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Literature List
Corneometer®

M. Pelizzari, A. Mesfin Asrat, G. Bifulco, F. Rastrelli, G. Rastrelli, **Olive oil upcycled 'surf-active'for skin and hair**, PERSONAL CARE MAGAZINE, Volume 28, Issue 8, September 2024, p. 25-28

The use of common surfactants exposes well-known environmental issues such as low biodegradability and possible toxicological effects for human, animal and aquatic life, and adverse effects for skin and eye. Studies have shown the ecological impacts of commercially available surfactants, including anionic and cationic ones (quaternary ammonium compounds) due to their bioaccumulative properties and toxicity behaviour. The widespread and daily use of skin care and cleansing products has led over the years to concerns about water contamination by surfactants contained in cosmetic products.

A. Taimana, S. Kuo, **Mobilising the power of New Zealand red seaweed**,

Antarctic Bottom Water (AABW) plays a crucial role in shaping the marine ecosystems of New Zealand. Originating from the frigid depths of Antarctica, this dense, cold water mass travels northward, bringing with it a wealth of nutrients and impacting global ocean currents. For New Zealand, a country uniquely positioned in close proximity to Antarctica, the influence of AABW is particularly significant. Nestled in the southwestern Pacific Ocean, New Zealand's unique geographical location positions it as one of the closest inhabited landmasses to the icy expanse of Antarctica.1 This proximity not only establishes New Zealand as a critical player in Antarctic exploration and research but also as a guardian of some of the world's purest oceanic waters. From its southernmost city, Invercargill, to the key port of Christchurch, the nation serves as a vital hub for logistical support, environmental stewardship, and oceanic purity. The role of Antarctic Bottom Water in marine ecosystems AABW forms as cold, salty, and dense water sinks near the Antarctic continent, driven by the extreme temperatures and salinity changes. As this water travels along the ocean floor, it acts as a conveyor belt, transporting nutrients essential for marine life. These nutrients support the growth of phytoplankton, the foundation of the marine food web, which in turn sustains a diverse array of marine species, from tiny zooplankton to large fish and marine mammals. For New Zealand, this influx of nutrient-rich water is vital.

S. Duchi, **Microcapsules for Dark Skin**, COSSMA 09/2024, p. 10-13

The 'hybrid'lifestyle is no longer just a trend but a new way for consumers to view just about anything, including their skincare routines. As part of this lifestyle shift, the 'buy less, buy better' motto has been widely adopted by the beauty market in their process of creating products that meet this hybrid focus. As part of this trend, the beauty industry is making more of an effort to be inclusive in their offerings by creating products and, namely, makeup tailored to dark skin tone consumers

B.L. Lua, J. Robic, **Yellowness in skin complexion: Analysis of self-perception of women in China evaluated against clinical parameters of yellowness**, Skin Research and Technology: Volume 30, Issue 8, August 2024

Background: Skin "yellowness" is an abstract and subjective term, without a definitive measurement protocol. Objectives were to analyze Chinese women's self-perception of skin yellowness and associated parameters and identify objective clinical measurements that correlate with these perceptions. Methods: Following focus group discussions, criteria for skin yellownesswere defined, and validated by volunteer rankings of facial images. A typology study of 185 women was performed. Participants were grouped into yellow (Color Uniformity, Brightness and Transparency (CUBT) yellow scale grade > 3, chromameter b* value > 16) and non-yellow (CUBT yellow scale grade < 2, b* value < 14) groups. Participants selfevaluated their skin on yellowness, transparency, skin uniformity, dullness, radiance, oiliness, and texture. Expert assessments were performed to grade sebaceous pores, ocular area pigmentation, pigmentary spots and CUBT scores. Instrumental analysis of the skin was employed using corneometer, sebumeter, mexameter chromameter, and AGE reader. Results: Women in the yellow group self-evaluated their skin as significantly duller, less uniform, and less radiant than women in the non-yellow group (P ◘ 0.05). Higher levels of ocular area pigmentation and lower facial skin

uniformity and brightness (P < 0.001) were observed in women with yellow skin. CUBT expert grading showed lower pink skin color, but significantly higher beige, yellow, and olive pigmentation (P ◘ 0.05) in women in the yellow skin group. Melanin and b* values were significantly higher in women with yellow skin while L value was significantly lower. Conclusion: Self-perceived skin yellowness in Chinese women correlates to chromameter and mexameter measurements, as well as expert evaluation of ocular pigmentation and CUBT parameters.

B.L. Lua, L. Ruan, Y. Lyu, S. Liu, **Understanding the causes of skincare product pilling**, Skin Research and Technology: Volume 30, Issue 8, August 2024

Background: Skincare and makeup “pilling” is an unsightly and undesirable phenomenon whereby skincare such as moisturizers or foundation ball up to form flakes on the skin. To date, the causes of skincare product pilling have not been studied. This study aimed to examine the relationship between skin physiology and pilling potential of sunscreen and foundation (the two products most reported by consumers to cause pilling). This study also examined the effects of product applicationmethods on pilling. Materials and methods: 528 female volunteers fromGuangzhou, China, aged between 20 and 49 years, underwent various clinical skin assessments, followed by three steps of product layering. Pilling was assessed after each product application step. Results: 217 volunteers (41%) experienced pilling. The majority of pilling (n = 655 events) occurred following sunscreen application, while only a few pilling events (n = 35) occurred with foundation. Foundation improved pilling caused by sunscreen in 98.9% of cases. Volunteers experiencing pilling with both sunscreen and foundation had significantly lower facial skin hydration and oiliness, higher pH, and smoother skin texture (P < 0.05). Two application methods, rubbing of products in circular and linear motions, yielded the highest numbers of pilling events. Conclusion: This study has provided the first insights into the causes of pilling. Sunscreen is a promoter of pilling, while foundation may resolve sunscreen-induced pilling in many cases. Skin physiology, particularly drier, smoother skin with higher pH, and product application methods are likely contributing factors to this undesirable phenomenon.

S.H. Kim, J.H. Kim, Y.M. Choi, S.M. Seo, E.Y. Jang, S.J. Lee, H.-S. Zhang, Y. Roh, Y.W. Jung, C.O. Park, D.H. Jeong, K.H. Lee, **Development of a biomarker-based platform for comprehensive skin characterization usingminimally invasive skin sampling and quantitative real-time PCR**, Skin Research and Technology: Volume 30, Issue 8, August 2024

Background: Classifying diverse skin types is crucial for promoting skin health. However, efficiently identifying and analyzing relevant biomarkers from a vast array of available genetic data is challenging. Therefore, this study aimed to develop a precise and efficient platform for analyzing specific skin biomarkers using quantitative real-time PCR (qRT-PCR) with the minimal invasive skin sampling method (MISSM). Materials and methods: MISSM was used for RNA extraction from skin samples, followed by qRT-PCR analysis to quantify the expression of 20 biomarkers associated with skin characteristics (four biomarkers each for five skin characteristics). Noninvasive measurements from 299 Korean participants were utilized to correlate biomarker expression with skin parameters. Statistical analyses were conducted between biomarker expression levels and noninvasive skin measurements to select the relatively best-performing biomarker for each skin characteristic. Results: Collagen type 1 alpha 1 (COL1A1) and moesin (MSN) were identified as skin aging biomarkers. Krüppel-like factor 4 (KLF4) and serine peptidase inhibitor Kazal type 5 (SPINK5) were identified as skin dryness biomarkers, whereas melan- A (MLANA) was selected as a biomarker for understanding pigmentation dynamics. Myelin protein zero like 3 (MPZL3) and high mobility group box 2 (HMGB2) were identified as markers of oily skin and skin sensitivity, respectively. Statistically significant correlations were found between the biomarker expression levels and noninvasive skin characteristic measurements. Conclusion: This study successfully developed a platform for the precise evaluation of individual skin characteristics using MISSM and qRT-PCR biomarker analysis. By selecting biomarkers that correlate with noninvasive measurements of skin characteristics, we demonstrated the platform’s efficacy in assessing diverse skin conditions.

E. Chicharro-Luna, S. Zúnica-García, C. Martinez-Algarra, A. Gracia-Sánchez, **Age-related variations in stratum corneum hydration in the foot**, Maturitas, 2024 Aug 22:189:108104

Objective: The aims of the study are to identify which region of the foot has lower hydration according to age, measure the variation in the level of stratum corneum hydration of the foot across the a wide age range, and examine hydration differences of the foot according to gender. Study design: A descriptive observational study was conducted to assess stratum corneum hydration of the foot among 504 participants recruited between November 2023 and March 2024. Main outcomes measures: Stratum corneum hydration assessment was conducted using a Corneometer 825® probe at 10 specific points on the foot. Data on sociodemographic variables, medical history, foot care habits, and hydration-

related factors were collected. Statistical analyses were performed using SPSS v. 24.0. Results: Stratum corneum hydration of the foot varied significantly across regions, with higher hydration in the digital zone and lower hydration in the heel. An inverse correlation was found between age and hydration, with younger participants exhibiting higher hydration levels. Women showed higher hydration than men. Differences in hydration were observed between the right and left feet. Conclusion: This study highlights the importance of localized assessment of foot skin dehydration. Aging significantly affects stratum corneum hydration of the foot. Gender differences in hydration suggest the importance of personalized approaches to skin care. Differential hydration between feet underscores the influence of mechanical load.

S. Phay Ng, S. Bielfeldt, S. Laing, S. Danby, M.J.J. Cork, **Effects of a pH-Regulating Emollient Cream in Mild Atopic Dermatitis Patients with Moderate Localised Lesions**, Skin Pharmacol Physiol., August 2024

Introduction: Increased skin pH values in patients with atopic dermatitis (AD) contribute to poor antimicrobial and permeability barrier functions of the skin. In practice the majority of topical preparations available for dry skin conditions do not provide sufficient pH and buffering capacity for maintaining optimum skin surface conditions. To address this issue, we tested a novel zinc lactobionate preparation to determine whether the regular application would lower skin surface pH, and in doing so improve the condition of lesional skin. Methods: The assessment for local severity of AD was done with the SCORAD and skin dryness was assessed by capacitance measurement. Results: The results showed that the test product lowered skin pH and improved atopic dermatitis skin lesions from moderate to mild during 2 weeks of application. In the treated area a lowered pH of about 0.85 units was found. Together with the lowering of pH, the local SCORAD significantly improved from 8.3 at average down to 4.0, while on the untreated area only a slight improvement (from 8.2 to 6.4) was found. Conclusion: Synergistic effects of the test product's pH lowering and emollient properties might explain the observed improvements of clinical signs of AD and further research against a comparator would allow the specific contribution of pH modulation to these improvements to be unambiguously isolated.

E.A. Sroczyk, A. Tarasiuk, M. Talar, G.C. Rutledge, A. Makaro, Z. Misztal, M. Wołyniak, K. Berniak, M. Sałaga, J. Fichna, U. Stachewicz, **Cholesterol Nanofber Patches with Sustainable Oil Delivery Eliminate Inflammation in Atopic Skin**, ACS Appl. Mater. Interfaces 2024, 16, p. 37783−37794

Atopic skin is dry and itchy and lacks integrity. Impaired skin barrier results from altered lipid composition of the skin. A crucial skin lipid, cholesterol, provides flexibility and homeostasis of the cell membranes' lipid bilayer. Cholesterol-based creams and natural oils, especially blackcurrant seed oil, are benefcial for skin care as they hydrate the skin and improve its integrity. The major atopic symptom, skin dryness, can be overcome by the application of porous patches enhanced with cholesterol and natural oil. The base of the patches is constructed of polyimide (PI) nanofbers with cholesterol coatings and externally added blackcurrant seed oil. The presence of cholesterol in PI mats hinders the passage of oil through the patches to the skin, resulting in sustained and prolonged skin hydration. The theoretical and numerical investigations of oil dynamics in porous mats confrmed the experimental results, showing a prolonged skin hydration effect up to 6 h. Additionally, as demonstrated by in vivo tests on atopic mice, cholesterol patches lower serum immunoglobulin E levels and expression of proinflammatory cytokines in the skin, thereby accelerating skin healing. Our results hold great promise for the longterm application of the patches in atopic dermatitis treatment.

J. Schinzari Palo, G.E. de Lima Faria, A.D. McCarthy, R. Frota Boggio, **Improved brachial skin hydration and appearance with hyperdiluted calcium hydroxylapatite**, Skin Research & Technology, July 2024

Introduction: The search for minimally invasive treatments for areas not covered by clothing, such as the arms, has increased, particularly to combat flaccidity resulting from factors such as aging and weight loss. This study evaluated the efficacy of calcium hydroxyapatite (CaHA), an injectable biostimulator, in improving flaccidity and hydration of the skin of the arms. Materials and Methods: Six women between 40 and 50 years old with visible signs of brachial flaccidity were selected. Calcium hydroxyapatite was injected into the arms in a 1:4 dilution (1.5 mL per side), with subjective evaluation based on the GAIS score and objective hydration analysis using corneometry. Results: After a single application of CaHA, there was a significant increase in skin hydration (12.2%), objectively assessed by corneometry. Patient and physician satisfaction was high, evidenced by visible improvements in photographs and by the GAIS score. No significant adverse events were reported, demonstrating the safety of the procedure. Discussion: Our clinical observations confirm the ability of CaHA to visibly improve arm flaccidity. In addition, hydration measures support previous histological studies demonstrating increases in dermal proteoglycans. Compared to other studies, the increase in skin

hydration with CaHA was similar to those obtained with hyaluronic acid, suggesting comparable results with a more comfortable and less invasive technique. Conclusion: This study demonstrates the efficacy of CaHA in improving hydration of brachial skin after a single treatment. Despite the limitations of the sample size, the research contributes to the medical literature, highlighting the utility of the 3 mL CaHA presentation for brachial treatment with objective results in skin hydration.

J.L Cohen, M. Young, T. Kononov, A.S Zahr, **Effects of a Sheer 100% Mineral Sunscreen Moisturizer on Facial Photodamage Across Fitzpatrick Skin Types**, J Drugs Dermatol. 2024 Jul 1;23(7): p. 538-544

All skin tones need to be protected from the damaging effects of solar radiation. Although mineralsunscreens offer protection, they can have a thick, greasy feel and leave a white cast, particularly on darker skin tones. Tints offset white cast and provide visible light protection; however, patients mayprefer a sheer option. Therefore, a multifunctional, sheer, 100% mineral sunscreen moisturizer (MSM) with broad-spectrum SPF 50 was developed to have positive aesthetics and deliver antiaging and skin health benefits to all skin tones. Methods: An IRB-approved, 12-week, openlabel clinical study was conducted to investigate the efficacy and tolerability of the MSM. Thirtynine (39) females aged 35 to 60 years with moderate-severe overall facial photodamage and representing all Fitzpatrick skin types (FST) were recruited. Participants applied the MSM to the face and neck in the morning and reapplied per US Food and Drug Administration requirements. Efficacy and tolerability grading, photography, ultrasound imaging, corneometer measurements, and questionnaires were completed at baseline and weeks 4, 8, and 12. Results: Statistically significant progressive improvements were demonstrated from baseline to week 12. At week 12, 23.4% and 26.5% mean improvements in overall photodamage were seen for FST I-III and FST IV-VI, respectively. Favorable tolerability was shown for both the face and neck. Photography corroborated clinical grading, and ultrasound imaging indicated a trend in skin density improvement. The MSM was well-perceived. Conclusion: The MSM is an efficacious and well-tolerated product for patients of all skin tones who desire a sheer, 100% mineral sunscreen moisturizer with anti-aging and skin health benefits.

G.E. de Lima Faria, N.I Fakih-Gomez, A. Tartare, L. Zattar, A.C. Henriques Ribeiro Machado , F. Felice, J. Kadouch, C. Muñoz-Gonzalez, R. Frota Boggio, **Hand Rejuvenation with Customizable Hybrid Fillers: Premixed Calcium Hydroxyapatite and Hyaluronic Acid**, Aesthetic Plast Surg. 2024, June

Introduction: Hand aging is a prevalent concern characterized by the atrophy of local soft tissues and increased visibility of vessels and tendons. Hyaluronic acid (HA) and calcium hydroxyapatite (CaHA) are well-established treatments for addressing this issue. While hybrid filler containing HA and CaHA has been proposed for facial rejuvenation, studies investigating its efficacy for hand rejuvenation are lacking. Objective: This study aims to assess the safety and efficacy of a premixed hybrid filler containing calcium hydroxyapatite (CaHA) and hyaluronic acid (HA) for hand rejuvenation. Methods: A prospective, double-blind, controlled trial was conducted. The control arm (CA) received conventional subdermal treatment with CaHA at a 1:1 dilution. The intervention arm (IA) underwent hybrid treatment, consisting of CaHA at a 1:1 dilution combined with 1 ml of lowdensity HA. Evaluation was performed subjectively using the Global Aesthetic Improvement Scale (GAIS) and the Manch ster Hand Grading System (MHGS), and objectively using cutometry, corneometry, and ultrasound. 30.07.24, 17:09 Hand Rejuvenation with Customizable Hybrid Fillers: Premixed Calcium Hydroxyapatite and Hyaluronic Acid and International Society of Aesthetic Plastic Surgery. Results: Both the CA and the IA exhibited high rates of patient satisfaction and satisfaction as assessed by blinded evaluators. Although numerical superiority was observed in the IA, no statistical difference was found between the two groups. Significant improvements in hydration, elasticity, and skin thickness were observed in both arms, with no discernible difference between them. Greater ultrasound echogenicity was noted in the IA, which, as indicated by existing literature, may suggest enhanced biostimulation. No adverse effects were reported in either arm. Conclusion: Premixed filler containing HA and CaHA for hand rejuvenation appears to be a safe and effective approach.

J.E. Seol, G.J. Cho, S.H. Jang, S.W. Ahn, S.M. Hong, S.H. Park, H. Kim, **Effect of Amount of Daily Water Intake and Use of Moisturizer on Skin Barrier Function in Healthy Female Participants**, Ann Dermatol. 2024 Jun;36(3): p. 145-150

Background: It is well known that adequate water intake and moisturizer application improves skin barrier function. Objective: This study was conducted to analyze the effects of daily water intake and moisturizer application on skin barrier function and the degree of response to barrier recovery. Methods: Participants with daily water intake more than 1 L were classifed as high daily water intake group (H) and those with less than 1 L as low daily water intake group (L). Each group wassubcategorized into four groups according to intervention method: additional water intake (H1, L1),

moisturizer (H2, L2), both (H3, L3), and control (H4, L4). Transepidermal water loss (TEWL) and stratum corneum hydration (SCH) were measured at baseline during the 2nd and 4th week. Results: A total of 43 participants completed the study (H: 22, L: 21). At baseline, there was no signifcant difference in SCH and TEWL in any on the anatomical sites between the high daily water intake and low daily water intake groups. However, SCHs of lef forearm (group H2, p=0.004; group H3, p=0.004), lef hand dorsum (group H2, p=0.010; group H3, p=0.026), and lef shin (group H2, p=0.016; group H3, p=0.001) in group H2 and H3 were signifcantly increased in the 4th week as compared to the baseline values. Conclusion: The results suggest that the degree of water intake May

be related to improved skin barrier function. However, application of additional moisturizers had more favorable impact on skin hydration as compared to additional water intake.

G. Siquier-Dameto, P. Boadas-Vaello, E. Verdú, **Intradermal Treatment with a Hyaluronic Acid Complex Supplemented with Amino Acids and Antioxidant Vitamins Improves Cutaneous Hydration and Viscoelasticity in Healthy Subjects**, Antioxidants 2024, 13, 770.

Intradermal injection of bioactive compounds is used to reduce the effects of aging skin. The aim of this work is to study the response of facial injection of a hyaluronic acid complex supplemented with amino acids and antioxidant vitamins on skin rejuvenation. A total of 40 healthy adult subjects were recruited to whom this complex was injected into the facial skin, three consecutive times every two weeks. Together with assessing the degree of skin hydration, the level of skin microcirculation, wrinkles, skin color, and skin biomechanical parameters were evaluated. Using the GAIS scale, the degree of satisfaction of the participants was assessed. At 42 days (D42), there was an 11–12% increase in skin hydration and viscoelasticity, a 23% increase in skin density, a 27% increase in skin microcirculation, and a signifcant lightening and whitening of skin color, but without causing changes in skin wrinkles. A value between 1 and 3 on the GAIS scale was observed between 70 and 92% of the participants, and 87% of subjects found their skin more beautiful, 85% would recommend this treatment, and more than 50% found their face rejuvenated. In summary, the intradermal treatment tested suggests skin rejuvenation, with a good degree of safety.

J.S. Lee, Y.C. Yoon, J.M. Kim, Y.-H. Kim, Y.-H. Kang, Y.C. Shin, **Liquid collagen from freshwater fish skin ameliorates hydration, roughness and elasticity in photo-aged skin: a randomized, controlled, clinical study**, Nutr Res Pract. 2024 Jun;18(3): p. 357-371

Backgroud/Objects: Collagen is commonly used in diverse forms as a functional component in skincare products. On the other hand, the effects of collagen on human skin are controversial. Dietary collagen hydrolysates from freshwater *Pangasius hypophthalmus* fish skin ameliorated photo-aged skin of hairless mice. This study conducted a randomized, double-blind, placebo-controlled clinical trial to determine if liquid fish collagen (CollagenTripep20™, Tripep20) as a drink strengthens skin health and quality. Subjects/Methos: In this clinical trial, 85 subjects aged 35–60 yrs were diagnosed with photo-aged skin. Eighty-fve subjects were randomized to receive either Tripep20 (n = 44) or placebo (n = 41). Seventy-eight subjects fully participating for a 12-week period consumed 1,000 mg of Tripep20 (n = 41) or placebo (n = 37) in a 50-mL bottle as a daily drink. The intend-to-treat and per-protocol populations were 85 and 78, respectively. Skin hydration, wrinkles, and elasticity were assessed at 0 (baseline), 6, and 12 weeks during the study period. Results: Skin hydration in the Tripep20 group was signifcantly higher from 6 weeks (P < 0.001) than the baseline. Afer 12 weeks, the Crow's-feet visual score and skin roughness (Ra, Rq, and Rmax) were signifcantly improved in the Tripep20 group than in the placebo group (P < 0.05). Consuming liquid collagen Tripep20 greatly enhanced skin elasticity (Gross R2, Net R5, and Biological elasticity R7) in 6 weeks compared to the placebo group. The Tripep20 group showed a signifcant increase in skin elasticity from the baseline afer 6 and 12 weeks (P < 0.001). Neither abnormal symptoms nor adverse events were encountered during the study period in subjects ingesting Tripep20 or placebo. The changes in parameters related to hematology and clinical chemistry were within the normal ranges. Conclusion: Oral consumption of liquid collagen Tripep20 was safe and well-tolerated. The results of this study show that freshwater fsh-derived liquid collagen Tripep20 can be used as a healthy functional food ingredient to improve skin moisturizing, anti-wrinkling, and elasticity in an aging population.

T.Q. Nguyen, C. Emesiani, M. Meckfessel, **Heatmap Evaluation of Facial Hydration Using a Novel Python Program**, J Drugs Dermatol. 2024 Jun 1;23(6): p. 463-465

Background: Evaluating cleansers and moisturizers provides important information to guide clinicians in the recommendation of these products. This project was performed to visualize skin hydration via heatmap after the use of a gentle skin cleanser (GSC) and moisturizing lotion (ML).
Methods: Half-face, intra-individual open-label study in healthy volunteers. Cleanser was administered in a single application that was then wiped off the face. Moisturizing lotion was applied at least once-

daily for one week. Hydration measurements were made at 30 pre-defined points on half of the face, at baseline, and 30 minutes post-application; an additional assessment at week 1 was made for the moisturizing lotion. Heatmaps were generated using Python programming software to interpolate hydration values to colors that were then superimposed onto the volunteer's facial image. Results: Five subjects completed the cleanser assessments, and 5 subjects completed the 30-minute evaluation for the lotion, with 4 completing the week 1 assessment. There was a visible shift in skin hydration post-GSC application from values approximately in the 12-42 AU (arbitrary unit) range to 30-60 AU at 30 minutes. Similarly, there was a shift in hydration from baseline to 30 minutes that continued to increase through week 1 of ML use.
Conclusions: This innovative heatmap data generation showed a clear, visual change in hydration over time. There was a visible shift in hydration values from baseline to 30 minutes after application of cleanser; hydration also improved after use of moisturizing lotion at 30 minutes and increased after week 1 application.

C.S. Barros-Oliveira, M.J. Melo de Jesus, V.C Campos, R. Salvatori, A. Antunes de Souza Araújo, R. Fernandes Soares Neto, A. Bartke, V.O. Batista , A. Schneider, K.R. Villar-Gouy, M.M. Masternak, Â.C. Leal, L.B. Santos, C.R.P. Oliveira, E.G. Santos, D.A. Oliveira Simões, B. de Santana Silva, M.H. Aguiar-Oliveira, **Skin assessment in congenital untreated isolated GH deficiency**, Endocrine, 2024 Jun;84(3): p. 1116-1124

Purpose: The separation between the inside and outside through the skin was fundamental for the evolution of prevertebrates, which grow through extrapituitary circuits, to vertebrates, which grow through the somatotrophic axis, namely pituitary growth hormone (GH). and circulating IGF1.Individuals with untreated isolated growth hormone (GH) deficiency (IGHD) due to a mutation in the GH-releasing hormone receptor (GHRH) gene, residing in Itabaianinha, Brazil, are vulnerable to skin cancer and have reduced sweating. However other aspects of their skin physiology are still unknown. Our objectives were to evaluate the number of skin cancers, skin aging, and functional aspects of the skin in this IGHD cohort. Methods: Twenty-six IGHD individuals and 26 controls matched by age, sex, ethnicity, and occupation were submitted to a biochemical, dermatological and a functional skin assessment by the Multi Probe Adapter Cutometer® MPA 580. Results: There was no difference in the number of skin cancers and in the degrees of photodamage between the groups. The melanin content in the forearm was similar between the groups but was lower in the buttocks ($p = 0.005$), as well as skin resistance ($p < 0.0001$) and elasticity ($p = 0.003$), lower in the IGHD. There was no difference in hydration and sebum content between the two groups. Conclusion: IGHD is apparently associated with a neutral profile in terms of skin cancer and photodamage, with similar melanin on the forearm and lower buttocks, lower skin resistance and elasticity, with hydration and sebum similar to controls.

M.C. Lidon-Moya, E. Gomez, J. Galvez, A. Soley, G. Mola, R. Delgado, **Nourishing sensitive skin for healthier appearance**, PERSONAL CARE MAGAZINE, June 2024, p. 27-31

Sensitive skin is a condition characterized by heightened responses to stimuli that should not normally cause discomfort. While external factors like temperature and chemicals are known to affect skin sensitivity, the role of nutritional status on skin health and sensitivity is emerging. Therefore, understanding the impact of diet on skin inflammation and ageing is crucial. An unhealthy diet, high in fat and sugar, induces metabolic stress that leads to skin inflammation and accelerates skin ageing. This unhealthy diet triggers the release of stressorins, danger alarm signals that bind to RAGE receptors (receptors for Advanced Glycation End Products) on skin cells and other cells. Consequently, this activates the NF-kB signaling pathway, resulting in increased production of pro-inflammatory cytokines.

A. Ziemlewska, M. Zagórska-Dziok, A. Mokrzyńska, Z. Nizioł-Łukaszewska, D. Szczepanek, I. Sowa, M. Wójciak, **Comparison of Anti-Inflammatory and Antibacterial Properties of *Raphanus sativus* L. Leaf and Root Kombucha-Fermented Extracts,** Int. J. Mol. Sci. 2024, 25, 5622

In the cosmetics industry, the extract from Raphanus sativus L. is fermented using specifc starter cultures. These cosmetic ingredients act as preservatives and skin conditioners. Kombucha is traditionally made by fermenting sweetened tea using symbiotic cultures of bacteria and yeast and is used in cosmetic products. The aim of this study was to evaluate the cosmetic properties of radish leaf and root extract fermented with the SCOBY. Both unfermented water extracts and extracts after 7, 14, and 21 days of fermentation were evaluated. The analysis of secondary plant metabolites by UPLC-MS showed higher values for ferments than for extracts. A similar relationship was noted when examining the antioxidant properties using DPPH and ABTS radicals and the protective effect against H2O2-induced oxidative stress in fbroblasts and keratinocytes using the fluorogenic dye H2DCFDA. The results also showed no cytotoxicity to skin cells using Alamar Blue and Neutral Red tests. The ability of the samples to inhibit IL-1β and COX-2 activity in LPS-treated fbroblasts was also demonstrated using

ELISA assays. The influence of extracts and ferments on bacterial strains involved in inflammatory processes of skin diseases was also assessed. Additionally, application tests were carried out, which showed a positive effect of extracts and ferments on TEWL and skin hydration using a TEWAmeter and corneometer probe. The results obtained depended onthe concentration used and the fermentation time.

J.W Fluhr, A. Voisard, D.G Nikolaeva, L. Herzog, G. Wiora, J. Gayer, N.J Lehmann, R. Darlenski, **Stratum Corneum Hydration Measurements with a Bluetooth Wireless Probe: A Real-Life Study at Home Compared to Measurements under Laboratory Conditions**, Skin Pharmacol Physiol., May 2024, p. 1-9

Introduction: Non-invasive measurement of the stratum corneum hydration (SCH) with capacitance-based instrumentation is established in dermatological and cosmetic studies. We wanted to test the reliability of non-invasive self-measurements for SCH performed under real-life conditions by volunteers with a Bluetooth-based (wireless) probe Corneometer® (CM 825i) transmitting the data via a smartphone application to a central server. Probes and smartphonescommunicated using Bluetooth Low Energy. Data from the smartphone were securely transferred to a remote server in a different country with TLS encryption using HTTPS protocols. CM 825i values were correlated with the established CM 825 under laboratory conditions. The primary endpoint was the correlation of the two probes. Secondary endpoints were the coefficient of variation (CV) and delta values (before and after treatment). Methods: Eighteen healthy volunteers (f: 8; m: 10) participated in the prospective observational study. The real-world home use of the wireless CM 825i was performed before and after treatments with base cream DAC for 7 days. Results: Both instruments showed a significant and relevant correlation (p < 0.0001; Spearman coefficient of r = 0.8647). CM 825i and CM 825 differentiate significantly between normal and high SCH. Both devices showed comparable robustness in repeated measurements with a CV between 5.6% and 9.2%. Conclusion: We could show a significant correlati on between both devices and a comparable differentiation between low and high SCH and comparable CVs. The real-life use demonstrated adequate acquiring and transmitting of in vivo data to a smartphone and subsequently transmitting to the secure server with low numbers of missed transmissions (<0.2%) and missed measurements (<5%).

X.R. Zhang, Y.X. Jin, P.N. Chien, T.T. Thuy Tien, S.Y. Zhou, N.N. Giang, L.T. Thuy Le, S.Y. Nam, C.Y. He, **Evaluation test and analysis of a microneedle and iontophoresis based medical device "CELLADEEP Patch" in skin improvement on ex vivo human-derived skin tissue models**, Skin Research & Technology May 2024

Background: Microneedles are tiny needles, typically ranging from tens to hundreds of micrometers in length, used in various medical procedures and treatments. The tested medical device named "CELLADEEP Patch" a dissolvable microneedle therapy system (MTS), made of hyaluronic acid and collagen. And the iontophoresis technique is also applied in the system. The study aimed to evaluate the effectiveness of the "CELLADEEP Patch" in skin improvement. Methods: Ex vivo human-derived skin tissue models were used in this study and they were divided into three different groups, namely, the Untreated Group, the Negative Control Group, and the Test Group respectively. The Untreated Group received no treatment measures, the Negative Control Group was exposed to ultraviolet B radiation (UVB) irradiation, and the Test Group was exposed to UVB irradiation and treated with "CELLADEEP Patch". Skin moisture content, transdermal water loss, and skin elasticity were evaluated by three clinical devices. Additionally, histological staining and related mRNA expression levels were also analyzed. Results: The results of skin moisture content, transdermal water loss, and skin elasticity evaluation consistently illustrated that the application of "CELLADEEP Patch" led to remarkable skin improvement. And the analysis of histological staining images also confirmed the effectiveness of the "CELLADEEP Patch", especially for increasing collagen density. Moreover, the upregulation of Collagen type 1 a (COL1A1) and hyaluronan synthase 3 mRNA expression and the decrease of Matrix metalloproteinase 1 (MMP- 1) and Interleukin-1 beta (IL-1β) mRNA expression reflected its wrinkle improvement, moisturizing and anti-inflammation function.

S. Fallah Pakdaman, A. Samadi, M. Fattahi, A. Naeimifar, F. Amiri Ardehali, Y. Ketabi, S.A. Nasrollahi, A. Firooz, **Fabrication and efficacy assessment of combination of brimonidine and ivermectin for treatment of papulopustular rosacea**, J Cosmet Dermatol. May 2024

Background & Aim: Rosacea is a chronic inflammatory, multifactorial disease for which combination therapy could be an effective treatment.In this study, we evaluate the effect of the combination therapy of brimonidine 0.33% and ivermectin 1% as a single cream for the treatment of papulopustular rosacea. Method: A stable and appropriate formulation was prepared by adding the aqueous phase to the lipid phase while being stirred. The stability and physicochemical properties of

the formulation were evaluated under accelerated conditions. Twelve patients (36–60 years) with mild to moderate papulopustular rosacea and a Demodex count of five or more were treated with the combination of brimonidine 0.33% and ivermectin 1% cream. Clinician's Erythema Assessment (CEA), Patients Self-Assessment (PSA), skin erythema (ΔE) and lightness (ΔL), and skin biophysical parameters including transepidermal water loss (TEWL), skin hydration, pH, and sebum content, as well as erythema and melanin index and ultrasound parameters, were measured before treatment and 4 and 8 weeks after. Adverse drug reactions were also recorded Results: CEA and PSA decreased significantly from 3 to 2 after 8 weeks, respectively (p-value = 0.014 for CEA and 0.010 for PSA). ΔE and ΔL, as well as skin erythema index and TEWL improved after 8 weeks of treatment ($p < 0.05$). Two patients withdrew from the study in the first week because of local adverse effects; one developed flushing following treatment and left the investigation after 4 weeks and another patient withdrew from the study after 4 weeks due to deciding to become pregnant. Conclusion: Eight-week treatment with the combination of brimonidine 0.33% and ivermectin 1% was shown to be effective for improvement of erythema and inflammatory lesions in mild to moderate papulopustular rosacea.

B. Aral, **Testing Tactics: Approaches to Measure Scalp Comfort and Care**, Cosmetics & Toiletries, May 2024

The global hair and scalp care market is expected to generate a revenue of about $94 billion in 2024, with an anticipated CAGR of 2.8% in the next four years. Anti-dandruff, hair loss, dry and itchy scalp, dry and dull hair, and white/gray hair product categories dominate, while products targeting scalp comfort and care have emerged as their own sub-category thanks to a few combined factors.

F. Yang, X. Zhang, H. Wang, M. Guo, J. Zhang, X. Feng, J. Yu J. Yang, J. Zhu, Y. Wang, **Comprehensive evaluation of the efficacy and safety of a new multi-component anti-aging topical eye cream**, Skin Research & Technology, May 2024

Background: The delicate periorbital region is susceptible to skin dehydration, wrinkles, and loss of elasticity. Thus, targeted and effective anti-aging interventions are necessary for the periorbital area. Aim: To evaluate the efficacy and safety of a new anti-aging eye cream formulated with the active complex (Yeast/rice fermentation filtrate, *N*-acetylneuraminic acid, palmityl tripeptide-1, and palmitoyl tetrapeptide-7). Methods: The cell viability and expressions of key extracellular matrix (ECM) components of the active complex were evaluated using a human skin fibroblast model. In the 12-week clinical trial, skin hydration, elasticity, facial photographs, and collagen density following eye cream application were assessed using Corneometer, Cutometer, VISIA, and ultrasound device, respectively. Dermatologists and participants evaluated clinical efficacy and safety at baseline, and after 4, 8, and 12 weeks. Results: PCR and immunofluorescent analyses revealed that the active complex significantly stimulated fibroblast proliferation ($p < 0.05$) and markedly promote the synthesis of collagen and elastin. Clinical findings exhibited a substantial enhancement in skin hydration (28.12%), elasticity (18.81%), and collagen production (54.99%) following 12 weeks of eye cream application. Dermatological evaluations and participants' assessments reported a significant improvement in skin moisture, roughness, elasticity, as well as fine lines and wrinkles by week 8. Conclusion: The new anti-aging eye cream, enriched with the active complex, demonstrates comprehensive rejuvenating effects, effectively addressing aging concerns in the periorbital area, coupled with a high safety profile.

T. Sadowski, C. Müller, N. Nowak, H. Niesalla, H. Gerdes, **Illustrating Skin Hydration by Capacitive Contact Imaging after Frequent Hand Disinfection / Visualisierung der Hautfeuchtigkeit nach häufger Händedesinfektion mittels Capacitive Contact Imaging**, söfw Journal 150, 5/24, p. 8-12

Hand hygiene is essential for preventing healthcare-associated infections. However, hand hygiene compliance is often hindered by a number of factors, one of which is irritant contact dermatitis. Illustrating the benefits of skin friendly hand disinfectants and their effect on skin condition could positively influence hand hygiene compliance. The aim of this study was to analyse the skin hydrating effect of a hand disinfectant with a comprehensive skin care complex using Capacitive Contact Imaging (CCI) as a method to assess and visualise skin hydration in comparison to conventional corneometry. In addition to established parameters, including pH value, transepidermal water loss (TEWL), and dermatological assessments, the study investigated the dermatological effects of a two-week application of a hand disinfectant foam. Frequent daily application of the product led to an improvement in skin hydration without causing intolerability. The results from CCI and corneometry were consistently comparable and showed significantly elevated skin hydration after the two-week application period. CCI illustrated the increased skin hydration and its potential to be used as an additional method to evaluate and demonstrate the effect of hand hygiene products on skin health.

Händehygiene ist im Gesundheitswesen entscheidend für die Infektionsprävention. Allerdings

wird die indikationsgerechte Einhaltung der Händehygiene (Compliance) oft durch eine Reihe von Faktoren behindert, einschließlich Unverträglichkeiten wie irritativer Kontaktdermatitis. Eine Visualisierung der Vorteile hautfreundlicher Hände-Desinfektionsmittel für den Hautzustand könnte die Händehygiene-Compliance positiv beeinflussen. Ziel dieser Studie war es, die Haut befeuchtende Wirkung eines Hände-Desinfektionsmittels mit umfassendem Hautpflegekomplex zu untersuchen. Dabei wurde ein kapazitives Bildgebungsverfahren (Capacitive Contact Imaging [CCI]) als Methode zur Messung und Visualisierung der Hautfeuchtigkeit im Vergleich zur herkömmlichen Corneometrie eingesetzt. Zusätzlich zu etablierten Parametern wie pH-Wert, transepidermaler Wasserverlust (TEWL) und dermatologische Bewertungen wurden die Auswirkungen einer zweiwöchigen Anwendung eines Hände-Desinfektionsschaums auf den Hautzustand untersucht. Die regelmäßige tägliche Anwendung des Produktes führte zu einer Verbesserung der Hautfeuchtigkeit, ohne dass Unverträglichkeiten auftraten. Die mittels CCI und Corneometrie erzielten Ergebnisse waren durchweg vergleichbar und zeigten eine signifkant erhöhte Hautfeuchtigkeit nach dem zweiwöchigen Anwendungszeitraum. CCI visualisierte die erhöhte Hautfeuchtigkeit und zeigt damit das Potenzial für den Einsatz als zusätzliche Methode zur Bewertung und zum Nachweis der Auswirkungen von Hände-Hygieneprodukten auf die Hautgesundheit.

Y. Wu, J. Ran, T. Tanaka, Q. Liu, **Quantitative skin surface hydration measurement by visible optical image processing: A pilot study**, Skin Research & Technology, May 2024

Background: Skin barrier function is significantly impacted by skin moisture. Most non-invasive evaluation techniques to measure skin surface hydration relying on its electrical properties, which are limited in scope and have unstable operations. Applying image processing for skin hydration assessment is uncommon, with an emphasis on skin-capacitive pictures and near-infrared images in general, which demand a certain spectrum. As a result, there is an increasing need for wide-area skin hydration evaluation and mapping. Objective: The study aims to propose a quantitative evaluation algorithm for skin surface hydration from visible-light images.Materials and methods: Three devices were applied to measure skin hydration: skin image capture device and two recognized commercial skin devices. A digital image processing system creates a new index, called GVR, to symbolize skin surface moisture. The CLAHE algorithm was applied to enhance the contrast of skin image, and after calculating it with the monochrome image, the skin reflectance image was segmented. The GVR was estimated using the values of the individual sites and the entire skin. The correlation coefficient between the three methods was examined using statistical analysis to assess the performance of GVR. Results: Skin hydration estimated from visible-light images is influenced by the entire facial structure in addition to specific areas. The electrical and visible image evaluations showed a strong association with a significant difference. Conclusion: It was discovered that reflecting measures from visible images provide a quick and efficient way to quantify the moisture of the skin's surface.

F. Villapiano, R. di Lorenzo, R. Sparaco, E. Magli, F. Frecentese, S. Laneri, A. D'Orsi, V. Nele, M. Biondi, L. Mayol, V. Campani, V. Santagada, G. de Rosa, **Technological and Physical–Chemical Evaluation of Cotton Gauzes Impregnated with Semisolid Preparations for Wound Healing**, Biomedicines 2024, 12, 777

Chronic wounds are marked by an extended healing period during which damaged tissues fail to undergo orderly and timely repair. Examples of chronic wounds encompass venous ulcers, pressure ulcers, and diabetic foot ulcers. The process of wound healing is complex and dynamic, relying on the interplay and response among various cells and mediators. In this study, four marketedwound dressing (namely Betadine® 10%, Connettivina® Bio Plus Fitostimoline® Plus, and Non-Ad® gauzes) have been characterized for their physicochemical properties and ex vivo behaviors. More in detail, the pH and rheological features of semisolid formulations impregnating the gauzes were analyzed along with their ability to adhere to the gauzes. The most promising ones were selected and compared in ex vivo experiments on fresh pig skin. The pH measurements showed an acidic environment for all the tested solutions, albeit with variations in mean values, ranging from 2.66 to 4.50. The outcomes of rheological studies demonstrated that all the semisolid preparations impregnating the gauzes exhibited a pseudoplastic behavior, with signifcant differences in the pseudoplasticity index across the preparations, which is likely to influence their ability to adhere to the gauze. A rheological study in oscillatory mode revealed rheological behavior typical of a viscous solution only for the cream impregnating non-paraffn gauzes. The other products exhibited rheological behavior typical of a weak gel, which is expected to be advantageous as regards the capability of the semisolid preparation to create and maintain the space within the wound and to provide protection to the injured tissue. Results of ex vivo experiments demonstrated that Fitostimoline® Plus was more effective than Connettivina® Bio Plus in promoting both skin hydration and energy.

A. Perwez, I. Mohd, A. Asad, M. Haya, ***Cananga odorata*** **(Ylang-Ylang) Essential Oil Containing Nanoemulgel for the Topical Treatment of Scalp Psoriasis and Dandruff**, Gels, 2024, 10, 303.

This research aimed to evaluate the effcacy of a nanoemulgel (NE) containing *Cananga odorata* (Ylang-Ylang) oil for managing scalp psoriasis and dandruff through various assessments. The study involved phytochemical screening, characterization, stability testing, in vivo performance evaluation, dermatokinetic analysis, central composite rotatable design (CCRD) optimization, in vitro release profling, and antioxidant and antimicrobial activity assessment of the NE. The NE exhibited excellent stability and maintained physical parameters over a three-month period. In vivo studies showed no skin irritation, maintenance of skin pH (4.55 to 5.08), and improvement in skin hydration (18.09 to 41.28 AU) and sebum content (26.75 to 5.67 mg/cm2). Dermatokinetic analysis revealed higher skin retention of *C. odorata* in the NE (epidermis: 71.266 µg/cm2, dermis: 60.179 µg/cm2) compared to conventional formulations. CCRD optimization yielded NE formulations with the desired particle size (195.64 nm), entrapment effciency (85.51%), and zeta potential (-20.59 mV). In vitro release studies indicated sustained release behavior, and antioxidant and antimicrobial properties were observed. This study demonstrates the stability, skin-friendliness, therapeutic benefts, and controlled release properties of the NE. The NE presents a promising option for various topical applications in treating bacterial and fungal diseases, potentially enhancing drug delivery and treatment outcomes in pharmaceuticals and cosmetics.

L. Kakuda, P.M.B.G. Maia Campos, W.P. Oliveira, **Development and Effcacy Evaluation of Innovative Cosmetic Formulations with *Caryocar brasiliense* Fruit Pulp Oil Encapsulated in Freeze-Dried Liposomes**, Pharmaceutics 2024, 16, 595

Encapsulation and drying technologies allow the engineering of innovative raw materials from plant biodiversity, with potential applications in pharmaceutical and cosmetic felds. Lipid-based nanoencapsulation stands out for its effciency, ease of production, and versatility in encapsulating substances, whether hydrophilic or lipophilic. This work aimed at encapsulating pequi oil in liposomes and freeze-dried liposomes to enhance its stability and functional benefts, such as skin hydration and anti-aging effects, for use in innovative cosmetic formulations. Pequi oil—extracted from the *Caryocar brasiliense* fruit pulp, a plant species from Brazilian plant biodiversity—is rich in secondary metabolites and fatty acids. Liposomes and dried liposomes offer controlled production processes and seamless integration into cosmetic formulations. The physicochemical analysis of the developed liposomes confrmed that the formulations are homogeneous and electrokinetically stable, as evidenced by consistent particle size distribution and zeta potential values, respectively. The geltype formulations loaded with the dried liposomes exhibit enhanced skin hydration, improved barrier function, and refned microrelief, indicating improvements in skin conditions. These results highlight the potential of dried liposomes containing pequi oil for the development of innovative cosmeceutical products. This research contributes to the valorization of Brazilian biodiversity by presenting an innovative approach to leveraging the dermatological benefts of pequi oil in cosmetic applications.

S. Somwongin, W. Chaiyana, **Clinical Effcacy in Skin Hydration and Reducing Wrinkles of Nanoemulsions Containing Macadamia integrifolia Seed Oil**, Nanomaterials 2024, 14(8), 724

This study aimed to assess natural oils for their antioxidant and anti-hyaluronidase properties and select the most effective candidate for development into nanoemulsions (NE) for clinical evaluations. The oils were assessed using 2,2′-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid ($ABTS^{\bullet+}$) and ferric thiocyanate assays for antioxidant properties and an enzyme-substrate reaction assay for anti-hyaluronidase activity. The most potent oil was formulated into conventional emulsions (CE) and NE, which were characterized and evaluated for their stability, both in accelerated and long-term conditions. The irritation potential was assessed using both the hen's eggs chorioallantoic membrane test and a clinical trial. Skin hydration enhancement and skin wrinkle reduction efficacy were clinically assessed. Macadamia integrifolia oil exhibited significant potency as an $ABTS^{\bullet+}$ radical scavenger, lipid peroxidation inhibitor, and hyaluronidase inhibitor ($p < 0.05$). Both the CE and NE, comprising 15% w/w oil, 5% w/w Tween® 80 and Span® 80, and 80% w/w DI water, were found to be optimal. NE with an internal droplet size of 112.4 ± 0.8 nm, polydispersity index of 0.17 ± 0.01, and zeta potential of –31.5 ± 1.0 mV, had good stability and induced no irritation. Both CE and NE enhanced skin hydration and reduced skin wrinkles in human volunteers, while NE was outstanding in skin hydration enhancement.

E. Lain, K. Mariwalla, J. Zeichner, F. Kirchner, E. Ruvolo, Z.D. Droelos, **Clinical Evaluation of Next-generation, Multi-weight Hyaluronic Acid Plus Antioxidant Complex-based Topical Formulations with Targeted Delivery to Enhance Skin Rejuvenation**, J Clin Aesthet Dermatol. 2024;17(4): p. 12–

16

Introduction: Hyaluronic acid (HA) has become a commonly used ingredient in many topical products due to its strong humectant properties and essential role in skin hydration; however, limitations of delivery of HA to only the surface of skin has hindered leveraging the full capacity of HA biology necessary for skin rejuvenation. Here, we describe the clinical e- cacy data of a set of novel next-generation, multi-weight HA plus antioxidant complex-based topical formulations with targeted skin delivery to enhance skin rejuvenation. Methods: Four multi-weight HA plus antioxidant complex-based formulations: 1) Multi-Weight HA plus Antioxidant Complex Lotion with SPF 30 (Day Lotion); 2) Multi-Weight HA plus Antioxidant Complex Cream (Night Cream); 3) Multi-Weight HA plus Antioxidant Complex Gel Cream; and 4) Multi-Weight HA plus Antioxidant Complex Boost Serum were clinically evaluated for key attributes including moisturization via corneometer, with clinical grading of: dryness, roughness, ne lines and wrinkles, and following daily use of the individual products for up to eight weeks. Results: Daily use of the multi-weight HA plus antioxidant complex-based formulations demonstrated signi cant improvements in all parameters evaluated compared to baselines, with changes in moisturization observed within 30 minutes of application, and changes in clinical grading parameters of dryness, roughness, ne lines and wrinkles observed as early as two weeks. Conclusion: These data demonstrate the clinical bene ts of daily use of multi-weight HA plus antioxidant complex-based moisturizers for overall improvement in skin health and appearance.

M. Coirier, M. Humeau, H. Muchico, E. Aymard, B. Closs, **An alfalfa quintessence to the benefit of a plural beauty**, HPC Today, Vol. 19(2), 2024

In the cosmetics industry, "plural beauty" is a concept that has been rising with the diversity equity and inclusion (DEI) movement. In line with this idea of considering all skin specificities, SILAB identified the main cutaneous characteristics of consumers in terms of ethnicity age, and gender. This approach highlighted that the three major beauty axes responding to universal expectations are all regulated by biological mechanisms taking effect in both the dermis and epidermis. The aim of the study was therefore to demonstrate how a Water & *Medicago sativa* (Alfalfa) Extract can respond to the needs of all skin types through a transversal action on both the dermis and the epidermis.

T. Arshad, H.M. Shoaib Khan, K.-R. Khan, A.S. Al-Roujayee, M. Mohany, M. Ahmad, S. Maryam, M.B. Akram, H. Shaukat, U. Khursheed, M.A.M. Aboul-Soud, **In vitro and split-faced placebo-controlled in vivo study on the skin rejuvenating effects of cream loaded with bioactive extract of *Indigofera argentea* Burm.f**, Frontiers in Pharmacology, April 2024, 15:1352045.

The bioactive extracts of traditional medicinal plants are rich in polyphenols and help to rejuvenate skin. The study was designed to assess the skin rejuvenating effects of a stable cream enriched with 4% *I. argentea* (IaMe) extract. The quantity of polyphenols by spectrophotometric methods was TPC, 101.55 ± 0.03 mg GAE/ g and total flavonoid content; 77.14 ± 0.13 mg QE/g, while HPLC-PDA revealed gallic acid; 4.91, chlorogenic acid 48.12, p-coumaric acid 0.43, and rutin 14.23 ¤g/g. The significant results of biological activities were observed as DPPH; 81.81% ± 0.05%, tyrosinase; 72% ± 0.23% compared to ascorbic acid (92.43% ± 0.03%), and kojic acid (78.80% ± 0.19%) respectively. Moreover, the promising sun protection effects Sun protection factor of extract (20.53) and formulation (10.59) were observed. The active cream formulation (w/o emulsion) was developed with liquid paraffin, bees wax, IaMe extract, and ABIL EM 90, which was stable for 90 days as shown by various stability parameters. The rheological results demonstrated the active formulation's non-Newtonian and pseudoplastic characteristics and nearly spherical globules by SEM. The IaMe loaded cream was further investigated on human trial subjects for skin rejuvenating effects and visualized in 3D skin images. Herein, the results were significant compared to placebo. IaMe formulation causes a substantial drop in skin melanin from ₋1.70% (2 weeks) to ₋10.8% (12 weeks). Furthermore, it showed a significant increase in skin moisture and elasticity index from 7.7% to 39.15% and 2%–30%, respectively. According to the findings, *Indigofera argentea* extract has promising bioactivities and skin rejuvenating properties, rationalizing the traditional use and encouraging its exploitation for effective and economical cosmeceuticals.

M. Giakoumaki, G.I. Lambrou, D. Vlachodimitropoulos, A. Tagka, A. Vitsos, M. Kyriazi, A. Dimakopoulou, V. Anagnostou, M. Karasmani, H. Deli, A. Grigoropoulos, E. Karalis, M. Christou Rallis, H.S. Black, **Type I Diabetes Mellitus Suppresses Experimental Skin Carcinogenesis**, Cancers 2024, 16, 1507

This study explores the previously uncharted territory of the effects of ultraviolet (UV) radiation on diabetic skin, compared to its well-documented impact on normal skin, particularly focusing on carcinogenesis and aging. Employing hairless SKH-hr2, Type 1 and 2 diabetic, and nondiabetic male mice, the research subjected these to UV radiation thrice weekly for eight months. The investigation

included comprehensive assessments of photoaging and photocarcinogenesis in diabetic versus normal skin, measuring factors such as hydration, trans-epidermal water loss, elasticity, skin thickness, melanin, sebum content, stratum corneum exfoliation and body weight, alongside photo documentation. Additionally, oxidative stress and the presence of hydrophilic antioxidants (uric acid and glutathione) in the stratum corneum were evaluated. Histopathological examination post-sacrifce provided insights into the morphological changes. Findings reveal that under UV exposure, Type 1 diabetic skin showed heightened dehydration, thinning, and signs of accelerated aging. Remarkably, Type 1 diabetic mice did not develop squamous cell carcinoma or pigmented nevi, contrary to normal and Type 2 diabetic skin. This unexpected resistance to UVinduced skin cancers in Type 1 diabetic skin prompts a crucial need for further research to uncover the underlying mechanisms providing this resistance.

B. Brockway, **Ancient ayurvedic adaptogen ashwagandha - Now trending in modern beauty**, HPC Today, Vol. 19(2), 2024

Ashwagandha (*Withania somnifera*) is an adaptogenic herb that has been used in India's traditional Ayurvedic medicine for over 3000 years. The roots of the ashwagandha plant contain a diverse array of bioactive compounds including withanolides, alkaloids, and antioxidants that areresponsible for its rejuvenating and health-promoting properties. Therefore, full spectrum extracts containing these actives at their natural levels provide the greatest benefits. Recent clinical studies have validated ashwagandha's traditional uses for combating stress and for healthy-aging. These studies show ashwagandha is effective for body building along with benefits for skin and hair. Ashwagandha root extract applied topically can improve skin wrinkles, texture, elasticity, and hydration in healthy adults with photo damaged skin. When applied regularly, Ashwagandha root extract can also reduce hair loss, increase thickness and density. *Withania somnifera* root extract has GRAS status and numerous studies confirm its safety for topical use. The emerging clinical data is adding to ashwagandha's value as a holistic cosmetic ingredient.

J. Pazdrowski, A. Polańska, J. Kaźmierska, M.J. Kowalczyk, M. Szewczyk, P. Niewinski, W. Golusiński, A. Dańczak-Pazdrowska, **The Assessment of the Long-Term Impact of Radiotherapy on Biophysical Skin Properties in Patients after Head and Neck Cancer**, Medicina 2024, 60, 739

Background and Objectives: Chronic radiotherapy-induced skin injury (cRISI) is an irreversible and progressive condition that can signifcantly impact a patient's quality of life. Despite the limited literature available on the assessment of the epidermal barrier in cRISI, there is a consensus that appropriate skincare, including the use of emollients, is the primary therapeutic approach for this group of patients. The aim of this study was to evaluate the biophysical properties of the skin during the late period (at least 90 days) following radiation therapy (RT) for head and neck cancer. Materials and Methods: This was a single-center prospective non-randomized study. It involved theanalysis of 16 adult patients with head and neck cancer who underwent RT at the Greater Poland Cancer Center, along with 15 healthy volunteers. The study and control groups were matched for gender and age ($p = 0.51$). Clinical assessment, based on the LENT-SOMA scale, was conducted for all patients. Evaluation of the skin's biophysical properties included: an analysis of transepidermal water loss (TEWL), stratum corneum hydration (SCH), and skin visualization using high-frequency ultrasonography (HF-USG). Results: A signifcantly higher TEWL was observed in the irradiated area compared to the control area in the study group ($p = 0.004$). However, there was no statistically signifcant difference in SCH ($p = 0.073$). Additionally, no signifcant difference was observed in the values of TEWL and SCH in the irradiated area between the group of patients with and without clinically obvious RISI ($p = 0.192$ and $p = 0.415$, respectively). The skin thickness of the irradiated area, assessed by HF-USG, did not differ signifcantly from the skin thickness of the control area ($p = 0.638$). Furthermore, no difference in skin thickness was observed in patients with clinical features of cRISI in the irradiated and control areas ($p = 0.345$). The mean time after RT was 6.1 years. Conclusions: This study marks the frst demonstration of epidermal barrier damage in patients in the long term following RT for head and neck cancer. The impairment of the epidermal barrier was observed independently of evident cRISI features. This observation underscores the necessity to recommend appropriate skin care, including the use of emollients, for all patients following RT. We also suggest that HF-USG examination is generally inconclusive in determining the degree of skin damage in the late period after RT.

L.K.W. Phoebe, K.W.A. Lee, L.K.W. Chan, L.C. Hung, R. Wu, S. Wong, J. Wan, K.-H. Yi, **Use of platelet rich plasma for skin rejuvenation**, Skin Research & Technology, April 2024

Objective: Platelet-rich plasma (PRP) is recognized as a safe and effective therapy for regenerative skin healing and rejuvenation, utilizing autologous blood enriched with various growth factors. This review aims to assess the efficacy of PRP treatments forskin rejuvenation. Methods: Keywords such as "platelet-rich plasma," "rejuvenation," "skin aging," and"wrinkles" were queried on

Ovid, PubMed, and MEDLINE to identify pertinent studies on PRP treatment for skin rejuvenation.Results: Analysis revealed that PRP treatment led to significant enhancements in multiple facial parameters after one to three sessions. Improvements were noted in skin pore size, texture, wrinkle reduction, pigmented spots, collagen density, hyaluronic acid levels, and protection against ultraviolet damage. Combining PRP with hyaluronicacid demonstrated a synergistic effect, particularly enhancing skin elasticity in patients with lower body mass index and firmness in individuals aged 50s and 60s. Incorporating both physical and biometric data for assessment proved superior to relying solely on physical observations for evaluating subtle skin quality and structural changes. Conclusion: This study underscores the efficacy of PRP monotherapy for skin rejuvenation and emphasizes the necessity of standardizing PRP preparation protocols in future investigations. Heightened awareness and advancements in technology have contributed to the emergence of higher-quality, less biased studies supporting PRP as a reliable and safe therapeutic option for skin rejuvenation.

B. Walzel, A. Herrmann, B. Senti, T. Shah, S. Bänziger, **A collagen alternative from acacia trees**, PERSONAL CARE MAGAZINE, April 2024

PhytoCollagen is a unique plant-derived collagen alternative sourced from the acacia tree, which combines the cosmetic benefts of collagen with a green, sustainable source and matches consumer preferences. *In vivo* studies confrm that it entirely mimics the cosmetic benefts of animal collagen. This makes it an ideal replacement – a truly plant-derived, sustainable, green, vegan alternative to animal collagen.

C.A. Ysulat, H. Suzuki, S. Ushijima, S. Yoshimoto, **Lysolecithin ingredient to restore sensitive skin**, PERSONAL CARE MAGAZINE, Volume 25, Issue 4, April 2024, p. 60-63

The number of people suffering from sensitive skin caused by atopic dermatitis, allergies, air pollutants, temperature changes and stress is increasing, and sensitive skin cosmetics that claim low irritation and skin barrier repair have become essential products for such people. According to The prevalence of sensitive skin', 60-70% of women and 50-60% of men report having some degree of sensitive skin on surveys conducted in 20 different countries in five continents.

J. Leignadier, A. Zibi Elbaz, J. Attia, **Empowering natural skin barrier function**, PERSONAL CARE MAGAZINE, Volume 25, Issue 4, April 2024, p. 89-93

The skin is its own best ally. It acts permanently as a protective barrier against external aggressors. However, these repeated attacks can damage it, resulting in a loss of efficacy in its barrier function, leading to skin water loss (dehydration), and an increase in skin permeability. Over time, this damage contributes to premature skin ageing with visible signs such as the appearance of wrinkles, skin roughness and a decrease in skin tonicity. Lucas Meyer Cosmetics, in collaboration with the Infinity Institute in France, discovered a new protein: LCE6A. LCE6A, part of the 'Late Cornified Envelope' protein family, is known to be essential for the mechanical resistance of the corneocytes in the stratum corneum. By mimicking the LCE6A protein activity, Corneopeptyl™ strengthens the corneocyte envelope resulting in a more resilient epidermal barrier with improved skin barrier function demonstrating a reduction of skin permeability and water loss. Substantiated with AI, rebuilding skin barrier consequently future-proofs the skin by reducing the appearance of ageing signs like wrinkles, decreasing skin roughness, and increasing skin tonicity.

H.E. Baldwin, C. Arrowitz, J. Del Rosso, **Natural Moisturizing Factor-Enriched Formulations Compared to a Ceramide-Based Cream**, J Drugs Dermatol. 2024;23(3): p. 141-145

Background: We aimed to investigate the effects of 2 ceramide plus natural moisturizing factor-enriched formulations compared to a ceramide-based cream on skin moisturization. Methods: Two double-blinded comparative studies were conducted, which enrolled 35 (n=29 females, n=6 males) and 33 (n=21 females, n=12 males) participants, respectively. Participants applied ceramide plus natural moisturizer cream or ceramide-based cream (study 1) or applied ceramide plus natural moisturizing factor lotion or ceramide-based cream (study 2) to each of their lower legs for 10 days with a 5-day regression period (no moisturizer applied). Skin hydration by corneometry after bilateral application was conducted once daily for each leg in both groups. Results: An increase in corneometer units vs baseline for the ceramide plus natural moisturizing factor-enriched cream and natural moisturizing factor-enriched lotion were greater than the increase vs baseline for the ceramide-based cream at days 10 and 15; with an overall statistical significance in favor of the ceramide plus natural moisturizing factor-enriched formulations at day 10. Conclusions: The marked improvement in skin moisturization following utilization of the ceramide plus natural moisturizing factor-enriched cream and lotion compared to the ceramide-based cream can be attributed to the inherent properties of the natural moisturizing factors. These properties are known to maintain the humectancy and intercellular lipid membrane of the stratum

corneum, which directly improves the permeability barrier function of human skin in reducing transepidermal water loss.

R. Amin, F. Rancan, K. Hillmann, U. Blume-Peytavi, A. Vogt, J. Kottner, **Effects of a leave-on product on the strength of thedermoepidermal junction: An exploratory, intraindividual, randomized controlled trial in older adults with dry skin**, Health Sci. Rep. 2024;7:e1985

Background and Aims: Skin aging is associated with dry skin and a decrease of the strength of the dermoepidermal adhesion, which increases the risk for lacerations
(skin tears). Application of leave-on products improves dry skin and seems to reduce skin tear incidence. The aim of this study was to measure the effects of a humectant containing leave-on product on the strength of the dermoepidermal junction in older adult participants with dry skin.Methods: A randomized controlled trial using a split body design was conducted. One forearm was randomly selected and treated with a lipophilic leave-on product containing 5% urea for 8 weeks. The other forearm was the control. The parameters stratum corneum hydration (SCH), transepidermal water loss, pH, roughness, epidermal thickness and skin stiffness were measured at the baseline, Weeks 4 and 8. At Week 8, suction blisters were created and time to blistering was measured. Blister roofs and interstitial fluid were analyzed for Interleukin-1α, 6 and 8. Results: Twelve participants were included. After 8 weeks treatment, SCH was higher (median difference 11.6 AU), and the overall dry skin score (median difference −1) and median roughness (Rz difference −12.2 µm) were lower compared to the control arms. The median group difference for Interleukin-1α was −452 fg/µg total protein (TP) in the blister roofs and −2.2 fg/µg TP in the blister fluids. The median time to blister formation was 7.7 min higher compared to the control arms. Conclusion: The regular application of humectant containing leave-on products improves dry skin and seems to lower inflammation and contribute to thestrengthening of the dermoepidermal adhesion. This partly explains how the use of topical leave-on products helps to prevent skin tears.

B. Jadach, Z. Mielcarek, T. Osmałek, **Use of Collagen in Cosmetic Products**, Curr. Issues Mol. Biol., 2024, 46, p. 2043–2070

Collagen (CLG) belongs to the family of fbrillar proteins and is composed of left-handed α polypeptide chains, which, twisting around themselves and their axis, form a right-handed superhelix. In the chemical structure, it contains mainly proline, hydroxyproline, glycine, and hydroxylysine. It occurs naturally in the dermis in the form of fbers that provide the skin with proper density and elasticity. The review aimed to present the types of collagen protein, factors affecting its structure and its unusual role in the functioning of the human body. Also, an overview of cosmetic products containing collagen or its derivatives, the characteristics of the formulas of these products, and the effects of their use were presented. Throughout the market, there are many cosmetic and cosmeceutical products containing CLG. They are in the form of fllers administered as injections, belonging to the group of the oldest tissue fllers; products administered orally and for topical use, such as creams, gels, serums, or cosmetic masks. Analyzed studies have shown that the use of products with collagen or its peptides improves the general condition of the skin and delays the aging process by reducing the depth of wrinkles, improving hydration (in the case of oral preparations), reducing transepithelial water loss (TEWL), as well as improving skin density and elasticity. In addition, oral application of bioactive CLG peptides has shown a positive effect on the nails, reducing the frequency of their breakage.

J. Robic, W. Lata, A. Nkengne, A. Bigouret, K. Vie, **The impact of air pollution on the facial skin of Caucasian women using real-life pollutant exposure measurements**, Skin Research & Technology, March 2024

Background: To date, studies examining the effect of air pollution on skin characteristics have relied on regional pollution estimates obtained from fixed monitoring sites. Hence, there remains a need to characterize the impact of air pollution in vivo in realtime conditions. We conducted an initial investigation under real-life conditions, with the purpose of characterizing the in vivo impact of various pollutants on the facial skin condition of women living in Paris over a 6-month period. Materials and methods: A smartphone application linked to the Breezometer platform was used to collect participants' individual exposures to pollutants through the recovery of global positioning system (GPS) data over a 6-month period. Daily exposure to fine particulate matter (PM 2.5 µm and PM 10 µm), pollen, and air quality was measured. Facial skin color, roughness, pore, hydration, elasticity, and wrinkle measurements were taken at the end of the 6-month period. Participants' cumulated pollutant exposure over 6 months was calculated. Data were stratified into two groups (lower vs. higher pollutant exposure) for each pollutant.Results: 156 women (20–60 years-old) were recruited, with 124 women completingthe study. Higher PM 2.5 µm exposure was associated with altered skin color andincreased roughness under the eye. Higher PM 10 µm exposure with increased wrinkles and roughness under the eye,

increased pore appearance, and decreased skin hydration. Exposure to poorer air quality was linked with increased forehead wrinkles and decreased skin elasticity, while higher pollen exposure increased skin roughness and crow's feet. Conclusion: This study suggests a potential correlation between air pollution and facial skin in real-life conditions. Prolonged exposure to PM, gases, and pollen may be linked to clinical signs of skin ageing. This study highlights the importance of longermonitoring over time in real conditions to characterize the effect of pollution on the skin.

E. Berardesca, C. Cartigliani, M. Nior, A. Bonfigli, L. Canchy, D. Kerob, J. Tan, **Randomised, split-face study of a dermocosmetic cream containing Sphingobioma xenophaga extract and Neurosensine® in subjects with rosacea associated with erythema and sensitive skin**, Skin Research & Technology, March 2024

Introduction: Rosacea is a chronic inflammatory skin condition associated with erythema, inflammation and skin sensitivity. Objectives: To assess the benefit of a dermocosmetic cream (DC cream) containing Sphingobioma xenophaga extract and soothing agent in adult females with rosaceaassociated erythema and sensitive skin. Materials and Methods: During phase 1, DC was applied twice daily on the randomized half-face and compared to usual-skincare (USC) for 28 days. During phase 2, DC was applied on the full face twice daily for 56 days. Clinical, instrumental and skin sensitivity assessments were performed at all visits; demodex density (standardized skin surface biopsy (SSSB)method) was performed at baseline and D28, quality of life (QoL) was assessed using the stigmatization questionnaire (SQ), Rosacea Quality of Life index (ROSAQoL) and Dermatology Life Quality Index (DLQI) at baseline and D84.Results: At D28, a significant benefit of DC over USC was observed for erythema, tightness, burning and stinging (all p ◘ 0.05), erythema measured by chromameter ($p < 0.01$), corneometry and transepidermal water loss ($p < 0.0001$ and $p < 0.05$, respectively), skin sensitivity ($p < 0.001$) and significant reduction of mean demodex density ($p < 0.05$) on the DC side. At D84, DC significantly (all $p < 0.05$) improved clinical signs and symptoms on both sides of the face compared to baseline; SQ, ROSAQoL and DLQI scores improved by 40.4%, 25.0% and 55.7%, respectively compared to baseline. Tolerance was excellent. Conclusion: DC significantly improved erythema, skin sensitivity, demodex count, QoL and feeling of stigmatization of subjects with rosacea and is very well tolerated.

L. Ma, H. Zhang, Q. Jia, T. Bai, S. Yang, M. Wang, Y. Li, L. Shao, **Facial Physiological Characteristics and Skin Microbiomes Changes are Associated with Body Mass Index (BMI)**, Clinical, Cosmetic and Investigational Dermatology 2024:17, p. 513–528

Background: Overweight and obesity have become public health problems worldwide. An increasing number of research works are focusing on skin physiology and the manifestations of obesity-associated skin diseases, but little is known about the correlations between body mass index (BMI), facial skin physiological parameters, and the facial skin microbiome in healthy women. Objective: To investigate the correlations between BMI, facial skin phyiological parameters and facial bacteria and fungi in 198 women aged 18 to 35 years in Shanghai. Methods: According to the international BMI standard and Chinese reference standard, subjects were divided into three groups, "lean" B1, "normal" B2 and "overweight" B3, and the physiological parameters of facial skin were measured by non-invasive instrumental methods, and the skin microbiota was analyzed by 16S rRNA and ITS high-throughput sequencing. Results: Compared with the skin physiological parameters of the normal group, those of the overweight group exhibited a significant increase in trans-epidermal water loss (TEWL), which indicated that the skin barrier was impaired. The skin haemoglobin content was signifcantly increased, and skin surface pH was signifcant decreased in those with a high BMI. Furthermore, α-diversity, analysed using the Shannon, Chao, Sobs, and Ace indexes, was increased in the overweight group, suggesting that the diversity and species abundance of facial bacterial and fungal microbiota were also increased. Moreover, the overweight group had higher abundances of *Streptococcus*, *Corynebacterium*, *Malassezia*, and *Candida*. Notably, skin surface pH was signifcantly and negatively correlated with the relative abundances of *Malassezia*, *Candida*, and *Cladosporium*. Besides, the abundance of Malassezia was positively associated with the abundances of *Staphylococcus* and *Corynebacterium*. Conclusion: These results indicate that BMI is associated with differences in the biophysical properties and microbiome of the facial skin. A high BMI affects the integrity of skin barrier and changes the skin flora diversity and species composition.

H. Falholt Elvebakken, I. Blomquist Christensen, C. Vedel, S. Kjærulff, **A proof of concept: Clinical anti-aging efficacy and safety of *Lactiplantibacillus plantarum* LB244R® applied topically in a double-blinded placebo-controlled study**, *J Cosmet Dermatol.* 2024;23: p. 1233–1242

Background: With the increasing age of the westernized population, there is also increasing economic and aesthetic interest in reducing the signs of skin aging. Additionally, the physical aspect of

aging can be displeasing and have detrimental effects psychologically in individuals. Probiotics have shown potential as anti-agingagents, albeit proper studies are needed to confirm their potential. Aims: Proving that *Lactiplantibacillus plantarum* LB244R® could alleviate aging signs relative to its placebo vehicle. Patients/Methods: In total, 46 subjects were randomly assigned either the ointment with live bacteria, *L. plantarum* LB244R® or its vehicle ointment, and had to use the assigned ointment twice daily for 56 days. On Day 0, Day 28, and Day 56 subepidermal low echogenic band (SLEB) thickness, dermal density, skin firmness and elasticity, skin hydration, transepidermal water loss (TEWL), skin pH, collagen fiber visualization using confocal microscopy, Crow's feet, spot score, skin smoothness, and complexion radiance were assessed by dermatologists. Results: All parameters except TEWL improved relative to their baseline (D0) for the active group. *L. plantarum* LB244R® improved SLEB thickness, dermal density, skin elasticity, skin hydration, and Crow's feet wrinkle score relative to the placebo vehicle ointment. Conclusion: The study demonstrates an anti-aging effect of *L. plantarum* LB244R® for topical skin use in the first double-blinded, vehicle-ointment placebo-controlled clinical study.

X. Zhang, H. Tao, Y. Deng, X. He, Z. Zhang, L. Zhong, Y. Wen, **Efficacy and safety of a panthenol-enriched mask for individuals with distinct impaired skin barrier subtypes**, J Cosmet Dermatol. 2024

Background: The protection for different skin types with impaired skin barrier in the market is insufficient. Aim: To evaluate the efficacy and safety of a panthenol-enriched mask (La RochePosay Mask Pro) in addressing various skin barrier impairment subgroups, including dry sensitive, oily sensitive, and oily acne skin. Methods: A total of 177 participants were enrolled in the study and divided into three subgroups based on their skin type. Participants used the mask following the specified protocol, with measurements taken for skin hydration, transepidermal water loss (TEWL), sebum content, and skin redness—factors that are directly influenced by skin barrier function. Assessments were conducted at baseline and after 1 day (tested 15 min post-application), 7 days, and 14 days of application using Sebumeter, Tewameter, Corneometer, Mexameter, and VISIA. Results: Results showed significant improvements in skin parameters across all subgroups. In the dry sensitive skin subgroup, the mask increased skin hydration, sebum content, and reduced redness. For the oily sensitive skin subgroup, the mask regulated sebum production and improved skin hydration. In the oily acne skin subgroup, the mask reduced sebum content, redness, TEWL, and post-inflammatory erythema and hyperpigmentation. Tolerance was excellent for all skin types, with no adverse reactions observed. Conclusions: This study highlights the efficacy and safety of the panthenol-enriched LRP Mask Pro for individuals with distinct skin barrier impairment subgroups. The mask's versatile formulation and proven efficacy make it a valuable skincare product for addressing various skin concerns and achieving healthier, more balanced skin.

Y. Hao, W. Song, L. Qu, **Effects of a combination of *Poria Cocos*, *Ziziphus spinose*, and gamma-aminobutyric acid (GABA) on sleep quality and skin health: A randomized double-blind placebo-controlled clinical trial**, Food Sci Nutr. 2024;12: p. 3883–3892

Sleep is crucial for preserving both physical and mental health, including skin health. Presently, there is a burgeoning interest in the use of herbal and natural ingredients to mitigate the adverse effects of sleep disorders. In this 4-week, randomized, doubleblind, controlled trial, 70 subjects with sleep disorders were randomly assigned to receive either a placebo or a *Poria cocos*, *Ziziphus spinose*, and GABA (PZG) supplement (10 mL per day). Total sleep duration was detected by wrist actigraphy, and sleep quality was assessed by the Pittsburgh Sleep Quality Index (PSQI). Skin conditions wereevaluated based on assessments of skin hydration, glossiness elasticity, color, severity of wrinkles, and skin roughness. After 4 weeks, the total sleep duration significantly increased by 12.96% ($p = .006$) and the PSQI score notably decreased by 59.94% ($p = .000$) compared to the baseline. Notably, compared to the baseline conditions, skin hydration, radiance, elasticity, firmness, wrinkle severity, and roughness were significantly improved in the PZG group. In addition, the PZG group demonstrated significantly greater improvements than the placebo group in terms of changes from baseline in total sleep duration, PSQI score, skin hydration, wrinkle severity, and skin roughness. The present results demonstrated that the combined intake of herbs and GABA can improve sleep quality and enhance skin health without adverse effects.

A.L.V. Pequeno, E. Bagatin, **Dermatological ultrasound in assessing skin aging,** Frontiers in Medicine 11:135360, 2024

Ultrasonography (US) has emerged as a pivotal tool in Dermatology since its inaugural use in 1979. Its evolution encompasses technological advancements, higher frequencies, and diverse applications in clinical, surgical, and research aspects. The discussion centers on its crucial role in assessing skin aging through various parameters such as skin thickness, subepidermal low echogenicity

band (SLEB) characterization, and echogenicity assessment. This analysis can help guide interventions in a more personalized manner for each patient and assess the effectiveness of cosmetics and procedures. Despite its widespread utility, challenges persist, including discrepancies in research outcomes, operator dependence, inability to detect minute lesions, and measurement variations throughout the day. Combining US with complementary methodologies is advocated for a better understanding of skin aging in vivo. The costeffectiveness and non-invasiveness of the US emphasize its promising future in dermatology, but ongoing research remains imperative to enhance its accuracy and expand its applications.

L.N. Favaro, L. Kakuda, P.M.B.G. Maia Campos, **Boosting Moisturization for Tattooed Skin Care**, Cosmetics & Toiletries February 2024

Globally, according to Fortune Business Insights, the tattoo market is projected to grow from $2.04 billion in 2023 to $3.93 billion by 2030 – a CAGR of 9.87%.1 In Brazil alone, according to the Brazilian Support Service for Micro and Small Businesses (SEBRAE), from 2016 to 2017, the tattoo market was unhindered by the country's economic crisis and grew at rate of nearly 20% per year.1 In this context, this increase can be correlated with higher consumer demand for tattoos.

L. Girão, P. Pinto, **Efficacy and Safety of an Autologous Micrografting Procedure for Management of Striae Distensae in Women**, Dermatol Ther (Heidelb) (2024) 14: p. 469–488

Introduction: Striae distensae (SD), or stretch marks, are a common skin problem having a psychological impact and cosmetic concern, especially for women, in whom the prevalenceis higher than in men. This study assessed the efficacy and safety of a single autologousmicrografting treatment (AMT) using Rigenera technology for the management of SD.Methods: This single-centre study included 10 healthy women between 24 and 65 years of age, with Fitzpatrick–Goldman skin types I–IV, who had visible SD in glutes/thighs. Each subject acted as their own control. The treatment procedure (microneedling + AMT) and the control procedure (no treatment) were performed on contralateral sides of the glutes/ thighs, targeting matched and paired SD. Microneedling was carried out using Dermapen, equipped with 32 needle heads set at 1.5 mm needle length. The AMT procedure involved extracting biopsies from the mastoid hair zone with a 2.5-mm dermal punch, followed by disaggregation of the biopsies in a physiological saline solution using the Rigeneracons. The disaggregated micrografts were then intradermally injected using 30G 4-mm needles, maintaining a distance of 1 cm between injection points, covering the entire marked treatment region. Results: In the treated area, at 3 months postprocedure compared to pre-procedure, the following changes were observed, all with statistical significance ($P \leq 0.05$): (a) significant reductions in skin roughness (Ra, - 15.9%; Rz, - 22.6%), skin luminance (- 2.0%), and bluegreen color distribution (- 10.6%); (b) significant increases in skin microcirculation maximum value (+ 240.1%), skin hydration (+ 71.2%), skin elasticity (+ 216.5%), skin density (+ 34.3%), skin thickness (+ 26.0%), and hypodermis thickness (+ 29.9%).Furthermore, for each of the aforementioned parameters, there was a significantly greater improvement observed with the AMT procedure compared with microneedling at 3 months (all $P \leq 0.05$). Conclusion: The AMT procedure using Rigenera technology resulted in a noticeable improvement in the SD appearance after 3 months in healthy women.

X. Zhang, H. Tao, Z. Zhang, W. Wang, A. Steel, X. Fang, X. He, **Evaluation of the efficacy of a sunscreen containing ultra-long UVA1 and other UVR broad-spectrum filters on skin barrier protection and melanin content reduction in Chinese adults: A single-center study**, Health Sci. Rep. 2024;7:e1923

Background and Aims: The protection for ultra-long UVA1 is lacked in the market, posing potential damage from ultra-long UVA1 irradiation. The study aims to evaluate the efficacy of a sunscreen containing multiple components, especially Mexoryl® 400 for improving skin barrier function and reducing melanin content. Methods: This single-center study included adults with sensitive and normal skin in China in November 2022. Participants received the test sunscreen for 4 weeks. Melanin and hemoglobin content, sebum secretion skin hydration, and transepidermal water loss were evaluated at T0d, T7d, and T28d. The self-assessment was done at T15min, T7d, and T28d. Results: Sixty participants were included, including 30 self-claimed sensitive skin in the sunscreen group. The sunscreen demonstrated significant improvements in skin parameters. Skin redness reduced by 9.84% at T28d, sebum content in the forehead area decreased by 22.70% at T28d, and skin stratum corneum hydration increased by 38.44% at T28d, $p < 0.001$ respectively. Most notably, skin melanin content significantly reduced by 13.49% after 4 weeks' usage ($p < 0.001$). No adverse reactions were reported in either group. Conclusions: The study sunscreen improved the skin condition by decreasing the melanin content, regulating skin barrier function, and achieving a balance of skin hydration and sebum secretion.

S. Apsara, T. Opatha, R. Chutoprapat, P. Khankaew, V. Titapiwatanakun, W. Ruksiriwanich, K. Boonpisuttinant, **Asiatic acid-entrapped transfersomes for the treatment ofhypertrophic scars: In vitro appraisal, bioactivity evaluation, and clinical study**, International Journal of Pharmaceutics, Feb 2024

Non-invasive treatment options for hypertrophic scars (HTS) are limited, and treating HTS remains challenging due totheir unappealing appearance and associated social stigma. In this work, a novel transfersomal system named Asiaticacid-entrapped transfersomes (AATs) was prepared. AATs were evaluated for their skin permeability, anti-inflammatory activity, and other characteristic parameters to determine the most promising formulation. Asiatic acid-entrapped transfersomal gel (AATG), which was obtained by incorporating the lead AATs in a gel base, underwenttesting in an 8-week, double-blind, placebo-controlled, split-skin clinical study. The net skin elasticity (R5), melaninindex (MI), and skin surface hydration were analyzed employing Cutometer®, Mexameter®, and Corneometer®, respectively, in order to evaluate the effectiveness of the developed AATG. AATs exhibited vesicular sizes and zetapotential values within the range of (27.15 ± 0.95 to 63.54 ± 2.51 nm) and (-0.010 to -0.129 mV), respectively. TW80AATgave the highest %EE (90.84 ± 2.99%), deformability index (101.70 ± 11.59 mgs), permeation flux at 8 h(0.146 ± 0.005 mg/cm/h), and anti-inflammatory activity (71.65 ± 1.83%). The clinical study results of AATG indicated noadverse skin reactions. Furthermore, product efficacy tests demonstrated a significant reduction in MI and an increasein net skin elasticity at 2, 4, and 8 weeks. These pilot study outcomes support the effectiveness of the AATG.

A.L.A.S. de Souza, A.K.C. Gomes, C.S. Morgado, E.R. Junior, N.K. Simas, E.P. Dos Santos, A.D. Azevedo, A.C.C. Gomes, M.S.S.B. Monteiro, **Nanoemulsion with wine lees: a green approach**, An Acad Bras Cienc (2024) 96(2)

Bioactive substances can be found in wine lees, a waste from the winemaking industry. This work developed two formulations, a nanoemulsion with coconut oil (NEOC) and a nanoemulsion with coconut oil and 0.5% of wine lees extract (NE-OC-Ext), to investigate their effect on untreated, bleached, and bleached-colored hair. The oilin-water (O/W) nanoemulsions were prepared with coconut oil, TweenTM 80, SpanTM 80, AristoflexTM AVC, Conserve NovaMit MFTM, wine lees extract, and deionized water. The hydration measurements were carried out using a Corneometer® CM 825 with the capacitance method. Scanning electron microscopy (SEM) was used to characterize the effect of formulations on hair fbers. Differential Thermal Analysis (DTA) was to assess the thermal stability and compatibility of wine lees and coconut oil in formulations. Compared to NE-OC, NE-OC-Ext showed a greater hydration effect on bleached-colored hair. DTA showed that NE-OC-Ext presented a smaller number of exothermic degradation events than those of NE-OC, suggesting good interaction and compatibility of the wine lees extract in this formulation. This study highlights the value of wine lees, a residue from the winemaking process, and its possibility of use as raw material for the cosmetic hair industry since it shows a greater moisturizing potential in colored hair.

A. Graça, A.M. Martins, P. Pinto, H.M. Ribeiro, J. Marto, **Combining protection with skin health: *In vivo* studies of an innovative gelatin/tannic acid-based hydrogel patch to prevent PPE-related skin lesions**, International Journal of Pharmaceutics 650 (2024)

The prolonged use of Personal Protective Equipment (PPE) can lead to skin problems due to persistent pressure, friction, and tension. This issue has prompted the exploration of solutions to protect the skin while maintaining the effectiveness of the PPE. This study aimed to evaluate the *in vivo* effectiveness of a gelatin/tannic acid-based hydrogel patch positioned beneath a mask to alleviate skin damage resulting from mask-wearing. To understand the pressure exerted by PPE, *in vitro* tests were conducted to measure the tensile strength of three types of facial masks. The FFP2 masks exhibited the highest tensile strength and were selected for subsequent *in vivo* biometric investigations. Biometric parameters were evaluated using the Flir E50bx® thermographic camera, Corneometer®, MoistureMap®, Sebumeter®, Tewameter®, and VISIA® systems. The results showed that when the hydrogel patch was used under the mask, there were no significant differences in facial skin temperature, sebum levels, or TEWL values ($p > 0.05$). However, a statistically significant increase in skin hydration and a decrease in frontal redness ($p < 0.05$) were observed. Consumer acceptance was assessed through sensory analysis questionnaires. In summary, the observed attenuation of physiological changes in the facial area and the positive consumer feedback suggest that this polymeric film-forming system is a simple yet effective solution to prevent PPE use-related skin issues.

*P. Charipoor, M.A. Nilforoushzadeh, M. Khani, M. Nour, E. Ghasemi, M.A. Amirkhani, M. Eftekhari, B. Shokr*i, **The FEDBD plasma's quantitative investigation of skin parameters: Skin elasticity, thickness, density, tissue oxygenation, perfusion, and edema**, Heliyon 10 (2024)

This study used the FEDBD plasma device for skin rejuvenation in animal samples. There were two groups of six male Wistar rats. Before starting the treatment, immediately after the treatment, the fourth week, and the tenth week of follow-up, biometric tests were performed, including moisture level, evaporation from the skin surface, erythema and melanin, skin elasticity and firmness with an MPA9 device and cutometer. The thickness and density of the epidermis and dermis, an essential indicator in rejuvenation, were evaluated with a skin ultrasound device. Also, the level of oxygen, perfusion, and interstitial water (edema) was checked using a Tivita tissue hyperspectral camera at a depth of 6 mm of the skin.

H.B. Gunt, S.B. Levy, **Effect of Race on Lower Lip Hydration**, J Clin Aesthet Dermatol. 2024;17(1): p. 28–32

Objective: To examine racial differences in lip hydration values – a retrospective analysis. Methods: Baseline lip hydration data collected as Corneometer® CM 825 measurements were culled from sixteen clinical studies conducted under a standard protocol. Data for the three largest subject groups were compared by ANOVA. Possible weather and age effects were also examined. Results: The groups ranked, in order of increasing lip hydration: Black < Caucasian < Hispanic. Two smaller groups not included in the ANOVA, Asian-American and Native-American, had baseline lip hydration values numerically comparable to the Hispanic group. The observed hydration trend was consistent with some literature reports of skin hydration differences due to race measured in other body areas. Limitations: This work had two primary limitations: (1) the studies were conducted by four different clinical research laboratories at different times of the year; (2) the studies relied on the self-classification of race. Conclusion: Given that there is lack of information in the literature on lip biophysical properties, the results of this analysis shed new light on and suggest that racial differences in lip hydration exist, as have been reported for other body areas.

S.H. Seong, Y.I. Lee, J. Lee, J. Suk, I.A. Kim, C. Baeg, J. Kim, J.H. Lee, **Oral consumption of Bonito fish-derived elastin peptide (VGPG Elastin®) improves biophysical properties in aging skin: A randomized, double-blinded, placebo-controlled study**, Skin Res Technol., January 2024

Background: Recent in vitro and in vivo studies have suggested that the elastin peptide improves the skin's biophysical properties, enhancing the proliferation of fibroblasts and elastin synthesis, resulting in anti-aging properties. Therefore, we conducted a randomized, double-blinded, placebo-controlled study to clinically evaluate the effect of elastin peptide intake on human skin. Materials and Methods: Healthy adult participants (N = 100) were randomly assignedto receive a test product containing 100 mg of Bonito elastin peptide (VGPG Elastin®) or placebo. In this study, all participants were Asian from Korea. The parameters of skin wrinkles, hydration, and brightening (melanin index) were measured at baseline and 4, 8, and 12 weeks after intervention. Results: The average skin roughness, maximum peak-to-valley values, maximum peak height of thewrinkle, maximum valley depth of thewrinkle, average maximum height ofthe wrinkle, and eye wrinkle volume improved considerably in the test group compared with the placebo after 12 weeks of intervention. Skin hydration was enhanced, and the melanin index was significantly lower in the test group than in the placebo group. Noparticipant experienced adverse events related to the test product.Conclusion: Oral consumption of Bonito elastin peptide (VGPG Elastin®) reduced fine wrinkles, enhanced skin moisture, and decreased melanin index without significant adverse effects and may be a promising anti-wrinkle, anti-dryness, and anti-pigmentation treatment.

T. Tempark, A. Shem, S. Lueangarun, **Efficacy of ceramides and niacinamide-containing moisturizer versus hydrophilic cream in combination with topical anti-acne treatment in mild to moderate acne vulgaris: A split face, double-blinded, randomized controlled trial**, J Cosmet Dermatol. January 2024

Introduction: Topical therapy is the mainstay treatment of acne, and topical retinoids such as tretinoin, tazarotene, and adapalene are recommended as the firstline therapy for mild to moderate acne. However, the cutaneous irritations may occur, and the dermocosmetics are recommended to prevent side effects of antiacne drugs and adhere to treatment. Thus, this study aims to compare the efficacy and tolerability of ceramides and niacinamide-containing moisturizer (CCM) versus hydrophilic cream in combination with topical anti-acne treatment in mild to moderate acne vulgaris. Methods: This was an 8-week, randomized, double-blinded, split face study in 40 patients assigned for topical anti-acne medications (5% benzoyl peroxide and 0.1% adapalene gel), then randomly applied CCM or hydrophilic cream. All patients were followed at week 0, 2, 4, and 8 for acne improvement, adverse reactions, biometric, and biophysical evaluation. Results: CCM could significantly improve the non-inflammatory, inflammatory, and total acne lesions compared with hydrophilic cream after week 8 of treatment. Interestingly, there was an improvement of global worst score, hemoglobin index, melanin

index, TEWL, skin hydration, sebum production, and skin surface pH, with no statistically significant differences between the two treatments. No serious side effects from clinical application of CCM and hydrophilic cream in mild to moderate acne vulgaris patients. Conclusion: Ceramide and niacinamide-containing moisturizer in combination with anti-acne medication can significantly improve acne lesions and decrease cutaneous irritations toward a satisfactory treatment outcome of mild to moderate acne vulgaris.

L.J. Russell, T. Dodd, D. Kendall, A. Lazenbury, A. Leggett, S. Payton-Haines, L. Jiang, D. Filingeri, P.R. Worsley, **A bioengineering investigation of cervical collar design and fit: Implications on skin health**, Clinical Biomechanics 112 (2024)

Background: Cervical collars restrict cervical spine movement to minimise the risk of spinal cord injury. Collars apply mechanical loading to the skin putting it at risk of skin damage. Indeed, cervical collar-related pressure ulcers are unacceptably prevalent, especially at the occiput, mandibles, and chin. Collar design and ft are often key considerations for prevention. Methods: This comprehensive study evaluated four commercial prehospital and acute care cervical collars. Pressure, microclimate, transepidermal water loss and skin hydration were measured at the interface between the device and the skin. Range of motion restriction was measured to evaluate effective immobilisation. Head, neck, and shoulder morphology was evaluated using three-dimensional scans. Findings: The occiput experienced signifcantly higher interface pressures than the chin and mandibles for most collar designs. Interface pressure at the occiput was signifcantly higher for the Stiffneck extrication collar compared to the other collar designs. The Stiffneck collar also provided the most movement restriction, though not signifcantly more than other designs. Relative humidity at the device skin interface was signifcantly higher for the Stiffneck and Philadelphia collars corresponding to closed cell foam padding, in contrast to the open cell foams lined with permeable fabric used in the other collars. Collar discomfort correlated with both occipital pressure and skin humidity. Interpretation: The occiput is at increased risk of cervical collar-related pressure ulcers during supine immobilisation, especially for Stiffneck extrication collars. Lined open-cell foams could be used to minimise skin humidity and increase comfort.

W.-J. Sim, J. Kim, K.-S. Baek, W. Lim, T.-G. Lim, **Porcine Placenta Peptide Inhibits UVB-Induced Skin Wrinkle Formation and Dehydration: Insights into MAPK Signaling Pathways from In Vitro and In Vivo Studies**, Mol. Sci. 2024, 25, 83

Excessive exposure to ultraviolet (UV) radiation from sunlight accelerates skin aging, leading to various clinical manifestations such as wrinkles, dryness, and loss of elasticity. This study investigated the protective effects of porcine placenta peptide (PPP) against UVB-induced skin photoaging. Female hairless SKH-1 mice were orally administered PPP for 12 weeks, followed by UVB irradiation. PPP significantly reduced wrinkle formation, improved skin moisture levels, and prevented collagen degradation. Mechanistically, PPP inhibited the expression of matrix metalloproteinases (MMPs) and upregulated collagen production. Moreover, PPP elevated hyaluronic acid levels, contributing to enhanced skin hydration. Additionally, PPP demonstrated antioxidant properties by increasing the expression of the antioxidant enzyme GPx-1, thereby reducing UVB-induced inflammation. Further molecular analysis revealed that PPP suppressed the activation of p38 MAP kinase and JNK signaling pathways, crucial mediators of UV-induced skin damage. These findings highlight the potential of porcine placental peptides as a natural and effective intervention against UVB-induced skin photoaging. The study provides valuable insights into the mechanisms underlying the protective effects of PPP, emphasizing its potential applications in skincare and anti-aging formulations.

J.M. Jurek, V. Neymann, **The role of the ImmunatuRNA® complex in promoting skin immunity and its regenerative abilities: Implications for antiaging skincare**, J Cosmet Dermatol. 2024;23: p. 1429–1445

Introduction: Recent advancements in cosmetic science have ushered in a new era of skincare strategies, with a focus on utilizing natural bioactive ingredients to enhance skin health and combat premature aging. The skin, as the largest organ of human body, provides as a vital protective barrier against external hazards such as environmental pollutions, toxins, and radiation. However, intrinsic and extrinsic factors, including various types of radiation, reduced air quality, and increased exposure to pollutants, lead to an imbalance in the skin's immune system, significantly reducing the skin's ability to regenerate and accelerating skin aging. Therefore, there is an emerging need to develop innovative skincare strategies that could support the skin's immune capacity by strengthening antioxidant protection, skin regeneration, and repair. Plant-derived compounds, along with naturally sourced ingredients, show promise in accelerating wound healing, especially when incorporated into cosmetic formulation. ImmunatuRNA® stands as a prime example of a biologically active complex, uniquelycomprising yeast-derived RNA, marine exopolysaccharides, and natural hyaluronic acid, that

exhibits high antioxidant activity and exerts beneficial modulatory effects on skin microbiota, thereby positively influencing skin immunity. Methodology: The main aim of this study was to investigate the potential of the ImmunatuRNA® complex in promoting skin regeneration and reducing signs of skin aging, both through the use of in vitro human skin cultures and the evaluation of clinical trials in healthy volunteers. Results: The results of conducted experimental studies have shown that the ImmunatuRNA® complex demonstrated significant positive effects on the immunity and repair capabilities of the skin, characterized by increased fibroblast proliferation, enhanced glycosaminoglycan synthesis, and reduced oxidative stress. Furthermore, use of the complex also significantly accelerated wound healing following mechanically-induced damage in the keratinocytes, demonstrated as reduction in wound margins measurement, new cell production, and an increase in regeneration speed. In addition, conduced clinical study on healthy human volunteers with various skin types confirmed that use of cosmetic products that incorporate theImmunatuRNA® complex within the formulation can visibly improve skin condition, appearance, and general health, achieved by increased skin hydration and elasticity, reduced wrinkles, and enhanced skin firmness. Conclusions: This study confirms the usefulness of the ImmunatuRNA® complex inthe innovative antiaging cosmetic products that can be suitable for all skin types, including sensitive skin. The inclusion of naturally sourced bioactives, as those found in ImmunatuRNA® complex, represents a promising advancement in holistic natural skincare that consumers appreciate. The active ingredients of the complex support the skin's immunity, fostering its repair and protecting against oxidative damage, thus maintaining skin homeostasis and promoting its regenerative capacity. Further research is necessary to explore the long-term effects of ImmunatuRNA® complex on skin health and its potential applications in innovative skincare formulations.

C. Janssens-Böcker, K. Wiesweg, C. Doberenz, **Native collagen sheet mask improves skin health and appearance: A comprehensive clinical evaluation**, J Cosmet Dermatol. January 2024

Background: Collagen, a critical structural protein found abundantly in animal skin and bones, has become increasingly recognized for its potential therapeutic role in skincare. Despite growing interest, the scientific evidence for the efficacy of collagen sheet masks remains limited. The principal objective of our study was to provide insights into the multifaceted role of collagen in skin health, with a specific focus on its application in collagen sheet masks. Methods: The effects of a collagen sheet mask consisting of >92% native bovine collagen were investigated. The soluble protein components of the collagen matrix were analyzed and the influence of soluble collagen components on fibroblast regulation was examined. Scanning Electron Microscope (SEM) analysis was performed for structural analysis and effect on irritated skin. Five different clinical studies were conducted, including a comparison of the diversity of the skin microbiome, the tolerance and local irritating reactions in atopic dermatitis, an evaluation of skin redness after UV radiation, wrinkle reduction, and hydration and skin roughness of the collagen mask in comparison to a pre-soaked cellulose sheet mask. Results: The collagen mask contains soluble protein components, including small collagen peptides. The mask showed potential for promoting fibroblast activity. SEM analysis showed a native collagen structure similar to human dermis. The mask maintained the skin microbiome diversity and decreased skin pH levels. It demonstrated good tolerability on both intact and lesional skin and had a significant effect in reducing erythema caused by UV radiation compared to other skincare products. It showed significant improvements in skin hydration and the volume of eye wrinkles and was more effective than pre-soaked cellulose sheet masks. Conclusion: Collagen sheet masks have the potential to positively impact skin health and appearance by increasing hydration, reducing erythema, minimizing wrinkles, and maintaining a healthy skin microbiome and skin barrier.

T. Myers, A. Bouslimani, S. Huang, S.T. Hansen, C. Clavaud, A. Azouaoui, A. Ott, A. Gueniche, C. Bouez, Q. Zheng, L. Aguilar, R. Knight, M. Moreau, S.J. Song, **A multi-study analysis enables identification of potential microbial features associated with skin aging signs**, Frontiers in Aging January 2024

Introduction: During adulthood, the skin microbiota can be relatively stable if environmental conditions are also stable, yet physiological changes of the skin with age may affect the skin microbiome and its function. The microbiome is an important factor to consider in aging since it constitutes most of the genes that are expressed on the human body. However, severity of specific aging signs (one of the parameters used to measure “apparent” age) and skin surface quality (e.g., texture, hydration, pH, sebum, etc.) may not be indicative of chronological age. For example, older individuals can have young looking skin (young apparent age) and young individuals can be of older apparent age. Methods: Here we aim to identify microbial taxa of interest associated to skin quality/aging signs using a multi-study analysis of 13 microbiome datasets consisting of 16S rRNA amplicon sequence data and paired skin clinical data from the face. Results: We show that there is a negative relationship between microbiome diversity and transepidermal water loss, and a positive association between microbiome diversity and

age. Aligned with a tight link between age and wrinkles, we report a global positive association between microbiome diversity and Crow's feet wrinkles, but with this relationship varying signi*fi*cantly by substudy. Finally, we identify taxa potentially associated with wrinkles, TEWL and corneometer measures. Discussion: These findings represent a key step towards understanding the implication of the skin microbiota in skin aging signs.

J. Baumann, F. Wandrey, F. Zülli, **Energizing the skin with phytoglycogen**, PERSONAL CARE MAGAZINE, Volume 25, Issue 1, January 2024, p. 36-39

Living organisms require energy to perform the tasks of everyday life. At the cellular level, the energy is used for overall cell maintenance, protection, and the production of molecules that are essential for cell and organ function. Skin cells, which are continuously exposed to environmental factors such as sunlight or pollution, greatly rely on large amounts of energy to combat cellular - and consequently skin - damage. As we age, cellular energy levels decline and the deficiencies in skin energy can manifest in age-related changes in the skin. One consequence of this includes the formation of wrinkles or skin hyperpigmentation due to photodamage. Therefore, increasing cell energy levels can be a valid approach to target skin ageing.

Y. Su, S.Y. Chen, Y. Zhang, X. Qi, D.C. Guo, B. Feng, R.Q. Qi, Y. Wu, X.H. Ga, **Filament coating system assists recovery of ablative fCO_2 laser treatment: A split-face clinical observation**, Journal of Cosmetic Dermatology, January 2024

Background: The current nursing procedure after fractional carbon dioxide (fCO_2) is complex and needs to be optimized. The present study was conducted to evaluate the assisting effect of filament coating system after fCO_2 laser treatment.: Methods: Chinese individuals aged from 18 to 65 years diagnosed as photoaging or atrophic acne scar were recruited and each participant was treated with one single pass of fCO_2 laser. A split face was randomly assigned as treatment side or control side. For control side, conventional procedure was topically applied respectively, including desonide cream two times for 3 days, fusidic acid cream two times for 7 days, and recombinant human epidermal growth factor (RhEGF) gel four times for 7 days; for treating side, a filament coating system was applied immediately after one application of fusidic acid cream, desonide cream and RhEGF, and removed 3 h later, for 3 days. Erythema, edema, crust, and pain on both sides were scored from 0 to 10 before and 1, 2, 4, and 7 days after fCO_2 laser treatment. Stratum corneum hydration (SCH) and sebum of forehead and cheek on both sides were also measured by using Corneometer-Sebumeter. Results: Twenty photoaging and 11 atrophic acne scar participants finished the observation. All of them complained of erythema, edema, crust, and pain after fCO_2 laser treatment, and the scores decreased as time passed by. There were no statistical significances of erythema, edema, crust, pain, SCH, and sebum between treating side and control side at each observation time. Conclusion: Filament coating system was effective, safe, convenient, and economic in assisting recovery of ablative fCO_2 laser, which might be a new option for additional nursing procedure.

S.H. Seong, Y.I. Lee, J. Lee, S. Choi, I.A. Kim, J. Suk, I. Jung, C. Baeg, J. Kim, D. Oh, J.H. Lee, **Low-molecular-weight collagen peptides supplement promotes a healthy skin: A randomized, double-blinded, placebo-controlled study**, J Cosmet Dermatol. 2024;23: p. 554–562

Background: Oral collagen peptides supplementation was reported to improve skin integrity and counteract skin aging. Aims: A randomized, double-blinded, placebo-controlled study was conducted to clinically evaluate the impact of low-molecular-weight collagen peptides on the human skin. Patients/Methods: Healthy adult participants (n = 100) were randomly assigned to receive a test product containing low-molecular-weight collagen peptides or a placebo. Parameters of skin wrinkles, elasticity, hydration, and whitening (melanin and erythema indexes) were measured at baseline and after 4, 8, and 12 weeks. Results: Compared with the placebo group, the average skin roughness, maximum of all peak-to-valley values, maximum peak height of the wrinkle, and average maximum height of the wrinkle were significantly improved in the test group. Parameters of skin elasticity, including overall elasticity, net elasticity, and biological elasticity, were also significantly improved in the test group at Week 12 as compared with the placebo group. Moreover, skin hydration and whitening parameters changed more significantly in the test group than in the placebo group. None of the participants experienced adverse events related to the test product. Conclusions: Taken together, these findings suggest that low-molecular-weight collagen peptides supplementation can safely ehance human skin wrinkling, hydration, elasticity, and whitening properties.

P.V. Andrew, A. Pinnock, A. Poyner, K. Brown, J. Chittock, L.J. Kay, M.J. Cork, S.G. Danby, **Maintenance of an Acidic Skin Surface with a Novel Zinc Lactobionate Emollient Preparation Improves Skin Barrier Function in Patients with Atopic Dermatitis**, Dermatol Ther (Heidelb) (2024)

14: p. 391–408

Introduction: The skin of patients with atopic dermatitis (AD) is characterised by elevated pH. As a central homeostatic regulator, an increased pH accelerates desquamation and suppresses lipid processing, resulting in diminished skin barrier function. The aim of this study was to determine whether a novel zinc lactobionate emollient cream can strengthen the skin barrier by lowering skin surface pH.Methods: A double-blind, forearm-controlled cohort study was undertaken in patients with AD. Participants applied the test cream to one forearm and a vehicle cream to the other (randomised allocation) twice daily for 56 days. Skinsurface pH and barrier function (primary outcomes) were assessed at baseline and after 28 days and 56 days of treatment, amongst other tests. Results: A total of 23 adults with AD completed the study. During and after treatment, a sustained difference in skin surface pH was observed between areas treated with the test cream and vehicle (4.50 ± 0.38 versus 5.25 ± 0.54, respectively, p \ 0.0001). This was associated with significantly reduced transepidermal water loss (TEWL) on the test cream treated areas compared with control (9.71 ± 2.47 versus 11.20 ± 3.62 g/m2/h, p = 0.0005). Improvements in skin barrier integrity, skin sensitivity to sodium lauryl sulphate, skin hydration, and chymotrypsin-like protease activity were all observed at sites treated with the test cream compared with thecontrol. Conclusion: Maintenance of an acidic skin surface pH and delivery of physiologic lipids arebeneficial for skin health and may help improve AD control by reducing sensitivity to irritants and allergens.

S. Oh, H. Kim, M. Kim, X. Jin, S. Zheng, T.-H. Yi, **The effects of Jawoongo soap on skin improvement**, Journal of Cosmetic Dermatology, Jan 2024

Background: Jawoongo is used to treat and prevent skin issues such as dry and keratinization disorders,
burns, trauma, pigmentation, scarring, and inflammatory skin conditions. In this study, the efficacy and safety of 0.47% Jawoongo extract-containing soap (JAUN-CS) were assessed in terms of skin improvement effects such as cleansing, moisturizing, sebum secretion management, and skin elasticity enhancement. Methods: Twenty healthy adult men and women aged 20-60 years old took part in the study. Before and after using JAUN-CS, the participants were divided into groups, and various skin improvement effects were measured utilizing machines such as the Corneometer, Tewameter TM 300, and Visioscan. A dermatologist analyzed the product's safety in accordance with Frosch & Kligman and the Cosmetic, Toiletry, and Fragrance Association (CTFA) rules. Results: Using JAUN reduced the amount of base and point makeup by 25.7% and 76.7%, respectively. Also, JAUN showed a great facial exfoliation effect by removing the old and lifted skin keratins by 84.7% and 20.3%, respectively. Impurities in facial pores decreased by 58%, too. Furthermore, JAUN increased the moisture content of deep skin and skin surface by 3.5% and 74.0%, and skin elasticity by 2.8%. Skin tone, skin texture, skin radiance, and skin barrier all showed improvements of 3.3%, 20.0%, 15.0%, and 115.2%, respectively. Lastly, cleansing with JAUN successfully enhanced the condition of the youth triangle by 7.6%, while TEWL significantly decreased by 52.7%. Neither the JAUN nor the control group soap showed any adverse reactions, such as erythema or allergies, during the testing period. Conclusions: The results of this study demonstrated that JAUN is safe for human use and has various skinimproving properties, making Jawoongo a promising natural material for the development of functional cosmetics in the future. Keywords: Jawoongo extract-containing soap (JAUN-CS); skin barrier; skin care; skin elasticity; skin improvement.

C. Folle, E. Sánchez –López, M. Mallandrich, N. Díaz-Garrido, J. Suner-Carbó, L. Halbaut, P. Carvajal-Vidal, A.M. Marqués, M. Espina, J. Badia, L. Baldoma, M.L. García, A.C. Calpena, **Semi-solid functionalized nanostructured lipid carriers loading thymol for skin disorders**, International Journal of Pharmaceutics 651 (2024)

Acne constitutes one of the most prevalent skin disorder affecting both skin and mental health of patients. However, no cure has been developed so far. In this area, Thymol constitutes a potential candidate since it is ableto restore the healthy microbiota of the skin. However, its permeation properties cause its fast elimination and, toavoid this problem, thymol has been loaded into nanostructured lipid carriers (TH-NLCs). Moreover, to increasethe suitability of these systems for skin applications, several surface functionalization strategies of TH-NLCs had been assessed. Among the different molecules, phosphatidylcholine-TH-NLCs demonstrated to be safe as well as to provide high antioxidant activity in cellular studies. Therefore, to administer these systems to the skin, functionalized TH-NLCs were dispersed into a carbomer gel developing semi-solid formulations. Rheological properties, porosity and extensibility of TH dispersed in carbomer as well as phosphatidylcholine-TH-NLCs wereassessed demonstrating suitable properties for dermal applications. Moreover, both formulations were applied in healthy volunteers demonstrating that gel-phosphatidylcholine-TH-NLCs were able to increase in skin hydration,decrease water loss and reduce skin sebum. Therefore, gel-phosphatidylcholine-TH-NLCs

proved to be a suitable system for skin pathologies linked with high sebum generation, loss of hydration and high oxidation, such as acne vulgaris.

S. Sakaguchi, K. Saito, N. Arakawa, M. Konyo, **Stratum corneum compliance enhances tactile sensitivity through increasing skin deformation: A study protocol for a randomized controlled trial**, J Cosmet Dermatol. 2024;23: p. 296–307

Background: Tactile sensation plays a crucial role in object manipulation, communication, and even emotional well-being. It has been reported that the deformability of skin (also described as skin compliance) that shows a large mechanical response to stimuli is associated with high tactile sensitivity. However, although the complianceof the stratum corneum, the outermost layer of skin, can change daily due to skin care and environmental factors, few studies have quantified the effect of the stratum corneum on tactile sensation. Aims: We investigated the changes in tactile sensitivity resulting from skin hydration and identified corresponding alterations in the compliance of the stratum corneum.Methods: A randomized controlled trial was conducted. Participants were randomly assigned to an intervention group ($n = 20$) that had a moisturizing cream applied totheir cheeks or a control group ($n = 19$) that had Milli-Q water applied to their cheeks.Tactile discrimination performance was assessed using psychophysical techniques before and after application. The water content, mechanical response characteristics, and penetration of PEG/PPG-17/4 dimethyl ether from the cream in the stratumcorneum were evaluated to identify hydration effects. Skin deformations occurring during tactile sensation were measured concurrently using a suction device employed for tactile stimulation.Results: Tactile sensitivity was increased in participants who had cream applied to theskin surface, while no significant change was observed in participants who received Milli-Q water. The improved discrimination of tactile stimulus intensity was directly related to the magnitude of skin displacement. The higher water content of the stratum corneum due to cream application decreased the dynamic modulus of elasticity of the stratum corneum and increased the skin's extensibility in response to tactile stimuli. Conclusions: Hydrating the stratum corneum significantly enhances tactile sensitivity and is accompanied by an increase in skin extensibility, a factor in tactile intensity perception. The compliance of the thin stratum corneum layer plays a crucial role in tactile experiences that involve skin stretching.

G.H. Na, S.J. Kim, H.M. Jung, S.H. Han, J. Han, Y.K. Koo, **Skin Anti-Aging Effcacy of Enzyme-Treated Supercritical Caviar Extract: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial**, Nutrients 2024, 16, 137

Oxidative stress in the skin, induced by an unhealthy lifestyle and exposure to UVB radiation, leads to skin aging, including reduced elasticity, formation of wrinkles, moisture loss, and inflammation. In a previous study, we revealed the photoaging effects of enzyme-treated caviar extract (CV) by regulating collagen and hyaluronic acid synthase, melanogenesis, anti-oxidant mechanisms, and inflammation in a UVB irradiation-induced mice model. HPLC and MALDI-TOF were performed to determine the effect of enzyme treatment on the free amino acid contents andpeptide molecular weight in supercritical caviar extract. As results of the analysis, CV is mainlycomposed of low-molecular-weight peptides consisting of leucine, tyrosine, and phenylalanine. Based on our in vitro and in vivo study, we conducted a clinical trial to assess the skin anti-aging effcacy of CV. In this randomized, double-blind, placebo-controlled trial, we measured indicators related to elasticity, wrinkles, and skin hydration at 4 and 8 weeks after consumption of CV. The subjects were categorized into caviar, combination, and placebo groups. After 4 weeks, skin hydration, dermal hydration, and transepidermal water loss all showed signifcant improvement. Furthermore, after 8 weeks, skin elasticity indexes—R2 (total elasticity), R5 (net elasticity), and R7 (ratio of elastic recovery to total deformation)—exhibited signifcant increases. Improvement in wrinkle indicators (Rmax, Ra, and Rz) and the whitening indicator melanin pigment was also observed. This is the first report showing that CV has signifcant skin anti-aging effcacy on human skin. In conclusion, our study suggests that CV can be used as skin anti-aging nutraceuticals through positive effects on skin condition in clinical trials.

C. Kern, S. Dudonné, C. Garcia, **Dietary supplementation with a wheat polar lipid complex improves skin conditions in women with dry skin and mild-to-moderate skin aging**, J Cosmet Dermatol. 2024;23:1 p. 320–1330

Background: Aging, menopause, and seasonal changes alter the lipid composition of the outermost skin layer, the stratum corneum, resulting in dry and itchy skin. Aims: This clinical trial aimed at evaluating the effects of a wheat polar lipid complex (WPLC) on skin characteristics in women showing dry and wrinkled skin, investigating its effects in a subgroup of postmenopausal women, and assessing if benefits were maintained after supplementation. Methods: Seventy-two women with dry and wrinkled skin were recruited in thisdouble-blind, randomized, parallel-group study, and allocated to three groups of 24 subjects, each including at least 10 postmenopausal women. For 56 days, subjects consumed the

WPLC supplement (oil or powder), or the placebo. Skin hydration, transepidermal water loss (TEWL), elasticity, and profilometry were evaluated at baseline, after 14, 28, and 56 days of supplementation, and 56 days after the end of supplementation. Additionally, a lipidomic analysis was performed to examine changes in superficial skin layers over 56 days. Results: Dietary supplementation with WPLC rapidly improved all parameters. It increased skin hydration, smoothness, and elasticity while decreasing TEWL, roughness, and wrinkle depth after only 14 days of supplementation. These effects werealso observed in the subpopulation of postmenopausal women and led to an improved self-perception of skin. For all the parameters, outcomes were not maintained after the supplementation was stopped. The lipidomic analysis revealed 10 compounds evolving over the 56 days of WPLC supplementation. Conclusion: WPLC supplementation improved skin hydration, smoothness, elasticity,and wrinkledness within 14 days and, as expected, did not last after supplementation was stopped.

G.H. Na, S.J. Kim, H.M. Jung, S.H. Han, J. Han, Y.K. Koo, **Skin Anti-Aging Effcacy of Enzyme-Treated Supercritical Caviar Extract: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial**, Nutrients 2024, 16, 137

Oxidative stress in the skin, induced by an unhealthy lifestyle and exposure to UVB radiation, leads to skin aging, including reduced elasticity, formation of wrinkles, moisture loss, and inflammation. In a previous study, we revealed the photoaging effects of enzyme-treated caviar extract (CV) by regulating collagen and hyaluronic acid synthase, melanogenesis, anti-oxidant mechanisms, and inflammation in a UVB irradiation-induced mice model. HPLC and MALDI-TOF were performed to determine the effect of enzyme treatment on the free amino acid contents andpeptide molecular weight in supercritical caviar extract. As results of the analysis, CV is mainlycomposed of low-molecular-weight peptides consisting of leucine, tyrosine, and phenylalanine. Based on our in vitro and in vivo study, we conducted a clinical trial to assess the skin anti-aging effcacy of CV. In this randomized, double-blind, placebo-controlled trial, we measured indicators related to elasticity, wrinkles, and skin hydration at 4 and 8 weeks after consumption of CV. The subjects were categorized into caviar, combination, and placebo groups. After 4 weeks, skin hydration, dermal hydration, and transepidermal water loss all showed signifcant improvement. Furthermore, after 8 weeks, skin elasticity indexes—R2 (total elasticity), R5 (net elasticity), and R7 (ratio of elastic recovery to total deformation)—exhibited signifcant increases. Improvement in wrinkle indicators (Rmax, Ra, and Rz) and the whitening indicator melanin pigment was also observed. This is the first report showing that CV has signifcant skin anti-aging effcacy on human skin. In conclusion, our study suggests that CV can be used as skin anti-aging nutraceuticals through positive effects on skin condition in clinical trials.

F. Huang, X. Wang, M. Zhang, L. Wang, Y. Wang, Y. Hu, T. Dong, P. Wie, **Correlating facial skin parameters with age and gender in population of Shaanxi Province**, **China**, J Cosmet Dermatol. 2024;23: p. 1386–1395

Objective: This study was designed to comprehensively evaluate the changes in facial skin biophysical parameters with age, as well the influence of gender differences in populations of Shaanxi Province, China. Methods: Fourteen skin parameters, including stratum corneum hydration (SCH), transdermal water loss (TEWL), erythema, melanin, R0, R2, R5, R7, F4, gloss, skin surface pH, skin erythema index (a*), wrinkle length, and sebum, were measured by noninvasive instruments in 481 volunteers from Shaanxi Province. Spearman correlation analysis was performed to analyze the relationship between skin parameters and age. Additionally, skin parameters were analyzed for different age groups and different genders. Results: The results of the study showed a linear decrease in skin surface pH and sebum content with age, and the skin elasticity parameters R0, R2, R5, and R7 decreased significantly at the age of 54–65 years. Wrinkle length showed a linear andincrease with age. R5 showed a weak negative correlation with age, R2, R7, and sebumcontent showed a moderate negative correlation, while wrinkle length showed a strong positive correlation. Considering the effect of gender on skin parameters, the results showed that SCH and gloss were lower in men than in women, while TEWL, erythema, melanin, wrinkle length, and sebum were higher than in women. However, there was no difference in skin elasticity between them. Conclusion: The facial skin parameters, especially for the wrinkle length, exhibited the strong correlation relationship with ages in Shaanxi Province. Meanwhile, most skin parameters show significant differences with gender, which can provide a reference for future research and development in the field of cosmetics.

N. Ashok Chand, S. Duarah, B.A. Yuk-Winters, D. Fomra, **Clinical Investigation of Collagen-Based Electrospun Nanofbers for Enhanced Delivery of Skincare Ingredients**, Cosmetics 2024, 11, 18

Nanofber-based materials, due to their unique properties, are of remarkable interest across multiple felds of applications, including cosmetics. Collagen, a primary structural protein in human skin, is well-regarded for its critical role in maintaining skin health, elasticity, and enhancing skin regeneration.

This study reports the characterization, safety, and effcacy evaluation of DermaLayr™, a novel collagen-based nanofber platform, for skincare application. The collagen nanofbers were developed using a sonic electrospinning technique, and scanning electron microscopy (SEM) analyses indicated that the nanofbers were uniform with average fber diameters ranging from 250 to 300 nm. The skin permeation studies on EpiDerm™ indicated that applying the test products resulted in around 5–25% higher collagen permeation into the epidermis, and 16–20% higher collagen permeation into the dermis when compared to the non-treated sample. Additionally, the safety of the developed nanofibers was assessed in vitro and in vivo and both the studies indicated their non-toxic and nonirritant properties. Moreover, clinical trials on human subjects further substantiated the clinical efficacy of DermaLayr™ by demonstrating significant improvement in several skin parameters such as hydration, elasticity, and overall skin health. In summary, the findings of this study emphasize the huge potential of DermaLayr™ nanofiber products for their safe application in cosmetics and skin therapeutics.

H.K. Sung, T.J. Kim, H.M. Kim, S.J. Youn, Y. Choi, N.Y. Lee, H.J. Oh, H.S. Kwon, S.M. Shin, **Anti-Wrinkle and Skin Moisture Effcacy of 7-MEGA™: A Randomized, Double-Blind, Placebo Comparative Clinical Trial**, Nutrients 2024, 16, 212

7-MEGA™ is a food product made from purifed Alaska pollack fsh oil containing palmitoleic acid (16:1), commonly referred to as omega-7. We sought to quantitatively evaluate whether this substance inhibits skin aging. A total of 101 middle-aged females were randomly allocated to the intervention (N = 50) or placebo group (N = 51). Each participant was advised to takeeither 500 mg of 7-MEGA™ or a placebo twice daily for 12 weeks. The primary outcomes were the degree of improvement in wrinkles and the degree of moisture flling after consumption for 12 weeks compared to baseline. The secondary outcomes were improvement in skin wrinkles; moisture changes at 4 and 8 weeks from baseline; changes in transdermal water loss, skin elasticity, the melanin index, the erythema index, and the Global Photo Damage Score. We found a signifcant improvement in skin wrinkles and elasticity at 12 weeks in the 7-MEGA™-consuming group compared to that in the placebo group; skin moisture, elasticity, and the melanin index were also improved. No supplementrelated adverse reactions were observed and 7-MEGA™ was identifed as safe. 7-MEGA™ was effective for human skin function in terms of wrinkles, moisture, elasticity, and melanin production and may be useful as a skin nutritional supplement.

N. Akhtar, F. Menaa, N. Akhtar, N. Javed, A. Seth, M. Shahzad Khan, **Tocopherol succinate-loaded ethosomal gel synthesized by cold method technique: Deeper biophysical characterizations for translational application on human skin**, J Cosmet Dermatol. 2024;23: p. 1015–1028

Background: Tocopherols are well-known antioxidant and moisturizing agent. Tocopherol succinate (TS) are widely used in many skin products especially used in anti-aging and skin whitening product formulation. Aim: We previously reported the successful synthesis and preliminary characterizations of stable TS ethosomal gels (TSEG) (DOI: 10.1111/jocd.14907). Herein, we develop and further characterize TSEG to enhance the stability of the developed formulation with increased permeation through skin. Methods: Cold method technique was used to prepare TS ethosomes. The developed ethosomal vesicle size was 250 nm, which allowed TS to penetrate through the stratum corneum layer and act on melanocytes. For stability study was assessed bythermogravimetric analysis (TGA) by placing TSEG and unloaded/control ethosomal gel (CEG) at various temperature conditions, that is, 8°C, 25°C, 40°C, and 40°C ± 75% RH for 3 months. Organoleptic evaluation was done in terms of color, odor, and phaseseparation. Transmission electron microscopy (TEM), Fourier Transform infrared spectroscopy (FTIR), x-ray diffraction spectroscopy (XRD), zeta potential (ZP) and particle size (PS) was used for TSEG physical characterizations. In vitro dissolution and ex-vivo permeation studies (using Franz diffusion cell) were performed for both TSEG and CEG formulations. Human women (N = 34) were used to evaluate in vivo biophysical parameters including erythema, melanin, moisture content, sebum level, and skin elasticity. Results: Developed formulation was highly thermostable during the 3 months. Erythema, melanin, and sebum level decreased while marked improvement ($p < 0.05$) in moisture content and elasticity have been observed for the developed TSEG. Conclusion: The developed TSEG formulation was found to be efficient, safe (no adverse effects observed), stable (at least for 3 months), and easy to use for topical application with improved skin complexation and skin integrity.

L. Lu, W. Bai, M. Wang, C. Han, H. Du, N. Wang, M. Gao, D. Li, F. Dong, X. Ge, **Novel roles of bovine milk-derived exosomes in skin antiaging**, J Cosmet Dermatol. 2024;23: p. 1374–1385

Background: Exosomes are small vesicles released from cells and are found in various mammalian biological fluids, such as bovine milk, which has been employed in skincare for many years, apart from its dairy applications. In addition, exosomes have been recognized as vehicles for intercellular communication. Aims: In this study, we aimed to investigate the novel effects of bovine milk-derived

exosomes (MK-Exo) on antiaging in human skin. Methods: Initially, MK-Exo were co-cultured with keratinocytes and fibroblasts; subsequent analysis involved qPCR and western blotting to assess induced gene expression. Subsequently, MK-Exo were topically applied to the facial skin of 31 female volunteers twice daily for 28 days. The functions were evaluated after conducting safety assessments in vivo. Results: Purified MK-Exo demonstrated the ability to be taken up directly by keratinocytes and fibroblasts in vitro, resulting in the upregulation of natural factors associated with skin moisturization, including filaggrin (FLG), aquaporin 3 (AQP3), and CD44 in keratinocytes, as well as hyaluronidase (HAS2) in fibroblasts. Concurrently, MK-Exo promoted fibroblast cell migration and restored the expression of type I and III collagen (Col I and Col III) following exposure to ultraviolet radiation. Furthermore, phototoxicity, photoallergy, repeated skin irritation, skin allergy, and patch tests confirmed the safety of MK-Exo for skin application. Finally, we elucidated the roles of MK-Exo in preserving moisture and reducing wrinkles in humans. Conclusion: Our findings unveil the novel contributions of MK-Exo to human skin aging, presenting a new avenue in the field of skincare.

Y. Cao, X. Zhang, X. He, W. Wang, Y. Yi, Y. Ai, **Efficacy of ceramide-containing sunscreen on skin barrier**, J Cosmet Dermatol. 2024;23: p. 525–528

Background: UV rays not only cause oxidative damage to the skin, but also damage its barrier function. The use of sunscreen is crucial in preventing skin from UV radiation, but it may have an impact on the function of the skin barrier. While much research has focused on the protective effects of sunscreen against UV oxidative damage, little is known about the impact of daily sunscreen use on the skin barrier. Objective: This study mainly investigated the changes in skin barrier function of volunteers (including those with sensitive skin) before and after using a ceramidecontaining sunscreen. Methods: A total of 60 volunteers used SPF30 sunscreen containing ceramide every morning. Using non-invasive methods to detect skin barrier changes in TEWL, hydration, facial redness based on VISIA-CR image, and Erythema index (EI) value after 4 weeks of using ceramide-containing sunscreen. Adverse reactions were also assessed. Results: After 4 weeks of using ceramide-containing sunscreen, significant reductions were observed in skin redness with both an 11.89% decrease in a* value and a 5.68% decrease in skin EI, while there was also a significant decrease in transepidermal water loss (TEWL) with a reduction of 22.96%, and a significant increase in skin hydration with a 21.96% increase in the moisture content of the stratum corneum. No adverseevents occurred during the entire testing process. Conclusion: Daily application of ceramide-containing sunscreen can increase skin hydration while enhancing the function of the skin barrier.

J.H. Lee, J. Kim, Y.N. Lee, S. Choi, Y.I. Lee, J. Suk, J.H. Lee, **The efficacy of intradermal hyaluronic acid filler as a skin quality booster: A prospective, single-center, single-arm pilot study**, J Cosmet Dermatol. 2024;23: p. 409–416

Background: The use of “skin boosters” comprised of hyaluronic acid (HA)-based fillers to improve skin quality has gained popularity recently, especially in individuals interested in skin rejuvenation. Aim: This study aimed to evaluate the efficacy and safety of intradermal micropuncture injections of HA-based gel filler combined with lidocaine (BYRYZN® SKINBOOSTER HA, ACROSS Co., Ltd., Gangwon-do, Korea). Patients/Methods: A prospective, single-arm, open-label pilot study was conducted with study subjects who were aged between 30 and 60 years old and exhibited evidence of skin aging, such as wrinkles and loss of elasticity. They received three injections at 2-week intervals and were followed up for a total of 12 weeks. Results: Twenty subjects with a mean age of 54.1 years were included. The mean Lemperle wrinkle scale demonstrated a 40% decrease from 2.60 ± 0.60 at baseline to 1.55 ± 0.51 at week 8. The improvement rate was maintained at about 33% until week 12. The average maximum height of the wrinkle (Rz, μm), average skin roughness (Ra, μm), skin elasticity (R2, AU), facial curved length (mm), skin pore size (mm2), skin hydration (AU), TEWL (g/hm2), and skin glossiness (gloss value, AU) exhibited statistically significant improvements over time compared with the baseline measurements. No serious adverse effects or persistent adverse effects were reported, except for a transient subcutaneous nodule in one subject. Conclusions: This study demonstrates that multiple microinjections of HA-based gel filler for facial skin aging are safe and effective in improving facial skin quality.

R. di Lorenzo, M. Maisto, L. Ricci, V. Piccolo, A. Marzocchi, G. Greco, G.C. Tenore, S. Laneri, **Annurca Apple Oleolite as Functional Ingredient for the Formulation of Cosmetics with Skin-Antiaging Activity**, Int. J. Mol. Sci. 2024, 25, 1677

The identification of natural remedies for the management of the skin aging process is an increasingly growing issue. In this context, ursolic acid (UA), a ubiquitous molecule, mainly contained in Annurca apple (AA) fruit, has demonstrated valuable cosmetic potential. To this end, in the current study, the AA oleolite (AAO, extract in sunflower oil containing 784.40 ± 7.579 □g/mL of UA) was evaluated to

inhibit porcine elastase enzymatic reactions through a validated spectrophotometric method. AAO has shown a valuable capacity to contrast the elastase enzyme with a calculated IC50 of 212.76 mg/mL, in comparison to UA (IC50 of 135.24 ¤g/mL) pure molecules and quercetin (IC50 of 72.47 ¤g/mL) which are used as positive controls. In this context and in view of the valuable antioxidant potential of AAO, its topical formulation with 2.5% (w/w) AAO was tested in a placebocontrolled, double-blind, two-arm clinical study on 40 volunteers. Our results indicated that after 28 days of treatment, a significant reduction of the nasolabial fold (-7.2 vs. baseline T0, $p < 0.001$) and forehead wrinkles (-5.3 vs. baseline T0, $p < 0.001$) were registered in combination with a valuable improvement of the viscoelastic skin parameters, where skin pliability/firmness (R0) and gross elasticity (R2) were significantly ameliorated (-13% vs. baseline T0, $p < 0.001$ for R0 and +12% vs. baseline T0, $p < 0.001$ for R2). Finally, considering the positive correlation between skin elasticity and hydration, the skin moisture was evaluated through the estimation of Trans epidermal water loss (TEWL) and skin conductance.

X. Zhang, D. Kerob, Z. Zhang, H. Tao, X. He, Y. Yi, X. Fang, W. Wang, A. Steel, **Efficacy and safety of a cream containing panthenol, prebiotics, and probiotic lysate for improving sensitive skin symptoms**, Skin Research & Technology, January 2024

Background: Sensitive skin is a common condition affecting a significant proportion of the population, and there is a growing demand for effective and safe management. Aim: To evaluate the efficacy and safety of a cream containing panthenol, prebiotics, and probiotic lysate as an optimal care for facial sensitive skin. Methods: A total of 110 participants (64 in group A and 46 in group B) with facial sensitive skin applied the cream twice daily for 28 days. Group A evaluated their sensitive skin, product efficacy, and product use experience at D0 (15min), D1, D14, andD28. In group B, skin barrier function-related indicators were measured at baseline and on D1, D7, D14, and D28. Dermatologists evaluated tolerance for all participants. Results: After 28 days of use, in group A, 100% of participants reported mildness and comfort with product use. Participants demonstrated significant improvements in skin barrier function-related indicators, including increased stratum corneum moisture content, reduced erythema index, elevated sebum content, decreased trans-epidermal water loss, and diminished skin redness parameter a* value (all $p<0.05$). Dermatologist evaluations revealed excellent tolerance among all participants. Conclusion: The panthenol-enriched cream with prebiotics and probiotic lysate exhibited substantial clinical efficacy in ameliorating facial sensitive skin conditions, coupled with a high safety profile.

E. Ghasemi, M.A. Nilforoushzadeh, M. Khani, M.A. Amirkhani, M. Nouri, P. Charipoor, M. Eftekhari, S. Izadpanah, B. Shokri, **The quantitative investigation of spark plasma on skin parameters with skin elasticity, thickness, density, and biometric characteristics**, Scientifc Reports, (2023) 13:7738

Cold atmospheric plasma has been developed and utilized as a novel technique for skin rejuvenation because of its various efects on cells and living things. This study investigated the accuracy of this claim and any possible side efects of using spark plasma to rejuvenate skin. The present work is the frst quantitative investigation using animal models. 12 Wistar rats were divided into two groups for this investigation. To compare the skin's natural process with the treated skin, the frst group underwent a single session of plasma therapy, while the second group served as the control group. The back of the necks of the samples was shaved for 20 cm. Before beginning treatment, the MPA9 multifunctional skin tester was used to determine the melanin index, erythema index, and transepidermal water loss (TEWL). The skin's thickness and density were assessed using sonography, and its elasticity index was calculated using a Cutometer. The samples were exposed to plasma radiation in the designated area (in a triangular pattern). The abovementioned signs were examined immediately after the following therapy and at the weekly appointment 2–4 weeks later. Optical spectroscopy was also used to demonstrate the presence of active species. In this study, we found that a plasma spark therapy session signifcantly boosts skin elasticity, and the ultrasound results revealed a signifcantly increased skin thickness and density. The plasma increased the amount of skin surface evaporation, erythema, and melanin immediately following the treatment. However, 4 weeks later, it recovered to its former state and did not difer signifcantly from before the therapy.

H. Cui, C. Feng, T. Zhang, V. Martínez-Ríos, P. Martorell, M. Tortajada, S. Cheng, S. Cheng, Z. Duan, **Effects of a lotion containing probiotic ferment lysate as the main functional ingredient on enhancing skin barrier: a randomized, self-control study**, Scientifc Reports, (2023) 13: 16879

There is an emergent need to develop functional cosmetic ingredients for the topical management of skin barrier function. This study aimed to investigate the efficacy of a lotion containing fermented lysates VHProbi® Mix R for enhancing the skin barrier. In vitro studies demonstrated that fermented cultures of both Lacticaseibacillus rhamnosus VHProbi® E06 (E06) and L. paracasei VHProbi® E12 (E12) had antioxidant capacity, showing promising scavenging capability for 2,2-

diphenyl-1-picryl-hydrazyl. The antioxidant capacity of these strains was also demonstrated in the model of Caenorhabditis elegans. In addition, the fermented lysates of both E06 and E12 enhanced the proliferation of HaCaT cells and ameliorated the toxicity induced by Staphylococcus aureus ATCC 25923, hydrogen peroxide, and ultraviolet B radiation in the HaCaT cell models, which simulated the irritants that facial sensitive skin is exposed to. Subsequently, the ingredient VHProbi® Mix R was formulated using four kinds of fermented lysates: E06, E12, Lactiplantibacillus plantarum VHProbi® E15, and Lactobacillus helveticus VHProbi® Y21. A clinical study was conducted to investigate whether a lotion containing VHProbi® Mix R would be beneficial for people to enhance skin barrier. The participants were asked to use the investigational product for 30 days. Several indicators, including transepidermal water loss (TEWL), skin moisturization, and redness were measured at day 0 and day 30 using VISIA®-CR and CK®-MPA systems. Meanwhile, the burden of sensitive skin (BoSS) and self-assessment questionnaires were performed at baseline and endpoint of this study. The study data showed that at day 30, there was a significant decrease in TEWL ($P < 0.01$), redness measured by CK®-MPA ($P < 0.01$), and redness profile measured by VISIA®-CR compared with the baseline measurements. Skin moisturization had significantly increased after treatment with the lotion for 30 days. BoSS and self-assessment questionnaires also substantiated that the participants felt a markedly positive change in their sensitive skin. Hence, we hypothesize that applying the topical functional VHProbi® Mix R could confer effective benefits for people with sensitive skin and this represents a promising intervention for enhancing skin barrier.

N. Stanek-Wandzel, M. Zarębska, T. Wasilewski, Z. Hordyjewicz-Baran, E. Zajszły-Turko, M. Tomaka, T. Bujak, A. Ziemlewska, Z. Nizioł-Łukaszewska, **Kombucha fermentation as a modern way of processing vineyard by-products into cosmetic raw materials**, Int J Cosmet Sci, 2023 Dec;45(6): p. 834-850

Objective: The wine industry generates large quantities of by-products presenting a remarkably valuable composition in phytochemicals. The process that can significantly increase the content of bioactive compounds is fermentation by yeast and other microorganisms. The current study presents, for the first time, an evaluation of the potential of grape stems extract and its ferments using the Scoby consortium, as a cosmetic raw material for improving the skin care properties of facial cosmetics. Methods: Fermentation of grape stems using Scoby consortium was carried out for 10 and 20 days. Unfermented and fermented extracts were analysed for their antioxidant activity and chemical composition, with a particular emphasis on biologically active substances. Additionally, the influence of the addition of the obtained ferments to the model cosmetic creams on hydration, transepidermal water loss and skin pH were assessed. Results: The obtained results revealed that grape stems extract and its ferments are a rich source of phenolic compounds and show antioxidant activity, with the highest values observed for extracts on the 20th day of fermentation. Furthermore, the addition of the extract, as well as ferment, to the cream has a positive effect on skin hydration and reduces transepidermal water loss. Conclusion: These results suggest that grape stem extracts are a prospective source of active compounds that may be valuable ingredients for the cosmetic industry. Unfermented and fermented extracts can be used in moisturizing cosmetic formulations and also to complement the treatment of dry and sensitive skin.

J. Czajkowska, J. Juszczyk M.N. Bugdol, M. Glenc-Ambroży, A. Polak, L. Piejko, E. Pietka, **High-frequency ultrasound in anti-aging skin therapy monitoring**, Scientifc Reports (2023) 13:17799

Over the last few decades, high-frequency ultrasound has found multiple applications in various diagnostic felds. The fast development of this imaging technique opens up new diagnostic paths in dermatology, allergology, cosmetology, and aesthetic medicine. In this paper, being the frst in this area, we discuss the usability of HFUS in anti-aging skin therapy assessment. The fully automated algorithm combining high-quality image selection and entry echo layer segmentation steps followed by the dermal parameters estimation enables qualitative and quantitative evaluation of the efectiveness of anti-aging products. Considering the parameters of subcutaneous layers, the proposed framework provides a reliable tool for TCA-peel therapy assessment; however, it can be successfully applied to other skin-condition-related problems. In this randomized controlled clinical trial, forty-six postmenopausal women were randomly assigned to the experimental and control groups. Women were treated four times at one-week intervals and applied skin cream daily between visits. The three month follow-up study enables measurement of the long-term efect of the therapy. According to the results, the TCA-based therapy increased epidermal (entry echo layer) thickness, indicating that the thinning process has slowed down and the skin's condition has improved. An interesting outcome is the obtained growth in the intensity of the upper dermis in the experimental group, which might suggest a reduced photo-aging efect of TCA-peel and increased water content. The same conclusions connected with the anti-aging

efect of TCA-peel can be drawn by observing the parameters describing the contribution of low and medium-intensity pixels in the upper dermis. The decreased share of low-intensity pixels and increased share of medium-intensity pixels in the upper dermis suggest a signifcant increase in local protein synthesis.

P. Minoretti, A.S. Santiago Sáez, Á.F. García Martín, M. Liaño Riera, M. Gómez Serrano, E. Emanuele, **Skin biophysical parameters and serum dermokine levels in airline pilots: a comparative study with office workers**, Adv Dermatol Allergol 2023; XL (6): p. 757–761

Introduction: Concerns are growing in the aviation industry about occupational skin diseases like malignant melanoma (MM) among airline pilots (APs), due to the unique working environment that exposes them to various skin stressors. Aim: To compare fve skin biophysical parameters in a group of 40 male APs, each matched in terms of age and service tenure (minimum of 5 years) with a control group of 40 male ofce workers (OWs). Considering the potential role of dermokine (DMKN) in skin barrier dysfunction and the pathogenesis of MM, we further analyzed the serum levels of this molecule and correlated them with the measured skin parameters. Material and methods: Stratum corneum skin hydration, transepidermal water loss (TEWL), sebum content, erythema index (EI), and melanin index (MI) were quantifed by non-invasive instruments in the cheek region. Serum DMKN levels were measured using a commercially available enzyme-linked immunosorbent assay kit. Results: Compared with OWs, the skin of APs exhibited a decrease in hydration levels in the stratum corneum,coinciding with a higher TEWL. However, there was no signifcant variance in sebum content between the groups. MI was notably higher in APs than in OWs, as was EI. In APs, serum DMKN levels were independently associated with MI ($\beta = 0.56$, $p < 0.05$). Conclusions: We found a signifcant link between the profession of an airline pilot and changes in skin biophysical parameters. Further research into the interplay between serum DMKN levels and the risk of MM in APs is warranted.

D. Deflorio, M. Di Luca, A.M. Wing, **Skin properties and afferent density in the deterioration of tactile spatial acuity with age,** J Physiol 601.3 (2023) p. 517–533

Tactile sensitivity is affected by age, as shown by the deterioration of spatial acuity assessed with the two-point discrimination task. This is assumed to be partly a result of age-related changes of the peripheral somatosensory system. In particular, in the elderly, the density of mechanoreceptive afferents decreases with age and the skin tends to become drier, less elastic and less stiff. To assess to what degree mechanoreceptor density, skin hydration, elasticity and stiffness can account for the deterioration of tactile spatial sensitivity observed in the elderly, several approaches were combined, including psychophysics, measurements of fnger properties, modelling and simulation of the response of frst-order tactile neurons. Psychophysics confrmed that the Elderly group has lower tactile acuity than the Young group. Correlation and commonality analysis showed that age was the most important factor in explaining decreases in behavioural performance. Biological elasticity, hydration and fnger pad area were also involved. These results were consistent with the outcome of simulations showing that lower afferent density and lower Young's modulus (i.e. lower stiffness) negatively affected the tactile encoding of stimulus information. Simulations revealed that these changes resulted in a lower build-up of task-relevant stimulus information. Importantly, the reduction in discrimination performance with age in the simulation was less than that observed in the psychophysical testing, indicating that there are additional peripheral as well as central factors responsible for age-related changes in tactile discrimination.

F. Li, H. Chen, D. Chen, B. Zhang, Q. Shi, X. He, H. Zhao, F. Wang, **Clinical evidence of the efficacy and safety of a new multi-peptide anti-aging topical eye serum,** Journal of Cosmetic Dermatology, Volume 22, Issue 12, December 2023

Background: Skin aging is a complex multifactorial progressive process. With age, intrinsic and extrinsic factors cause the loss of skin elasticity, with the formation of wrinkles, resulting in skin sagging through various pathways. A combination of multiple bioactive peptides could be used as a treatment for skin wrinkles and sagging. Objectives: This study aimed to evaluate the cosmetic efficacy of a multi-peptide eye serum as a daily skin-care product for improving the periocular skin of women within the ages of 20–45 years. Methods: The stratum corneum skin hydration and skin elasticity were assessed using a Corneometer CM825 and Skin Elastometer MPA580, respectively. The PRIMOS CR technique based on digital strip projection technology was used for skin image and wrinkle analysis around the "crow's feet" area. Self-assessment questionnaires were filled on Day 14 and 28 of product use. Results: This study included 32 subjects with an average age of 28.5 years. On Day 28, there was a significant decrease in the number, depth, and volume of wrinkles. Skin hydration, elasticity, and firmness increased continuously during the study period, consistent with typical anti-aging claims. A majority of the participants (75.00%) expressed overall satisfaction with their skin appearance after using the product. Most participants noted a visible skin improvement, with an increase in skin elasticity and

smoothness, and confirmed the extensibility, applicability, and temperance of the product. No adverse reactions related to product use were observed. Conclusions: The multi-peptide eye serum uses a multi-targeted mechanism against skin aging to improve the skin appearance, making it an ideal choice for daily skincare.

W. Poomanee, N. Yaowiwat, T. Pattarachaidaecharuch, P. Leelapornpisid, **Optimized multiherbal combination and in vivo anti-skin aging potential: a randomized double blind placebo controlled study**, Scientifc Reports, (2023) 13

The present study aimed to optimize a multi-herbal combination exerting the greatest antioxidant property using statistical method for anti-skin aging application as well as to elucidate its in vivo safety and anti-skin aging potential. The multi-herbal combination was optimized using a two-level, full factorial approach by exploring the correlation between the concentrations (0–3%w/v) of three extracts from *Centella asiatica* (CA)*, Momordica cochinchinensis* (MA), *Phyllanthus emblica* (EM). Ananti-skin aging emulsion containing the optimized combination was then developed and evaluated for its physicochemical characteristics with its stability under storage conditions. The in vivo anti-skinaging potential of the emulsion was subsequently investigated among 60 women in a randomized, double-blind, placebo-controlled study. Skin hydration, elasticity and wrinkles at eye and cheek areas were measured at baseline, after 30 and 60 days of application. Before performance testing, in vivo skin irritation was evaluated using the patch test and homogeneity between groups was also statistically analyzed. According to the model describing the signifcant main efects of each extractand interaction efects between extracts on percent inhibition against DPPH radicals, the best multi-herbal combination consisted of 3%w/v EM and 3%w/v CA. The developed emulsion containing the combination presented smooth soft texture with good stability in terms of physical characteristics and biological property. Regarding the clinical study, no skin erythema and edema was reported amongin all volunteers. After 60 days of application, signifcantly improved skin hydration, elasticity and wrinkles were observed in the test group. In addition, signifcantly reduced wrinkles were observed after 60 days in both skin areas of the test group. The anti-skin aging emulsion containing this optimized combination exhibited good safety and performance. Ultimately, this product comprises an efective anti-skin aging formulation for applications.

M. Roohaninasab, F. Khodadad, A. Sadeghzadeh-Bazargan, N. Atef, S. Zare, A. Jafarzadeh, S.T. Rahimi, M. Nouri, M. Ali Nilforoushzadeh, E. Behrangi, A. Goodarzi, **Efficacy of fractional CO2 laser in combination with stromal vascular fraction (SVF) compared with fractional CO2 laser alone in the treatment of burn scars: a randomized controlled clinical trial,** Stem Cell Research & Therapy (2023) 14

Background: The appearance of skin scars is known as one of the main side effects of skin burns. Stromal vascular fraction (SVF), as a rich source of cell populations with tissue regeneration properties, plays an important role in the healing of skin lesions. Fractional CO2 lasers have occupied a special place in treating skin lesions, particularly skin scars, since their introduction. Our study aimed to compare the combination of SVF and fractional CO2 laser with fractional CO2 laser alone in the treatment of burn scars. Method: This double-blind clinical trial study was conducted on ten patients with burn scars that were treated three times with a fractional CO2 laser at site of burn lesions, and one of the two areas studied was randomly injected with SVF. Two months after completion of the procedure, patients' scars were assessed using the Vancouver scar scale (VSS), biometric criteria, and physician and patient satisfaction ratings. Results: The results confirmed a significant improvement in VSS, cutometry, R7 criteria, complete density sonography, and skin density sonography in the fractional CO2 laser-treated group. The VSS criteria, epidermal thickness sonography, complete density sonography, and skin density sonography in the group treated with the combination of fractional CO2 laser and SVF also showed significant improvement. The VSS criteria and melanin index of Mexameter in the group treated with SVF in combination with fractional CO2 laser were significantly better than the group treated with fractional CO2 laser alone. Also, physician and patient satisfaction in the group treated with SVF injection in combination with fractional CO2 laser was significantly higher than the other group. Conclusion: The results confirm the efficacy of SVF injection in combination with fractional CO2 laser in the treatment of burn scars and can be considered as a treatment option for better management of these lesions.

O. Afolabi, A.A. Ajani, A.O. Akinboro, O.A. Olasode, E.O. Onayemi, **Napkin Dermatitis: Skin Hydration Levels and Skin Care Practices amongst Children at Urban Comprehensive Health Centre, Ilelfe, Nigeria**, West African Journal of Medicine, 2023

Introduction: Napkin Dermatitis (ND) means skin inflammation occurring within the napkin area. Skin care practices and skin hydration levels (SHL) are parameters of interest in the pathogenesis of

ND. Aim and objectives: To compare napkin area skin care practices and levels of skin hydration in children with ND and those without ND and to determine the predictors of ND in children. Methods: This was a case-control study of 60 participants with ND and 60 age and sex matched controls without ND, aged below 12 months that used napkins. Information on napkin area skin care practices were obtained from parents and diagnosis of ND was made clinically. Skin hydration levels were measured using a Corneometer®. Results: The median age of children was 16 ± 17.1 weeks (range 2-48 weeks). Controls were more likely to use appropriate barrier agents compared with participants with ND (71.7% vs. 33.3%; p< 0.001). Conclusion: Consistent use of an appropriate barrier agent could be protective against ND.

A. Soto-Moreno, T. Montero-Vilchez, P. Diaz-Calvillo, A. Molina-Leyva, S. Arias-Santiago, **The impact of photodynamic therapy on skin homeostasis in patients with actinic keratosis: A prospective observational study**, Skin, Research & Technology, Volume 29, Issue 12, December 2023

Background: Photodynamic therapy (PDT) is an effective treatment for actinic keratosis (AKs), but there is little information on how PDT affects skin barrier function. The objectives of this study are: To compare skin barrier function between skin with AKs and healthy skin and to evaluate the impact of PDT on skin homeostasis in patients with AKs. Methods: A prospective observational study was conducted in patients with AKs to evaluate epidermal barrier function and skin homeostasis before and 1 ek after receiving PDT. Results: A total of 21 subjects were included in the study, male/female ratio was 17:4, mean age was 75.86 years. The number of AKS observed before starting treatment was reduced with respect to those diagnosed 1 month after starting PDT (14.83 vs. 1.91, $p < 0.0001$). Application of PDT for treating AKs modifies epidermal barrier function. Immediately after the first session temperature, transepidermal water loss (TEWL), stratum corneum hydration (SCH) and total antioxidant capacity (TAC) increased while pH decreased on lesional skin. After 1-month follow-up, the only remained change was the increased in SCH. Higher increases in temperature were observed when using occlusive PDT compared to mixed modality. 5-ALA and M-ALA seem to have a similar impact on skin barrier. Conclusions: PDT can improve skin barrier function in patients with AKs. Skin homeostasis parameters can be used to assess efficacy and optimize dosing.

P. Minoretti, A. Santiago Sáez, M. Liaño Riera, M. Gómez Serrano, Á. García Martín, **Topically Applied Magnetized Saline Water Improves Skin Biophysical Parameters Through Autophagy Activation: A Pilot Study**, Cureus 15(11), 2023

Background: Water exposed to a magnetic field exhibits several changes in its properties, such as increased electrical conductivity, reduced density, and low surface tension. Additionally, it has reduced dissolved oxygen levelsand becomes more alkaline. Previous experimental studies have demonstrated that exposure to salinealkaline water leads to a dose-dependent increase in the expression of autophagy-related genes. Here, we hypothesize that the topical application of magnetized alkaline water to the skin can activate autophagy and improve cutaneous biophysical parameters, making it a promising strategy for enhancing skin aesthetics. Methods: Two distinct substudies were undertaken. Firstly, a 12-week, uncontrolled, open-label investigation was conducted with 20 females who desired to enhance the appearance of their facial and neck skin. Secondly, a molecular study was carried out on a subset of 10 females to investigate the serum's impact on two autophagy markers (Beclin-1 and mammalian/mechanistic target of rapamycin {mTOR}) in skin biopsies taken from the posterior neck area below the hair attachment line. Results: After a period of 12 weeks, the application of the serum resulted in significant improvements in skin hydration within the stratum corneum (56 ± 14 arbitrary units {a.u.}) compared to the baseline measurement (47 ± 12 a.u.; $p < 0.001$). Moreover, the transepidermal water loss (TEWL) decreased from 14 ± 2 g/m2/hour to 11 ± 3 g/m2/hour ($p < 0.001$). The results also revealed a notable reduction in sebum content from 38 ± 7 µg/cm2 to 30 ± 4 µg/cm2 after the 12-week period of serum application (<0.001). Additionally, the melanin index ($p < 0.01$) and erythema index ($p < 0.001$) were both significantly lower at 12 weeks compared to baseline. The molecular study showed a 38% increase in Beclin-1 levels after 12 weeks of serum application on the posterior neck area, as measured from skin biopsies. In contrast, mTOR levels decreased by 24% from baseline to 12 weeks. Conclusion: The application of magnetized saline water topically, within a serum formulation, shows potential in improving skin biophysical parameters for females seeking to enhance the appearance of their facial and neck skin. These beneficial effects are achieved through the activation of cutaneous autophagy, as evidenced by an increase in Beclin-1 expression and a decrease in mTOR content in the skin.

M. Zagórska-Dziok, A. Ziemlewska, A. Mokrzyńska, Z.a Nizioł-Łukaszewska, M. Wójciak, I. Sowa, **Evaluation of the Biological Activity of Hydrogel with Cornus mas L. Extract and Its Potential Use in Dermatology and Cosmetology**, Molecules 2023, 28, 7384

Due to the growing popularity of herbal extract-loaded hydrogels, this study assessed the

biological activity of extracts and hydrogels containing three types (water (WE), water–ethanol (EE) and water–glycerin (GE)) of Cornus mas L. (dogwood) extracts. The content of biologically active compounds in the extracts was assessed using the UPLC-DAD-MS technique. Antioxidant properties were assessed by using DPPH and ABTS radicals and measuring the intracellular level of reactive oxygen species. Alamar Blue and Neutral Red tests were used to measure the cytotoxicity of the tested samples on skin cells—fibroblasts and keratinocytes. Cell migration and the anti-aging activity of the tested extracts and hydrogels were assessed. Transepidermal water loss and skin hydrationafter applying the hydrogels to the skin were also determined. A chromatographic analysis revealed that the extracts contained polyphenols, including gallic, caftaric, protocatechuic, chlorogenic, ellagicand p-coumaroylquinic acids, as well as iridoids, with loganic acid as the predominant component.Additionally, they contained cyanidin 3-O-galactoside, pelargonidin 3-O-glucoside and quinic acid. The obtained results show that the tested extracts and hydrogels had strong antioxidant properties and had a positive effect on the viability of skin cells in vitro. Additionally, it was shown that they stimulated the migration of these cells and had the ability to inhibit the activity of collagenase and elastase. Moreover, the tested hydrogels increased skin hydration and prevented transepidermal water loss. The obtained results indicate that the developed hydrogels may be effective delivery systems for phytochemicals contained in dogwood extracts.

T. Khiljee, N. Akhtar, S. Khiljee, B. Khiljee, H.M. Rasheed, S.A. Ansari, H.M. Alkahtani, I.A. Ansari, **Gauging Quince Phytonutrients and Its 4% Emulgel Effect on Amplifying Facial Skin Moisturizing Potential**, Gels 2023, 9, 934

Background: The aim of this study was to evaluate the moisturizing efficacy of quince fruit, used in folk medicine. For this purpose, the phytoconstituents of Cydonia oblonga fruit extract, like phenolics and flavonoids, were determined. A stable cosmetic emulgel containing 4% Cydonia oblonga fresh fruit extract was formulated and subjected to in vivo evaluation compared with a control. Materials and Methods: Cydonia oblonga fresh fruit extract was evaluated for tyrosinase activity and phenolic and flavonoid content. A stable emulgel containing 4% Cydonia oblonga fresh fruit extract was formulated and tested in a skin irritation test. After this, in vivo tests of erythema, moisture, sebum, and skin elasticity were conducted. The in vivo evaluation was a randomized and single-blind study. Thirteen healthy female volunteers were selected for a three-month study period. Results: Cydonia oblonga fruit extract showed good phenolic and flavonoid content, which was associated with its good antioxidant and tyrosinase-inhibiting activity. Cydonia oblonga containing the emulgel showed a reduction in sebum and erythema, while the elasticity and moisture content showed increments in their levels after the three-month application of the formulation. The fruit contains chlorogenic acid and many sugars, which might account for its anti-inflammatory and sebum reduction effects; it is also capable of enhancing the skin's hydration level and decreasing skin sagging by enhancing its elasticity. Conclusion: The emulgel loaded with Cydonia oblonga fresh fruit extract is verified regarding its folklore status as a moisturizing agent that enhances the facial skin cells' resilience potential.

Y.-R. Gao, R.-P. Wang, L. Zhang, Y. Fan, J. Luan, Z. Liu, C. Yuan, **Oral administration of hyaluronic acid to improve skin conditions via a randomized double-blind clinical test**, Skin Research & Technology, November 2023

Objective: To evaluate the impact of oral intake of Hyaluronic Acid (HA) on skin health. Background: HA, an endogenous substance in the human body, plays a key role in skin health.However, its concentration in the skin decreases significantlywith age. Previous studies suggested that oral intake of HA can supplement the body's HA level, but did not reveal the effects on different age groups and skin types. Methods: A double-blind, randomized clinical trial with 129 female participants, covering young and elderly groups and differnet skin types, was conducted to assess the efficacy of orally administered HA on skin health. Results: Oral administration of HA significantly promoted skin hydration after 2-8 weeks among both young and elderly groups. Skin tone improvement was observed after 4-8 weeks, while an increase in epidermal thickness was noted after 12 weeks. Conclusion: This study provides direct evidence supporting the clinical efficacy of oral intake of HA in promoting skin health.

E. Tarshish, K. Hermoni, N. Muizzuddin, **Comprehensive assessment of the efficacy and safety of a clay mask in oily and acne skin**, Skin Research & Technology, Volume 29, Issue 11, November 2023

Background: Oily skin, characterized by excessive sebum production, can lead to acne and have psychosocial impacts due to changes in appearance. Recent research has shown interest in treatments for oil control, with kaolin and bentonite emerging as promising options. Despite their potential, comprehensive studies on these ingredients are still in the nascent stages. Aim: This study aimed to assess the efficacy of a clay mask (La Roche-Posay Effaclar Sebo-Controlling Mask) in

reducing skin oiliness and acne, and its safety for use. Methods: In this study, 75 adults with oily or combination skin were enrolled and provided with a clay mask for twice-weekly use over 4 weeks. Clinical assessments, using instruments like Sebumeter, Vapometer, and Corneometer, were conducted at baseline, and after 1, 2, and 4 weeks, evaluating acne lesions, skin irritation, sebum content, and skin hydration. Participant self-assessment questionnaires were also utilized for subjective evaluation. Statistical analyses were performed accordingly. Results: The study revealed significant improvements in acne-related outcomes, sebum content, skin evenness, stratum corneum water content, and transepidermal water loss following the application of the clay mask. Pore area and porphyrin area showed no significant changes. Tolerance assessment showed reduced dryness and irritation, with self-assessment indicating high product acceptability and perceived oil control effectiveness. Conclusion: This study demonstrated the clay mask's efficacy in managing acne and oily skin, improving hydration and texture. Significant improvements in skin parameters and high product safety were observed, supporting its suitability.

G.N. Stamatas, P.-F. Roux, E. Boireau-Adamezyk, I. Lboukili, T. Oddos, **Skin maturation from birth to 10 years of age: Structure, function, composition and microbiome**, Experimental Dermatology, 2023;32: p. 1420–1429

Infant and adult skin physiology differ in many ways; however, limited data exist for older children. To further investigate the maturation processes of healthy skin during childhood. Skin parameters were recorded in 80 participants of four age groups: babies (0–2 years), young children (3–6 years), older children (7– <10 years) and adults (25– 40 years). Overall, skin barrier function continues to mature, reaching adult levels of transepidermal water loss (TEWL), lipid compactness, stratum corneum (SC) thickness and corneocyte size by the age of about 6 years. Higher levels of lactic acid and lower levels of total amino acids in the SC of babies and young children further indicate higher cell turnover rates. In all age groups, TEWL and skin surface hydration values remain higher on the face compared with the arm. Skin becomes darker and contains higher levels of melanin with increasing age. The composition of skin microbiome of the dorsal forearm in all children groups is distinct from that in adults, with Firmicutes predominating in the former and Proteobacteria in the latter. Skin physiology, along with the skin microbiome, continues to mature during early childhood in a site-specific manner.

N.G. Ha, S. L. Kim, S.H Lee, W.J. Lee, **A novel hydrogel-based moisturizing cream composed of hyaluronic acid for patients with xerosis: An intraindividual comparative analysis**, Poster Presentation at the 1st Congress of Investigative Dermatology, Tokyo, May 2023 & Skin Research & Technology, Volume 29, Issue 11, November 2023

Background: Hyaluronic acid (HA) is mainly used to treat xerosis. It also exerts woundhealing, moisturizing, and antiaging effects. Although HA is considered an effective and safe ingredient in cosmetics, there is a constant demand for a more money-saving and effective formulation. This study aimed to evaluate the safety and efficacy of a novel hydrogel-based moisturizer containing HA cross-linked with silicone polymers, produced solely through irradiation without the use of cross-linking agents. Materials and Methods: A safety study enrolled 30 participants with healthy skin to perform patch and photopatch tests while recording adverse events. For the efficacy study, 30 participants with xerosis were compared before and after using the novel hydrogel, evaluating the cutaneous barrier function, xerosis severity scale (XSS) score, participant's satisfaction, and Investigator's Global Assessment (IGA). Furthermore, the efficacy of the novel hydrogel-based moisturizer was evaluated by comparing it with a conventional moisturizer, Physiogel, in another 30 participants with xerosis. Results: In the safety study, no serious adverse events were observed. In the efficacy study before and after use, skin hydration and skin surface lipid increased ($p < 0.05$) whereas the XSS scores decreased ($p < 0.05$) with time. In the comparative efficacy study with Physiogel, skin hydration increased whereas the XSS scores decreased ($p < 0.05$) over time in both groups. Furthermore, IGA improved in 100% of participants in both groups. Also, 100% and 93% of participants were satisfied with the novel hydrogel-based moisturizer and Physiogel, respectively.

Y. Lee, Y.J. Cha, S. Jeong, S.-K. Yun, Y. Nho, S. Kang, W. Kim, J. Son, J. Kim, S. Kyung, **A novel sophorolipids extraction method by yeast fermentation process for enhanced skin efficacy**, Skin Research & Technology, October 2023

Aims: Oriental herbs have been used as medicines in the folk remedy for their numerous phytochemicals and bioactivities. In this study, we have selected five Korean traditional medical herbs and applied bio conversion extraction technology, named it as Bioconversion Oji complex, to identify phytochemicals and evaluate skin related efficacies. Material and methods: The process of two-step bio conversion was sequentially conducted. The first step of fermentation was to produce biosurfactants using macadamia seed oil with Candida bombicola, and then five natural plants were added to carry

outthe main fermentation. To evaluate skin improvement efficacy of Bioconversion Oji complex, in vitro and in vivo studies were conducted. We studied HaCaT cells cultured to assess viability, skin anti-inflammatory, moisturizing and barrier improvementrelated mRNA expression. For efficacy study, 21 participants were tested evaluating anti-inflammatory, skin moisturizing and skin barrier improving effects of Bioconversion Oji complex compared to Water extraction of Oji (placebo) for the 4 weeks test period. Results: The application of bioconversion technology highly increased the content of amino acids and lipids within Bioconversion Oji complex, and 23 flavonoids were also identified. Bioconversion Oji complex was found to be non-toxic and showed significant effects in all parameters tested, including anti-inflammation, skin moisture, and skin barrier in both in vitro and in clinical studies. Conclusions: Bioconversion Oji complex has demonstrated skin-friendly properties with significant beneficial effects on anti-inflammatory, skin hydration and barrier function properties. This study provides evidence for the use of Bioconversion Oji complex as an active ingredient in cosmetics and skincare products.

G.E.L. Faria, J.S. Palo, A.R. Torres, A.C.H.R. Machado, R.F Boggio, **RELAX and FIRMNESS: The Combination of Muscle Relaxation with Botulinum Toxin and Collagen Biostimulation with Calcium Hydroxyapatite for the Treatment of the Cervical Region**, Clinical, Cosmetic and Investigational Dermatology 2023:16, p. 2781–2791

Introduction: There are several therapeutic modalities for neck rejuvenation, especially calcium hydroxylapatite. Botulinum toxin, by relaxing the mm. platysma, also provides improvement in facial contour. Combination treatments for this region are usually recommended as they offer better results. Objective: This study evaluated the effcacy and safety of the joint dilution of both products (Relax and Firmness – RF), applied in the same device, based on the treatment in the topography of the platysma muscle, ie, starting from the lower third of the face and extending to the neck. Methods: Prospective, blinded, controlled study with 10 participants randomly assigned to RF and 5 in the control group (treated with CaHA only). Results were recorded through the Vectra platform and subjectively evaluated through the GAIS scale by participants and blinded evaluators. Objective analysis was performed using corneometry. Times evaluated: pre-treatment, 30 and 90 days. Considered statistically signifcant when p<0.1. Results: 100% of the RF group reported “excellent improvement” at D30 and 30% at D90. In the control group, 100% reported “very improved” at D30 and 20% rated “excellent improvement” at D90. A higher and earlier satisfaction rate was observed in the RF group. No difference in corneometry was found between the groups at D30. At D90, the control group had a mean increase of 0.24 versus 5.17 in the RF group (p-value=0.089*). When we analyzed the percentage variation from baseline, the control group was stable, while the RF showed a mean increase of 8.89% (p-value=0.062*). Discussion: We demonstrated the safety and effectiveness of the association of both products, diluted and applied together through microcannulas. Minimization of punctures, patient comfort, and technique based on the anatomy of the platysma muscle underlie the technique. High rates of early satisfaction due to botulinum toxin (Relaxation) and late satisfaction due to CaHA (Firmness).

K. Chilicka, M. Rusztowicz, A.M. Rogowska, R. Szyguł a, D. Nowicka, **Efficacy of Oxybrasion and Cosmetic Acids on Selected Skin Parameters in the Treatment with Acne Vulgaris**, Clinical, Cosmetic and Investigational Dermatology 2023:16 p .1309–1317

Purpose: The present study aimed to evaluate the efficacy of an oxybrasion treatment applied alone and an oxybrasion treatment combined with cosmetic acids in improving acne-prone skin and selected skin parameters. Patients and Methods: A single-blind placebo study in a sample of 44 women diagnosed with acne vulgaris was conducted. Group A (n = 22) had a series of five oxybrasion treatments, while group B (n = 22) received a synergy of five oxybrasion treatments and a mixture of phytic, pyruvic, and lactic and lactic ferulic acids at 40% pH 1.4. Cosmetic treatments were performed every 14 days, and The Derma Unit SCC3 apparatus (Courage & Khazaka, Cologne, Germany) Sebumeter SM 815 and Corneometer CM825 and GAGS scale were used to check their effectiveness. Results: A Bonferroni post hoc test showed that group A and B did not differ from each other in acne severity before treatment ($p = 1.00$). However, these samples differed significantly after treatment ($p < 0.001$), suggesting that combined treatment of oxybrasion and cosmetic acids has a better effect than oxybrasion alone. Also, two treatment conditions (before and after) were statistically different for groups A and B separately ($p < 0.001$), indicating a similar efficacy of both treatments on acne severity. Conclusion: Cosmetic treatments improved acne-prone skin and selected skin parameters. Better results were obtained by combining an oxybrasion treatment with cosmetic acids.

A. Catalano, K. Mitri, P. Perugini, G. Condrò, C. Sands, **In vitro and in vivo efficacy of a cosmetic product formulated with new lipid particles for the treatment of aged skin**, J Cosmet Dermatol. 2023;22: p. 3329–3339

Background: The cumulative oxidative damage causes an acceleration in the skin aging. Objectives: To evaluate the ability of a new patented matrix of lipid particles (SIREN CAPSULE TECHNOLOGY™) to have superior anti-aging properties due to its high sensitivity to reactive oxygen species (ROS), testing its efficacy versus free or encapsulated vitamins. Methods: An in vitro study was conducted to evaluate the protective effects of lipid particles using menadione as an enhancer of oxidative stress. Subsequently, in vivo studies evaluated skin hydration, skin barrier function, and smoothness and wrinkle depth. For this purpose, gels containing free or encapsulated vitamins were used as controls. Results: In vitro, the SIREN CAPSULE TECHNOLOGY™ gel shows inhibitory activity against ROS production through menadione induction. In fact, at both tested concentrations, ROS production is lower than in the control samples (placebo, free vitamins, encapsulated vitamins). In vivo, the net effect of SIREN CAPSULE TECHNOLOGY™ gel versus the others permitted to conclude that lipid particles exert a higher skin moisturizing effect (20.17%) and a stronger effect in reducing transepidermal water loss (-16.29%) after 4 weeks of treatment. As for surface analysis, a gel based on SIREN CAPSULE TECHNOLOGY™ improves the skin texture in a similar way than gel containing encapsulated vitamins (Ra and Rz variations in 4 weeks). Conclusions: SIREN CAPSULE TECHNOLOGY™ represents an advance and a successful strategy to develop cosmetic products for the treatment of skin conditions associated with an accumulation of ROS. SIREN CAPSULE TECHNOLOGY™ represents a result-oriented breakthrough in the effective delivery of active ingredients to the skin.

D. Andriani Ratna Dewi, A. Arimuko, L. Norawati, S.W. Yenny, N.L. Setiasih, A. Perdiyana, N. Arkania, F. Nadhira, N. Wiliantari, **Exploring the Impact of Hydrolyzed Collagen Oral Supplementation on Skin Rejuvenation: A Systematic Review and Meta-Analysis**, Cureus 15(12), September 2023

With increasing life expectancy, the quest for skin rejuvenation has gained prominence among individuals of diverse age groups. The popularity of nutricosmetics, notably dietary supplements, has garnered significant attention in recent years. Many scientific investigations have amassed compelling evidence highlighting the positive impact of hydrolyzed collagen supplementation in mitigating the visible signs of skin aging. Thisstudy aims to know the powerful effect of hydrolyzed collagen on the skin. This research method is to conduct a systematic review followed by a meta-analysis of the clinical trial focusing on randomized, double-blind, and controlled trials that examined the oral consumption of hydrolyzed collagen and reported outcomes related to skin aging, wrinkles, moisture levels, elasticity, and firmness. The selected articles from CENTRAL, PubMed, Google Scholar, and ScienceDirect databases were published from 2017 to 2023. The subsequent meta-analysis, comprising 14 distinct studies and a collective cohort of 967 participants, revealed encouraging findings favoring hydrolyzed collagen supplementation. It consistently demonstrated substantial enhancements in skin moisture levels and elasticity compared to the placebo group, a trend robustly corroborated by subgroup analysis. These compelling findings underscore the effectiveness of a 12- week regimen of hydrolyzed collagen supplementation in revitalizing the skin by augmenting its hydration and elasticity.

G. Fattorini, S. Zanzottera, **IN & OUT Routine zur Vorbeugung der Hautalterung**, sofw journal, 149 Jahrgang, 9/23

Hyaluronsaure ist dank seiner vorteilhaften Wirkungauf die Haut ein sehr bekannter Inhaltsstoff im Kosmetikmarkt. Normalerweise hangt die biologische Wirksamkeit mit dem spezifischen Molekulargewicht zusammen. Die biologische Wirksamkeit kann uber verschiedene Stimulationen durch ein breites Spektrum an Molekulargewichten erreicht werden, das in der Lage ist, die Biologie und die Anforderungen des Hautgewebes nachzuahmen und so eine gezielte und breite Wirkung zu gewahrleisten. Der vorliegenden Artikel soil die Wirksamkeit eines spezifischen Natriumhyaluronats, das auf der Full Spectrum Technologie beruht, zeigen, den Zeichen der Hautalterung in einer IN&OUT Routine entgegenzuwirken: als Wirkstoff in einem kosmetischen Produkt und als Hauptbestandteil eines Nahrungserganzungsmittels.

E. Willeit, **Natürliches Astaxanthin aus Österreich - ein einzigartiger Wirkstoff für biologischen Zellschutz**, sofw journal, 149 Jahrgang, 9/23

Mit steigender Lebenserwartung und zunehmendem Stress im Alltag rückt gesundes Altern in den Mittelpunkt des Interesses. Durch einen gesunden Lebensstil und die Förderung der Funktionsfähigkeit unserer Haut versuchen wir, sichtbaren Alterserscheinungen und altersbedingten Erkrankungen vorzubeugen. Eine Sisyphusarbeit, denn wir können den Alterungsprozess unseres Körpers und insbesondere unserer Haut nicht aufhalten - aber durch vorbeugende Maßnahmen positiv beeinflussen und verzögern. Der Einsatz von Antioxidantien spielt vor allem im Bereich der Hautgesundheit eine wichtige Rolle. Astaxanthin ist ein hochwirksames natürliches Antioxidans, das durch seine biologische Wirkung einen effektiven Zellschutz bietet. Als natürliches Schutzschild gegen

umweltbedingten Stress und degenerative Oxidationsprozesse ist es die perfekte Wahl fur AntiAging-Produkte. Zahlreiche klinische Studien belegen die positive Wirkung seiner einzigartigen Molekulstruktur auf den Hautalterungsprozess. BDI-BioLife Science konnte die positive Wirkung von Astaxanthin anhand eigener Studien im Kosmetikbereich mit seinem markengeschützten Wirkstoff, einem Oleoresin mit 5% Astaxanthingehalt, bestätigen.

R. Miliawati, N.I Hidayah, M. Radyn Haryadi Widjaya, H. Gunawan, E. Sutedja, R. Farah Dwiyana, E. Krishna Sutedja, **Evaluation of Scalp Hydration and pH Values in Hijab-Wearing and Non-Hijab-Wearing Women**, International Journal of Women's Health 2023:15, p. 1661–1672

Introduction: Indonesia is the most populous Muslim-majority country, where some women wear hijab covering their scalp and neck. Some hijab-wearing women complain of scalp problems eg, itch, dandruff, and hair loss, which might be related to severe and chronic skin barrier impairment due to occlusion. Excessive water accumulation in the occluded stratum corneum might result in increased permeability, followed by increased skin pH values. This study aimed to evaluate scalp hydration and pH values in hijabwearing and non-hijab-wearing women. Material and Methods: This was a cross-sectional comparative analytical study using stratified random sampling methods conducted on 63 subjects, who were divided into two groups, consisting of 33 hijab-wearing and 30 non-hijab-wearing women. Both groups underwent physical examination and their medical history recorded. Scalp hydration was measured using a Corneometer (Courage + Khazaka, Koln, Germany), and scalp pH value was measured using a Skin & Scalp pH Tester (Hanna Instruments® HI981037, Rumania). This study was conducted at the Dermatology and Venereology Clinic of Hasan Sadikin General Hospital Bandung. Results: The mean scalp hydration and pH values were 18.34 ± 2.91 AU and 4.93 ± 0.17, respectively, in hijab-wearing women. Meanwhile, the mean scalp hydration and pH values were 17.71 ± 3.35 AU and 4.91 ± 0.16, respectively, in non-hijab-wearing women. The difference of scalp hydration and pH values between the groups was not statistically significant based on the independent t-test, with p-values of 0.430 and 0.597, respectively. Conclusion: Scalp hydration and pH values in hijab-wearing and non-hijab-wearing women did not differ significantly. Hijabwearing women should not worry about scalp barrier impairment as long as they do not have any history of underlying scalp and skin disorders, and do not wear hijab in wet condition.

H. Nguyen, T. Nguyen, A. Mantilla, C. Emesiani, M. Meckfessel, **Over-the Counter Moisturizers Significantly Improve Skin Hydration in Adults With Eczema/Atopy-Prone Skin**, J. Drugs Dermatol, 2023 Oct 1;22(10)

Background: Many adults suffer from dry, itchy skin, particularly those with eczema-prone skin. This study evaluated the effects of two over-the-counter (OTC) moisturizing products on skin hydration, transepidermal water loss (TEWL), ceramide levels, and patient experience. Methods: Single-center, randomized, double-blind, split-body study evaluating the effectiveness of an Eczema Soothing Moisturizer (ESM) versus an Itch Relief Moisturizing Lotion (IRML) applied twice daily for 4 weeks in healthy adults with self-perceived persistent mild-to-moderate eczema-prone skin. Assessments included corneometer for skin hydration, evaporimeter for TEWL, tape stripping to measure ceramide NS and AS levels on the skin of the arm and leg, and a self-assessed participant-reported outcome questionnaire. Results: A total of 30 adults completed the study. Both products significantly increased hydration, but the effect of ESM was greater than IRML (P=0.001), and both significantly decreased TEWL. At week 4, there were increases in NS and AS ceramides at both the legs and arms for both products (P<0.05 vs BL). Individually, ceramide content was significantly improved for ESM in the leg and for IRML in the arm at week 4 (P<0.05 vs BL). Participant photos show ESM was beneficial across a range of skin phototypes. Both products resulted in favorable perceptions from study participants. Conclusions: These moisturizers improved skin hydration, skin barrier, ceramide levels in the skin, and were well-perceived by the participants. This suggests that both products are beneficial for patients with eczema and eczema-prone skin. However, the hydrating effect of ESM was significantly greater than IRML.

L. Tamez Pedroza, E. Marquez, G. Cuartero, **Skin Biomechanical Characteristics Differences in Ultrasonic Liposuction Devices Used in Liposuction**, Plast Reconstr Surg Glob Open. 2023 Oct; 11(10 Suppl): 151

Introduction: New plastic surgery devices have been development to improve results in liposuction procedures like Vibration Amplification of Sound Energy at Resonance (VASER) is one of those devices that revolutionized liposuction surgery. Liposuction developed in 1977, with many changes over the years on cannulas, aspirating devices, assist with external devices on fat emulsification, tumescent infiltration, in late 1980s Zocchi described the use of ultrasonic lipoplasty in which fat was liquefied with ultrasonic energy and then evacuated from subcutaneous space reducing

trauma and blood loss in patients. Vibration amplification of sound energy at resonance (VASER) is a third-generation ultrasound-assisted modality of liposuction. Which was introduced to the United States in the early 90s and now stands as the most popular of its kind. This system uses ultrasound energy at a 36 kHz frequency to separate the adipose cells from its tissue matrix through stable cavitation and acoustic streaming. By this mechanism it facilitates fat emulsification and extraction, preserving vascularization and improving the long-term aesthetic results4. In 2009 Nagy and Vanek published a multicenter, prospective, randomized, single-blind, clinical trial comparing VASER-assisted lipoplasty and Suction-Assisted lipoplasty finding improved skin retraction and reduction in blood loss compared to suction-assisted lipoplasty. Methods: This prospective study compared two different devices (VASER, Solta Medical Inc. Hayward Calif.) and the new HEUS (Inomedica, México) for liposuction procedures. Thirteen patients (2 males and 11 females) between the ages of 21 and 46 years received Ultrasound-Assisted liposuction with both devices, one side with HEUS-assisted liposuction and the contralateral side treated with VASER-assisted liposuction; the side of the patients treated with HEUS and VASER were randomized. We used the devices in the same conditions, same anatomical areas, time applied in each area, device power parameters (%), fat aspirated volume and surgeon, the assigned side was randomly assigned to VASER and HEUS. We measured bio-mechanical skin parameters: distensibility, Net-elasticity, Biological-Elasticity, Skin Hydration, Erythema and Melanin with cutometer MPA 580. 2 sides were compared. In the statistical analysis, no statistically significant differences were observed in any of the functional or biomechanical parameters. Conclusion: According to cutometer there was no difference between HEUS ultrasonic liposuction device and VASER, HEUS is a safe option to archive good results in liposuction surgery, this device is currently use over Mexico and Latin America.

H. Choi, J.H. Ha, H.C. Kang, W.S. Seo, B.-H. Bin, **The Protective Effects of Moisturizer Containing Potentilla anserina Extract in the Topical Treatment of Skin Damage Caused by Masks**, Int. J. Mol. Sci. 2023, 24

Abstract: The use of face masks during the COVID-19 pandemic resulted in significant societal changes, particularly for individuals with sensitive skin. To address this issue, the researchers explored traditional medicine and identified Potentilla anserina extract as a potential solution due to its anti-inflammatory and moisturizing effects. This research investigated how this extract influences skin hydration, barrier function, and itching. The findings revealed that the extract had a hydrating effect by elevating Aquaporin-3 (AQP3) expression. Additionally, the study demonstrated that the extract improved skin barrier function, with Filaggrin (FLG) expression being approximately three times higher ($p < 0.001$) in the Potentilla-anserina-extract-treated group compared to the control group and the genes associated with itching being reduced. In this process, we researched and developed P_CD (hydroxypropyl-_-cyclodextrin)-Liposome containing Potentilla anserina extract, gradually and sustainably releasing the active components of the Potentilla anserina extract. During four weeks of clinical trials involving individuals wearing masks for over 6 h a day, a moisturizer containing Potentilla anserina extract demonstrated a notable reduction in skin redness. Hemoglobin values (A.U.), which serve as indicators of skin redness, showed decreases of 5.06% and 6.74% in the test area inside the mask after 2 and 4 weeks, respectively, compared to the baseline measurements. Additionally, the moisturizer containing Potentilla anserina extract notably decreased Trans Epidermal Water Loss (TEWL), with reductions of 5.23% and 9.13% observed in the test area inside the mask after 2 and 4 weeks, respectively. The moisturizer, especially in the test area treated with the extract-containing moisturizer, significantly enhanced skin hydration compared to the control group. The Corneometer values (A.U) exhibited notable increases of 11.51% and 15.14% in the test area inside the mask after 2 and 4 weeks, respectively. These discoveries emphasize the potential of Potentilla anserina extract and its utility in tackling skin issues caused by mask wearing, including enhancing moisture, fortifying the skin's barrier, and alleviating itching. These results indicate that moisturizers incorporating specific ingredients provide greater benefits compared to conventional moisturizers.

J. Moura, A.P. Fonseca, C. dal Pizzol, A.C. Vanzo, P.M.B.G Maia Campos, **Development of a renewal tonic for sensitive skin**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The term sensitive skin has been commonly used in various situations of skin discomfort. Topical products that aim to take care of sensitive skin should consider their formulations carefully, using the minimum of necessary ingredients, none or the minimum of components known to be sensitizing and irritating. A clinical trial was conducted with 33 female subjects aged between 18 and 45 years, presenting sensitive and acne prone skin, besides skin spots. They used the product daily, for 28 days. The product promoted a significant increase of skin hydration ($p<0.05$) after 8 and 12 hours of single application and after 28 days of use and a reduction of total skin spots after 28 days of continuous use ($p<0.05$). In the self-assessment questionnaire, after 14 days of use 73.33% of the subjects agreed that

the product promoted a more uniform skin texture (less rough and wrinkles) and after 28 days 86.67% agreed that the skin texture was more uniform, spots were smoothed, and the pores felt less apparent.

F. Yang, T. Chen, M. Guo Z. Zhou, H. Wang Hua, **The New Skin Barrier Insights for Skin Aging of Asian Ethnic Group from Multi-Omics Study**, Podium presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

To study the correlation between clinical skin parameters, skin metabolites, skin microbiomes in different age groups, 83 healthy Asian volunteers were recruited and their skin physiological clinical parameters (e.g., Tewameter and wrinkles) were characterized. The skin metabolites were collected by swab and analyzed by untargeted metabolomics technique, and the skin microbiomes of different age groups were detected using the high-throughput detection technique. The multi-omics study was carried out by pearson correlation analysis. PLS-DA and student t-test demonstrated that several key metabolites (e.g., isocitric acid) showed significant differences within the aged group and young group. The KEGG pathway analysis found that tricarboxylic acid (TCA) cycle ranked the most dominant metabolic pathway. Moreover, the microbiome diversity increased with age, as indicated by the differences in Propionibacterium, and Cutibacterium acnes at species level. The multi-omics data cross-domain correlations also suggested clinical skin parameters, skin metabolites, and skin microbiome are mutually influenced. This work provides more deep insights for studying the skin aging and skin barrier mechanism and developing microecology-relevant cosmetics.

A. Porcheron, A. Makdani, A. Marshall, J. Latreille, M.-H. Bardel, F. McGlone, **The impact of skin hydration on pleasant touch: What the nerves tell the brain**, Podium presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

There is a close, two-way relationship between the biomechanical properties of skin, and cutaneous innervation and sensitivity. Previous research has considered the impact of skin hydration on tactile perception but has focused primarily on glabrous skin, and discriminatory touch mediated by A-◘ afferent fibres. This study expands on this work, using microneurography (an electrophysiological technique) and psychophysics, to explore the impact of both acute hydration and dehydration on cutaneous afferents in hairy skin (i.e. the majority of the human body), with a particular focus on gentle dynamic touch, and on unmyelinated C- low threshold mechanoreceptors (C-LTMRs), which have previously been linked to social and affective touch (C-Tactile fibres). The results show that, in contrast to the impact of treatment on A-◘ afferent fibres, C-Tactile fibres activity is significantly dampened post-dehydration, and that acute hydration (i.e. with a moisturiser) appears to have a protective or stabilising effect on their sensitivity. The microneurography data and the psychophysical responses showing that gentle dynamic touch applied to hydrated, moisturised skin was more pleasant, than touch applied to dehydrated skin, together support the hypothesis that biomechanical changes in skin affecting C-Tactile fibres and other afferent activity are key parts of the mechanism driving self-grooming behaviour.

J. Kim, H.W. Lee, J.-O. Park, H.-K. Lee, J.H. Shin, **A comparative study of skin biophysical characteristics as cosmetic formulations within environmental changes**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Background: Skin conditions according to environmental changes are influenced by temperature and humidity. It is widely accepted that climate conditions especially affect skin surface properties and long-termly induce internal change of the skin. Several studies have reported about skin physiological parameters and their changes according to different environmental conditions. Moreover, there have been many skin cares and cosmetics to prevent or block skin surface from environmental changes. In the current study, we have investigated the skin properties on individually different formulations due to temperature changes to find useful formulation targeting on seasonal product. Methods: In order to check the skin condition according to the change in the external environment, the skin properties were measured through mechanical evaluation after applying the 5 different types of cosmetics which are silky, greasy, watery, hot, and cool. Experiments were carried out in a climatic chamber with independently controlled Ta and RH. The skin of volunteers was exposed for some minutes in variable atmosphere manner as follows general- (20- 24℃, 40-60%), cool- (14-16℃, 45-55%), and hot- (28 - 32℃, 40-60%) conditions. Results: Although skin hydration, trans-epidermal water loss (TEWL), sebum content, and skin pH measurement did not show any difference according to environmental change conditions, skin temperature revealed atmosphere temperature-dependent results in all formulations and erythema (skin redness) measurements showed differences depending on environmental change conditions. Hot product was most sensitive formulation with respect to sebum content, TEWL, skin pH, skin redness, and skin hydration. Greasy product was the stickiest in all environmental conditions, showing the level of high sebum contents and low skin hydration. Conclusion:

Taken together, these results demonstrated that skin biological properties are influenced by formulation type according to external changes. Therefore, we suggest that biophysical properties in accordance to environmental changes can be major seasonal consideration in the development of cosmetics.

Y. Zhong, X. Zheng, Q. Zhang, J. Liu, X. Wu, **The efficacy of the revitalizing oil cream in sensitive skin repairing**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The revitalizing oil cream is an innovative cream formula, up to 35% oil phase. The unique and critical dual-phase system is designed to efficiently delivery actives to the skin layers, which could quickly repair the skin barrier and improve the skin fatigue of aging, friendly to the sensitive skin. In this study, the in-vitro studies were assessed oil cream's protective effects against damaged skin. Notably, Oil cream effectively inhibited the inflammatory reactions via the down-regulation of the IL-1□, TNF-□, IL-6, and PGE2, caused by SLS-induced EpiKutis®3D epidermis models via ELISA, and protected the SLS-induced epidermis models by upregulating the expressions of filaggrin (FLG), Transgulataminase-1 (TGM1), and loricrin (LOR), which is known to decreased in damaged skin cells. The clinical result demonstrated that using oil cream for 4 weeks could effectively increase the hydration degree of cheek cuticle and reduce trans-epidermal water loss and skin redness. Additionally, the skin firmness and dermal thickness were significnatly improved. These evidences to confirm the oil cream can efficiently rapair the damaged skin, and concurrently improve the signs of skin aging.

M.S. Moon, J.Y Moon, J.E. Kim, D.S. Lee, B.R. Go, E.B Jang, S.A. Yoon, H.J. Hyeon, Y.-M. Ham, J.M. Kim, **Moisturizing effect of *Damnacanthus major* callus treated elicitor extract and containing formulations**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Plant tissue culture technology is one of the most effective production methods for uniformly mass-producing physiologically active substances throughout the year using plant cells and organs. Recently, a mass production system using a bioreactor is attracting attention as a method for reducing labor and production costs, which are disadvantages of conventional tissue culture. In this study, the optimal growth conditions for *Damnacanthus major*, a Jejuspecific plant, were established according to elicitor treatment. In addition, the moisturizing effect of *Damnacanthus major* callus extract and containing formulations was confirmed so that it can be applied to cosmetics using this.

Y. Zhou, P. Ma, X. Cai, L. Du, L., Shen, G. Huo, **A Clinical Study on the Efficacy of a Cosmetic Serum Containing Five Active Whitening Ingredients**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Facial pigmentation disorders and dull, dark skin tone are common complaints of women. Various whitening cosmetic products are developed to treat these problems. This study was conducted to evaluate the efficacy of a cosmetic serum containing five active whitening ingredients: glabridin, Cystoseira tamariscifolia extract, hydrolyzed conchiolin protein, phenylethyl resorcinol and niacinamide. Thirty-five healthy Chinese females, aged 25-55 years old, with mild-to-moderate pigmentation were enrolled in the 12-week, double-blind, single centre clinical study. Instrumental assessments, clinical evaluation and self-assessment were obtained at baseline, 2 weeks, 4 weeks, 8 weeks and 12weeks. Thirty-three subjects completed the entire study. After 12-week treatment, Mexameter MX18 results demonstrated a statistically significant decrease in melanin index (MI) value($p < 0.001$), and Colorimeter CL400 results demonstrated a statistically significant increase in L* value and ITA°value($p < 0.001$). VISIA-CR photographs demonstrated a statistically significant decrease in spots area ratio ($p < 0.001$). Clinical evaluation results showed a statistically significant decrease in brightness score($p < 0.001$) after 2 weeks and the score continued to decrease throughout the 12-week treatment. In addition, self-assessment showed a good satisfaction of the whitening efficacy. All these results proved the cosmetic serum has a good whitening efficacy in lightening skin tone and improving facial pigmentation.

*M. Zhu, W. Wang, H. Wang, T. Chen; X. Xue, D. Wang, S. Li, A. Stee*l, **A pilot clinical study to decode Chinese skin stabilization**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Skin stabilization is a rising topic in the recent years, but there is no clear technical interpretation of this term. To deeply understand this concept and thus guide cosmetics formula development, a pilot clinical and consumer hybrid study was conducted to decode the differences of clinicalsigns between unstable skin and stable skin, and the skin reaction upon real life external aggressors. Methods: 39 Chinese female subjects were totally recruited and divided into 3 groups: G1 ("frequently unstable skin"), G2 ("occasionally unstable skin") and G3 ("stable skin") by questionnaire. Then, they successively stayed in 3 real-life environments with different temperature and humidity to mimic external aggressors.

After staying in each environment, Skin properties were evaluated by dermatologist grading, instrumental measurement, and selfevaluation. Results: G1 showed higher ratio of sensitive skin, more unpleasant sensation, higher skin redness, higher TEWL, lower hydration and skin lightness compared with G2 or G3 at the baseline. In addition, external aggressors caused TEWL, hydration and redness change in all 3 groups and significant change in the skin lightness in G1 and G2. Conclusions: Clear trend on the different clinical signs such as hydration, TEWL, skin tone, etc. between stable skin and unstable skin was observed. External triggers such as temperature and humidity fluctuation can exacerbate skin reactivity. Most consumer self-perception on the unstable symptom was aligned with the clinical sighs.

L. Kakuda; L.N. Favaro, P.M.B.G. Maia Campos, **Benefits of formulation with Pequi Oil for the skin: a clinical study by instrumental measurements and sensorial perception**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

This study aimed to develop a minimalist serum formulation containing pequi oil and assess its immediate and short-term clinical efficacy and sensorial perception. A serum was developed with 3% pequi oil (F2) or not (F1). Twelve healthy female participants aged 22 to 30 were recruited for the clinical trial. Measurements of stratum corneum water content, transepidermal water loss (TEWL), sebum content, and skin microrelief were conducted on the frontal and malar before and after 2 hours and seven days (t7) of using the formulations. Porphyrin count and sebaceous gland activity were evaluated at t7. Results showed that F2 immediately reduced skin desquamation and TEWL and increased skin hydration. At t7, F2 maintained TEWL, improved skin hydration, reduced porphyrin and sebum content, and decreased sebaceous gland activity. This corroborates with the participant's perception, where they considered F2 easy to spread and reported reduced oiliness. These results suggest that the carotenoids in pequi oil and its oleic and palmitic fatty acids contribute to reduced sebum content and sebaceous gland activity. In conclusion, pequi oil improves skin barrier function and hydration and establishes a hydrolipidic balance.

G.F. Cadioli, P.M.B.G. Maia Campos, **Skin Hydrolipidic Mantle: Formulations Development based on Avocado and Sunflower Seed Oil and Clinical Efficacy Evaluation**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The hydrolipidic mantle of the skin is essential in maintaining hydration and cutaneous homeostasis. However, continuous exposure to exposome factors can disrupt this mantle and compromise the skin's barrier function. Thus, the development of cosmetic formulations containing biocompatible ingredients is essential for preserving the hydrolipidic mantle and skin physiology. In this study, moisturizing cosmetic formulations were developed, incorporating sunflower seed oil and avocado oil either individually or in combination. A 28-day long-term efficacy evaluation was conducted in terms of skin microrelief, transepidermal water loss, stratum corneum water content, as well as perceived efficacy in terms of hydration and oily sensation. Results demonstrated that the formulation with the synergistic combination of oils effectively protected the skin barrier, improved hydration, and reduced skin desquamation compared to the vehicle formulation and individual oil additions. In conclusion, the formulation containing both oils was more effective in protecting the skin barrier function, increasing skin hydration and improvement of skin microrelief when compared to the formulations containing the oils individually. These findings suggest that the ideal composition of fatty acids contributes to better outcomes when incorporating vegetable oils into cosmetic formulations.

F. Yi, X.-J. Kuang, G.-X. Lin, Y.-H. Liu, L. Geng, S.-Y Zhu, H. Liang, **The Chinese female facial skin database construction and utilization: Deciphering the Ageing status of Chinese sensitive females**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Objective: This study aimed to compare the Bowman questionnaire and the lactic acid tingling test for studying facial aging characteristics of sensitive skin in Chinese women. Additionally, it analyzed differences in facial skin characteristics and aging patterns between sensitive and tolerant populations using a database of 4 million non-invasive facial indicators. Methods: 1000 women aged 20-45 years participated in the study across 7 Chinese cities. The Bowman questionnaire and lactic acid tingling test were administered, and non-invasive instruments quantified all biophysical parameters. Detailed characterization of female facial skincwas achieved through multidimensional non-invasive assessment data. Results: The Bowman questionnaire effectively determined sensitive skin and yielded more statistically significant skin indicators compared to the lactic acid tingling test. The sensitive population exhibited lighter skin tone, higher total acne prevalence, and fewer pores and total pigmentation than the tolerant population. Aging trends classified the sensitive population into latent aging (20-28 years old), abrupt aging (29-33 years old), and accelerated aging (34-45 years old), each displaying distinct

skin characteristics. Conclusions: These findings on sensitive skin aging will inform the development of personalized and precise skincare product customization.

I.M. Yanuarti, J.A. Cita, A. Alvina, R. Pribadi, N.S. Safitri, N. Sami, M.A. Christianti, **Influence of Surface Treatment to Product Performance on Different Skin Type**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Introduction: Good product performance can help consumers to decide on their cosmetic purchase. Surface treatment of the filler in formulation affects powder product performance. The aim of this study was to design best performance of powder foundation formulation based on selection of suitable surface treatment of the filler for different skin type referring to consumer key parameters. Methods: In this study, 175 females were surveyed regarding their preference about important parameters of powder cosmetics. Filler and binder materials were evaluated with oil absorption capacity. The selected materials was evaluated based on the important product perfomances, were formulated and validated in 30 females using instrument analysis and self-assessment questionnaire. Results: Oil control, spreadability, blendability, skin attachment, and coverage are product performances mentioned based on questionnaire. Four surface treated materials with selected two different surface treatment were formulated and continued to the in vivo testing stage. Conclusion: Combination of Mica, Dimethiconol Stearate; Mica, Perfluorooctyl Triethoxysilane; Sericite, Perfluorooctyl Triethoxysilane; and Talc, Dimethiconol Stearate can improve product performance of powder foundation on different skin types. It was able to give good skin attachment, coverage, oil control, and moisture level control.

J*. Maeng, J. So, J. Lee, Y. Jeong, A. Jo, G. Nam*, **A comparative study on skin characteristic factors and skin biomakers that can be applied under harmful environmental conditions in targeting Korean women**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

In the environment of temperature and humidity change outside of body homeostasis, the skin not only affects the skin barrier function, but also increases the sensitivity to external stimuli increasing the possibility of skin damage and disease. In this study, Setting the apply condition to the subjects by a high-temperature drying environment was set using an infrared irradiator. In before and after setting condition, 44 Korean women in their 20's to 50's were selected and measured of skin characteristics and carbonylated proteins which stratum corneum tape stripping. Statistical analyzes were performed by SPSS. As a result of the study, most skin characteristics and skin biomarkers showed differences before and after harmful environmental preparation. There were differences in the factors that change the most by age group, and the factors were affected by harmful environmental conditions were selected by analyzing the correlation before and after applying the conditions. In the future, other skin biomakers analysis such as lipid analysis will be added to the results of this study to verify the correlation and then developed to be directly used in the development of skin index or skin clinical study.

C. Monastier, S. Mac-Mary, X. Wang, J.-M. Sainthillier, C. Fogelgesang, S. Remiot, M. Azzaoui, L. Li, **Assessment of the soothing and anti-ageing properties of a cosmetic cream**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The objective of this study was to assess the soothing and anti-ageing efficacy of a face care formula (containing an antioxidant & anti-inflammatory complex - niacinamide, madecassoside & *Tasmannia lanceolata* leaf extract associated with hydroxypropyl-tetrahydro-pyrantriol - ProxylaneTM). The study was conducted on the facial skin of 44 healthy Asian women, aged 25-45, with sensitive and reactive skin (reacting to low concentration of capsaicin), living in a polluted environment, presenting irritation and discomfort and who applied the tested product twice a day for 4 months in winter. Assessments (performed on D0, D28, D56, D84 and D112) consisted on Sensiscore questionnaire, capsaicin test, clinical scoring, self-assessment and capacitance measurement. A significant improvement of the skin's reactivity was observed on at least 80% of the women after 2 months of applications and 90% after 4 months as demonstrated by results from the Sensiscore questionnaire and capsaicin test. An improvement of the ageing signs and hydration was also demonstrated by results of clinical scoring, self-assessment and capacitance measurement. All the results confirmed that the cosmetic cream has a long-term efficacy with continued improvement and an increasing number of respondents in all criteria assessed, including neuro-sensitivity (despite a cold and polluted environment) and ageing signs.

E. Yamada, Y. Sudo, T. Matsuoka, R. Izumi, D. Takemoto, Y. Nakao, T. Izumo, M. Nakai, **Skin care habits influence on well-being indices such as interdependent happiness and life satisfaction with improvement in the skin conditions of middle and senior men**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

This study investigated, for the first time, the effects of skin care habits on the emotions and well-being states, in addition to changes in the skin self-sensations and the skin conditions of middle and senior men. In our study, seventy-one men (mean age: 53.3 years, age range 40-64 years) underwent skincare by applying a milky lotion-type sample on their face twice a day for 30 days. While the subjects' skin sensations, such as the brightness, dark spots, oiliness, gradually changed, their emotions and well-being indices were significantly changed by continuing the skin care habit. There were significant decreases in their negative emotions, and significant improvements in well-being indices, especially related to life satisfaction and cooperative relationships with those around them. There were also evident changes in visual inspection, and the comments from surroundings on their skin conditions changed better. Furthermore, the skin measurement indicators significantly changed. Recently, the diversity of people's lifestyles has been expanding, whereas the way we think about men's skincare has been changed and the men's skincare market has been growing. This study found that middle and senior men, experienced changes in their own skin sensations, and their mental changed positively and became cooperative with those around them through the skin care habit.

V.H. Pacagnelli Infante, R. Bennewitz, M.C. Meinke, **Human glabrous skin contains crystallized urea structures in the *stratum corneum* which affect the hydration levels: a pilot study**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

We recently discovered crystallized urea dendriform (CUD) structures located exclusively in the *stratum corneum* (SC) of glabrous skin which affects skin hydration levels. Here, we performed a pilot study with sixty participants where four anatomic positions were analyzed: index finger (IF), small finger (SF), tenar palm (PL) and index finger of left hand (IFL). We acquired images using laser scan microscopy (LSM) and measured the skin hydration by corneometry. One participant with CUD structures immersed the hand during 45 minutes in distilled water and images were acquired before and after 0, 2h and 48h from the experiment. The participants were asked about their cosmetic habits. CUDs were found in the *stratum corneum* of 45% of participants. The participants with a higher density of CUD exhibited lower skin hydration. The volume fraction of CUD increased again after 2h, recovering after 48 h. This pilot study confirms that the presence of CUD structures in the glabrous skin reduces the water binding capacity of urea and leads to dry hands. Mostly, participants with CUD did not apply creams with urea. These findings highlight a new direction in understanding the mechanisms leading to dry hands with opportunities for the development of better hand moisturizers.

C. Monastier, S. Mac-Mary, X. Wang, J.-M. Sainthillier, C. Fogelgesang, S. Remiot, M. Azzaoui, L. Li, **Clinical study evaluating the anti-ageing propertiesLof a cosmetic 'night' cream conducted on Asian skin for one year**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Time but also the numerous external aggressions that the skin must face every day are responsible for the appearance of ageing signs. These marks are constantly evolving over time and some are likely to become more pronounced during the various seasonal changes. Physiologically to address them, skin protects itself all day and switches into "recovery mode" during the night. The aim of the study was to evaluate the global anti-ageing efficacy of a cosmetic "night" cream on Asian women during a year-long study taking into account seasonal changes. The study was conducted on 46 women, aged 40-65 presenting ageing signs that applied a neutral moisturizing cream every morning and the tested product each evening for 1year. Assessments were performed at D0, D28, D84, D180, D270 and D365 and consisted of clinical scoring, self-assessment, corneometry, Visia®-CR, ultrasound imaging and cutometry. The global anti-ageing efficacy was demonstrated by following the Clinical scoring Index with a significant improvement on all the women after only 1 month. A significant improvement of each item assessed by clinical scoring and self-assessment was observed after 3 months and remained for 12 months, and this in spite of seasonal changes and pollution.

N. Kaul, B. Drewitt, S. Raju, E. Kohoot, **Evaluating efficacy and tolerability of two doses of herbal dietary supplements use on aging hair, skin and nails in a 12 week clinical trial**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Visible effects of aging include (lines and wrinkles, dullness, loss in radiance) on skin (reduced strength, rough texture, decreased lustre, brittleness, overall dull appearance) of hair and (dullness, brittleness, and less growth) of nails. For sustainable youth, countering the effects of aging, besides cosmetics, that act from outside in, dietary supplements (DS) are gaining attention rapidly, with an increased demand for "beauty from within" products. Topically applied cosmetic products often fail to reach the deeper layers of the skin in order to causally affect or impact lasting influence of skin, hair, and nail aging process. Goldstein Research estimated this (DS) market to reach $6.8 billion by 2024. Dietary supplements tested in this clinical study contained ancient Indian herbs: Amla (Phyllanthus

Emblica); Haritaki (Terminalia chebula) and Bahera (Terminalia bellirica) all well known in Ayurveda, for imparting multiple benefits - antioxidant, anti-inflammatory, anti-microbial, rejuvenating, and promoting overall health.

S. Arandas, Monteiro e Silva, L. Moretti Aiello, R. Ferreira Magalhães, G. Ricci Leonardi, **Cutaneous Biophysical Characterization of Senile Skin**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Aging is a set of irreversible and unavoidable physiological changes, accompanied by a change in the normal functioning of the organism. Skin aging participates in the involutive changes that occur in the individual in an icy way. Intrinsic aging is characterized by decreased functional capacity, increased susceptibility to certain diseases and environmental aggressions, and is suffered by all body tissues. The most noticeable changes in the skin are flaccidity, increased deepening of expression wrinkles and dryness. On the other hand, the so-called extrinsic aging can be conceived as a result of several factors, such as: sun exposure, and it overlaps with intrinsic aging. The appearance of the skin can vary between individuals and is dependent on the degree of melanization, individual predisposition, frequency and duration of exposure throughout. As a result of this type of aging, there is a thickening and dryness of the skin and the formation of deep wrinkles, telangiectasials and other benign, premalignant and malignant lesions. It is interesting to note that while intrinsic aging is perceived in areas little exposed to radiation, extrinsic aging occurs in highly exposed areas, such as the face, neck and hands.

R. di Lorenzo, L. Ricci, T.di Serio, F. Forgione, A. Sacchi, S. Laneri, **Innovative 2D and 3D analysis to assess lips volume boosting and lip line mouth-filling redesign, related to lip plumpers applications or lip augmentation techniques**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Throughout the last half-century, the chase for full, plump lips has increasingly gained importance. An increasing number of people undergo procedures to obtain an attractive appearance with a natural three-dimensional enhancement of lips' volume, and well-defined vermilion borders. Several lip augmentation techniques are known, but only few studies properly analyze how they enhance the three-dimensional lip's structure. This study aims to establish a quantitative analysis for lips augmentation and assess the efficacy of lip plumpers through stereophotogrammetry by comparing lip dimensions of subjects treated with a commercial lip plumper. Specifically, lip dimension was assessed through multi-spectral imaging with VISIA 7th, while lips' volume and shape were analyzed using VECTRA H2 markerless tracking technology and 3D interpolating surface method. Finally, lips' youth fullness was also determined through evaluation of the moisture level, softness, firmness, and tissue density. Demand for lip augmentation is rising because of its quick recovery and low danger. Thus, the efficacy in promoting lip augmentation has to be demonstrated with significant and reproducible results. The applied techniques suggest that 3D and 2D stereophotogrammetry represent reliable techniques for the routine evaluation of the lips' size before and after lips' augmentation techniques, obtained with both cosmetics and aesthetic procedures.

S. Bom, P. Pinto, H.M. Ribeiro, J. Marto, **A step forward in Personalizing Beauty: the effect of 3D-printed skincare masks' design on hydration performance**, Podium presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Personalized beauty is on the rise in the cosmetic industry, with 3D printing offering the ability to customize skincare products to individual needs. Therefore, this work aimed to demonstrate the relevance of using printing design settings as personalizing features to customize the hydration performance of hydrogel-based skincare masks. Three-layered gelatin-based hydrogel patches were printed by an extrusion-based 3D printer (Allevi2, Allevi, USA). To evaluate the effect of the patch's design on hydration performance, occlusive and porous patches were applied to the ventral side of the forearm of healthy volunteers (n=10) under no-occlusion (4h) and under occlusion (24h; plastic occlusion stress test, POST). Hydration and transepidermal water loss (TEWL) were assessed using Corneometer® CM 825 and Tewameter® TM 300 devices, respectively.The data obtained show that the occlusive patches increased moisture content by 108.85%, while the porous patches increased it by 45.38%. TEWL results showed a higher variation for the occlusive patch, whereas the porous patch reduced TEWL by -9.96% after 4h. POST analysis further suggests that the porous patch retained a higher amount of water on the skin surface. Overall, the masks' internal geometry impacts the hydration performance, which can be linked to the skin occlusion degree induced by design.

A. Graça, P. Pinto, S. Raposo, H.M. Ribeiro, J. Marto, **Maintaining skin beauty while being protected: *In vivo* studies on innovative NADES-based sheet-mask to prevent skin lesions caused by PPE,** Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Prolonged and continuous use of personal protective equipment (PPE) exert sustained pressure, tension, and friction on the skin causing lesions, as reported during pandemic times. The present study aims to evaluate the efficacy of a gelatin-based sheet-mask to place underneath the PPE mask to attenuate skin damage provoked by the PPE. The proof of the efficacy of the hydrogel sheet-mask, when used underneath a FFP2 mask for 4 hours, was assessed by *in vivo* biometric studies using 10 healthy volunteers. Facial skin temperature, skin surface, transdermal water loss (TEWL), sebum level, and finally red spots were evaluated using biometric equipment. In addition, a well-being questionnaire was given to each participant. The results showed an overall slight decrease of the facial temperature and TEWL, an increase in hydration ($p < 0.05$), the sebum level maintained ($p > 0.05$), and the red spots decreased over 20%. Regarding the questionnaire, 90% of the participants said that they would buy the product since an attenuation of the skin lesions symptoms was felt. The developed hydrogel sheet-mask may be a simple yet efficient strategy to prevent pressureinduced skin lesions, keeping the facial skin healthy without compromising the protection given by the PPE.

M.L. Mourelle, C.P. Gómez, M.E. Ordoñez, J.L. Legido, **Efficacy assessment of honeybee-based natural cosmetic products**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The aim of this work is to assess the efficacy of five natural cosmetic products composed by ingredients derived from bees, mainly honey, but also include pollen and beeswax. The study was carried out with 60 individuals separated into two groups in which different cosmetics were evaluated. It was necessary to apply some inclusion and exclusion criteria to be able to participate in the study. Two types of evaluations were done, a sensory test and a biometric evaluation. For this evaluation, the equipment used was the Cutometer MPA580 and corneometer CM825 and sebumeter SM815 probes the Courage-Khazaka, analysing hydration, sebum content, and elasticity before and after the use of the cosmetic. Improvements were obtained both in hydration and sebaceous regulation of the studied products. Likewise, there was a great acceptance of the products in the sensory test.

J.L. Viladot, P. Guardeño, G. Mola, S. Méndez, R. Delgado, M. Ruffing, **Designing cosmetotextiles for efficacy**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Cosmetotextiles are garments designed to confer a cosmetic benefit to the user by releasing active ingredients from the cloth to the user's skin. To place a durable cosmetic active ingredient able to resist washing process, while being readily released upon use is a technical challenge. In this poster we present a rationale to calculate the necessary dose of active considering these parameters: durability upon washing, kinetic release to skin during use and others such as fabric's properties and application protocol. Accordingly, we have designed in our group a series of microencapsulated cosmetic active ingredients for different purposes (moisturizing, slimming, and others). The *in vivo* tests performed with these microcapsules, which are presented here for the first time, demonstrate the efficacy of these microcapsules and the validity of this rationale.

I.M. Yanuarti, A. Alvina, J.A. Cita, M.A. Christianti, N.S. Safitri, R. Pribadi, **In Vivo Evaluation (Clinical and Instrumental) Study of Efficacy of The Selective 'Triple Action Sebum Control' Agents in Pressed Powder Formulation on Indonesian Oily Skin**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Introduction: Porous silica, niacinamide, and zinc gluconate are well known as sebum control agents with different mechanisms. Porous silica absorbs non selectively to facial liquid including sebum and moisture, while niacinamide and zinc gluconate acts selectively to control sebum. The aim of this study was to attain superior efficacy of their combination as 'Triple Action Sebum Control' in powder formulation for oily skin without causing skin dryness.Methods: Pressed powder formulations containing 'Triple Action Sebum Control' which consisted of porous silica (1%), Niacinamide (3%), and Zinc Gluconate (0.5%) was studied in 30 healthy oily skin volunteers. In vivo test was conducted using Sebumeter and corneometer to measure the sebum and moisture level of subjects compared to untreated. Results: Based on in vivo test results, the 'Triple Action Sebum Control' formulation is proven more effective in maintaining sebum level by -12.14% compared to untreated and increases skin moisture by 33.48% compared to baseline after 6 hours. Conclusion: The superior efficacy of the 'Triple Action Sebum Control' through three different sebum control pathways was achieved. Also skin's moisture level value isimproved during product use.

T. Martínez-Valverde, E. Suñer, **Preclinical and Clinical Determination of the Synergistic Action of a Hyaluronic Acid Complex and a Plant Proteoglycan**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Facial aging is a multifactorial process whereby intrinsic and extrinsic factors lead to a

progressive loss of skin structural integrity and physiological function. We designed a product combining 2.5% of a 5-type HA complex, that acts on different skin layers, and a proteoglycan.The HA synthesis increase was tested *in vitro*. Skin hydration and firmness was evaluated objectively in a clinical trial under dermatological control on 30 volunteers for 56 days. 24-hour hydration kinetics were done after the first application. Cells treated with the combination of actives synthesized 3 times more HA than the treated without proteoglycans. *In vivo*, the first application resulted in a moisturizing effect of 88%, 39%, and 31% after 1, 8, and 24 hours, respectively. Continuous application increased skin hydration to 21% after 28 days. Images showed wrinkles reduction and rejuvenation effect. The dermatologist did not observe any skin reactions. A high percentage of volunteers reported that cosmetic qualities were very good. In conclusion, the HA complex was synergistically enhanced by proteoglycans. Its antiageing effect was demonstrated *in vivo* by an increase in skin moisturization and an improvement in overall facial skin appearance, with good skin tolerance. These results are in keeping with previously published studies.

C. Okamura, S. Imamura, T. Tsuji, Y. Tanaka, K. Watanabe, K. Mizuno, K. Kajiya, **Beyond holistic beauty, towards beauty wellness: A novel approach to evaluate the skin condition of healthy women based on comprehensive physical and mental indices**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

A healthy body and mind are essential for realizing skin beauty. With tremendous advances in data science technology, we attempted to reveal skin-body-mind interactions through a comprehensive analysis by excluding the effect between each index. Data were collected from healthy Japanese women (20-40 years old). Their cheeks were evaluated using skin measurements, and physical and mental indices were also measured. Finally, we successfully developed skin prediction models for each feature, and skin-related candidates for the physical and mental indices comprised the degree and direction of contribution. Some candidates are reasonable when we consider their roles or our daily experiences. Surprisingly, relationships were also identified. Grip strength and low-density lipoprotein (LDL) cholesterol levels are positively related to skin beauty. We conducted this research with a systematic view of ourselves, and it is not overstated to claim that we imitated human organisms from a skin beauty perspective through comprehensive data analysis. Our study quantitatively revealed the significance of physical and mental well-being in skin beauty and provided recommendations for adopting holistic beauty solutions. These will be incorporated into personal holistic beauty proposals; furthermore, they will penetrate daily life, accelerating well-being.

S. Ding, X. Sun, Y. Yu, C. Liu, **Combinatorial application of liquid crystal emulsion and glycosyl glycerol for improvement of skin elasticity, roughness, trans epidermal water loss and hydration**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Liquid crystal skin care products are widely used in cosmetics field because of their good skin affinity, unique optical characteristics, excellent water locking and moisturizing, control ability in active substances slow-releasd and other advantages. glycosyl glycerol is a glycoside compound formed by the connection of glycerol molecules and glucose molecules through glycosidic bonds. It can balance cell osmotic pressure and maintain cell survival under adverse environmental conditions. In this study, we developed a cream with liquid crystal structure using glycosyl glycerol as main active ingredient and evaluated its effects in skin care on 33 males or females between 30-65 years old with rough and dry skins and wrinkles around their eyes. The combinatorial creams showed statistically significant efficacy for the improvement of skin elasticity, roughness, trans epidermal water loss and hydration. Through self-evaluation from the subjects, facial dry lines, fine lines, moisture, elasticity and other aspects had obvious improvements. The efficacy results showed that this combinatorial application was a outstanding method for skin care, especially in anti-aging area to improve skin elasticity, roughness, trans epidermal water loss and hydration.

J. Park, Y, Jang, E. Lee, J. Ha, **Who ages faster? Men or Women: A study on the skin characteristics of male versus female with age-specific of comparison**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The global male cosmetic market has growing rapidly. However, research on male skin is relatively limited compared to female, despite the increasing need for personalized cosmetics and anti-aging products for men. Previous studies have mainly focused on comparing male and female skin without considering age-related changes. The objective of this study is to investigate the specific clinical characteristics of skin aging in Asian males and females in their 30s to 40s. This study conducted on 63 Korean male and 79 Korean female between the ages of 30 and 49. The subjectswere classified by their age and gender: 30-39 years old male, 30-39 years old female, 40-49 years old male, and 40-49 years old female. In male skin, wrinkle, skin color, spot, glossiness which known as major sign of

photoaging, were significantly changed by aging but those parameters were not in female skin. While, TEWL and hydration level of the female skin significantly changed by aging but not in male skin. Male experiences a significant deterioration of skin aging parameters even in middle age, because their less cosmetic use habit and negligence in using sunscreen.

K. Zhou, Q. Wu, B. Wang, F. Wang, **Efficacy of An Anti-ageing Treatment Serum Formulated by Targeting to Multiple Pathways Throughout Skin Layers**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

A novel treatment serum targeting multiple pathways in the anti-ageing cascade throughout epidermis, dermis and hypodermis was developed. The *in vitro* test was performed using a reconstructed human epidermis to determine the repair of skin barrier and down regulation of MMPs. A 4-week single center *in vivo* study was conducted in 30 female volunteers with a lactic acid irritating test as exclusively screening for sensitive skin subjects. The *in vivo* results showed significant improvement in visible signs of facial skin ageing, including skin hydration, skin elasticity, and skin texture. The skin conditions of subjects were assessed and rated by a dermatologist as well, which indicated overall fine line, skin hydration, smoothness, radiance and skin pore were all remarkedly improved. 100% of the subjects agreed that the designed serum could relieve skin and be efficient for anti-wrinkle. A human patch test performed in 30 Chinese volunteers showed no irritation case. This formulated serum was demonstrated as mild to skin and beneficial to reduce visible signs of skin ageing.

C.R.F. Souza, P.M.B.G. Maia Campos, L. Kakuda, S.A.M Silva, **Reflectance confocal microscopy to evaluate the efficacy of moisturizing cosmetic products**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Moisturizers are essential in the skincare routine and have a wide range of applications and advantages for various dermatological problems that reflect the underlying effect of dryness. Reflectance confocal microscopy (RCM) imaging technique is an important tool to evaluate skin hydration in deeper skin. Thus, the objective of this study was to evaluate the clinical efficacy of moisturizing cosmetic formulations by RCM imaging analysis. A clinical efficacy study of a gel formulation containing different humectants in combination, propanediol at 15% and glycerin 5% or propanediol 15%, butylene glycol 5%, and glycerin 5% was carried out by RCM to evaluate the epidermis layers thickness, interkeratinocyes reflectance in the granular layer, and epidermis layers morphology. The studied formulation was applied once a time in the skin of the volar forearm and the measurements were performed before (T0 – baseline) and after the 2 hours (T2). The results showed immediate effects in the improvement of skin hydration after application of the formulations with the humectants in combination when compared to baseline values. Finally, RCM is a very important technique for proving the clinical efficacy of cosmetic products, showing the benefits of the formulations not only on skin surface but also in skin deeper layers.

P.M.B.G. Maia Campos, L. Kakuda, C.R.F. Souza, **A Cosmetic formulation with Brazilian berry extract improves skin morphological characteristics and hydration: a clinical study by reflectance confocal microscopy**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The skin hydrolipid balance is essential to maintaining the physiological conditions of the skin. Natural extracts with antioxidant properties can accelerate cell renewal and keep the skin in good condition. In this context, the Brazilian berry (*Plinia cauliflora*) extract, rich in polyphenols, presents antioxidant effects and can contribute to restoring and maintaining the skin barrier. Thus, the objective of this study was to evaluate the clinical efficacy of a cosmetic formulation containing Brazilian berry extract in improving skin morphological characteristics and hydration. A gel formulation containing or not (vehicle) 2% of the extract was developed, and a clinical study using Reflectance Confocal Microscopy (RCM) was carried out to evaluate the skin morphological characteristics. In addition, skin hydration, microrelief, and TEWL were evaluated. The studied formulation showed a significant increase in the stratum corneum water content, reduction in TEWL and an improvement of skin microrelief after 45-day period of application. RCM imaging analysis showed that the formulation containing the extract improved the skin hydration in the viable epidermis due to an increase of interkeatinocyes reflectance in the granular layer after the treatment period. Finally, the results showed the benefits of Brazilian berry extract for improving and maintaining skin physiology.

Y. Yu, S. Li, S. Ding, K. Yang, C. Liu, **Study on the effect of facial mask preparation of sulfated fucan combined with sodium hyaluronate on sensitive skin**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Objective: To study the efficacy of the mask prepared by sulfated fucan and sodium hyaluronate

on sensitive skin. Methods: In vitro experiments, L929 Mouse Fibroblasts Cells scratch method, HaCaT cell viability assay and inhibition of inflammatory factors release induced by LPS from RAW264.7 cell. In humans, a single-center open, 4-week continuous before and after control experiment was conducted. 32 sensitive skin subjects used the facial mask three times a week. After 4 weeks , the repair efficacy can be verified by means of instrument test and before and after control. Results: After 24h of cell scratch culture, 0.1% and 1% sample groups all had a certain effect on promoting the healing of the scratch area. The 0.01%, 0.1% and 0.5% sample showed no toxicity to HaCaT cell, and 0.5% concentration had the best effect on cell proliferation. 0.001% of the samples had a better effect on inhibiting the release of inflammatory cytokines IL-β and IL-6. After 4 weeks, compared with before use, the increase rate of skin moisture content in the test area was 13.87% *(P*<0.001) , the reduction rate of TEWL value was 16.21% (*P*=0.001), the reduction rate of a* value was 10.20% (*P*<0.001) and the reduction rate of EI value was 8.13% (*P*<0.001). More than 90% of the subjects were satisfied with improvement of skin redness, itchiness, tightness, stinging, hot and dry, agreed that the test samples were mild and non-irritating. Conclusion: The facial mask has a good effect of anti-inflammatory, moisturizing, promoting skin barrier repair and relieving facial redness.

M. Komoto, K. Toya, K. Yashiki, S. Hayashi, H. Iwahashi, Y. Hashii, A. Kiso, Y. Kawashima, **Healthy skin increases mental positivity and boosts self-confidence - Saxifraga Sarmentosa Extract: a multifunctional acne-clearing material that benefits the skin and state of mind**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Acne vulgaris (acne) is a common skin concern that causes not only physical problems but also negative psychological effects. In our previous study, Saxifraga Sarmentosa Extract (SSE) suppressed Toll-like receptor (TLR) 2 expression in keratinocytes, indicating its potential to treat acne. This study aimed to evaluate the effects of SSE in a clinical trial. Treatment of 100 µg/mL SSE lotion for 8 weeks reduced the number of comedones, improved the ratio of stratum corneum water content/transepidermal water loss, and increased positive responses to the skin condition questionnaire. Furthermore, we focused on the relationship between acne and psychological stress and investigated the mechanisms by which SSE improves acne *in vitro*. SSE suppressed cortisol-induced upregulation of TLR2 mRNA expression, suggesting that SSE may act in stressful, acne-prone situations. In addition, SSE showed various effects that contributed to acne and skin condition improvement, such as the suppression of inflammation in response to palmitic acid stimulation and the promotion of the expression of factors related to skin hydration and barrier function. In conclusion, SSE is a multifunctional acne-clearing material that has the potential to positively affect people's minds through acne improvement.

A.P. Fonseca, C. Dal Pizzol, A.C. Vanzo, G.H. da Silva, G. Facchini, A.L. Tabarini Alves Pinheiro, S. Eberlin, P.M.B.G. Maia Campos, **Antiaging effects of a skin care formulation containing nanoencapsulated antioxidants: A clinical, in vitro, and ex vivo study**, J Cosmet Dermatol. 2023

The development of effective cosmetic products for the reduction of the signs of skin aging is a complex process which requires an optimized combination of ingredients and specialized systems to deliver the actives to the skin layers. Aim: To evaluate the tolerance and antiaging clinical efficacy of a cosmetic formulation containing a blend of nanoencapsulated antioxidants: ascorbyl palmitate, resveratrol, tocopherol, caffeine, carnosine, and niacinamide. Methods: Clinical efficacy was determined by subjective and instrumental analyses of collagen synthesis by fluorescence spectroscopy, by three-dimensional imaging analysis of suborbital edema, and by analysis of skin hydration and sebum content by biophysical techniques — Corneometer® and Sebumeter®. Results: The studied formulation was safe and effective for the improvement of skin appearance by increasing collagen synthesis and skin moisturizing and by reducing facial blemishes, swelling, and oiliness. A preclinical exploratory approach using an experimental model of human cell and skin cultures agreed with the observed antiaging effects, identifying mechanisms related to the containment of oxidative stress, reduction of melanin production, increased synthesis of type I procollagen, and regulation of the epidermal cohesion protein filaggrin. Conclusions: The skin benefits obtained resulted from the combination of the ingredients in the formulation and the nanoencapsulation-based delivery system, which favors the solubility, safety, efficacy, and bioavailability of the preparation to the skin.

J.V. Gruber, N. Terpak, J. McCormack, S. Massard, A. Schwartz, C. Lyon, **Jojoba Oil Esters – Ease inflammation, sensitivity and water loss,** Cosmetics & Toiletries September 2023

Recent climate change has triggered significant heat-related events including water shortages and even severe droughts throughout the world. This has brought profound attention among other concerns, the need to focus carefully on pragmatic use and careful management of precious water resources.

Y. Jiang, J. Wu, **Study on the Anti-Aging Effect of HyaInno™ ACE Sodium Acetylated Hyaluronate on Asian and Caucasian Subjects**, Poster T.S. Biotech Co., 2023

Skin aging is characterized by thinning of epidermal thickness, flattening between epidermis and dermis, degradation of subcutaneous tissue. According to the market survey, it has been found that people over 40 years old have a stronger consuming power on medical cosmetology, and the anti-aging and wrinkle-removing projects have grown rapidly. As a global leading biotechnology innovator, TS-Biotech links white technology to ingredient solutions and serve the health and personal care industries.

D. Kerob, A. Czermanska, E.M. Karamon, A. Moga, G. Lecerf, M. Nioré, G. Le Dantec C. Le Floc'h, J. Tan, **A Dermocosmetic Signifcantly Reduces the Frequency and Intensity of Facial Skin Intolerability and Sensitivity in Subjects with Skin Intolerant to Skin Care Products and Sensitive Skin**, Clinical, Cosmetic and Investigational Dermatology 2023:16 p. 1787–1794

Introduction: Intolerance to dermocosmetics is frequent in subjects with allergic contact dermatitis (ACD). A dermocosmetic (DC) was developed to restore the natural skin barrier, to reduce skin inflammation and to improve sensitive skin in ACD. Objective: To assess the beneft of a DC in subjects with an allergic background and intolerance to cosmetic care, or with sensitive skin. Materials and Methods: In this open-label study, 107 subjects above 16 years of age applied DC on the face twice a day for 28 days. Assessments at Days 0, 14 and 28, included skin sensitivity, stinging test, local tolerance, transepidermal water loss (TEWL), skin hydration, inflammatory biomarkers (IL-1α, IL-1RA, PGE2) using tape stripping and subject satisfaction. Results: 88% were women and mean age was 42.0±15.0 years. Skin sensitivity at inclusion scored 5.9±0.35; 46% had ACD, 95% skin irritation, 92% sensitive skin and 88% intolerance to cosmetics. A signifcant ($p<0.0001$) 85% decrease of frequency and intensity of the composite score was observed at both endpoints. Stinging scores signifcantly ($p<0.0001$) decreased from 3.9 at baseline to 2.4 at Day 14 and 1.4 at Day 28; 77% and 81% of subjects reported improved skin reactivity at Day 14 and Day 28, respectively. Similar improvements were noted in the frequency and intensity of irritation, erythema, stinging, burning and discomfort. TEWL, skin hydration and inflammatory biomarker levels signifcantly ($p<0.0001$) improved. Overall subject satisfaction (85%) and tolerance (investigators: 99%, subjects: 97%) were high. Conclusion: DC signifcantly reduced the frequency and intensity of facial skin intolerability and sensitivity in subjects with skin intolerant to skin care products.

S. Cestari, P. Correia, D. Kerob, **Emollients "Plus" are Beneficial in Both the Short and Long Term in Mild Atopic Dermatitis**, Clinical, Cosmetic and Investigational Dermatology 2023:16, p. 2093–2102

Introduction: Atopic dermatitis (AD) is a chronic relapsing disease with a pathophysiology including skin barrier damage, microbiome disbalance and inflammation. Classically, emollients maintaining a healthy microbiome are recommended as the basis of any AD severity management. Objective: To assess the benefit of a light balm containing vitamin E, tocopherol and glycerine and enriched with Aqua posae filiformis and microresyl (Emollient+) in subjects with mild AD over a period of 168 days. Materials and Methods: For this open-label study, subjects above 3 years of age with mild and stable AD for at least 6 months before inclusion and with a SCORAD score of < 0.05) improved at D28. At D168, SCORAD, signs and symptoms had significantly (all $p < 0.05$) improved in the global, adult and paediatric population at D168 compared to baseline. So did flares, skin hydration and QoL. The regimen was very well tolerated. Conclusion: Emollient+ is highly beneficial and well tolerated in mild AD with early benefits in improving AD signs and symptoms and skin hydration as well as the QoL of subjects as soon as D28.

J. Blaak, D. Dähnhardt, S. Bielfeldt, C. Theiss, I. Simon, K.-P. Wilhelm, S. Dähnhardt-Pfeiffer, P. Staib, **Improvement of Human Epidermal Barrier Structure and Lipid Profile in Xerotic- and Atopic-Prone Skin via Application of a Plant-Oil and Urea Containing pH 4.5 Emulsion**, Cosmetics 2023,10, 95

Epidermal barrier dysfunction can lead to xerotic skin and promote skin disorders like atopic dermatitis. Atopic skin is characterized by reduced water-retaining compounds, altered lipid composition and elevated skin pH. Against this background, a study was conducted to investigate the impact of a specific skin care product on epidermal barrier function in dry and atopic-prone skin. A marketed pH 4.5 cosmetic formulation containing 10% urea and specific plant oils was evaluated on 25 subjects with dry and atopic-prone skin. Measurements of skin hydration, pH, and barrier function were performed before and after 3 weeks of product usage. Additionally, visual scoring and stratum corneum lipid analysis using electron microscopy were conducted to investigate lipid composition. An improved skin hydration compared to the untreated area and a tendency to decrease the baseline elevated skin surface pH were observed. The visual scoring showed reduced dryness, roughness, and tension through the application. Furthermore, the stratum corneum lipid matrix was improved in terms of lipid content and organization.

The combination of an acidic product's pH, a relevant urea content and effective plant oils is shown to be beneficial in terms of improving the skin barrier function, structure and appearance and is recommended for dry and atopic-prone skin.

G.-H. Park, H.H. Kwon, J. Seok, S.H. Yang, J. Lee, B.C. Park, E. Shin, K.Y. Park, **Efficacy of combined treatment with human adipose tissue stem cell-derived exosome-containing solution and microneedling for facial skin aging: A 12-week prospective, randomized, split-face study**, J Cosmet Dermatol. 2023;22: p. 3418–3426

Background: Studies have reported promising results of mesenchymal stem cell therapies for skin aging. However, in the use of mesenchymal stem cells, some drawbacks including rarely possible tumorigenicity and low engraftment rates have limited their widespread clinical use. Adipose tissue stem cell-derived exosomes (ASCEs) are emerging as effective cell-free therapeutic agents. Aims: It was evaluated the clinical efficacy of combining the application of human ASCE-containing solution (HACS) with microneedling to treat facial skin aging. Methods: A 12-week, prospective, randomized, split-face, comparative study was conducted. Twenty-eight individuals underwent three treatment sessions separated by 3- week intervals and were followed up for 6□weeks after the last session. At each treatment session, HACS and microneedling were administered to one side of the face, and normal saline solution and microneedling were administered to the other side as a control. Results: The Global Aesthetic Improvement Scale score was significantly higher on the HACS-treated side than on the control side at the final follow-up visit (p=□0.005). Objective measurements obtained by different devices including PRIMOS Premium, Cutometer MPA 580, Corneometer CM 825, and Mark-Vu confirmed greater clinical improvements in skin wrinkles, elasticity, hydration, and pigmentation on the HACStreated side than on the control side. The results of the histopathological evaluation were consistent with the clinical findings. No serious adverse events were observed. Conclusions: These findings demonstrate that combined treatment using HACS and microneedling is effective and safe for treating facial skin aging.

A. Płatkowska, S. Korzekwa, B. Łukasik, N. Zerbinati, **Combined Bipolar Radiofrequency and Non-Crosslinked Hyaluronic Acid Mesotherapy Protocol to Improve Skin Appearance and Epidermal Barrier Function: A Pilot Study**, Pharmaceuticals 2023, 16, 1145

Background: Age-associated changes in epidermal hydration, pigmentation, thicknessand cell renewal influence skin appearance and can lead to laxity, dryness and poor skin tone. The aim of this pilot study was to assess the synergistic effects of a new bipolar radiofrequency plus non-crosslinked hyaluronic acid (HA) mesotherapy protocol compared with radiofrequency alone on skin appearance and markers of epidermal function. Methods: This prospective, singlecenter, split-face pilot study recruited women aged 25–65 years with dryness and laxity of the facial skin defined by a trans-epidermal water loss (TEWL) value of ≥26 g/m2/h. Subjects were treatedwith a bipolar radiofrequency device on both sides of the face. This was immediately followed byneedle hyaluronic acid (HA) treatment on one side of the face with 2.5 mL of a non-crosslinked HA. Photographic documentation, analysis of epidermal barrier function parameters, and highfrequency (HF) ultrasound analysis were performed prior to treatment and at 28 days. Results:Twenty female subjects with a mean age of 46 (range 29 to 54) years and dry and lax facial skin were included. TEWL was reduced and skin hydration improved to a greater extent with the combinedradiofrequency plus mesotherapy protocol compared with radiofrequency alone (-5.8% vs. +3.9%and +23.1% vs. +1.0%, respectively). The combined protocol was also associated with greaterimprovements in melanin (-7.5% vs. -1.5%) and erythema values (-7.2% vs. +3.0%), respectively. Ultrasound measures of epidermal thickness and epidermal density were greater after the combinedprotocol compared with radiofrequency alone (12.0% vs. 5.6% and 57.7% vs. 7.1%, respectively). Both treatments were well-tolerated. Conclusions: The combined bipolar radiofrequency and HA mesotherapy protocol provided greater improvements in skin hydration, firmness and tone compared with radiofrequency alone. The combination treatment was also associated with greater epidermal thickness and density and increased keratinocyte differentiation suggesting a synergistic effect of both treatments on epidermal homeostasis and barrier function. Both treatments were well-tolerated and led to improvements in facial appearance.

A. Fitzner, K. Knuhr, M. Brandt, S. Bielfeldt, **Investigating the effect of the pH of foot care product formulations on pedal skin in diabetic and non-diabetic subjects**, Int J Cosmet Sci,.2023 Aug;45(4): p. 524-538

Objective: The use of skin care formulations with acidic pHs is seen as an effective method to maintain the acidic mantel of the skin; however, because the skin pH varies depending on the area of the body and as data are lacking for the skin pH of the feet, there was a need to examine whether this assumption holds true for skin care formulations designed for the foot. Thus, three foot creams

formulated with a neutral, acidic or alkaline pH were compared with each other as well as to an untreated control group in order to analyse their impact on skin pH, hydration and general skin condition. Methods: An exploratory clinical investigation with 60 enrolled subjects, half of whom had a diagnosis of diabetes (type 1 or type 2), was undertaken. The investigation followed a randomized, double-blind, balanced incomplete block design (BIBD) including intra-individual comparison (before and after treatment). Evaluations of skin pH and hydration were carried out using a pH meter and a Corneometer respectively. Objective evaluation of skin condition for efficacy assessment was performed by a trained grader. For tolerability evaluation, objective and subjective dermatological assessments were performed. Results: At the end of the treatment period, the skin pH was largely unchanged at five out of six of the test areas, with the mean value for each treatment group using test products showing similar fluctuations as the untreated control group. Furthermore, the skin condition parameters studied all improved by a comparable magnitude for each of the treatment groups using the test products, whereas the untreated control group experienced a worsening of the skin condition parameters. Conclusions: The results of this investigation suggest that where the skin of the foot is concerned, the pH of skin care formulations has no (physiologically) relevant influence on the skin's pH in either diabetic or non-diabetic subjects. Furthermore, the expectation that acidic formulations would be more beneficial for the skin's condition was not found to hold true for the skin of the foot, as no significant difference was observed between the performance of the three test products investigated in this study.

H.M. Shoaib Khan, N. Tanveer, T. Arshad, F. Rasool, M.N. Uddin, M. Kazi, **Encapsulation of alpha arbutin, a depigmenting agent, in nanosized ethosomes: Invitro and invivo human studies**, Heliyon 9 (2023) e19326

Alpha arbutin is a skin-whitening agent in cosmetics. Structurally, it is 4-hydroxyphenyl-¤-glucopyranoside. Ethosomes encourage the formation of lamellar-shaped vesicles with improved solubility and entrapment of whitening agents. The objective of this study was to fabricate an optimized nanostructured ethosomal gel loaded with alpha arbutin for the treatment of skin pigmentation. Different ethosomal suspensions of alpha arbutin were prepared by the cold method. *Invitro* evaluation included zeta potential, droplet size analysis, polydispersity index, entrapment efficiency (EE), scanning electron microscopy (SEM) and Fourier transform infrared (FTIR) spectroscopy. Stability studies of the optimized ethosomal and control gels were performed for three months under different temperature conditions. The optimized ethosomal gel loaded with alpha arbutin was further analyzed on human volunteers for skin benefits by measuring melanin level, moisture content and elasticity. It was concluded that the optimized formulation had a size, zeta potential, polydispersity index and entrapment efficiency of 196.87 nm, - 45.140 mV, 0.217 and 93.458343%, respectively. Scanning electron microscopy (SEM) depicted spherical ethosomal vesicles. Stability data was obtained in terms of pH and conductivity. Rheological analysis revealed non-Newtonian flow. The cumulative drug permeated for ethosomal gel was 78.4%. Moreover, encapsulation of alpha arbutin causes significant improvement in skin melanin, moisture content and elasticity. The overall findings suggested that the arbutin-loaded ethosomal formulation was stable and could be a better approach than conventional formulation for cosmeceutical purposes such as for depigmentation and moisturizing effects.

J.H. Kim, H.S. Son, D.-A. Yu, Y.B. Choe, Y.W. Lee, **Assessment of Effects of Low-Level Light Therapy on Scalp Condition and Hair Growth**, Indian J Dermatol. 2023 Jul-Aug; 68(4): 487

Background: The appearance of the scalp and hair is very important aesthetically regardless of age or sex. Although there are many drugs and treatment methods for scalp problems and hair loss, the treatment response is still insufficient. Aims and Objectives: To evaluate the efßicacy of low-level light therapy in a helmet-like device. Materials and Methods: This study was designed as a 24-week trial with 50 participants. All participants used a helmetshaped device emitting 630–690, 820–880, and 910–970 nm light wavelengths, for 20 minutes, daily for 24 weeks. A phototrichogram for hair density and thickness, Global Aesthetic Improvement Scale score, erythema index, and sebum secretions of the scalp were evaluated at baseline and at 12 and 24 weeks. Results: After 24 weeks of treatment, hair density and hair thickness were found to have significantly increased (P <.01 and P =0.013, respectively) and sebum secretion of vertex area had decreased signißicantly (P <.01). Of 49 participants, 73.47% of the participants showed improvement in the overall appearance of the scalp (n = 36). Conclusion: A helmet-like low-level light therapy device can improve the appearance of the hair, with thickening and increase in the density of the hair, and can improve scalp condition by decreasing sebum secretion.

H. Zhao, B. Park, M.-J. Kim, S.-H. Hwang, T.-J. Kim, S.-U. Kim, I. Kwon, J.S. Hwang, **The Effect of γ-Aminobutyric Acid Intake on UVB- Induced Skin Damage in Hairless Mice**, Biomol Ther 31(6), p. 640-647 (2023)

The skin, the largest organ in the body, undergoes age-related changes influenced by both

intrinsic and extrinsic factors. The primary external factor is photoaging which causes hyperpigmentation, uneven skin surface, deep wrinkles, and markedly enlarged capillaries. In the human dermis, it decreases fibroblast function, resulting in a lack of collagen structure and also decreases keratinocyte function, which compromises the strength of the protective barrier. In this study, we found that treatment with γ-aminobutyric acid (GABA) had no toxicity to skin fibroblasts and GABA enhanced their migration ability, which can accelerateskin wound healing. UVB radiation was found to significantly induce the production of matrix metalloproteinase 1 (MMP-1), but treatment with GABA resulted in the inhibition of MMP-1 production. We also investigated the enhancement of filaggrin and aquaporin 3 in keratinocytes after treatment with GABA, showing that GABA can effectively improve skin moisturization. In vivo experiments showed that oral administration of GABA significantly improved skin wrinkles and epidermal thickness. After the intake of GABA, there was a significant decrease observed in the increase of skin thickness measured by calipers and erythema. Additionally, the decrease in skin moisture and elasticity in hairless mice exposed to UVB radiation was also significantly restored. Overall, this study demonstrates the potential of GABA as functional food material for improving skin aging and moisturizing.

M. Li, J. Mao, I. Diaz, E. Kopylova, A.V. Melnik, A.A. Aksenov, C.D. Tipton, N. Soliman, A.M. Morgan, T. Boyd, **Multi-omic approach to decipher the impact of skincare products with pre/postbiotics on skin microbiome and metabolome**, Frontiers in Medicine, July 2023

Introduction: Although pre/pro/postbiotics have become more prevalent indermatologic and cosmetic felds, the mode of action when topically applied islargely unknown. A multi-omic approach was applied to decipher the impact of the skincare products with pre/postbiotics on skin microbiome and metabolome. Methods: Subjects with dry skin applied a body wash and body lotion with orwithout pre/postbiotics for 6 weeks. Skin hydration was measured at baseline,3 and 6 weeks. Skin swabs were collected for 16S rRNA gene sequencing, metagenomics and metabolomics analysis. Results: Skin hydration significantly increased in both groups. The prebiotic group significantly reduced opportunistic pathogens, e.g., *Pseudomonas stutzeri* and *Sphingomonas anadarae*, and increased the commensals, e.g., *Staphylococcus equorum*, *Streptococcus mitis, Halomonas desiderata*. Bacterial sugar degradation pathways were enriched in the prebiotic group, while fatty acid biosynthesis pathways were reduced in control. The changes on skin metabolome profiles by the products were more prominent. The prebiotic group performed greater modulation on many clinically-relevant metabolites compared to control. Correlation analysis showed *H. desiderata*and *S. mitis* positively correlated with skin hydration, *P. stutzeri* and *S. anadarae* negatively correlated with the metabolites that are positively associated with skin hydration improvement. Conclusion: This holistic study supported a hypothesis that the pre/postbiotics increased skin hydration through the modulation of skin microbiome, metabolicp athways and metabolome.

G. Gentili, P. Perugini, S. Bugliaro, C. D'Antonio, **Efficacy and safety of a new peeling formulated with a pool of PHAs for the treatment of all skin types, even sensitive**, J Cosmet Dermatol. 2023; p. 22: p. 517–528

Background: Actually, the use of chemical peels in cosmetics and dermatology continues to grow due to their versatility, clinical endpoint–directed predictability, and favorable risk profile in comparison to lasers. The chemical peel is a generally safe method for treatment of some skin disorders and to refresh and rejuvenate the skin. The major challenge of chemical peels is the tolerability, that is because of sensitive skin which is one of the most common skin disorders. Aim: The aim of this study was to evaluate the effectiveness of the new Miamo Renewal Peel Serum formulated with a pool of new generation acids (ELPA25™) on sensitive skin with respect to mandelic acid serum only and with respect to placebo comparison. Materials and Methods: The “in vivo” study following the half-face experimental protocol active versus placebo involved 30 healthy Caucasian female volunteers between 25 and 64 years, with sensitive skin, who were divided into two different groups. ELPA25™ serum was applied in one group three times a week for 8 weeks. The other group, with the same protocol, applied an active serum containing mandelic acid, as control, versus placebo. In particular, skin moisturizing, skin viscoelastic properties, skin surface smoothness, wrinkle reduction, and stratum corneum renewal were evaluated. Results: Renewal Peel Serum was very well tolerated from sensitive skin. A significant decrease in skin roughness and wrinkle breadth, and an improvement in firmness and in skin elasticity, was observed after 2 months of treatment with respect both to mandelic acid serum and to placebo comparison. Conclusions: Scientific protocol using self-controlled study methodology and noninvasive skin bioengineering techniques with adequate statistical methods were able to evaluate both the safety and the efficacy of the new Miamo Renewal Peel Serum. This study highlighted that the Miamo Renewal Peel Serum formulated with a patent-pending mixture of new generation acids (ELPA25™) exerts many beneficial effects and it can be successfully employed for sensitive skin.

K.H. Kim, S. Lee, S. Bae, **Whitening and moisturizing enhancing effects of three-dimensional human adipose-derived mesenchymal stem cell-conditioned medium-containing cream**, J Cosmet Dermatol. 2023;22: p. 3352–3361

Background: High-functional cosmetic products combined with the concept of “treatment” cosmetics are being introduced to the market. Cosmetic products containing a skin-derived microbiome, a three-dimensional (3D) stem cell culture medium, and low-molecular-weight collagen are being introduced, and these products are leading the cosmeceutical market. We aimed to confirm the potential of a 3D stem cell culture medium-containing cream as a skin-whitening and moisturizing product. Aim: To determine the enhancing effects of a cream containing 3D adipose tissuederived mesenchymal stem cell-conditioned media (3D ADMSC-CM) on whitening and moisturization. Methods: The inhibitory activities of tyrosinase (TYR) and melanin were confirmed using 3D ADMSC-CM. Furthermore, hyaluronic acid expression in 3D ADMSC-CM was verified. The clinical efficacy of the cream containing 3D ADMSC-CM was established by evaluating its antioxidant properties and effects on skin tone, radiance, freckles, and moisturization. Results: The use of 3D ADMSC-CM suppressed the inhibitory effects of TYR and melanin by approximately 24% and 33%, respectively, and increased the expression of hyaluronic acid synthase. A significant difference was observed after 4 weeks of using 3D ADMSC-CM in the skin antioxidant evaluation. After 2 and 4 weeks of use, skintone and radiance increased and skin freckles decreased significantly. Under extremelycold and dry weather conditions, the use of the cream increased skin moisturization. Conclusions: The 3D ADMSC-CM cream evaluated in an environment similar to the human body was found to enhance skin whitening and moisturization and can therefore be used in the skin care and cosmetic industries as a biocosmetic product.

*J.H. Yoo, J.S. Lee, J.H. Jang, J.I. Jung, E.J. Kim, S.-Y. Cho*i, **AGEs Blocker™ (Goji Berry, Fig, and Korean Mint Mixed Extract) Inhibits Skin Aging Caused by Streptozotocin-Induced Glycation in Hairless Mice**, Prev. Nutr. Food Sci. 2023;28(2): p. 134-140

Glycation is a cause of skin aging. This study investigated in a glycation-induced skin aging mouse model the effects on skin and mechanism of action of AGEs Blocker™ (AB), which contains goji berry, fig, and Korean mint mixed extract. This study sought to demonstrate the antiglycation effect of streptozotocin, thereby improving skin aging, by measuring advanced glycation end products (AGEs) and various skin parameters, including collagen; matrix metalloproteinases (MMPs); inflammatory cytokines; activities of oxidative enzymes; and skin wrinkles, elasticity, and hydration. This study found that skin wrinkles, elasticity, and hydration improved with AB. Particularly, the oral administration of AB suppressed AGEs, receptors of AGEs, and carboxymethyl lysine in blood and skin tissue. In addition, AB increased the activities of antioxidative enzymes, reduced inflammatory cytokines, suppressed MMP-9 expression, and increased the contents of collagen and hyaluronic acid, ultimately suppressing skin wrinkles and increasing skin elasticity and hydration. Therefore, AB can inhibit skin aging through its antiglycation effect and is thus considered a good ingredient for skin care products.

E.H. Park, D. Jung, J.H. Won, J. Seong, J. Na, **Effects of winter indoor environment on the skin: Unveiling skin condition changes in Korea**, Skin Research & Technology, 2023;29:e13397

Background: InKorea, winter can cause skin dryness due to low relative humidity (RH); moreover, indoor heating devices promote moisture loss and air pollution. If dryness persists, dead skin cells accumulate, leading to skin problems; therefore, careful skin care is required. This study aimed to compare changes in skin conditions when exposed to an indoor environment for a short period of 6 h in winter, and to suggest proper winter skin care practices. Methods: A randomized, split-face clinical study was conducted in which healthy female participants with normal skin were exposed to an indoor environment with a heater turned on for a short period at least 6 h per day in thewinter season, and cream was applied to one side of the face. Skin temperature, hydration, sebum, transepidermal water loss (TEWL), elasticity, texture, pores, redness, and wrinkles were measured at the treated and nontreated sites. Results: After 6 h of exposure, skin temperature, pores, roughness, redness, and wrinkles significantly increased ($p < 0.05$) on the face, whereas TEWL significantly increased on the forearm ($p < 0.05$). However, sebum secretion appeared to function as a barrier to maintain homeostasis in the facial skin. Elasticity, pores, texture, and wrinkles in the cream-treated ceramide site improved compared to those in the nontreated site ($p < 0.05$). The moisture content was also significantly higher in the forearm ($p < 0.05$). Conclusion: Changes in skin parameters of participants with healthy skin were observed even after short-term exposure to an indoor environment in winter. Creams containing ceramide maintain skin homeostasis and protect the skin barrier; therefore, it is recommended to use such creams to prevent skin damage and maintain healthy skin, particularly during prolonged exposure to indoor environments during winter.

S. Jarząbek-Perz, M. Dziedzic, A. Kołodziejczak, H. Rotsztejn, **Split-face evaluation: Gluconolactone plus oxybrasion versus gluconolactone plus microneedling. The effects on skin parameters**, Skin Research & Technology, Volume 29, Issue 6, June 2023

Background: The application of polyhydroxy acids and alpha-hydroxy acids to the skin is often used in cosmetology. To enhance the effect of gluconolactone chemical peeling, a combined method including water-oxygen oxybrasion or microneedle mesotherapy can be used. Objectives: To evaluate skin parameters such as hydration, sebum, pH and TEWL after application of a 10% gluconolactone chemical peel in combination with oxybrasion and microneedling. Materials and methods: Twenty-one Caucasian women participated in the study. A series of three split face treatments was carried out at 1-week intervals. Oxybrasion was performed on the right side of the face and micro-needle mesotherapy on the left side. A 10% gluconolactone solution was applied to the entire face. Before the first and third treatments and 2 weeks after the last treatment, skin parameters were evaluated. Photographic documentation was also made before and after the treatment series. Results and conclusion: Evaluation of skin parameters using Courage & Khazaka 580 Multi Probe Adapter probes (Courage + Khazaka electronic GmbH, Cologne, Germany) showed an increase in hydration and a decrease in sebum, pH and TEWL for both treatments. There were no statistically significant differences between the treatments. Combining chemical peeling of gluconolactone with oxybrasion and microneedle mesotherapy is a good method to seal the hydrolipid barrier and increase skin hydration.

S. Laura, S. Veronese, G. Alberti, P.A. Bacci, A. Beatini, E. Fulgione, C. Urbani, A. Sbarbati, **Vacuum and electromagnetic field in synergy for skin rejuvenation: A retrospective study on 217 patients**, J Cosmet Dermatol. 2023;22: p. 2989–2995

Background: There are many aesthetic treatments aimed at combating aging. In the most common and frequently used ones there are often side effects, albeit minor ones. However, sometimes it is necessary to use medications before or after treatments. Objectives: To evaluate the anti-aging efficacy and application safety of a therapybased on the combination of vacuum and electromagnetic fields (EMFs). Methods: A retrospective study was conducted to evaluate the aesthetic effects of the treatment on 217 subjects. Before treatment (T0) and after the last session (T1), skin hydration levels, the amount of sebum present and the pH were measured. The presence of discomfort during the sessions and side effects at T1 was verified. At T1, the levels of satisfaction of the patients and of the doctors who performed the treatment were assessed. At 3 and 6 months of follow-up the aesthetic results were re-evaluated. Results: For all treated subjects, an evident qualitative improvement was observed in the quality of the skin of the neck and face, with an increase in tone and a reduction in wrinkles. The instrumental tests highlighted a normalization of skin hydration, pH, and sebum values. High levels of satisfaction at T0 and good stability of results up to 6 months of follow-up were reported. No discomfort was referred during the treatment sessions, nor any side effects after the entire treatment. Conclusions: The treatment that exploits the synergy between vacuum and EMFs is very promising given the effectiveness and safety of the technique.

G. Fatturini, S. Zanzoterra, **Youthful Skin**, COSSMA 6/2023

Fighting skin ageing is one of the top priorities of facialtreatments. A new active ingredient developed by Roelmi HPC now might be the solution: a microbiota-friendly cellenergiser, designed to optimise mitochondrialactivation.

A. Charpentier, **Inside the Clinical Testing Market (Part 2),** COSSMA 6/2023

The globaloverview highlights the current drivers of the specific market of clinical evaluation for ingredients and personalcare brands. CROs offer a wide range of services. Tests and methods as wellas more information about the market and its difficulties is shown in this second part.

C.-Y. Wu, C.-Y. Ho, Y.-H. Yang, **Developing Biomarkers for the Skin: Biomarkers for the Diagnosis and Prediction of Treatment Outcomes of Alzheimer's Disease**, Int. J. Mol. Sci. 2023, 24

Alzheimer's disease (AD) is a neurodegenerative disorder characterized by memory decline and cognitive impairment. Research on biomarkers can aid in early diagnosis, monitoring disease progression, evaluating treatment efficacy, and advancing fundamental research. We conducted a cross-sectional longitudinal study to see if there is an association between AD patients and age-matched healthy controls for their physiologic skin characteristics, such as pH, hydration, transepidermal water loss (TEWL), elasticity, microcirculation, and ApoE genotyping. The study used the Mini-Mental State Examination (MMSE) and Clinical Dementia Rating-Sum of the Boxes (CDR-SB) scales as references to quantify the presence of disease, if any. Our findings demonstrate that AD patients have a dominantly neutral pH, greater skin hydration, and less elasticity compared to the control subjects. At baseline, the tortuous capillary percentage negatively correlated withMMSE scores in AD patients. However, AD

patients who carry the ApoE E4 allele and exhibit a high percentage of tortuous capillaries and capillary tortuous numbers have shown better treatment outcomes at six months. Therefore, we believe that physiologic skin testing is a rapid and effective way to screen, monitor progression, and ultimately guide the most appropriate treatment for AD patients.

R. Di Lorenzo, L. Grumetto, A. Sacchi, S. Laneri, I. Dini, **Dermocosmetic evaluation of a nutricosmetic formulation based on Curcuma**, Phytother Res, 2023 May;37(5): p.1900-1910

Endogenous and exogenous factors can alter the skin layer and appearance, determining skin aging. The extracts and isolated molecules from food matrixes can be used to formulate "healthy" antiaging cosmetics. Two different cosmetic approaches can be used to achieve the antiaging effect. It is possible to use topical products based on food extract (cosmeceutical approach) or take a food supplement and apply a topical cosmetic product based on food extract on the surface to be treated (nutricosmetic approach). This work evaluated in vivo the antiaging potential of a nutricosmetic formulation (cream + food supplement) and a cosmeceutical cream based on Curcuma. The choice of the commercial Curcuma extract to be used for experimental purposes was based on the curcuminoid content determined by an HPLC test. Curcuminoids are the bioactive compounds responsible for Curcuma's antioxidant and antiinflammatory properties. Their levels in Curcuma extracts vary according to the storage condition, variety, and pedoclimatic cultivation conditions. The Tewameter® TM300 was used to evaluate the Trans Epidermal Water Loss (TEWL), the Corneometer® CM 825 to determine the moisturizing effect, the Cutometer® to estimate the skin firmness and elasticity, the Dermascan to assess the collagen index, and the Visioface® 1000D to evaluate the wrinkles. The nutricosmetic product showed potential as moisturizing, anti-age, and anti-wrinkle action better than the cosmeceutical product alone.

S. Li, X. Zhao, Y. Chen, J. Liu, **Therapeutic effects of mesoderm introduction of compound glycyrrhizin injection on the treatment of rosacea**, Skin Research & Technology, Volume 29, Issue 5, May 2023

Objectives: This study aims to introduce compound glycyrrhizin injection for the treatment of rosacea by mesoderm therapy, and further analyze the therapeutic and aesthetic effects of this treatment method and its impact on the dermatological quality of life index, which provides new ideas and methods for cosmetic dermatology treatment of rosacea. Methods: The recruited rosacea patients were divided into Control group (n = 58) and observation group (n = 58) according to the random number table. The control group was treated with topical metronidazole clindamycin liniment, and the study group was additionally used mesoderm introduction of compound glycyrrhizin injection. The transepidermal water loss (TEWL), water content in corneum, and dermatology life quality index (DLQI) in rosacea patients were evaluated. Results: Our results showed that the scores of erythema, flushing, telangiectasia, and papulopustule were significantly reduced in the observation group. In addition, the observation group significantly decreased TEWL and increased the water content of the stratum corneum. Furthermore, the observation group significantly reduced the DLQI of rosacea patients compared to the control group. Conclusion: The use of mesoderm therapy combined with compound glycyrrhizic acid has a therapeutic effect on facial rosacea and improves patient satisfaction.

Z. Ivanova, T. Aleksiev, H. Dobrev, N. Atanasov, **Use of a novel indentometer to evaluate skin stiffness in healthy and diseased human skin,** Skin Research & Technology, May 2023

Background: Mechanical behavior of the skin can be evaluated by different noninvasive methods. In this study, we applied a new measurement device based on indentometry to determine the skin mechanical properties in healthy individuals and in patients with systemic sclerosis (SSc). Material and methods: Three studies were performed. Study 1 included 100 healthy individuals (46 male and 54 female) divided into four age groups with mean ages of 21.5, 28.9, 51.2, and 69.3 years, respectively. Test sites were located on the center of the forehead and the middle of both volar forearms. Study 2 included 16 healthy individuals (two males and 14 females). Test sites were on both volar forearms. Measurements were made before and after the application of Vaseline and emulsion with 12% urea. Study 3 included 20 patients (one male and 19 females) with SSc and 60 age matched healthy individuals (23 males and 37 females). Test sites were on the center of the forehead and the middle of both volar forearms. Skin stiffness was measured with skin Indentometer IDM 800 (Courage + Khazaka, Cologne, Germany) equipped with two probes with pin diameters of 3 and 5 mm, respectively. The stiffer the skin, the less deep the displacement by the indenter. The smaller the diameter, the deeper the pin will go into the skin when using the same force. In addition, the Corneometer CM 820 (Courage + Khazaka) was used to determine epidermal water content in study 2. Results: Indentometric (IDM) values of healthy subjects measured with both probes were lower on the forehead compared to volar forearms. There was not significant difference between both forearms. In all age groups, the IDM values

on the male forearms were lower than on the female forearms whereas there was no significant difference on the forehead. In both sex and on all test locations a significant positive correlation between age and IDM values measured with both probes was observed. There was a significant positive correlation between IDM values measured with both probes. The application of moisturizers induced significant changes in epidermal water content whereas the IDM values remained unchanged. At both forehead and volar forearms, the IDM values in patients with SSc were significantly lower compared to the healthy control skin.

J. Pavlačková, H. Pecháčková, P. Egner, P. Mokrejš, R. Gál, M. Janalíková, **The Effect of Cosmetic Treatment and Gel Laser Therapy on the Improvement of Comedogenic Skin Type**, Gels 2023, 9, 370

Comedogenic skin care receives little attention compared to the care or treatment of more serious acne manifestations. Traditional therapies may have limited success with potential side effects. Cosmetic care supported by the effect of a biostimulating laser may offer a desirable alternative. The aim of the study was to evaluate the biological effectiveness of combined cosmetic treatment with lasotherapy on comedogenic skin type using noninvasive bioengineering methods. Twelve volunteers with comedogenic skin type underwent a 28-week application of Lasocare Basic 645® cosmetic gel containing *Lactoperoxidase* and *Lactoferrin* in combination with laser therapy (Lasocare® method). The effect of treatment on skin condition was monitored using noninvasive diagnostic methods. The parameters were the amount of sebum, the pore count, the ultraviolet-induced red fluorescence assessment of comedonic lesions (percentage of the area and quantification of orange-red spots), hydration, transepidermal water loss, and pH. A statistically significant decrease in sebum production was observed on the skin of the treated volunteers, as well as a decrease in porphyrins, indicating the presence of *Cutibacterium acnes* populating comedones and causing enlarged pores. The balance of epidermal water in the skin was regulated adjusting the acidity of the skin coat in individual zones, which decreased the presence of *Cutibacterium acnes*. Cosmetic treatment in combination with the Lasocare® method successfully improved the condition of comedogenic skin. In addition to transient erythema, there were no other adverse effects. The chosen procedure appears to be a suitable and safe alternative to traditional treatment procedures known from dermatological practice.

J. Leignadier, M. Pancarte, G. Serre, N. Jonca, J. Attia, **Reinforcing the Skin Barrier with a Biomimetic Green Peptide LCE6A to Reduce the Signs of Aging,** Poster Presentation at the 1st Congress of Investigative Dermatology, Tokyo, May 2023

A youthful and beautiful appearance can have a positive influence on the social behavior and reproductive status of individuals. Skin aging is characterized by the appearance of wrinkles, loss of elasticity, laxity and roughness of the skin 1. This aging process is also accompanied by an increase in the inflammatory reaction of the skin which leads to a disruption of the skin barrier function (BF). This alteration of BF leads to a phenotypic change of the skin cells as well as structural and functional modifcations of the extracellular matrix components 2. Thus, the strengthen of the BF is important to protect from the skin aging 3. The objective here was to develop a biomimetic green peptide encoding for a specifc sequence of the LCE6A (Late Cornifed Envelop 6A) protein, a constitutive component of the cornifed envelope (CE), covalently cross-linked by CE transglutaminase activity, in order to lead the stratum corneum (SC) and BF reinforcement. Through *in-vitro* and *ex-vivo* studies, we previously demonstrated that LCE6A peptide was able to increase the BF by reinforcing the CE. Here, by a second double blinded clinical study, we will focus on how the BF strengthening is able to prevent the skin aging.

R. Fukuda, K. Pak, R. Tanaka, N. Momchimaru, K. Yoshida, M. Kiuchi, N. Hirata, Y. Ohya, M. Mitsui, **Association of stratum corneum and breast milk factors with the development of atopic dermatitis in infancy: A prospective birth cohort study**, Poster Presentation at the 1st Congress of Investigative Dermatology, Tokyo, May 2023

Atopic dermatitis (AD) is a multi-pathogenic disease. The pathogenesis of AD relates to various etiological factors such as atopic predisposition, stratum corneum (SC) disorders, and immunity. As for SC factors, increased transepidermal water loss (TEWL), decreased natural moisturizing factor (NMF), ceramides and lipids have been reported in both adult and pediatric AD. Transforming growth factor (TGF)-β from breast milk plays a role in in allergy development, including AD and eczema). There have been no previous studies investigating SC and breast milk factors over time in the development of AD in infants.

M. Soeberdt, C. Neubauer, M. Kragl, N. Mähler, K. Moritz, S. Hoch, H. Steindl, R. Ziegler, T. Braun, P. Filipek, E. Bonyadirad, T. Jakschitz, G. Bonn, A. Koeberle, C. Abels, **Amelioration of symptoms of dry and eczema-prone skin by an oil-in-water emulsion containing a combination of a *Zingiber***

officinale* root extract and CBD with antioxidative and anti-inflammatory activity *in vitro, Poster Presentation at the 1st Congress of Investigative Dermatology, Tokyo, May 2023

In total, 24 plant extracts of different polarities were screened for potential anti-inflammatory and -oxidative activities in primary cells and cell lines. Effects were assessed and applied to a principal component analysis. Cannabidiol (CBD) and a *Zingiber officinale* root extract were found to be extraordinarily active and subsequently tested alone and in combination in relevant assays for skin inflammation. Subsequently, the newly developed oil-in-water (O/W) emulsion BNO 3731 containing CBD and a lipophilic *Zingiber officinale* root extract was investigated in a clinical study.

I. Harder, D. Stölz, N. Sander, J. Hartmann, E. Rodriguez, C. Mazur, S. Kerzel, M. Kabesch, D. Küster, J. Schmitt, R. Fölster-Holst, S. Gerdes, H. Emmert, S. Weidinger, **Effects of Early Emollient Use in Children at High Risk of Atopic Dermatitis: A German Pilot Study**, Acta Derm Venereol May 2023

Several small studies have indicated that daily emollient use from birth might delay, suppress or prevent atopic dermatitis (AD). Two larger trials did not confrm this; however, a recent smaller study indicated a protective effect if daily emollient use is used in the first 2 months of life. Further research is needed to evaluate the effect of emollient use on development of AD. The current study randomly assigned 50 newborns who were at high risk of developing AD (1:1) to receive general infant skin-care advice (control group), or skin-care advice plus emollient with advice to apply emollient at least once daily until 1 year of age (intervention group). Repeated skin examinations, skin physiology measurements and skin microbiome profling were performed. Of the children in the intervention and control groups, 28% and 24%, respectively, developed AD (adjusted Relative Risk (RR) 1.19, p=0.65, adjusted risk difference 0.05). Skin pH decreased and transepidermal water loss and stratum corneum hydration increased over time in both groups with nosignifcant differences. In the intervention group skinmicrobiome alpha diversity increased earlier, and the abundance of Streptococcus and Staphylococcus species were signifcantly reduced at month 1. Daily early emollient use in children with high risk of AD was safe, but it did not signifcantly reduce the risk of developing AD or impact skin physiology development.

G. Fattorini, S. Zanzottera, **Active ingredient for smiling beauty,** PERSONAL CARE MAGAZINE, April 2023

The viability of skin cells is a highly significant factor in cosmetics. Skin ageing and the resultingblemishes are known to be related with a decline of energy, which can typically be measured on the basis of the amount of adenosine triphosphate (ATP) produced by mitochondria. In fact, when skin cells lose their vigour, a loss of vitality makes for dull and tired complexion; as a result, ageing signs are highlighted and expression lines appear. To remedy the problem of cell ageing, it is therefore necessary to formulate compounds able to stimulate the viability of skin cells, enhancing cellular energy.

M. Abderrachid, **Naturalemulsifier for a sensitive skin shield,** PERSONAL CARE MAGAZINE, April 2023

The skin is increasingly sensitive. Increasingly exposed to environmental factors (UV, aggressive products, pollution) and stress, it slowly loses its barrier function resulting in tightness, burning, tingling and redness. Indeed, a weak barrier function facilitates the penetration of irritants or allergens, increases transepidermal water loss (TEWL), and fails to adequately protect nerve endings.

D. Yang, M. Fu, Q. Zhao, Y. Wang, T. Li, B. Feng, E. Li, Y. Nishijima, Z. Sun, Z. Hu, **α-ionone promotes keratinocyte functions and accelerates epidermal barrier recovery**, Ann Transl Med 2023;11(8):297

Background: As a common fragrance ingredient, α-ionone is widely used in cosmetics, perfume, and hygiene products. Nevertheless, little information is available for its biological activities on the skin. In this study, we investigated the effect of α-ionone on keratinocyte functions associated with skin barrier repair and further evaluated its skin barrier recovery capacity to explore its therapeutic potential for the treatment of skin barrier disruption. Methods: The effect of α-ionone on the keratinocyte functions including cell proliferation, migration, and production of hyaluronic acid (HA) and human β-defensin-2 (HBD-2) were examined *in vitro* using human immortalized keratinocytes (HaCaT cells) as experimental model. The barrier recovery effects of topical hydrogels containing 0.1% or 1% α-ionone were tested on the volar forearm of 31 healthy volunteers by measuring transepidermal water loss (TEWL) and stratum corneum (SC) hydration following barrier disruption induced by repeated tape-stripping. The statistical signifcance was evaluated by one-way analysis of variance (ANOVA) followed by a Dunnett's post-hoc test. Results: α-ionone promoted HaCaT cell proliferation ($P<0.01$) dose-dependently in the 10 to 50 μM range. Meanwhile, it also increased the intracellular cyclic adenosine monophosphate (cAMP) levels ($P<0.05$). Furthermore, HaCaT cells treated with α-ionone (10, 25, 50 μM) showed enhanced cell migration ($P<0.05$), up-regulated gene expression of hyaluronic acid synthases 2 (HAS2) ($P<0.05$),

HAS3 (P<0.01), and HBD-2 (P<0.05), and enhanced production of HA (P<0.01) and HBD-2 (P<0.05) in the culture supernatant. These beneficial actions of α-ionone were abrogated by cAMP inhibitor, suggesting that its effects are cAMPmediated in HaCaT cells. *In vivo* study showed that topical application of α-ionone-containing hydrogels accelerated the epidermal barrier recovery of human skin after barrier disruption by tape stripping. Treatment with hydrogel containing 1% α-ionone resulted in a significant increase of above 15% in the barrier recovery rate at day 7 post-treatment when compared to the vehicle control (P<0.01). Conclusions: These results demonstrated the role of α-ionone in the improvement of keratinocyte functions and the epidermal barrier recovery. These findings suggest possible therapeutic application of α-ionone in the treatment of skin barrier disruption.

C. Uhl, L. van't Hoff, **Skin pH assessment for sensitive skin claims**, PERSONAL CARE MAGAZINE, April 2023

Specific amounts of water and lipids on the skin surface determine the composition of the hydrolipidic film of the skin. The various functions of sebum and moisture on the skin surface to keep it supple, flexible and healthy have been investigated from the beginning in the cosmetic industry. The slightly acidic pH-value of the hydrolipidic film is a major protective factor for the skin, buffering acids and alkaline products that get in contact, as well as providing an environment favourable to our naturalvmicrobiome, at the same time restricting the growth of pathogenic microbes.

P. Perugini, C. Grignani, G. Condrò, H. van der Hoeven, A. Ratti, A. Mondelli, A Colpani, M. Bleve, **Skin Microbiota: Setting up a Protocol to Evaluate a Correlation between the Microbial Flora and Skin Parameters**, Biomedicines 2023, 11, 966

The concept of skin microbiota is not really clear and more accurate approaches are necessary to explain how microbial flora can influence skin biophysical parameters in healthy individuals and in pathology patients with non-infectious skin disease. The aim of this work is to provide a suitable, fast and reproducible protocol to correlate skin parameters with the composition of skin microbiota. For this purpose, the work was split into two main phases. The first phase was focused on the selection of volunteers by the administration of a specific questionnaire. The skin microbiota was then collected from the forehead of selected volunteers as a test area and from the shoulder as control area. On the same skin area, the biophysical parameters, such as transepidermal water loss (TEWL), sebum level (SL), porphyrin intensity, keratin content and stratum corneum water content were taken. All parameters were taken at t0 and after 15 days without changes in the volunteers' lifestyle. A strong correlation was found between forehead and shoulder area for porphyrin intensity, pH and TEWL parameters, and between *Cutibacterium acnes* and some biophysical parameters both in the forehead and the shoulder area. The procedural setup in this work represents the starting point for evaluating problematic skins and the efficacy of cosmetic products or treatment against skin dysbiosis.

M. Moy, I. Diaz, E. Lesniak, G. Giancola, **Peptide-pro complex serum: Investigating effects on aged skin**, J Cosmet Dermatol. 2023;22: p. 267–274

Background: Effective anti-aging treatments are an unmet consumer need. Aim: Ex vivoand clinical tests have evaluated the efficacy of a topical facial serumcontaining a proprietary blend of neuropeptides, proteins, amino acids, and marine extracts on aged skin. Methods: In the ex vivo study the facial serum was compared to a commercially marketed face serum and to an untreated control on skin explants using microrelief, smoothness, and epidermal thickness endpoints. The 12 weeks monadic clinical study was designed for the test product to be used on the whole face. Subjects functionedas their own control; evaluating change from baseline. Skin was evaluated clinically bya Dermatologist for tolerability and for efficacy. Also part of the product assessment was skin hydration measurements, imaging, and a subject questionnaire. Results: The facial serum improved skin condition by significant reductions in skin surface area occupied by microfolds and in skin roughness. Additionally, it increased epidermal thickness as compared to the untreated control as well as the commercially marketed face serum. The facial serum provided a statistically increased skin moisturization compared to pretreatment values. Dermatological evaluation of the skin concluded that there were statistically and clinically significant improvements in skin smoothness, wrinkles severity, fine lines visibility and lifting, and tightening effects at crow's feet area, forehead, and upper lip. Conclusion: A facial serum, containing a proprietary blend of neuropeptides, proteins, amino acids, and marine extracts, has been shown to improve the overall quality of aged skin in a series of *ex vivo* and clinical tests.

A. Charpentier, **Achieving Instant Gratification – Investing in the Millenial's Dream,** EURO Cosmetics, 4-2023

Hair is an integral part of one's identity, and people around the world place a great deal of importance on its look and style. Consumers are now looking for more inclusive, natural, ethical, and

sustainable products that can help them improve their hair grooming rituals while still providing the necessary cleansing and caring benefits.

A. Fitzner, K. Knuhr, M. Brandt, S. Bielfeldt, **Investigating the effect of the pH of foot care product formulations on pedal skin in diabetic and non-diabetic subjects**, Int J Cosmet Sci,.2023 Aug;45(4): p. 524-538

Objective: The use of skin care formulations with acidic pHs is seen as an effective method to maintain the acidic mantel of the skin; however, because the skin pH varies depending on the area of the body and as data are lacking for the skin pH of the feet, there was a need to examine whether this assumption holds true for skin care formulations designed for the foot. Thus, three foot creams formulated with a neutral, acidic or alkaline pH were compared with each other as well as to an untreated control group in order to analyse their impact on skin pH, hydration and general skin condition. Methods: An exploratory clinical investigation with 60 enrolled subjects, half of whom had a diagnosis of diabetes (type 1 or type 2), was undertaken. The investigation followed a randomized, double-blind, balanced incomplete block design (BIBD) including intra-individual comparison (before and after treatment). Evaluations of skin pH and hydration were carried out using a pH meter and a Corneometer respectively. Objective evaluation of skin condition for efficacy assessment was performed by a trained grader. For tolerability evaluation, objective and subjective dermatological assessments were performed. Results: At the end of the treatment period, the skin pH was largely unchanged at five out of six of the test areas, with the mean value for each treatment group using test products showing similar fluctuations as the untreated control group. Furthermore, the skin condition parameters studied all improved by a comparable magnitude for each of the treatment groups using the test products, whereas the untreated control group experienced a worsening of the skin condition parameters. Conclusions: The results of this investigation suggest that where the skin of the foot is concerned, the pH of skin care formulations has no (physiologically) relevant influence on the skin's pH in either diabetic or non-diabetic subjects. Furthermore, the expectation that acidic formulations would be more beneficial for the skin's condition was not found to hold true for the skin of the foot, as no significant difference was observed between the performance of the three test products investigated in this study.

P. Detudom, N. Kamanamool, A. Paichitrojjana, P. Udompataikul, M. Udompataikul, **Efficacy of anti-sebum moisturizing cream containing 2% L-carnitine and 5% epigallocatechin gallate in seborrhea: A randomized clinical trial**, J Cosmet Dermatol. 2023;22: p. 3058–3064

Background: Seborrhea leads to facial greasiness and unpleasant feeling. People with seborrhea also have trouble with selecting moisturizers. l-Carnitine and epigallocatechin gallate (EGCG) are reported anti-sebum properties. However, neither efficacy comparison nor the combination effect of the two topical anti-sebum agents was studied. Moisturizing cream with these agents is supposed to provide skin with an optimal water–oil balance. Aims: To compare the efficacy of moisturizer containing 2% l-carnitine or 5% EGCG alone on sebum controlling, and the synergistic effect of these two agents. Methods: Three study creams were formulated by adding three kinds of anti-sebum agents which were 2% l-carnitine, 5% EGCG, and 2% l-carnitine plus 5% EGCG in moisturizing cream base of dimethicone and glycerin. A randomized clinical trial was conducted. Ninety subjects, divided into three groups, applied the cream for 4 weeks. Sebum level, skin capacitance, and transepidermal water loss (TEWL) were evaluated at Weeks 0, 1, 2, and 4. Life qualities and subjective outcomes were assessed before and after treatment. Results: The mean sebum reduction from baseline was statistically significant in all treatment groups ($p < 0.01$). The median time to oil control was longer in l-carnitine group. The combine group had significantly greater anti-sebum efficacy than lcarnitine group ($p = 0.009$). All three groups had significant improvement of other objective parameters and subjective outcomes. Conclusions: The anti-sebum moisturizing cream exhibited beneficial effect on the sebum reduction with improve skin hydration in people with seborrhea and made users satisfied. The EGCG group and the combine group show the greater anti-sebum effect than the l-carnitine group.

Z.D. Draelos, A. Shamban, **A pilot study evaluating the anti-aging benefits of a CO 2-emitting facial mask**, J Cosmet Dermatol. 2023;22: p. 2198–2204

Background: Since 1936, injectable carboxytherapy has been used for the treatment of circulatory issues and lack of tissue trophism. In the last 25 years, it has been applied to aesthetic issues, especially those related to the signs and symptoms of skinaging. Presently, carboxytherapy is available as a combination of transcutaneous gels that produce CO2 with benefit for atrophic skin.Objective: The objective of this study was to investigate the efficacy and safety of a topical carboxy mask on facial photoaging after short term use of 4 weeks and long term use of 10 weeks. Methods: The short term study was conducted for 14 days after 3 times weekly application of the facial mask for 1 h followed by a regression phase with evaluations at days 21 and 28. 11 healthy female subjects age 45–75 years

were enrolled. Subjects applied the facial mask for 45 min, 3 times per week during the 2-week treatment period. The long term study was conducted for 10 weeks on 35 subjects 35–65 years with mild to moderate facial photoaging of Fitzpatrick skin types I–VI. Subjects underwent photography, elasticity, hydration, and VAS questionnaire assessments. Results: The short term 4 week study demonstrated improvement in laser-Doppler measured blood flow and skin hydration. The long term 10 week study demonstrated improvement in firmness (16%, $p = 0.001$), sagging (9%, $p = 0.023$), and overall skin appearance (12%, $p = 0.002$). These findings were supported by the retraction timedecrease at week 10 (-10%, $p = 0.05$). Summary: The combination of two gels produced the liberation of CO2, which improved short term skin hydration after 4 weeks of use and improved longer term skin elasticity after 10 weeks of use.

G. Cohen, J. Jakus, M. Portillo, R. Gvirtz, N. Ogen-Shtern, E. Silberstein, T. Ayzenberg, S. Rozenblat, **In vitro, ex vivo, and clinical evaluation of anti-aging gel containing EPA and CBD**, J Cosmet Dermatol. 2023;22: p. 3047–3057

Background: Skin aging manifestation, such as coarse wrinkles, loss of elasticity, pigmentation, and rough-textured appearance, is a multifactorial process that can be exacerbated by air pollution, smoking, poor nutrition, and sun exposure. Exposure to UV radiation is considered the primary cause of extrinsic skin aging and accounts for about 80% of facial aging. Extrinsic skin aging signs can be reduced with democosmetic formulations. Both cannabidiol (CBD) and eicosapentaenoic acid (EPA) have been previously suggested as potent active dermatological ingredients. Aims: The objective of the current research was to evaluate the compatibility of both agents in the prevention and treatment of skin aging. First, the impact of both agents was assessed using standard photoaging models of UV-induced damage, both in vitro (HaCaT cells) and ex vivo (human skin organ culture). Then, a clinical validation study ($n = 33$) was performed using an optimized topical cream formulation tested at different time points (up to Day 56). Results: EPA was found to potentiate the protective effects of CBD by reducing the secretion of prostaglandin E2 (PGE2) and interleukin-8 (IL-8), two primary inflammatory agents associated with photoaging. In addition, a qualitative histological examination signaled that applying the cream may result in an increase in extracellular matrix (ECM) remodeling following UV radiation. This was also evidenced clinically by a reduction of crow's feet wrinkle area and volume, as well as a reduction of fine line wrinkle volume as measured by the AEVA system. The well-established age-dependent subepidermal low-echogenic band (SLEB) was also reduced by 8.8%. Additional clinical results showed significantly reduced red spots area and count, and an increase in skin hydration and elasticity by 31.2% and 25.6% following 56 days of cream application, respectively. These impressive clinical results correlated with high satisfaction ratings by the study participants. Discussion and Conclusions: Collectively, the results show a profound anti-aging impact of the developed formulation and strengthen the beneficial derm-cosmetic properties of CBD-based products.

Y.G. Koh, J. Seok, J.W. Park, K.R. Kim, K.H. Yoo, Y.J. Kim, B.J. Kim, **Efficacy and safety of oral palmitoleic acid supplementation for skin barrier improvement: A 12-week, randomized, double-blinded, placebo-controlled study**, Heliyon 9 (2023)

Background: Palmitoleic acid (omega-7) has been reported to be effective primarily for metabolic disorders. Recently, it has been reported to help improve quality of life (QoL) by improving skin symptoms.Objective: The aim of this randomized, double-blinded, placebo-controlled clinical study is toevaluate the effcacy and safety of oral palmitoleic acid in improving skin barrier, elasticity, andwrinkle formation in adult women. Methods: In this randomized, double-blind, placebo-controlled clinical study, 90 healthy participants were enrolled and received 500 mg/day palmitoleic acid (intervention) or corn oil without palmitoleic acid (control) for 12 weeks. Skin hydration and transepidermal water loss and skin elasticity, surface roughness, eye wrinkle volume, and wrinkle severity were measured at 6-weekintervals to assess the skin barrier function and effcacy in wrinkle improvement, respectively.Results: After 12 weeks, skin hydration and transepidermal water loss signifcantly improved in the intervention group compared to the control group. Skin elasticity, surface roughness, eye wrinkle volume, wrinkle severity, and participant-assessed clinical improvement score did not signifcantly improve compared with the control group.Conclusion: Oral palmitoleic acid effectively improves the skin barrier function improvement, which may enhance QoL in aging adults.

G. Grigolon, K. Nowak, S. Poigny, J. Hubert, A. Kotland, L. Waldschütz, F. Wandrey, **From Coffee Waste to Active Ingredient for Cosmetic Applications**, Int. J. Mol. Sci. 2023, 24, 8516

Coffee silverskin (CS) is the thin epidermis covering and protecting the coffee bean and it represents the main by-product of the coffee roasting process. CS has recently gained attention due to its high content in bioactive molecules and the growing interest in valuable reutilization of waste products. Drawing inspiration from its biological function, here its potential in cosmetic applications was

investigated. CS was recovered from one of the largest coffee roasters located in Switzerland and processed through supercritical CO2 extraction, thereby generating coffee silverskin extract. Chemical profiling of this extract revealed the presence of potent molecules, among which cafestol and kahweol fatty acid esters, as well as acylglycerols, β-sitosterol and caffeine. The CS extract was then dissolved in organic shea butter, yielding the cosmetic active ingredient SLVR'Coffee™. In vitro gene expression studies performed on keratinocytes showed an upregulation of genes involved inoxidative stress responses and skin-barrier functionality upon treatment with the coffee silverskin extract. In vivo, our active protected the skin against Sodium Lauryl Sulfate (SLS)-induced irritation and accelerated its recovery. Furthermore, this active extract improved measured as well as perceived skin hydration in female volunteers, making it an innovative, bioinspired ingredient that comforts the skin and benefits the environment.

M. Shahzad Khan, Q. Adnan, N. Akhtar, **Profiling of phytochemicals using LC-ESI-MS², in vitro, in vivo characterization and cosmeceutical effects of Alpinia galanga (wild) extract loaded emulgel**, J Cosmet Dermatol, 2023 May;22(5): p. 1628-1641

Background: The potential as a depigmenting agent, sun protection, and healthy benefits is indicated by the sun protection factor, radical scavenging, and tyrosinase inhibitory activities of Alpinia galanga (wild). Aims: A stable emulgel containing A galanga (wild) extract is prepared. This emulgel is then characterized by in vitro evaluation and identification of contents by LC-ESI-MS². In vivo performance is counted in terms of moisturizing, melanin level, erythema, sebum, skin fine pores and large pores analysis, and other related physiological skin parameters. Methods: DPPH radical scavenging activity, total phenolic and flavonoid counts were used to measure the free radical scavenging and tyrosinase inhibitory capability of A galanga (wild) extract, respectively. LC-ESI-MS² used for phytochemical analysis. Emulgels synthesize, and their globule size, Ultracentrifugation, pH, and conductivity were all evaluated. Among the developed formulations, the optimal emulgels formulation underwent 90-day stability tests for organoleptic characteristics and rheology at 8°C, 25°C, 40°C, and 40°C + 75% RH (relative humidity). Using sebumeter®, mexameter®, and corneometer®, changes in skin physiological parameters were assessed over the course of 12 weeks in 13 healthy male, Asian volunteers. VisioFace® is used for computational analysis of high-resolution pictures to determine the % area, fine pore counts, and large pore counts of the skin. Results: The antioxidant, tyrosinase inhibitory potential and counts of total phenolic and flavonoids of A galanga (wild) extract were impressive (85%, 75%, and 48.0 mg GAE/g and 14.37 mg quercetin/g, respectively). In terms of stability evaluation, globule size (0.7528 ± 0.192 □m). Optimized A galanga (wild) ethanol aqueous (AGEA) extract loaded emulgel was stable in terms of organoleptic and in vitro evaluation. The AGEA formulation significantly reduced the amount of sebum, erythema, fine pore counts, large pore counts, fine pore % area and large pores area percentage while significantly improved the moisture and elasticity of the skin. Conclusion: A stable A galanga (wild) extract loaded emulgel was successfully produced that improved the skin physiological parameters in terms of skin's sebum, erythema, moisturizing, melanin, and pores.

S.-Y. Pu, Y.-L. Huang, C.-M. Pu, Y.-N. Kang, K.D. Hoang, K.-H. Chen, C. Chen, **Effects of Oral Collagen for Skin Anti-Aging: A Systematic Review and Meta-Analysis**, Nutrients 2023, 15

This paper presents a systematic review and meta-analysis of 26 randomized controlled trials (RCTs) involving 1721 patients to assess the effects of hydrolyzed collagen (HC) supplementation on skin hydration and elasticity. The results showed that HC supplementation significantly improvedskin hydration (test for overall effect: $Z = 4.94$, $p < 0.00001$) and elasticity (test for overall effect: $Z = 4.49$, $p < 0.00001$) compared to the placebo group. Subgroup analyses demonstrated that theeffects of HC supplementation on skin hydration varied based on the source of collagen and the duration of supplementation. However, there were no significant differences in the effects of different sources ($p = 0.21$) of collagen or corresponding measurements ($p = 0.06$) on skin elasticity. The study also identified several biases in the included RCTs. Overall, the findings suggest that HC supplementation can have positive effects on skin health, but further large-scale randomized control trials are necessary to confirm these findings.

Y. Ye, Y.Li, C. Xu, X. Wie, **Improvement of mild photoaged facial skin in middle-aged Chinese females by a supramolecular retinol plus acetyl hexapeptide-1 containing essence**, Skin Health Dis. 2023;3:e239

Background: The anti-ageing gold standard, retinol, has been widely recognized for its anti-wrinkle benefits in the Chinese population. Studies have shown that Asians are more sensitive to retinol compared to their Caucasian counterparts, and it is generally recommended to use retinol once a day in the evening. However, there are few reports on the most appropriate concentration and frequency of

retinol use in the general Chinese population. Objectives: In this study, supramolecular retinol was prepared using cyclodextrin encapsulation technology, and the most appropriate concentration for the general Chinese population was investigated. Then, a cosmetic essence was developed by combining the classic supramolecular retinol, which promotes collagen regeneration, with acetyl hexapeptide-1, a popular ingredient known for reducing expression lines. The safety and efficacy of this cosmetic essence were studied through clinical tests. Methods: First, a patch test was conducted on 32 healthy Chinese subjects to compare the tolerance of supramolecular retinol to non-encapsulated retinol and to select the optimal concentration of retinol. Then, an 8-week clinical study was conducted using a twice-daily cosmetic essence containing 0.1% supramolecular retinol and 0.02% acetyl hexapeptide-1 to treat mild photoaging in 32 middle-aged Chinese women. Dermatological evaluations and instrument measurements were taken at baseline, 4 weeks, and 8 weeks. Efficacy was assessed using facial skin wrinkles, textures, elasticity, firmness, pores, gloss and stratum corneum hydration. Tolerability was assessed throughout the study. Results: Our patch test results showed that supramolecular retinol was better tolerated than non-encapsulated retinol, and our findings suggest that 0.1% was the approximate optimal retinol concentration for the general Chinese population. The cosmetic essence studied was effective in improving the appearance of photoaged skin in the Chinese population in all aspects studied and was well tolerated. Conclusions: 0.1% retinol is suitable for twice daily use in the general Chinese population. Data and records on efficacy dimensions of skin textures, elasticity, firmness, pores, gloss and stratum corneum hydration for retinol in the Chinese population are supplemented with our study. Cosmeceutical approaches targeting both static and dynamic wrinkles are of value for treating the photoaged Chinese population.

C. Zappelli, A. Tito, M. Angellilo, A. Colantuono, D. Falanga, A. de Lucia, V. Fogliano, **Imperfectly perfect: moisturising and anti-ageing potential of an oil-soluble extract from rejected avocados,** HPC Today, Vol. 18(3) 2023

Avocado (Persea Americana) consumption has experienced a remarkably fast increase in demand, which inevitably leads to significant waste along the production chain. In recent years, the increased awareness of the environmental impact linked to food loss generated a huge rise in demand for sustainable goods. In this study we evaluated the moisturising effect, and the mechanisms behind it, of an oil-soluble extract from aesthetically imperfect, and thus rejected, avocado fruits cultivated in Sicily. Through *in vitro* and *ex-vivo* studies, we demonstrated that this new active ingredient significantly up-regulated proteins with key functions in the maintenance of intracellular water balance. Moreover, we showed that the extract promoted an overall improvement of epidermal barrier function by increasing the synthesis of lipid structures. Finally, clinical studies showed that the extract improved skin hydration and dermal density.

A. Lubczyńska, A. Garncarczyk, D. Wcisło-Dziadecka, **Effectiveness of various methods of manual scar therapy,** Skin Research & Technology, Volume 29, Issue 3, March 2023

Background: The skin is a protective barrier of the body against external factors, and its damage leads to a loss of integrity. Normal wound healing results in a correct, flat, bright, and flexible scar. Initial skin damage and patient specific factors in wound healing contribute that many of these scars may progress into widespread or pathologic hypertrophic and keloid scars. The changes in cosmetic appearance, continuing pain, and loss of movement due to contracture or adhesion and persistent pruritis can significantly affect an individual's quality of life and psychological recovery post injury. Many different treatment methods can reduce the trauma and surgical scars. Manual scar treatment includes various techniques of therapy. The most effectiveness is a combined therapy, which has a multidirectional impact. Clinical observations show an effectiveness of manual scar therapy. Material and methods: The aim of this work was to evaluate effectiveness of the scar manual therapy combined with complementary methods on the postoperative scars. Treatment protocol included two therapies during 30 min per week for 8 weeks. Therapy included manual scar manipulation, massage, cupping, dry needling, and taping. Results: Treatment had a significant positive effect to influence pain, pigmentation, pliability, pruritus, surface area, and scar stiffness. Improvement of skin parameters (scar elasticity, thickness, regularity, color) was also noticed. Conclusion: To investigate the most effective manual therapy strategy, further studies are needed, evaluating comparisons of different individual and combined scar therapymodalities.

A. Stolić Jovanović, M. Martinović, A. Žugić, I. Nešić, T. Tosti , S. Blagojević, V.M. Tadić, **Derivatives of L-Ascorbic Acid in Emulgel: Development and Comprehensive Evaluation of the Topical Delivery System**, Pharmaceutics 2023, 15, 813.

The dual controlled release of emulgels makes them efficient drug delivery systems of increasing interest. The framework of this study was to incorporate selected L-ascorbic acid derivatives

into emulgels. From the formulated emulgels, the release profiles of actives were evaluated considering their different polarities and concentrations, and consequently their effectiveness on the skin via a long-term in vivo study that lasted for 30 days was determined. Skin effects were assessed by measuring the electrical capacitance of the stratum corneum (EC), trans-epidermal water loss (TEWL), melanin index (MI) and skin pH. In addition, the sensory and textural properties of emulgel formulations were compared with each other. The changes in the rate of the release of the L-ascorbic acid derivatives were monitored using the Franz diffusion cells. The obtained data were statistically significant, and indicated an increase in the degree of hydration of the skin and skin whitening potential, while no significant changes in TEWL and pH values were detected. The consistency, firmness and stickiness of the emulgels were estimated by volunteers applying the established sensory evaluation protocol. In addition, it was revealed that the difference in hydrophilic/lipophilic properties of L-ascorbic acid derivatives influenced their release profiles without changing their textural characteristics. Therefore, this study highlighted emulgels as L-ascorbic acid suitable carrier systems and one of the promising candidates as novel drug delivery systems.

Y.I. Lee, S.G. Lee, I. Jung, J. Suk, C. Baeg, S.-Y. Han, J.Y. Seo, D. Jung, Y. Jeon, J.H. Lee, **Topical Application of Peptide Nucleic Acid Antisense Oligonucleotide for MMP-1 and Its Potential Anti-Aging Properties**, J. Clin. Med. 2023, 12, 2472.

Matrix metalloproteinase-1 (MMP-1) is a zinc-containing endopeptidase that degrades dermal collagen and other extracellular matrix molecules. It is recognized as one of the most important indicators of cellular senescence and age-related skin changes. Here, we introduced a novel MMP-1 peptide nucleic acid (PNA) derivative—PNA-20 carboxyethyl fluorene (CEF)—which can interact with and consequently silence the MMP-1 gene sequence. The investigation on the efficacy of PNA-20 CEF in MMP-1 silencing in human dermal fibroblasts revealed significantly decreased expression of MMP-1 at both gene and protein levels. Treatment with PNA-20 CEF showed significantly increased expression of collagen I protein, indicating its potential role in preventing the degradation of collagen I and consequently combating the skin aging process. Its topical application on 3D human skin tissue showed successful absorption into the epidermis and the upper dermis. Furthermore, the additional 4-week single-arm prospective study on 21 Asian women revealed improvements in facial wrinkles, skin moisture, elasticity, and density after the use of the topical PNA-20 CEF cosmeceutical formulation. Additional in-vitro and ex-vivo studies are needed for a comprehensive understanding of the skin anti-aging effects of MMP-1 PNA.

R. Santoprete, V. Hourblin, A. Foucher, O. Dufour, D. Bernard, Y. Domanov, B. Querleux, A. Potter, **Reduction of wrinkles: From a computational hypothesis to a clinical, instrumental, and biological proof,** Skin Research & Technology, Volume 29, Issue 3, March 2023

Background: Facial wrinkles are clear markers of the aging process, being chronological, photo-induced, or reflecting repetitive facial expressions. The aim of this study is to provide new insights into the biophysical and biological mechanisms involved in the formation, prevention, or elimination of the expression wrinkles. Materials and methods: We use a computational model to get a better understanding of the wrinkle mechanical behavior and evolution after skin softening and suggesting a possible antiaging mechanism. Then, we provide a clinical demonstration of the antiwrinkle effect of a long-term application of a 20% glycerol in a moisturizer formula (GBM) versus its vehicle on crow's feet. Skin hydration, elasticity, and wrinkles visibility were evaluated by a combination of clinical and instrumental in vivo data, inverse finiteelement analysis, and proteomic data. Results: The computational model shows a predominantly compressive stress beneath the wrinkle and its significant decrease by the softening of stratum corneum. The associated clinical study confirmed a significant increase of skin hydration and elasticity as well as a decrease of wrinkle visibility after 2 and 4 months as application for both formulas; this effect being stronger for GBM. A softening effect on stratum corneum and dermis was also observed for the GBM. Furthermore, proteomic data revealed an effect of upregulation of four proteins associatedwith desquamation, cell-glycan extracellular interactions, and protein glycation/oxidation, functions related to the tissue mechanics and adhesion. Conclusions: We provide an in vivo demonstration of the anti-ageing benefit of glycerol at high dose (20%) reflected by a cumulative skin surface softening effect. The use of high moisturizing potent formulations should bring additional performance to other conventional moisturizing formulations.

*A. Vitorino de Souza Neto, D. Quintas Balla, T. Marcilio Candido, C. Rosado, A. Rolim Baby, F. Vieira Lima Solino Pessoa***, Effect of an Emollient Emulsion Containing 15.0% of Caprylic/Capric Triglyceride on the Urocanic Acid of the Stratum Corneum,** Life 2023, 13, 876

Natural moisturizing factor (NMF) includes several compounds in the stratum corneum (SC), among them, urocanic acid (UCA). Ultraviolet (UV) exposure turns the *trans*-UCA of the SC into its *cis*

isomer. We investigated the impact of a topical emollient emulsion treatment on theUCA isomers of the SC exposed to artificial UV stress. Aliquots of emollient emulsion were applied in healthy subjects for 2 h on delimited areas of the volar forearm, then, the SC was removed by tape stripping. Tapes were irradiated in a solar simulator chamber and a high performance liquid chromatograph was used to quantify UCA isomers from stripped SC extract. The amount of both UCA isomers were almost twice higher in the SC treated with the emollient emulsion. We also observed that the UV irradiation elevated the amount of the *cis*/*trans* UCA ratio on the SC (non-treated and treated), suggesting that the emollient sample was not able to avoid the UCA isomerization. The in vivo tests corroborated with the UCA data obtained ex vivo, since we found an increase in the superficial skin hydration with respective reduction of the TEWL, probably occurring by the occlusion performed by the emollient emulsion containing 15.0% *w*/*w* of caprylic/capric triglyceride.

K. Narra, S.K. Naik, A.S. Ghatge, **A Study of Efficacy and Safety of Ashwagandha (Withania somnifera) Lotion on Facial Skin in Photoaged Healthy Adults**, Cureus 15(3), 2023

Background: Facial skin has an essential cosmetic function in both men and women, and photoaged skin can affect the quality of life in healthy people. Ashwagandha (*Withania somnifera*) which is also called Indian ginsenghas adaptogenic properties and is used in traditional Indian medicine to maintain balance, energize, and rejuvenate. Objective: This randomized, double-blind, and placebo-controlled study assessed the efficacy and safety of topical application of lotion containing 8% standardized Ashwagandha root extract on improvement of skin parameters in the photoaged facial skin of healthy subjects. Methods. Fifty-six healthy men and women aged between 18 and 60 years with Fitzpatrick phototype III-VI skin gradewere randomized to receive the topical application (lotion on facial skin) of either Ashwagandha 8% (AG,n=28), or an identical placebo (PL, n=28) for 60 days. The primary outcome was the change from baseline on day 60 in the scores for global physician assessment scoring for the five dermatological signs (skin wrinkles, pores, hydration/moisture, skin brightness/tone, and pigmentation) on facial skin. Secondary outcomes were changes from baseline in the transepidermal water loss (TEWL), melanin index, hydration, and skinelasticity (R2 ratio). Another efficacy outcome was quality of life using the health-specific Short Form Health Survey-12 (SF-12). Safety was assessed using local reactions and adverse events. Three (1 AG, 2 PL) patients were lost to follow-up and per-protocol (PP) data included 53 patients (27 AG, 26 PL). For measurement data, repeated measures analysis of variance (ANOVA) was used to assess treatment effect at different time periods in the PP dataset (n=53). Two groups were compared for differences using a t-test for continuous data or a Mann-Whitney 'U' test for ordinal data. Adverse events were compared between two groups using the chi-square test. Results: Greater reduction ($p<0.0001$) in total physician assessment scores from baseline to day 60 was observed with AG (-74.69%) compared to PL (-48.68%). There was a greater improvement in TEWL, skin hydration, and skin elasticity (R2 ratio) with AG as compared to placebo ($p<0.0001$). However, the change in melanin index was similar in the two groups at the end of day 60 ($p=0.969$). The percentage increase in melanin index from baseline to day 60 in the PP dataset was by -2.82% with AG and -1.78% with PL, whereas the percentage reduction in TEWL from baseline to day 60 in the PP dataset was by -15.12% with AG and -8.34% with PL. Similarly, greater percentage improvements were seen with AG as compared to PL for skin hydration (20.66% with AG and 9.5% with PL) and elasticity was assessed by the R2 ratio (16.34% with AG and 3.73% with PL). Adverse events were comparable in the two groups. Conclusions: Topical application of a lotion containing Ashwagandha standardized root extract improves the skin condition and quality of life in photoaged healthy individuals. Further studies with different skin types and standard comparators are warranted to substantiate these claims of benefit.

K. Shoji, A. Kameda, K. Furuichi, **Effects of Milk Amazake on Skin Elasticity, Hydration, and Transepidermal Water Loss: An 8-Week DoubleBlind, Randomized, Controlled Trial**, Journal of Oleo Science, 72, (3) p. 329-335 (2023)

Amazakes made from rice and *koji* mold are rich in nutrients, such as groups of vitamin B, minerals, essential amino acids, and oligosaccharides, and can improve skin moisturization. However, there are few reports on milk amazake, made from milk and *koji* mold. Therefore, in this double-blind, randomized controlled trial, we investigate the effect of milk amazake on skin function. Healthy women and men (n = 40) were randomly allocated to the milk amazake or placebo group. The test beverage was consumed once daily for 8 weeks. Skin elasticity, hydration, and transepidermal water loss (TEWL) were measured at baseline and at weeks 4 and 8, and all subjects completed the trial. Skin elasticity (R2 and R5) at 8 weeks was significantly increased in the milk amazake group compared with baseline. In addition, changes in R5 in the milk amazake group were significantly higher than those in the placebo group. Conversely, TEWL, an evaluation item of skin moisturizing function at 8 weeks, was significantly decreased in the active group compared with baseline. In conclusion, milk amazake may be useful as a functional food for improving skin function.

M. Yoshida, K.-O. Shin, S. Muraoka, Y. Choi, J.-H. Park, S.-H. Park, J.-T. Hwang, K. Park, Y. Uchida, **The Epidermal Environment's Influence on the Dermal Environment in Response to External Stress**, Skin Pharmacol Physiol 2023;36: p.149–159

The outermost layer of the skin, the epidermis, is directly exposed to external stress (e.g., irradiation, allergens, and chemicals). Changes in epidermal conditions/environment in response to this stress could also influence conditions of the dermis, located directly beneath the epidermis. Yet, whether/how any epidermal environmentchanges in response to external stress affect dermal functions has not been completely clarified. Methods: We employed ultraviolet irradiation B (UVB) (which hardly reaches the dermis) as a model of external stress. Human keratinocytes and human dermal fibroblasts were treated with UVB and conditioned medium of keratinocytes exposed to UVB (UVB-keratinocyte-M), respectively. We assessed (1) inflammatory cytokines and lipid mediators in keratinocytes; (2) matrix metalloprotease (MMP) levels and collagen degradation in fibroblasts; (3) ex vivo organcultured human skin was treated with UVB. MMP levelsand collagen degradation were examined; (4) test whether the mixture of agent (agent cocktail) consisting of dihydroceramide, niacin amide, resveratrol, glucosyl hesperidin, and phytosterol ester that has been shown to improve skin barrier integrity can mitigate influence of UVB in skin; and (5) a pilot one-arm human clinical test to assess efficacy of formulation containing agent cocktail on stratum corneum hydration, skin elasticity, and wrinkle index. Results: Inflammatory-cytokine and -lipid mediator production were increased in cultured keratinocytes treated with UVB, while matrix MMP-1, -3, and -9 production and collagendegradation were increased in fibroblasts incubated with UVB-keratinocyte-M. mRNA expression of COL1A1 (thatcodes type 1 collagen) levels was decreased in fibroblastsincubated with UVB-keratinocyte-M. The study using ex vivo organ-cultured human skin showed both MMP-1 and MMP- 9 expression were increased in both epidermis and dermis and increased dermal collagen degradation following UVBirradiation. Increased MMP production and collagen degradation were attenuated by application of an agent cocktail. Finally, a pilot clinical study demonstrated that the formulation containing our agent cocktail likely has the ability to improve skin hydration, increase skin elasticity, and reduce the appearance of wrinkles. Conclusion: Epidermal changes in epidermal environment and conditions in response to external stress affect dermal conditions, and these negative effects of external stress on various skin layers can be pharmacologically mitigated.

S. Li, X. He, Z. Zhang, X. Zhang, Y. Niu, A. Steel, H. Wang, **Efficacy and safety of a facial serum and a mask containing salicylic acid and lipohydroxy acid in acne management: A randomized controlled trial**, J Cosmet Dermatol. 2023;22: p. 2502–2511

Background: Inflammatory and non-inflammatory acne lesions constitute a significant clinical challenge in acne subjects. Aim: To evaluate the efficacy and safety of a facial serum and a mask containing salicylic acid and lipohydroxy acid for improving skin conditions.Methods: This randomized controlled trial included adults with comedones, postinflammatory erythema (PIE) and/or hyperpigmentation (PIH) in Shanghai, China in July 2021. Participants were randomly assigned 1:1 to receive the study Serum + Mask or serum alone for 8 weeks. Acne severity, comedones, papules, pustules, PIE, PIH, skin pores, skin tone evenness, sebum secretion, skin hydration, and trans-epidermal water loss were evaluated at T0d, T1d, T7d, T14d, T28d, and T56d. Results: Eighty-three participants were included, including 41 and 42 in the Serum + Mask and Serum groups, respectively. Acne severity, density of skin pores, skin tone evenness, PIH foci on face, PIE foci on nose, intensity of PIE and PIH, closed comedones on face, open comedones on nose, sebum secretion, and skin hydration were significantly improved from baseline after 8 weeks of treatment in both groups (all $p < 0.05$). Addition of the mask improved the number of closed comedones (-6.56 ± 0.39 vs. -5.19 ± 0.44, $p = 0.022$) and acne severity (-0.39 ± 0.08 vs. -0.12 ± 0.09, $p = 0.026$) substantially more than using the serum alone. No adverse reaction was reported in either group. Conclusions: The study serum improved skin conditions by regulating skin barrier function and achieving a balance of skin hydration and sebum secretion, removing comedones and improving PIE and PIH. Addition of the mask accelerated the effects without compromising safety.

K. Miyamoto, Y. Inoue, X. Yan, S. Yagi, S. Suda, M. Furue, **Significant Reversal of Facial Wrinkle, Pigmented Spot and Roughness by Daily Application of *Galactomyces* Ferment Filtrate-Containing Skin Products for 12 Months—An 11-Year Longitudinal Skin Aging Rejuvenation Study**, J. Clin. Med. 2023, 12, 1168

Facial skin aging is an important psychophysical and social concern, especially in women. We compared facial parameters reflecting aging of the skin in 1999 and 2010 in 86 female volunteers. Then, all subjects applied three Galactomyces ferment filtrate-containing skin care products (G3 products; SK-II Facial Treatment Essence, SK-II Cellumination Essence, and SK-II Skin Signature Cream) twice daily

for 12 months (M), with the skin parameters being measured at 2 M, 8 M, and 12 M during this period. Facial skin aging parameters such as wrinkles, hyperpigmented spots, and roughness significantly deteriorated during the 11-year interval. This 11-year aging process was associated with reduced hydration and increased transepidermal water loss (TEWL). Notably, treatment with G3 products significantly and cumulatively increased skin hydration with a correlated reduction of TEWL during the 12 M treatment period. Such treatment also significantly and cumulatively reversed the 11-year facial skin aging in the three parameters of wrinkles, spots, and roughness. These results suggest that facial skin retains the potential to recover from the aging process when it is applied with appropriate cosmetic agents.

C. Valpaços, S. Leclerc-Mercier, L. Lopes, D. Svoboda, D. Miranda, P. Correia, J. Junior, E. Fernandes, V. Francois-Newton, M.B. Mandary, A. Gueniche, J. Tan, D. Kerob, **Benefits of the Dermocosmetic Mineral 89 Probiotic Fractions Adjunct to Topical Retinoids for Anti-Aging Benefits**, Clinical, Cosmetic and Investigational Dermatology 2023:16, p. 375–385

Purpose: Tretinoin is a topical gold standard for photoaging treatment. However, patient adherence can be impaired by local tolerability in the frst 1–2 weeks of treatment. Mineral 89 Probiotic Fractions® (M89PF) containing Vichy volcanic mineralizing water®, probiotic fractions, hyaluronic acid, niacinamide and tocopherol was developed to fulfll the need for adjunctive products that can reinforce skin barrier and manage retinoid induced irritation. Patients and Methods: The study included 38 women, aged 44–60 years, phototype II–VI, applying 0.025% tretinoin gel once nightly for 84 days. For 28 days, one hemi face was treated with M89PF and sunscreen SPF 50+ while other hemi face received sunscreen only. Then, M89PF application was changed to full face. Evaluations were performed at days 0, 7, 28 and 84. Erythema, dryness, fne lines, skin tone, radiance and pore appearance were assessed by a dermatologist. Tolerability was evaluated through selfassessment questionnaire. Skin hydration levels, inflammatory and oxidative stress biomarkers were analyzed by immunological assay: Interleukin (IL)-8, IL1-alpha, IL1-Receptor Antagonist (IL-1Ra), Prostaglandin E2 (PGE2), Catalase and Superoxide Dismutase (SOD). Results: Hemiface analysis showed that erythema, fne lines, skin tone, radiance, pore appearance, hydration, tightness, dryness, burning, itching and stinging sensations were improved ($p<0.05$) on the M89PF side. At full face analysis on D84, erythema, fne lines, skin tone, radiance and pore appearance were improved compared to D0 ($p<0.001$). Tightness, dryness, burning, itching and stinging were reduced when compared to D7 ($p<0.05$). Dermatology Life Quality Index (DLQI) and Skindex 16 showed improvement in quality of life ($p<0.05$). IL-1RA increased at D28 ($p=0.003$) and PGE2 decreased at D28 and D84 compared to D0 ($p<0.01$). Conclusion: M89PF reduced retinoid induced irritation with a good tolerability profle and, used as an adjunct to topical tretinoin, signifcantly improved skin hydration, erythema, fne lines, skin tone, radiance and pore appearance.

Y. Matsumoto, N. Mochimaru, H.i Yasuda, K. Pak, T. Kobayashi, K. Yamamoto-Hanada, Y. Ohya, M. Kiuchi, M. Kurokawa, K. Yoshida, **In vivo analysis of the stratum corneum of Japanese neonates and infants using confocal Raman spectroscopy: a pilot study,** Skin Res Technol. 2023;29

It is well known that transepidermal water loss (TEWL) and moisturization are implicated in atopic dermatitis (AD) onset. The amount of ceramide in the stratum corneum (SC), which is important for skin barrier function, has also been implicated in AD. However, how the physiological properties of the skin change over time remains unclear. There are a few reports on the natural moisturizing factor (NMF) and water content in the SC of neonates and infants using confocal Raman spectroscopy (CRS), but no reports on ceramide. Identifying the specific SC components involved in AD onset may aid with early intervention in high-risk patients and efficiently prevent AD by replenishing these components upon depletion.

A.S. Evora, N. Abiakam, H. Jayabal, P.R. Worsley, Z. Zhang, S.A. Johnson, M.J. Adams, D.L. Bader, **Characterisation of superfcial corneocytes in skin areas of the face exposed to prolonged usage of respirators by healthcare professionals during COVID-19 pandemic**, Journal of Tissue Viability 32 (2023) 305–313

Introduction: During the COVID-19 pandemic healthcare workers (HCWs) have used respiratory protective equipment for prolonged periods, which has been associated with detrimental effects on the underlying skin. The present study aims to evaluate changes in the main cells (corneocytes) of the stratum corneum (SC) following prolonged and consecutive use of respirators. Methods: 17 HCWs who wore respirators daily during routine hospital practice were recruited to a longitudinal cohort study. Corneocytes were collected via tape stripping from a negative control site (area outside the respirator) and from the cheek which was in contact with the device. Corneocytes were sampled on three occasions and analysed for the level of positive-involucrin cornifed envelopes (CEs) and the amount of desmoglein-1 (Dsg1), as indirect measurements of immature CEs and corneodesmosomes (CDs), respectively.

These were compared to biophysical measurements (Transepidermal water loss, TEWL, and SC hydration) at the same investigation sites. Results: A large degree of inter-subject variability was observed, with maximum coeffcients of variation of 43% and 30% for the level of immature CEs and Dsg1, respectively. Although it was observed that there was not an effect of prolonged respirator usage on the properties of corneocytes, the level of CDs was greater at the cheek than the negative control site ($p < 0.05$). Furthermore, low levels of immature CEs correlated with greater TEWL values after prolonged respirator application ($p < 0.01$). It was also noted that a smaller proportion of immature CEs and CDs was associated with a reduced incidence of self-reported skin adverse reactions ($p < 0.001$). Conclusions: This is the frst study that investigated changes in corneocyte properties in the context of prolonged mechanical loading following respirator application. Although differences were not recorded over time, the levels of CDs and immature CEs were consistently higher in the loaded cheek compared to the negative control site and were positively correlated with a greater number of self-reported skin adverse reactions. Further studies are required to evaluate the role of corneocyte characteristics in the evaluation of both healthy and damaged skin sites.

R.R. Aruan, H. Hutabarat, A. Astasari Widodo, M.T.C.C. Firidiyono, C. Wirawanty, L. Fransziska, **Double-blind, Randomized Trial on the Effectiveness of Acetylhexapeptide-3 Cream and Palmitoyl Pentapeptide-4 Cream for Crow's Feet**, Clin Aesthet Dermatol. 2023;16(2): p. 37–43.

Background: Crow's feet is one of the signs of skin aging. Many studies regarding skin aging have been carried out in Caucasians, as for Asians, there are different genotypes and phenotypes. Some anti-aging treatments carry a slightly higher risk of side effects and irritation in Asian skin. Currently, the use of topical active peptides for anti-aging, Acetylhexapeptide-3 (AHP-3) and Palmitoyl pentapeptide-4 (PPP-4), has been widely developed. This study aimed to investigate the anti-aging e_ ects of AHP-3 and PPP-4 on the Asian patient with crow's feet. Methods: This study was a double-blind randomized trial using 21 Indonesian female subjects aged 26 to 55 years for eight weeks and divided into three groups: AHP-3 cream, PPP-4 cream, and placebo. The cream was applied twice daily to the periorbital area. The three groups were assessed using Corneometer, Tewameter, Cutometer, digital photography and Crow's Feet Grading Scale. Results: Based on clinical photos and data, improvements were found in several subjects using AHP-3 and PPP-4. PPP-4 appeared to demonstrate better results when compared to AHP-3 based on data, clinical photos, and self-assessment questionnaire. Conclusion: PPP-4 demonstrated better results when compared to AHP-3 and placebo. This initial study provides an opportunity for further study with a more adequate number of samples and duration.

A. Samadi, M. Movaffaghi, F. Kazemi, T. Yazdanparast, S.A. Nasrollahi, A. Firooz, **Tolerability and efficacy assessment of an oral collagen supplement for the improvement of biophysical and ultrasonographic parameters of skin in middle eastern consumers**, J Cosmet Dermatol. 2023;22: p. 2252–2258

Background: Topical skin care products often do not reach the deeper layers of the skin, and oral hydrolyzed collagen is one of the newest and most popular systemic supplementations for skin rejuvenation. However, there are limited information in case of Middle Eastern consumers. Objective: The purpose of this study was to evaluate the tolerability and efficacy of an oral collagen supplement for improvement of skin elasticity, hydration, and roughness in Middle Eastern consumers.Methods and Materials: It was a 12-week, before-after clinical study, conducted on 20 participants (18 women and 2 men) aged 44.15 ± 5.36 years with skin type III–IV. Skin elasticity parameters (R0, R2, R5, and R7), skin hydration and friction, as well as the thickness and echo density of the dermis, were measured after six and 12 weeks daily intake of the study product, as well as 4 weeks after stopping its use (week 16). Participants' satisfaction was assessed on the basis of their answers to the standard questionnaire, and tolerability of the product was assessed by monitoring the adverse effects. Results: A significant improvement was detected in R2, R5, and skin friction at week 12 (p-values 0.041, 0.012 and <0.01, respectively). At week 16, the values remained at an increased level, which indicates the persistence of the results. The increase of dermis density in week 16 was also significant (p-value = 0.03). Moderate overall satisfaction was reported with the treatment, and a few gastrointestinal complications were reported. Conclusion: The study demonstrated that oral collagen peptides could significantly improve the skin elasticity, roughness, and dermis echo density, and they also proved to be safe and well-tolerated.

A. Markiewicz-Tomczyk, E. Budzisz, A. Erkiert-Polguj, **A Subjective and Objective Assessment of Combined Methods of Applying Chemical Peels and Microneedling in Antiaging Treatments**, J. Clin. Med. 2023, 12, 1869

Combined methods of applying chemical peels and antioxidants could be an option for skin rejuvenation with no down-time. The penetration of active substances can be enhanced by microneedle

mesotherapy. The study was conducted on a group of 20 female volunteers, aged 40–65 years. All volunteers received a series of eight treatments performed every seven days. The whole face was first treated with azelaic acid; following this, the right side received a 40% solution of vitamin C and the left side 10% vitamin C with microneedling. Hydration and skin elasticity were markedly improved, with better results observed on the microneedling side. Melanin and erythema index decreased. No significant side effects were seen. The combination of active ingredients and delivery techniques have great potential to enhance the effectiveness of cosmetic preparations, probably by multidirectional ways of action. In our study, we demonstrated that both 20% azelaic acid + 40% vitamin C treatment and 20% azelaic acid + 10% vitamin C + microneedle mesotherapy efficiently improved the assessed parameters of aging skin. However, the use of microneedling mesotherapy as a means of direct delivery of active compound to the dermis enhanced the effectiveness of the studied preparation.

L. Duteil, C. Queille-Roussel, H. Issa, N. Sukmansaya, J. Murray, F. Fanian, **The Effects of a Non-crossed-linked Hyaluronic Acid Gel on the Aging Signs of the Face versus Normal Saline: A Randomized, Double-blind, Placebo-controlled, Split-faced Study**, Journal of Clinical and Aesthetical Dermatology, February 2023, Volume 16, Number 2

Background: Skin bio-revitalization improves skin quality globally; it permits the rejuvenation of the skin by increasing hydration and by reconstructing an optimal physiological environment for the skin cells together with a micro-filling effect. OBJECTIVE: To assess the comparative efficacy of a non-cross-linked hyaluronic acid (NCHA) preparation (M-HA®10, FILLMED Laboratories, France) on fine lines reduction and on skin hydration, radiance and mechanical properties, after three sessions of multiple intradermal injections, active versus placebo, on the face of subjects presenting aging signs. Methods: Thirty healthy subjects received filler injections on one side and a control solution (saline) on the contralateral side of the face. Fine lines depth, skin hydration, and mechanical properties were evaluated using instrumental methods. Skin radiance, cheek fold and crow's feet were scored clinically. In addition, Investigator and subject satisfaction rates were evaluated by the Global Aesthetic Improvement Scale and a subject self-assessment questionnaire. Results: Ten days after the last multi-injection session, the following significant results were observed compared to the control: a reduction of both crow's feet wrinkle depth (in the 110 to 1000µm range, -10% for NCHA and +7% for control) and clinical scoring of cheek wrinkles, and increases in skin radiance and hydration (+35%) and also skin firmness (+27%). The Investigator found that NCHA either improved or much improved the aesthetic aspect on 82% of subjects whereas no improvement was found on the saline side. Subjects found that NCHA significantly reduced wrinkles and increased both skin firmness and elasticity. Conclusion: Intradermal injection of NCHA can improve the quality of facial skin with aging signs by reducing fine wrinkles and improving hydration, firmness and radiance.

M. Lee, E. Kim, H Ahn, S. Son, H. Lee, **Oral intake of collagen peptide NS improves hydration, elasticity, desquamation, and wrinkling in human skin: a randomized, double-blinded, placebo-controlled study**, Food Funct., 2023, 14, 3196

Collagen hydrolysate, which contains bioactive peptides, is used as a dietary supplement for the refinement of elasticity, hydration, desquamation, and wrinkling of aging human skin. Here, we conducted a double-blind, randomized, and placebo-controlled oral administration study on the effects of a collagen peptide (CPNS) containing dipeptides, including Gly-Pro and Pro-Hyp, on skin wrinkling, desquamation, elasticity, and hydration. Our results show that an intake of 1650 mg per day of CPNS for 12 weeks hadbeneficial effects on skin health in a cohort of women aged from 30 to 60 years (n = 100). Compared with the placebo group, skin desquamation, hydration, skin wrinkling, and elasticity were significantly improved after 4, 4, 12, and 12 weeks of administration, respectively. In a safety test of CPNS ingestion, none of the participants showed any side effects during the clinical study period. These results demonstrate that the low molecular weight bioactive peptides contained in CPNS, such as Gly-Pro and Pro-Hyp, exert positive effects on skin hydration, elasticity, desquamation, and wrinkling.

B.R. Thomas, X.L. Tan, S. Van Duijvenboden, S.C. Hogan, A.J. Hughes, S.S. Tawfk, S. Dhoat, R. Atkar, E.J. Robinson, S.R. Rahman, S. Rahman, R.A. Ahmed, R. Begum, H. Khanam, E.L. Bourne, E.L. Wozniak, C.A. Mein, D.P. Kelsell, E.A. O'Toole, **Deep palmar phenotyping in atopic eczema: patterns associated with flaggrin variants, disease severity and barrier function in a South Asian population**, Br J Dermatol 2023; 188: p. 785–792

Background: Hyperlinear palms are described as a feature of loss-of-function (LoF) variants in flaggrin (FLG).Objectives To explore the phenotype of participants (age<31 years) with atopic eczema of Bangladeshi ancestry from East London and investigate which factors best associate with LoF FLG variants. Methods: A cross-sectional study with participants recruited between May 2018 and December 2020. Patterns of palmar linearity were categorized and modelled with the Eczema Area and Severity

Index (EASI), transepidermal water loss (TEWL), skin hydration (SH) and LoF FLG variants. Results: There were 506 complete cases available. Five palm patterns were noted. The 'prominent diamond' pattern associated best with EASI [marginal effects (ME) 2.53, 95% confdence interval (CI) 1.74–3.67], SH (ME 0.85, 95% CI 0.78–0.96) and TEWL (ME 1.32, 95% CI 1.11–1.62). Using fve palm patterns had some ability to discriminate LoF FLG variants [area under the receiver operator characteristic (AUROC) 76.32%, 95% CI 71.91–80.73], improving to 77.99% (73.70–82.28) with the addition of SH. In subgroup analysis with only fne perpendicular/prominent diamond patterns the AUROC was 89.11% (95% CI 84.02–94.19). Conclusions: This was a single-centre study design with humans classifying clinical patterns. The stability of temperature and humidity was not guaranteed across TEWL and SH measurements despite using a climate-controlled room. Palm patterns associate with EASI and TEWL. The fne perpendicular/prominent diamond patterns are markers to detect the absence/presence of LoF FLG variants, respectively.

L. Rocha Mota, I. da Silva Duarte, T. Rodrigues Galache, K.M. Dos Santos Pretti, O. Chiarelli Neto, L. Jansiski Motta, A. C. Ratto Tempestini Horliana, D. de Fátima Teixeira da Silva, C. Pavani, **Photobiomodulation Reduces Periocular Wrinkle Volume by 30%: A Randomized Controlled Trial**, Photobiomodul Photomed Laser Surg., 2023 Feb;41(2): p. 48-56

Objective: This study aimed to evaluate red and amber light-emitting diode protocols for facial rejuvenation at the same light dose. Background: The demand for minimally invasive cosmetic procedures to address skin aging has grown throughout the world. In vitro red and amber photobiomodulation (PBM) has been shown to improve collagen synthesis. Meanwhile, red PBM has already been studied in clinical trials; however, a comparison of the use of different wavelengths at the same light dose to reduce periocular wrinkles has not yet been performed. Methods: This split-face, randomized clinical trial recruited 137 women (40-65 years old) presenting with skin phototypes II-IV and Glogau photoaging scale types II-IV. The individuals received 10 sessions for 4 weeks of red (660 nm) and amber (590 nm) PBM (3.8 J/cm), one at each side of the face. The outcomes, measured before and after the treatments, were the periocular wrinkle volume measured by VisioFace RD equipment; hydration measured by the Corneometer CM 825; skin elasticity measured by the Cutometer Dual MPA 580; and quality of life determined by adapted versions of validated questionnaires [Melasma Quality of Life Scale-Brazilian Portuguese (MelasQoL-BP) and Skindex-29]. Results: There was a significant reduction in wrinkle volume after red (31.6%) and amber (29.9%) PBM. None of the treatments improved skin hydration and viscoelasticity. Both questionnaires showed improvements in participants' quality of life. Conclusions: PBM, both at red and amber wavelengths, is an effective tool for rejuvenation, producing a 30% wrinkle volume reduction. The technique has strong potential in patients with diabetes or those presenting with keloids, conditions for which highly inflammatory rejuvenating procedures are not indicated.

J. Maloh, M. Wei, W.C. Hsu, S. Caputo, N. Afzal, R.K. Sivamani, **The Effects of a Fasting Mimicking Diet on Skin Hydration, Skin Texture, and Skin Assessment: A Randomized Controlled Trial**, J. Clin. Med. 2023, 12, 1710

Diet and nutrition have been shown to impact dermatological conditions. This has increased attention toward integrative and lifestyle medicine in the management of skin health. Emerging research around fasting diets, specifically the fasting-mimicking diet (FMD), has provided clinical evidence for chronic inflammatory, cardiometabolic, and autoimmune diseases. In this randomized controlled trial, we evaluated the effects of a five-day FMD protocol, administrated once a month forthree months, on facial skin parameters, including skin hydration and skin roughness, in a group of 45 healthy women between the ages of 35 to 60 years old over the course of 71 days. The results of thestudy revealed that the three consecutive monthly cycles of FMD resulted in a significant percentage increase in skin hydration at day 11 (p = 0.00013) and at day 71 (p = 0.02) relative to baseline. The results also demonstrated maintenance of skin texture in the FMD group compared to an increase in skin roughness in the control group (p = 0.032). In addition to skin biophysical properties, selfreported data also demonstrated significant improvement in components of mental states such ashappiness (p = 0.003) and confidence (0.039). Overall, these findings provide evidence for the potential use of FMD in improving skin health and related components of psychological well-being.

M.N. Takuathung, P. Klinjan, W. Sakuludomkan, N. Dukaew, R. Inpan, R. Kongta, W. Chaiyana, S. Teekachunhatean, N. Koonrungsesomboon, **Efficacy and Safety of the Genistein Nutraceutical Product Containing Vitamin E, Vitamin B3, and Ceramide on Skin Health in Postmenopausal Women: A Randomized, Double-Blind, Placebo-Controlled Clinical Tria**l, J. Clin. Med. 2023, 12

Skin aging is one of the most concerning issues that occur after menopause. The Genistein Nutraceutical (GEN) product, containing genistein, vitamin E, vitamin B3, and ceramide, has been

formulated as a topical anti-aging product for improving the health of postmenopausal women's facial skin. This study aimed to investigate the efficacy and safety of the GEN product on postmenopausal women's facial skin. This randomized, double-blind, placebo-controlled trial randomly assigned 50 postmenopausal women to receive either the GEN product (n = 25) or the placebo (PLA) product (n = 25), topically applied twice daily for 6 weeks. The outcome assessments included multiple skinm parameters related to skin wrinkling, color, hydration, and facial skin quality at baseline and week 6. The percentage mean changes or absolute mean changes, where appropriate, in skin parameters were compared between the two groups. The mean age of the participants was 55.8 ± 3.4 years. For skin wrinkling and skin color parameters, only skin redness was significantly higher in the GEN group when compared to the PLA group. Following the application of the GEN product, skin hydration increased while fine pores and their area decreased. Subgroup analysis of older women (age ≥ 56 years) with adequate compliance found significant differences between the two groups in the percentage mean changes of most skin wrinkle parameters. The GEN product has benefits for the facial skin of postmenopausal women, particularly those who are older. It can moisturize facial skin, lessen wrinkles, and enhance redness.

L. Ma, Y. Niu, C. Yuan, T. Bai, S. Yang, M. Wang, Y. Li, L. Shao, **The Characteristics of the Skin Physiological Parameters and Facial Microbiome of "Ideal Skin" in Shanghai Women**, Clinical, Cosmetic and Investigational Dermatology 2023: 16, p. 325–337

Purpose: Everyone pursues perfect skin, but there exist significant differences between cultures, and no commonly accepted standards have been established. Therefore, our study attempted to define the "ideal skin" of oriental women and analyze the relationship between different skin physiological parameters and microbiomes. Patients and Methods: Based on our customized grading standard, the VISIA CR photos of 111 young women aged from 18 to 25 in Shanghai were collected and scored by the severity of pores, acne, spots, and wrinkles. The volunteers were then divided into "ideal skin" (W1), "normal skin" (W2), and "undesirable skin" (W3) groups. The physiological parameters of facial skin were measured by non-invasive instrumental methods, and the skin microbiome was analyzed by 16S rRNA and ITS high-throughput sequencing. Results: From "ideal skin" to "undesirable skin", the skin physiological parameters, α-diversity, and composition of the facial microbiome showed noticeable regular changes. Compared with the "normal skin" (W2) and "undesirable skin" (W3), the "ideal skin" (W1) group had lower sebum content, TEWL, melanin, hemoglobin, and roughness but higher hydration content and skin pH value. Furthermore, the Shannon index of skin bacteria was significantly increased in W1 (P = 0.004), suggesting that the ideal skin had higher species diversity. From W1 to W3, the species composition was changed significantly. The abundance of *Actinobacteria* was increased, while *Proteobacteria* and *Bacteroidetes* were decreased. Correspondingly, the abundances of lipophilic *Propionibacterium* and *Malassezia* were increased, while the abundances of *Stenotrophomonas, Pseudomonas, Ralstonia*, and *Streptococcus*, were significantly decreased. Additionally, Spearman correlation analysis revealed strong correlations between the physiological parameters and the microbiota. Notably, the Shannon index of skin bacteria was significantly positively correlated with skin hydration (P = 0.03) but negatively correlated with the abundance of *Cutibacterium* (P = 0.000), hemoglobin content (P = 0.025), and sebum content (P = 0.5). Therefore, the skin hydration content and the abundance of *Cutibacterium* played an important role in maintaining the α-diversity and skin homeostasis. Conclusion: Ideal skin had better water-oil balance and barrier function, higher microbial diversity, and more reasonable species distribution. Therefore, daily skincare needs to control skin oil and maintain skin microecological balance to achieve ideal skin conditions for young women aged 18–25 years old.

J. Kim, Y.I. Lee, S. Mun, J. Jeong, D.-G. Lee, M. Kim, H.W. Jo, S. Lee, K. Han, J.H. Lee, **Efficacy and Safety of Epidermidibacterium Keratini EPI-7 Derived Postbiotics in Skin Aging: A Prospective Clinical Study**, Int. J. Mol. Sci. 2023, 24, 4634

The present study investigated the effect of topical application of Epidermidibacterium Keratini (EPI-7) ferment filtrate, which is a postbiotic product of a novel actinobacteria, on skin aging, by performing a prospective randomized split-face clinical study on Asian woman participants. The investigators measured skin biophysical parameters, including skin barrier function, elasticity, and dermal density, and revealed that the application of the EPI-7 ferment filtrate-including test product resulted in significantly higher improvements in barrier function, skin elasticity, and dermal density compared to the placebo group. This study also investigated the influence of EPI-7 ferment filtrate on skin microbiome diversity to access its potential beneficial effects and safety. EPI-7 ferment filtrate increased the abundance of commensal microbes belonging to Cutibacterium, Staphylococcus, Corynebacterium, Streptococcus, Lawsonella, Clostridium, Rothia, Lactobacillus, and Prevotella. The abundance of Cutibacterium was significantly increased along with significant changes in Clostridium

and Prevotella abundance. Therefore, EPI-7 postbiotics, which contain the metabolite called orotic acid, ameliorate the skin microbiota linked with the aging phenotype of the skin. This study provides preliminary evidence that postbiotic therapy may affect the signs of skin aging and microbial diversity. To confirm the positive effect of EPI-7 postbiotics and microbial interaction, additional clinical investigations and functional analyses are required.

V. Rego Moraes, M. Oliveira Melo, P.M.B.G. Maia Campos, **Evaluation of Morphological and Structural Skin Alterations on Diabetic Subjects by Biophysical and Imaging Techniques**, Life 2023, 13, 579

Diabetes causes increased production of advanced glycation end products (AGEs), which may lead to irreversible damage to collagen fibers, and early and more accentuated signs of skin aging. Thus, the objective of this study was to evaluate diabetic skin's mechanical and morphological characteristics and compare these to healthy skin. Twenty-eight female participants aged between 39 and 55 years were enrolled: half had type 2 diabetes, and the others were healthy. Wrinkles, transepidermal water loss (TEWL), stratum corneum water content, skin color, elasticity, morphological and structural characteristics of epidermis and dermis echogenicity were evaluated using biophysical and skin imaging techniques. Higher TEWL values were observed in participants with diabetes, who also showed lower skin elasticity and wrinkles with greater volume, area, and depth. In addition, the Reflectance Confocal Microscopy (RCM) imaging analysis showed that all participants with diabetes presented polycyclic papillae and deformed and amorphous collagen fibers. The obtained data showed significant differences between healthy and diabetic skin and could help develop more specific topical treatments to improve the treatment of skin conditions in people with diabetes. Finally, RCM is an advanced imaging technique that allows for a more profound analysis of diabetic skin, which could assist in the evaluation of dermocosmetic treatments to improve the skin alterations caused by this disease.

L. Rocha Mota, I. da Silva Duarte, T. Rodrigues Galache, K.M. Dos Santos Pretti, O. Chiarelli Neto, L. Jansiski Motta, A.C. Ratto Tempestini Horliana, D. de Fátima Teixeira da Silva, C. Pavani, **Photobiomodulation Reduces Periocular Wrinkle Volume by 30%: A Randomized Controlled Trial**, Photobiomodul Photomed Laser Surg, 2023 Feb;41(2): p. 48-56

Objective: This study aimed to evaluate red and amber light-emitting diode protocols for facial rejuvenation at the same light dose. Background: The demand for minimally invasive cosmetic procedures to address skin aging has grown throughout the world. In vitro red and amber photobiomodulation (PBM) has been shown to improve collagen synthesis. Meanwhile, red PBM has already been studied in clinical trials; however, a comparison of the use of different wavelengths at the same light dose to reduce periocular wrinkles has not yet been performed. Methods: This split-face, randomized clinical trial recruited 137 women (40-65 years old) presenting with skin phototypes II-IV and Glogau photoaging scale types II-IV. The individuals received 10 sessions for 4 weeks of red (660 nm) and amber (590 nm) PBM (3.8 J/cm), one at each side of the face. Theoutcomes, measured before and after the treatments, were the periocular wrinkle volume measured by VisioFace RD equipment; hydration measured by the Corneometer CM 825; skin elasticity measured by the Cutometer Dual MPA 580; and quality of life determined by adapted versions of validated questionnaires [Melasma Quality of Life Scale-Brazilian Portuguese (MelasQoL-BP) and Skindex-29]. Results: There was a significant reduction in wrinkle volume after red (31.6%) and amber (29.9%) PBM. None of the treatments improved skin hydration and viscoelasticity. Both questionnaires showed improvements in participants' quality of life. Conclusions: PBM, both at red and amber wavelengths, is an effective tool for rejuvenation, producing a 30% wrinkle volume reduction. The technique has strong potential in patients with diabetes or those presenting with keloids, conditions for which highly inflammatory rejuvenating procedures are not indicated.

C. Uhl, **How to Prove the Concept of Microbiotic Skin Care,** EURO COSMETICS 1-2 2023, p. 18-22

When the Human Genome Project 1 was launched in autumn 1990 with the aim of identifying and mapping all of the genes of the human genome, no-one would have thought that we would discover a new microcosmos revolving around and mingling with our human cells. Of course, already long before this project, it was well-known that our body is not sterile and there are many bacteria living within and on it. These bacteria were however mainly classified as being malicious, threatening our health and causing problems. Until the 70s of the last century, a germ-free personal environment was considered as most desirable, and strong cleaning products became quite popular. Only starting in the early 1980s, these ideas and information were carefully reevaluated.

M. Gina, K. Wichert, B. Pieper, T. Behrens, T. Brüning, M. Fartasch, **Irritant potential of different washing procedures used for heavy-duty soiling: Short and intense or longer and mild?** Contact

Dermatitis. 2023; 88, p. 363–371

Background: To prevent irritant contact eczema even in occupational fields with heavy-duty soiling, it is generally recommended to use 'mild' hand cleansers (mild detergent without grits, MC). On the other hand, since grit-containing cleansers (GC) show a higher washing power that minimizes washing time, their usage is generally preferred in specific occupational fields. Objectives: To compare whether a shorter, intense washing period might cause less skin damage than a longer washing period with an MC. Methods: Differences in cleaning time were first verified in a pilot study using standardized model dirt. In the main study, the forearms of 35 healthy volunteers were washed with three standardized procedures over a period of 3 days, either using 2 min of MC with/without hand brush or 1-min GC. Clinical scoring, transepidermal water loss (TEWL), corneometry, colourimetry and scaliness/roughness (Visioscan) were used to evaluate the epidermal barrier, topography and irritation. Results: The pre-study showed that washing time doubled when using MC vs. GC. Using GC resulted in stronger barrier disruption, even after a shorter washing period – median ΔT4–T1 TEWL 0.96 g/m2/h vs. 4.91 g/m2/h respectively, $p < 0.0001$. The most harmful procedure for the skin was the additional application of a hand brush (18.86 g/m2/h). Conclusions: Short-time washing with GC damages the skin barrier more significantly in comparison to a longer application of an MC. When washing with MC, the strongest irritant reaction occurred when accompanied with hand brushing.

V.H. Pacagnelli Infante, P.M.B. Gonçalves Maia Campos, **Applying sunscreen SPF 50 with high antioxidant capacity during fifteen days improves the dermis echogenicity and reduces the reddish skin undertone**, J Cosmet Dermatol. 2023;22: p. 872–879

Background: Of the many effects induced by UV radiation on the skin, erythema is one of the most well-known features, which is a cutaneous inflammatory reaction correlated with acute photodamage. The utilization of sunscreen may reduce this process. Aims: To evaluate the utilization of a sunscreen SPF50 with high antioxidant capacity during 15 days by young men without photoprotection habits. Methods: For this, we evaluated erythema, skin hydration properties, and dermis echogenicity using skin imaging techniques. Forty male participants (aged between 18 and 28 years old), 36 without previous photoprotection habits, were recruited, and the erythema was evaluated using a visual score and skin colorimeter. Macroscopic images (VivaCam®) were also obtained. Dermis echogenicity was evaluated using high-frequency ultrasonography. All the participants received a sunscreen SPF 50 touse for 15 days. Results: The visual score presented a strong correlation ($r = 0.8657$) with the colorimeter results. Visually and using the biophysical methodologies was possible to observe the reduction of the visual erythema. The dermis echogenicity also improved, probably correlated with the acute inflammation reduction. No alterations were observed in the skin hydration and skin barrier parameters. Conclusions: The utilization of complementary and correlated different skin biophysical and imaging techniques in this study allows a better comprehension regarding the skin early photoaging process due the direct sun exposure. The utilization with a SPF 50 sunscreen with high antioxidant potential allows for a reduction in the erythema after 15 days of usage, a quick result, however, did not improved the skin barrier or SC hydration.

C. Zappelli, A.Tito, M. Bimonte, A. Colantuono, **Scalp soothing properties of *Portulaca oleracea*,** PERSONAL CARE MAGAZINE, January 2023, p. 39-43

Sensitive scalp is an extension of the concept of sensitive facial skin, and is associated with dry skin, reactivity to climatic/environmental factors, and topical agents. Vitalab's scientists have harnessed the power of the medicinal plant *Portulaca oleracea,* developing an ingredient clinically tested for its efficacy to soothe the skin, reduce the perception of itch intensity for both skin and scalp, and restore the skin barrier function. The multifunctional ingredient improved cellular ability to scavenge free radicals, while reducing the release of pro-inflammatory messengers, helping to relieve sensitive-prone skin and scalp.

V. Nobile, I. Schiano, L. Germani, E. Cestone, P. Navarro, J. Jones, N. Caturla, **Skin Anti-Aging Efficacy of a Four-Botanical Blend Dietary Ingredient: A Randomized, Double Blind, Clinical Study**, Cosmetics 2023, 10, 16

Plant polyphenols have been found to be effective in preventing or reducing different skin alterations. A dietary approach based on these compounds could be a safe and effective method to slow down or prevent age-associated deterioration of skin appearance and function. In a previous study, a specific combination of four botanical extracts (pomegranate, sweet orange, herba *Cistanche,* and *Centella asiatica*) exhibited potential anti-aging effects in a dermal fibroblast cell model. The present study aims to clinically evaluate the safety and anti-aging efficacy of this new botanical ingredient (eternalyoung®). To this end, a 12-week randomized, double-blind, placebo-controlled study was carried out in 60 Caucasian women with evident signs of both chronoand photoaging. Product efficacy

was measured as follows: skin moisturization (corneometer), transepidermal water loss (tewameter), skin radiance, and color (spectrophotometer), skin elasticity and firmness (cutometer), skin roughness (image analysis), and skin thickness (ultrasound). Both intergroup and intragroup analysis proved that the daily intake of 225 mg of the active ingredient was enough to produce visible and structural improvements to the skin and to the signs of aging without any side effects. Statistically significant improvements compared to the placebo group were observed as early as 4 weeks regarding wrinkle depth, elasticity, firmness, skin thickness, skin moisturization, transepidermal water loss, and dark spots pigmentation. In addition, the subjects who consumed the blend reported better scores on the self-assessment questionnaires. Our results suggest that the intake of the test product can positively affect the appearance, barrier function, and skin density of aged skin after 12 weeks of treatment.

D. Martinovic, D. Tokic, M. Usljebrka, S. Lupi-Ferandin, L. Cigic, L.V. Rogosic, S. Ercegovic, M. Kontic, M. Kumric, D. Rusic, M. Vilovic, M. Leskur, J. Bozic, **The Association between the Level of Advanced Glycation End Products and Objective Skin Quality Parameters**, Life 2023, 13

Advanced glycation end products (AGEs) represent an endogenously produced or exogenously derived group of compounds derived from nonenzymatic glycation. Recent experimentalstudies are suggesting that AGEs could play an important role in the skin's quality and its aging process. Hence, the aim of this study was to clinically evaluate the AGEs and skin quality parameters across different age groups in the general population. The study included 237 participants. Melanin, erythema, hydration, friction and transepidermal water loss (TEWL) were evaluated using noninvasive probes, while AGEs were evaluated using a skin autofluorescence reader. There was a significant positive correlation between AGEs and the amount of melanin ($p < 0.001$), erythema ($p < 0.001$) and TEWL ($p < 0.001$), while there was a significant negative correlation between AGEs and hydration ($p < 0.001$) and friction ($p < 0.001$). After dividing the sample into three groups depending on their age, in all three groups, there was a significant positive correlation between AGEs and the melanin count ($p < 0.001$) and TEWL ($p < 0.001$), while there was a significant negative correlation between AGEs and skin hydration ($p < 0.001$). Multiple linear regression analysis showed that the level of AGEs as a dependent variable retained a significant association with age ($p < 0.001$), melanin ($p < 0.001$), erythema ($p = 0.005$) and TEWL ($p < 0.001$) as positive predictors. Moreover, AGEs retained a significant association with skin hydration ($p < 0.001$) and friction ($p = 0.017$) as negative predictors. These outcomes imply that AGEs could be linked with the complex physiology of the skin and its aging process.

A.J.U.K. John, F. Del Galdo, R. Gush, P.R..Worsley, **An evaluation of mechanical and biophysical skin parameters at different body locations**, Skin Research & Technology, January 2023

Background: Skin is the largest organ in the body, representing an important interface to monitor health and disease. However, there is significant variation in skin properties for different ages, genders and body regions due to the differences in the structure and morphology of the skin tissues. This study aimed to evaluate the use of noninvasive tools to discriminate a range of mechanical and functional skin parameters from different skin sites. Materials and methods: A cohort of 15 healthy volunteers was recruited following appropriate informed consent. Four well-established CE-marked non-invasive techniques were used to measure four anatomical regions: palm, forearm, sole and lower lumbar L3, using a repeated measures design. Skin parameters included transepidermal water loss (TEWL), pH (acidity), erythema, stratum corneum hydration and stiffness and elasticity usingMyoton Pro (skin and muscle probe). Differences between body locations for each parameter and the intra-rater reliability between days were evaluated by the same operator. Results: The results indicate that parameters differed significantly between skin sites. For the Myoton skin probe, the sole recorded the highest stiffness value of 1006 N/m (SD±179), while the lower lumbar recorded the least value of 484 N/m(SD±160). The muscle indenter Myoton probe revealed the palm's highest value of 754 N/m (± 108), and the lower lumbar recorded the least value of 208 N/m (SD ± 44). TEWL values were lowest on the forearm, averaging 11 g/m2/h, and highest on the palm, averaging 41 g/m2/h. Similar skin hydration levels were recorded in three of the four sites, with the main difference being observed in the sole averaging 13 arbitrary units. Erythema values were characterised by a high degree of inter-subject variation, and no significant differences between sites or sides were observed. The Myoton Pro Skin showed excellent reliability (intra-class correlation coefficients > 0.70) for all sites with exception of one site right lower back; the Myoton pro muscle probes showed good to poor reliability (0.90–017), the corneometer showed excellent reliability (>0.75) among all the sites tested, and the TEWL showed Good to poor reliability (0.74–0.4) among sites. Conclusion: The study revealed that using non-invasive methods, the biophysical properties of skin can be mapped, and significant differences in the mechanical and functional properties of skin were observed. These parameters were reliably recorded between days, providing a basis for their use in assessing and monitoring changes in the skin during health and disease.

K. Shoji, A. Kameda, K. Furuichi, **Effects of Milk Amazake on Skin Elasticity, Hydration, and Transepidermal Water Loss: An 8-Week DoubleBlind, Randomized, Controlled Trial**, Journal of Oleo Science, 72, (3) p. 329-335 (2023)

Amazakes made from rice and *koji* mold are rich in nutrients, such as groups of vitamin B, minerals, essential amino acids, and oligosaccharides, and can improve skin moisturization. However, there are few reports on milk amazake, made from milk and *koji* mold. Therefore, in this double-blind, randomized controlled trial, we investigate the effect of milk amazake on skin function. Healthy women and men (n = 40) were randomly allocated to the milk amazake or placebo group. The test beverage was consumed once daily for 8 weeks. Skin elasticity, hydration, and transepidermal water loss (TEWL) were measured at baseline and at weeks 4 and 8, and all subjects completed the trial. Skin elasticity (R2 and R5) at 8 weeks was significantly increased in the milk amazake group compared with baseline. In addition, changes in R5 in the milk amazake group were significantly higher than those in the placebo group. Conversely, TEWL, an evaluation item of skin moisturizing function at 8 weeks, was significantly decreased in the active group compared with baseline. In conclusion, milk amazake may be useful as a functional food for improving skin function.

K. Shoji, A. Kameda, K. Furuichi, **Effects of Milk Amazake on Skin Elasticity, Hydration, and Transepidermal Water Loss: An 8-Week DoubleBlind, Randomized, Controlled Trial**, Journal of Oleo Science, 72, (3) p. 329-335 (2023)

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*M. Gina, K. Wichert, G. Kutz, T. Brüning, M. Fartasch***, Applying skin protective cream and the wearing of gloves?—A randomized controlled experimental study**, Contact Dermatitis. 2023;88: p. 372–382

Background: Glove occlusion might enhance skin sensitivity to a subsequent detergent challenge (occlusion effect). Thus, some skin protection creams (PC) claim to protect against this effect of occlusion, and are recommended to be used before wearing liquid-proof gloves.Objectives: To evaluate the effect of PC applied prior to glove occlusion on the‘occlusion effect’—refers to increased susceptibility of the skin to a model detergent.Methods: One hundred and eleven volunteers were enrolled in a single-blind, randomized study. Seven PCs were applied before glove occlusion over 7 days (D1–D7). After sodium lauryl sulphate (SLS) challenge, we compared the irritation between the areas treated with PC and occlusion alone. Clinical scoring and bioengineering methods (capacitance, transepidermal water loss [TEWL], and colourimetry [erythema]) were used to quantify the irritant reactions. Results: After 1 week of occlusion and PC application, we did not observe significant changes in TEWL, nor in erythema, whereas skin hydration raised in three creamtreated areas. On day 10, after a challenge with SLS, some products significantly aggravated the skin irritation as compared to occlusion alone. Conclusions: The ‘occlusion effect’—shown as higher skin susceptibility to a modeldetergent—was not mitigated by PCs when applied prior to glove occlusion. On thecontrary, some PCs might have negative effects on skin barrier function and augment such sensitivity.

H. Falholt Elvebakken, A. Bech Bruntse, C. Vedel, S. Kjærulff, **Topical *Lactiplantibacillus plantarum* LB244R® ointment alleviates skin aging: An exploratory trial**, J Cosmet Dermatol. 2023;22: p. 1911–1918

Background: The skin is of vital importance for health and well-being. As people age, the skin undergoes visual and morphological changes such as wrinkling, loss of elasticity, increased pigmentation, and decreased cell turnover. This is not only visually unappealing to many but can also pose health issues. Aim: In this study, a probiotic ointment (PO) containing live lactic acid bacteria (LAB) (Lactiplantibacillus plantarum LB244R®) was investigated for its ability to alleviate symptoms of skin aging in an exploratory clinical trial. Methods: The PO was applied twice daily for 56 days by 21 subjects.

Anti-aging efficacy was evaluated by skin ultrasonography, skin biomechanical properties, skin hydration, and clinical evaluations at day 0, 28, and 56. Results: Sub-epidermal low echogenic band thickness decreased (0.261 ± 0.069 mm to 0.247 ± 0.055 mm) after 56 days. Dermal density increased (324.689 ± 57.506 pixel/mm2 to 367.831 ± 75.790 pixel/mm2). Skin hydration increased (34.1 ± 6.9 to 51.3 ± 10.0 AU). Additionally, skin firmness increased, as shown by decreasing values (0.264 ± 0.038 to 0.228 ± 0.037 mm). Skin elasticity increased (0.578 ± 0.045 to 0.618 ± 0.044). Trans-epidermal water loss decreased (9.1 ± 2.0 g/h/m2 to 8.5 ± 1.3). All clinical evaluations, Crow's feet, spot score, smoothness score, and complexionradiance, were improved. Conclusion: The PO improved all measured parameters with statistical significance after 56 days of application, clearly demonstrating the potential of the PO as an antiaging agent and reaffirming the potential of topical probiotic LAB. Future studies need to elucidate the mode of action of anti-aging effects by probiotics, but at present time, this study paves the way for the use of probiotic LAB topically to alleviate aging of the skin.

Naturally derived emollient as a silicone alternative, PERSONAL CARE MAGAZINE, January 2023, Cover Story, p. 7-9

Floramac® 10 (INCI: Ethyl Macadamiate) is a moisturizing mix of macadamia esters offering a soft, silky after-feel comparable to leading market silicones. This non-greasy, light ester is derived from macadamia oil, which is a desirableplant source due to its sustainability profile. The macadamia plant is promoted as an alternative crop to small farmers in developing regions of the world since it has a relatively low input requirement, and it can continue to yield seeds for decades.

X. Wang, Z. Jin, L. Mao, L. Tu, Y. Sun, J. Tao, **Study on the Skin Hydration and Trans Epidermal Water Loss of Aloe Viscose Seamless Knitted Fabric for Autumn and Winter**, Materials 2023, 16, 212

To explore the skin moisturizing performance of aloe viscose fiber seamless knitted fabric, this experiment takes the different yarn-blending ratios of aloe viscose fiber and viscose fiber, as well as three different tissue structures as factors, establishes a sample scheme according to full factor experimental tests on skin hydration and trans epidermal water loss (TEWL) after the sample fabric had been wrapped around the skin, and uses two-way and one-way ANOVA in SPSS and the Duncan multiple comparison method. The test data were analyzed to study the influence of different materials and the structure of the veil on the moisture retention of the fabric. The results show that the sample scheme with the largest change rate of skin hydration is when the raw material of the veil is aloe viscose/viscose 100/0 yarn, and the structure is 1 + 3 simulated rib. The sample scheme with the minimum change rate of TEWL is when aloe viscose/viscose 75/25 yarn is used as the raw material of the veil, and the structure is 1 + 1 simulated rib, which provides a theoretical basis for the research and development of moisturizing knitted fabric.

J.-Y. Lee, S. Jeon, S. Han, K.-H. Liu, Y. Cho, K.-P. Kim, **Positive Correlation of Triacylglycerols with Increased Chain Length and Unsaturation with ω-O-Acylceramide and Ceramide-NP as Well as Acidic pH in the Skin Surface of Healthy Korean Adults**, Metabolites 2023, 13, 31

Triacylglycerols (TG) play an important role in skin homeostasis including the synthesis of ω-O-acylceramides (acylCER) required for skin barrier formation by providing linoleic acid (C18:2n6). However, the overall relationships of TG species with various ceramides (CER) including CER-NP, the most abundant CER, ω-O-acylCER, and another acylCER, 1-O-acylCER in human SC, remain unclear. Therefore, we investigated these relationships and their influence on skin health status in healthy Korean adults. Twelve CER subclasses including two ω-O-acylCER and two 1-O-acylCER were identified with CER-NP consisting of approximately half of the total CER. The ω-O-acylCER species exhibited positive relationships with TG 52:4 and TG 54:2 containing C18:2, while interestingly, 1-O-acylCER containing ester-linked C14:0 and C16:0 demonstrated positive relationships with TG 46–50 including C14:0 and C16:0, respectively. In addition, CER-NP and CER-NH showed positive correlations with TG 52–54 containing C18:2 or C18:3. A lipid pattern with higher levels of CER including CER-NP and ω-O-acylCER with TG 54 and TG with 5–6 double bonds was related to good skin health status, especially with acidic skin pH. Collectively, TG with increased chain length and unsaturation seemed to improve CER content, and profiles such as higher acylCER and CER-NP improved skin health status by fortifying skin barrier structure.

M. Chopin-Doroteo, E. Krötzsch, **Soap or alcohol-based products? The effect of hand hygiene on skin characteristics during the COVID-19 pandemic**, J Cosmet Dermatol. 2023;22: p. 347–353

Background: Different strategies for hand skin hygiene have been used to prevent the spread of SARS-CoV-2. However, frequent hand sanitization has been associated with skin damage. The present study aimed to evaluate hand hygiene habits during the COVID-19 pandemic and the effect of

the repetitive use of soap or alcohol-based products on skin characteristics. Methods: We conducted a survey regards hand hygiene habits acquired during theCOVID-19 pandemic. Also, we performed cutometry in a cohort of individuals who cleansed their volar forearms every 30 min, during 4 h, using soap or alcohol-based products. Results: We received 138 responses from people with medium-high educational level who reported a 2.5-time increase in the frequency of hand cleansing ($p < 0.0001$) that resulted in skin damage. An in vivo analysis of skin moisture and elasticity was also performed among 19 health workers and students. In general, skin moisture decreased with every cleansing, mainly after 2 h of washing with soap ($p < 0.01$), while skin elasticity only reduced after 4 h of treatment ($p < 0.05$). Alcohol-based solution or alcohol-based gel (70% ethanol, both) did not affect skin moisture or elasticity during testing. Conclusion: It is known that the excessive use of soap or alcohol-based products causes dermatological issues. The present study demonstrates that non-medicated soap significantly affects skin moisture and elasticity, probably because the soap removes the hydrolipidic protective barrier, favoring transepidermal water loss, where the lack of the appropriate stratum corneum hydration also affects skin elasticity, mainly associated with changes in epidermal structure.

G. Nam, H.W. Lee, J.S. Jang, C.H. Kim, K.-H. Kim, **Novel conformation of hyaluronic acid with improved cosmetic efficacy**, J Cosmet Dermatol. 2023;22: p. 1312–1320

Background: Hyaluronic acid presents a valuable cosmetic ingredient that occurs naturally. Its direct links to skin aging has led to its broad application. The aim of this study was to improve the cosmetic efficacy of high molecular weight hyaluronic acid (HMWHA) without chemical modifications and evaluate such improvements through clinical and in vitro studies. Methods: A novel formulation of HMWHA (SCAI-HA) was prepared and investigated to comparatively assess 6 clinical and 2 in vitro parameters concerning its dermatological cosmetic efficacy and biological properties. The dermatological and cellular parameters examined in this study include skin hydration, transepidermal water loss (TEWL), skin elasticity, wrinkles, facial sagging, dermal density, cytotoxicity, and collagen synthesis. Results: SCAI-HA exhibited the ability to improve the tested dermatological parameters (hydration, elasticity, wrinkles, and density) to magnitudes comparable to those of HMWHA. In addition, SCAI-HA showed notably improved capacities for attenuating facial sagging and TEWL and promoting cellular collagen synthesis in normal human dermal fibroblasts. Conclusion: SCAI-HA presents a novel conformation of HMWHA with improved cosmetic efficacy in mitigating (i) facial sagging, (ii) TEWL, and promoting, and (iii) collagen synthesis. These findings denote the enhancement of SCAI-HA as a cosmetic ingredient with potential anti-aging properties.

R. Voegeli, A.V. Rawlings, **Moisturizing at a molecular level – The basis of Corneocare**, Int J Cosmet Sci. 2023;45: p. 133–154

This review covers the last 20 years of research we and our collaborators have conducted on ethnic differences in facial skin moisturization placed in historical context with previous research. We have focussed particularly on the biochemical and cellular gradients of the stratum corneum (SC) with the aim of discovering new skin moisturization and SC maturation mechanisms, identifying new technologies and/or providing conceptual innovations for ingredients that will improve our understanding and treatment of dry skin. Specifically, we discuss gradients for corneodesmosomes and proteases, corneocyte phenotypeinducing enzymes, filaggrin and natural moisturizing factor (NMF), and barrier lipids. These gradients are interdependent and influence greatly corneocytes maturation. The interrelationship between corneodesmolysis and the covalent attachment of ω-hydroxy ceramides and ω-hydroxy fatty acids to the corneocytes protein envelope forming the corneocyte lipid envelope is especially relevant in our new understanding of mechanisms leading to dry skin. This process is initiated by a linoleoyl-ω-acyl ceramide transforming enzyme cascade including 12R lipoxygenase (12R-LOX), epidermal lipoxygenase-3 (eLOX3), epoxide hydrolase 3 (EPHX3), short-chain dehydrogenase/reductase family 9C member 7 (SDR9C7), ceramidase and transglutaminase 1. Our research has opened the opportunity of using novel treatment systems for dry skin based on lipids, humectants, niacinamide and inhibitors of the plasminogen system. It is clear that skin moisturization is a more complex mechanism than simple skin hydration.

L.T. Thuy Le, B.-K. Kim, P.N. Chien, K.-W. Choi, H.-B. Kim, U.-J. Hwang, H.S. Han, C.-Y. Heo, **Investigating the Anti-Aging Effects of Caviar Oil on Human Skin**, in vivo 37: p. 2078-2091 (2023)

Background/Aim: As the largest organ of the human body, the skin serves as a critical barrier against environmental damage. However, many factors, such as genetics, sun exposure, and lifestyle choices can lead to skin damage creating wrinkles, sagging, and loss of elasticity. The use of skincare products containing natural ingredients has become increasingly popular as a way to combat the signs of aging. Caviar oil is one such ingredient that has gained attention due to its rich composition of fatty acids, vitamins, and minerals. The objective of this study was to investigate the potential anti-aging

effects of caviar oil and to develop a product, Cavi Balm, which could potentially reduce wrinkles and skin sagging. Materials and Methods: An in vitro model using the 3T3-L1 cell line was employed to assess the effect of caviar oil on adipocyte differentiation. An ex vivo study using human skin tissue was conducted to investigate the impact of caviar oil on collagen and elastin formation and the expression of matrix metalloproteinase-1,2,9 (MMP-1, MMP-2, MMP-9). Furthermore, 102 participants were enrolled in five clinical studies to evaluate the anti-aging efficacy of our product, “Cavi Balm”, in facial and neck wrinkles, facial and eye area lifting, and various skin parameters, such as skin moisture, skin elasticity, skin density, skin tightening relief, skin clarity, and skin turnover. Results: In vitro, caviar oil enhanced adipocyte differentiation, and increased lipid accumulation inside the cells. The ex vivo analysis revealed that caviar oil reduced the expression levels of MMP-1, MMP-2, and MMP-9, and increased the formation of elastin and collagen I, III. Moreover, in the clinical study, Cavi Balm improved skin parameters after one-time use, with more significant effects observed after four weeks of usage. Conclusion: Caviar oil has a substantial impact on mitigating skin aging and holds potential for application in anti-aging products.

B. Murphy, S. Grimshaw, M. Hoptrof, S. Paterson, D. Arnold, A. Cawley, S.E. Adams, F. Falciani, T. Dadd, R. Eccles, A. Mitchell, W.F. Lathrop, D. Marrero, G. Yarova, A. Villa, J.S. Bajor, L. Feng, D. Mihalov, A.E. Mayes, **Alteration of barrier properties, stratum corneum ceramides and microbiome composition in response to lotion application on cosmetic dry skin**, Scientifc Reports, (2022) 12:5223

Xerosis, commonly referred to as dry skin, is a common dermatological condition afecting almost a third of the population. Successful treatment of the condition traditionally involves the application of cosmetic products facilitating the moisturisation of the skin with a range of ingredients including glycerol and fatty acids. While the efectiveness of these treatments is not in question, limited information exists on the impact on the skin microbiome following use of these products and the improvement in skin hydration. Here, we describe improvements in skin barrier properties together with increased levels of cholesterol, ceramides and long-chain fatty acids following application of Body Lotion. Concomitant alterations in the skin microbiome are also seen via 16S rRNA metataxonomics, in combination with both traditional and novel informatics analysis. Following 5 weeks of lotion use, benefcial skin bacteria are increased, with improvements in microbiome functional potential, and increases in pathways associated with biosynthesis of multiple long chain fatty acids.

F. Yi, X.-X. Yang, R.-Y. Yang, M.-M. Zhao, Y.-M. Dong, L. Li, Y.-F. He, M.-M. Guo, J. Li, X.-H. Zhang, Z. Lu, J. Gu, J.-L. Bao, H. Meng, **A cross-sectional study of Chinese women facial skin status with environmental factors and individual lifestyles,** Scientifc Reports, (2022) 12:18110

Geographical, environmental and pollution conditions afect facial skin health, but their efects on skin appearance have not been elucidated. This study aimed to describe the skin barrier and skin tone characteristics of Chinese subjects according to lifestyle and environmental conditions using in vitro measurements. In total, 1092 women aged 22–42 years were recruited from 7 representative Chinese cities. Eight skin parameters (hydration, sebum, pH, transdermal water loss, individual type angle, melanin index, erythema index, yellowness) were measured using noninvasive instruments; individual lifestyle data were also collected. Data on four meteorological factors (air temperature, relative humidity, sunshine duration, wind speed) and seven air pollution indicators (air quality index, fne particulate matter, breathable particulate matter, sulfur dioxide, nitrogen dioxide, carbonmonoxide and ozone) were collected in each city from the China Meteorological Administration. Facialskin characteristics difered signifcantly between cities. Facial skin barrier characteristics and skin tones showed regional diferences, with a better skin barrier associated with the western region, as indicated by high skin hydration and sebum secretion and a low pH value. According to the value of transdermal water loss, lighter and darker skin tones were found in the western and southern regions, respectively. Environmental conditions afected facial skin status. Air pollution induced facial skin issues, with fne particulate matter and nitrogen dioxide contributing the most. Individual lifestyles afected the facial skin barrier and skin tone.

R. Lubart, A. Lipovsky, **Immediate and Long Term Clinical Benefits of a Novel Topical Micronized Collagen Face Cream**, Journal of Cosmetics, Dermatological Sciences and Applications, 2022, 12, p. 153-163

Collagen has been a component of skin care formulations for many years, and over this time, there have been numerous claims of its efficiency. Collagen protein is responsible for firm strong skin, but since collagen fibers are too large to penetrate the stratum corneum (SC), topical creams containing collagen fibers remain on the skin surface without affecting skin quality. To overcome the poor penetration of collagen fibers, we prepared in the past micronized collagen fibers that were proven to reach the epidermis layer while inserted in a cream. In the present paper, we have performed a clinical

study that analyzes the effect of the micronized fibrillar collagen containing cream on skin. Fifty five healthy female volunteers were enrolled and completed the study. The anti-ageing, firming, elasticity and moisturization efficacy of the cream were measured using Profilometer, Cutometer and Corneometer respectively. The results showed a significant improvement in skin hydration firmness and elasticity, a significant reduction in fine lines and wrinkles was also observed.

A. Polańska, A. Łojko-Dankowska, A. Czyż, Z. Adamski, R. żaba1, L. Gil, A. Dańczak-Pazdrowska, **Epidermal barrier function in patients after allogeneic hematopoietic stem cell transplantation – a pilot study**, Adv Dermatol Allergol 2022; XXXIX (6), December/2022: p. 1083–1087

Introduction: The skin is the typically and predominantly affected organ in patients after allogeneic hematopoietic stem cell transplantation (alloHSCT). The supportive therapy in patients after alloHSCT includes especially ultraviolet protection and the use of emollients. Aim: Due to the lack of studies regarding epidermal barrier function in patients with alloHSCT, our aims were to monitor dermatologically patients 1 year after the procedure with special emphasis on epidermal barrier function and to evaluate the properties of epidermal barrier function in patients with confrmed chronic GvHD (cGvHD). Material and methods: Our pilot study included 30 patients after alloHSCT and 20 healthy controls. In the group of patients after alloHSCT there were 10 individuals who were monitored dermatologically (including evaluation of skin, mucosae, nails and hair) within 1 year after the procedure (subgroup 1) and 20 patients with previously confrmed cGvHD (subgroup 2). We evaluated transepidermal water loss (TEWL), skin hydration and skin color. The clinical assessment and all noninvasive evaluations in patients included in subgroup 1 were performed before (at baseline) and 3, 6, 9 and 12 months after the procedure, while in subgroup 2 they were performed once. Results: In subgroup 1 we did not observe signifcant differences between baseline results and periods of assessments in TEWL values or corneometry, erythema and melanin measurements. In subgroup 2 the highest TEWL values and the lowest corneometry results were observed in patients with sclerodermoid chronic cutaneous GvHD in comparison to patients with lichenoid chronic cutaneous GvHD and patients with cGvHD but without skin lesions. TEWL values and melanin level were signifcantly higher in patients with cGvHD than in controls. Conclusions: Our pioneer observations proved the disturbed epidermal barrier function among patients after alloHSCT. Therefore it seems that proper skin care, including photoprotection, should be recognized as a crucial component in long-term management of these patients.

J. Sim, S.D. Gong, G. Kang, M. Jang, H. Yang, J. Park, Y. Kim, H. Lee, H. Jung, Y. Kim, C. Jeon, H. Ahn, M. Kim, J. Choi, H. Lee, H. Jung, **Enhanced Micro-Channeling System via Dissolving Microneedle to Improve Transdermal Serum Delivery for Various Clinical Skincare Treatments,** Pharmaceutics 2022, 14, 2804

Topical liquid formulations, dissolving microneedles (DMNs), and microscale needles composed of biodegradable materials have been widely used for the transdermal delivery of active compounds for skincare. However, transdermal active compound delivery by topical liquid formulation application is inhibited by skin barriers, and the skincare efficacy of DMNs is restricted by the low encapsulation capacity and incomplete insertion. In this study, topical serum application via a dissolvable micro-channeling system (DMCS) was used to enhance serum delivery through micro-channels embedded with DMNs. Transdermal serum delivery was evaluated after the topical-serum-only application and combinatorial serum application by assessing the intensity of allophycocyanin (APC) loaded with the serum in the porcine skin. APC intensity was significantly higher in the skin layer at a depth of 120–270 μm upon combinatorial serum application as compared to topical-serum-onlyapplication. In addition, the combinatorial serum application showed significantly improved efficacy in the clinical assessment of skin hydration, depigmentation, improvement of wrinkles, elasticity, dermal density, skin pores, and skin soothing without any safety issues compared to the serum-only application. The results indicate that combinatorial serum application with DMCS is a promising candidate for improving skincare treatments with optimal transdermal delivery of active compounds.

C.-K. Hsu, N.-Y. Cheng, C.-C. Yang, Y.-Y. Yen, S.-H. Tseng, **Investigating the clinical implication of Corneometer and mexameter readings towards objective, efficient evaluation of psoriasis vulgaris severity**, Scientifc Reports, (2022) 12:7469

In clinical settings, although Psoriasis Area and Severity Index (PASI) scoring system can provide a quick visual assessment of the severity of psoriasis vulgaris, there is still a strong demand for higher efficiency and accuracy in quantifying the infammation status of psoriatic lesions. Currently, there are already commercial systems, such as the Courage + Khazaka Corneometer and Mexameter that measure skin capacitance and optical refectance, for conveniently quantifying the status of skin barrier function and erythema of skin. Despite numerous comparisons of the Courage + Khazaka system with

the PASI scoring system, they are rarely compared on parity with difuse reflectance spectroscopy (DRS) based systems. In this study, we employed a custom-built DRS system shown to be able to determine the skin water-protein binding status and the hemoglobin concentration, and we performed cross-validation of the DRS measurement results with the readings derived from the Corneometer and Mexameter as well as a portion of the PASI scores. Our results revealed that the erythema readings from the Mexameter were a good representation of skin oxygenated hemoglobin but not the deoxygenated hemoglobin. On the other hand, the dermatologists recruited in this study were inclined to rate higher scores on the “erythema” category as skin’s deoxygenated hemoglobin level was higher. Thus, the Mexameter derived erythema readings may not be coherent with the PASI erythema scores. Further, the Corneometer derived skin capacitance readings were well correlated to the PASI “desquamation” and “thickness” scores, while the PASI “desquamation” evaluation was a dominating factor contributing to the DRS deduced water-protein binding status. We conclude that the DRS method could be a valuable addition to existing skin capacitance/refectance measurement systems and the PASI scoring system toward achieving a more efcient and objective clinical psoriasis vulgaris severity evaluation.

R. Voegeli, M. Cherel, R. Schoop, A.V. Rawlings, **A comprehensive comparison of facial skin hydration based on capacitance and conductance measurements in Chinese women**, Int J Cosmet Sci, 2022;44: p. 703–718

Objectives: The aim of this study was to compare the data of conductance and capacitance measurements of facial skin hydration and to evaluate and discuss the advantages and disadvantages of the different approaches. Methods: We measured skin capacitance (Corneometer® CM 825) and skin conductance (Skicon-200EX®) on 30 pre-defined facial sites of 125 Chinese women, resulting in 3750 readings per device. The data were analysed and compared, and continuous colour maps were generated on a 3D avatar for capacitance, conductance, relative difference (Δ%) and correlation (R-value) by interpolating between the individual readings and converting the values tocolours. This visualization allows a better interpretation of the results. Results: The complexity of facial skin hydration is revealed by this approach. The similarities and discrepancies in the facial hydration maps are clearly apparent. Due to the superiority of the Skicon in measuring high hydration levels, differences in skin hydration were evident on the forehead compared with the Corneometer maps, which may be related to the more superficial measurement of the Skicon within the stratum corneum. Conversely, a greater understanding of the complexity of facial skin hydration in the nasolabial fold was obvious when using the Corneometer. The best congruence between the instruments was found at two specific but separated facial areas, one around the inner eye region andthe other one on a line between the nasolabial sulcus and the oblique, lateral jaw. Interestingly, the data were not normally distributed for both instruments and they had opposite skews. All facial clusters were statistically different from each other ($p < 0.001$), except the cheek and jaw for the Skicon. Larger than expected percentage coefficients of variance were found for the Corneometer on some facial sites that might be explainable by differences in stratum corneum physiology and biochemistry. Corneometer values of 48 AU and Skicon values of 132 μS were taken as the cutoff for normally hydrated facial skin.

T. Marcílio Cândido, M. Bueno Ariede, C. Aparecida Sales de Oliveira Pinto, F. Vieira Lima, W. Vidal Magalhães, N. Mencacci Esteves Pedro, G. Padovani, B. da Silva Sufi, P. Rijo, M.V. Robles Velasco, C. Rosado, A. Rolim Baby, **Rosmarinic Acid Multifunctional Sunscreen: Comet Assay and In Vivo Establishment of Cutaneous Attributes**, Cosmetics 2022, *9*, 141

The skin acts as a protective barrier, guarding the body against microorganisms, chemicals, and several environmental factors. Accordingly, this all-important organ must be kept healthy to maintain its optimal functionality. One approach to maintain skin health is the application of multifunction bioactive sunscreens containing antioxidant molecule(s). Rosmarinic acid (RA), a phenolic compound, is known for its antioxidant activity. Herein, the safety and efficacy of a multifunction prototype sunscreen were investigated, aiming to evaluate the performance of this polyphenol with two known and widely used UV filters (bemotrizinol and octyl *p*methoxycinnamate). Samples protected the DNA fragmentation compared to UV control, by the comet assay, and showed good skin compatibility in subjects. Formulations F1 and F3 were able to increase skin hydration, and, possibly, the RA interfered with this attribute. An increase in transepidermal water loss was observed for formulations F1, F2, and F4, which may be related to the vehicle, containing the RA or not. No decreases were observed in the inflammatory reaction caused by the ethyl nicotinate with any of the samples. As a perspective, we suggest trials with a greater number of subjects or protocol modifications. Altering the vehicle qualitative and quantitative composition is also a pertinent perspective.

H. Choi, E. Barker, A.A. Abduljabar, D. Anumba, A.Porch, **Cervical Tissue Hydration Level**

Monitoring by a Resonant Microwave Coaxial Probe, Sensors, 2022, *22*, 9527

Cervical tissue hydration level is one of the most important parameters to monitor in the early diagnosis of preterm birth. Electrical-impedance-spectroscopy-based techniques are often used, but they suffer from limited accuracy. Open microwave coaxial probes have been widely used as a broadband dielectric characterization technique for human tissue samples due to their versatility, but with limited accuracy due to their nonresonant nature. In this work, a resonant microwave open coaxial probe with multiple harmonic resonances is proposed as a sensing platform for tissuehydration-level monitoring. The mechanical design was analyzed and verified by finite-element full 3D electromagnetic simulation and experiments. Dominant sources of errors and the ways to mitigate them were discussed. In vitro experiments were carried out on human cervix samples to verify the precision and accuracy by comparing the results to a commercial skin-hydration sensor. The proposed sensor shows mean fractional frequency shift of (3.3 ± 0.3) × 10-4 per unit % over the entire data. This translates into an absolute frequency shift (D *fN*) of 252 ± 23 kHz/%, 455 ± 41 kHz/%, and 647 ± 57 kHz/% at second, fourth, and sixth harmonic resonance, respectively.

L. Celleno, A. D'amore, W.K. Cheong, **The Use of Urea Cream for Hand Eczema and Urea Foam for Seborrheic Dermatitis and Psoriasiform Dermatoses of the Scalp**, Clinical, Cosmetic and Investigational Dermatology 2022:15 2445–2454

Purpose: Urea as an ingredient in topical skin applications can aid skin integrity and hydration and have keratolytic, anti-fungal, antibacterial, and anti-pruritic effects. Skin conditions that urea-containing formulations have been utilized to treat include hand eczema/ dermatitis, seborrheic dermatitis and psoriasiform dermatoses of the scalp. Two monocentric, simple blind, observational studies were carried out in healthy participants to examine the effcacy and safety of two urea-containing products in these skin conditions. Patients and Methods: Study 1 tested the actions of a commercially available 30% urea topical cream on hand eczema. The product was applied ≥2/day for 28 ±2 days. Transepidermal water loss, skin redness, skin hydration, and participant ratings of effcacy and qualities were assessed prior to frst product application and on days 14 and 29. Study 2 tested the actions of a commercially available foaming product containing 10% urea on seborrheic dermatitis and scalp psoriasiform dermatoses. The product was applied ≥2/day for 28 ±2 days. Desquamation index and surface occupied by squames, analysis of extracted squames, microscopic assessment of scalpphotos and participant ratings of product effcacy and qualities was carried out prior to frst product application and on days 14 and 29. Results: In Study 1 (n = 20 females), results showed a signifcant ($p < 0.05$) decrease in transepidermal water loss, with an increase in hydration level of the upper skin layers, and a decrease in skin redness. In Study 2 (n = 13 females, 7 males), product use led to signifcant ($p < 0.05$) decreases in desquamation measures and dryness. In both studies, the majority of participants "agreed" or "slightly agreed" that the product had good effcacy and was easy to apply. No adverse reactions were reported. Conclusion: These fndings point to the utility of urea in topically applied vehicles for hand eczema, seborrheic dermatitis, and psoriasiform dermatoses.

E. Alves, J. Gregorio, P. Rijo, C. Rosado, L.M. Rodrigues, **The Regular Intake of Kefir Improves Epidermal Barrier in Atopic Dermatitis**, SPFisiologia Confrence, Coimbra, November 2022

Kefir, an ancient food with probiotic characteristics is known to present several health benefits including a positive impact on the general condition of the digestive system, and intestinal microbiota. Atopic Dermatitis (AD), a chronic inflammatory skin disease, is associated to both skin barrier dysfunction and intestinal dysbiosis. This exploratory study aimed to assess the potential relationship between the ingestion of kefir and the skin barrier function of atopic skin subjects. Our volunteers (n = 18) were all females with a diagnosis of AD, mean age 32.1 ± 12.2 years, assigned to either the kefir intake (K) or the control (C) group, according to their preference. All participants were given instructions on how to proceed during the study. The kefir group intervention consisted on the daily consumption of kefir for eight weeks. The control group did not consume kefir. Skin measurements were made by reference technology (CK electronics G) in the forearm. AD severity was assessed using the Scoring Atopic Dermatitis Severity Index (SCORAD). Regular consumption of kefir for 8 weeks was associated to a significant improvement on skin barrier parameters, TEWL and hydration ($p<0.001$ and $p<0.001$, respectively) and AD severity ($p<0.001$). No similar differences were observed in the control group. Both TEWL and hydration improvement correlated with ADseverity decrease (rho=0.532, p=0.023 and rho=0.766, $p<0.001$, respectively), which supports the skin physiology improvement. Despite the small number of participants this study was able to find a beneficial effect of kefir intake in cutaneous conditions. A correlation between AD severity and skin barrier function was found in previous observations supporting the potential modulatory capacity of kefir on the gut-skin axis. To our knowledge no similar information on the effect of kefir intake on skin barrier function of AD individuals was published. These results justify this interest on kefir as a gut-skin axis modulator.

A. Ziemlewska, Z. Nizioł-Łukaszewska, M. Zagórska-Dziok, M. Wójciak, D. Szczepanek, I. Sowa, **Assessment of Cosmetic and Dermatological Properties and Safety of Use of Model Skin Tonics with Kombucha-Fermented Red Berry Extracts**, Int. J. Mol. Sci. 2022, 23

Kombucha is a health-promoting beverage that is produced by fermenting sweetened tea using symbiotic cultures of bacteria belonging to the genus Acetobacter, Gluconobacter, and yeast of the genus Saccharomyces. This study compared the cosmetic and dermatological properties of theextracts of the following redberries: R. rubrum, F. vesca, and R. idaeus, and their ferments, which were obtained by fermentation for 10 and 20 days using tea fungus. For this purpose, the fermented and non-fermented extracts were compared in terms of their chemical composition using the HPLC/ESIMS chromatographic method, demonstrating the high content of biologically active compounds that were present in the ferments. The antioxidant activity of the tested samples was evaluated using DPPH and ABTS tests, as well as by evaluating the scavenging of the external and intracellular free radicals. The cytotoxicity of the extracts and the ferments, as well as the cosmetic formulations, were also determined by conducting Alamar Blue and Neutral Red tests assessing the cell viability and metabolism using skin cell lines: fibroblasts and keratinocytes. In addition, application tests were conducted showing the positive effects of the model cosmetic tonics on the TEWL, the skin hydration, and the skin pH. The results indicate that both the extracts and the ferments that were obtained from kombucha can be valuable ingredients in cosmetic products.

S. Faloni Andrade, T. Matos Ferreira, T. Fontes, S. Lopes, C. Ferreira-Pego, L.M. Rodrigues, **Dietary Patterns and Skin Physiology**, SPFisiologia Confrence, Coimbra, November 2022

The impact of dietary patterns on skin functions is still unclear. We examined cutaneous physiology characteristics between vegan-vegetarian (VG) and omnivorous (OM) participants, involving 122 healthy participants, both sexes, 82 OM (32.0 ± 13.1 y.o.) and 40 VG (34.0 ± 9.62 y.o) with similar Body Mass Indices. The protocol was previously approved by the institutional Ethical Commission. Main indicators were transepidermal water loss (TEWL), hydration, and biomechanics skin parameters in five anatomical sites (forehead, cheek, neck, hand, and leg). Carotene skin content was determined in the hand palm by MultipleSpatially Resolved Reflection Spectroscopy. The food group intake was assessed using a validated Food Frequency Questionnaire. The dietary patterns and their impact on the skin were compared using MannWhitney test and correlations were investigated by the Spearman rank correlation coefficient ($p<0.05$). The carotenoid content was significantly higher in the VG group. TEWL has shown higher values in the VG group but significant differences could only be detected in the neck and leg. Concerning skin biomechanical parameters and hydration we could not find significant differences between the two groups. Looking for a potential relationship between the most frequent foods consumed by the two groups and skin physiology we found that vegetables, vegetable drinks, milk, yogurt, and cheese had a significant positive relationship with epidermal water balance. Alcoholic beverages and fast food showed a significant negative relationship with the same variables. Other significant correlations included a VG group positive correlation with the carotenoid content, and a OM group a negative correlation with red meat, viscera, alcoholic beverages, and sugar-sweetened beverages consumption. These results clearly suggest that skin physiology can beinfluenced by regular dietary patterns and should be further investigated.

A. Chioreanu, I.C. Mot, D.I. Horhat, N.C. Balica, C.A. Sarau, R. Morar, E.M. Domuta, C. Dumitru, R.A. Negrean, B.A. Bumbu, M. Ravulapalli, S. Alambaram, R. Akshay, M. Pricop, **Development and Preliminary Characterization of Polyester-Urethane Microparticles Used in Curcumin Drug Delivery System for Oropharyngeal Cancer**, Medicina 2022, 58, 1689

Background and Objectives: Curcumin (Cc) as an active substance is known for its antiinflammatory, anticoagulant, antioxidant, and anti-carcinogenic effects, together with its role in cholesterol regulation, and its use in different gastrointestinal derangements. On the other hand, curcumin can be used for its properties as an inactive substance, with Cc particles being more often tested in pharmaceutical formulations for drug delivery, with promising safety records and kinetics. The aim of this research was to obtain and characterize polyurethane microparticles that can be used as a carrier with a controlled Cc release. Materials and Methods: The in vitro samples were characterized by the Zetasizer procedure, and UV–Vis spectroscopy, while the in-vivo measurements on human subjects were performed by non-invasive skin assays (trans-epidermal water loss, erythema, and skin hydration). A total of 16 patients with oropharyngeal cancer stages II and III in equal proportions were recruited for participation. Results: The experimental values of sample characteristics using the Zetasizer identified a mean structural size of 215 nm in the polyester-urethane preparate (PU), compared to 271 nm in the curcumin-based PU. Although the size was statistically significantly different, the IPDI and Zeta potential did not differ significantly (22.91 mV vs. 23.74 mV). The average age during the study period was 57.6

years for patients in the PU group, respectively, and 55.1 years in those who received the curcumin preparations. The majority of oropharyngeal cancers were of HPV-related etiology. There were no significant side effects; 75.0% of patients in the PU group reporting no side effects, compared to 87.5% in the Cc group. The 48 h TEWL measurement at the end of the experiment found a statistically significant difference between the PU and the Cc group (2.2 g/h/m2 vs. 2.6 g/h/m2). The erythema assessment showed a starting measurement point for both research groups with a 5.1-unit difference. After 48 h, the difference between PU and PU_Cc was just 1.7 units (p-value = 0.576). The overall difference compared to the reference group with sodium lauryl sulfate (SLS) was statistically significant at a 95% significance level. Conclusions: Our findings indicate the obtaining of almost homogeneous particles with a medium tendency to form agglomerations, with a good capacity of encapsulation (around 60%), a medium release rate, and a non-irritative potential. Therefore, this polyester-urethane with Cc microparticles can be tested in other clinical evaluations.

P. Kubik, J. Jankau, R Rauso, H. Galadari, M. Protasoni, W. Gruszczyńsk, Dariusz Grzanka, M. Smolińska, P. Antosik, M.-L. Piesiaków, L. Kodłubańska, A. Zagajewska, B. Łukasik, G. Stabile, N. Zerbinati, **HA PEGylated Filler in Association with an Infrared Energy Device for the Treatment of Facial Skin Aging: 150 Day Follow-Up Data Report**, Pharmaceuticals 2022, 15, 1355

Background: The face is the area most exposed to the normal course of skin aging, both intrinsically and extrinsically. The aim of the study was to evaluate the cellular and clinical response of a therapeutic protocol aimed at countering facial skin aging. Materials and Methods: Twenty female patients with facial skin laxity and photodamage underwent combined therapy including mesotherapy using non-cross-linked hyaluronic acid with calcium hydroxyapatite and an infrared energy-based device treatment with subsequent implementation of PEG-cross-linked hyaluronicacid soft tissue fillers. To evaluate the benefits, patients underwent histological, immunological, and biomechanical evaluations before the treatment and at 21 and 150 days after the treatment. Results: The histological results at 21 days and 150 days after the procedure showed an increase in the number of fibroblasts and angiogenesis. As for the immunological aspect, it was shown that the treatment has an immunomodulating action, avoiding the activation of CD4 and CD8 cells. Biomechanical data showed that, at 150 days after treatment, the average changes in skin elasticity increased by 72% and the skin hydration increased by 49%. Conclusions: A combination of an infrared energybased device treatment with both non-cross-linked hyaluronic acid and novel PEG-cross-linked hyaluronic acid leads to numerous positive cutaneous changes after histological, immunological, and biomechanical evaluations.

S. Hendrickx-Rodriguez, S. Connetable, B. Lynch, J. Pace, R. Bennett-Kennett, G.S. Luengo, R.H. Dauskardt, A. Potter, **From decoding the perception of tightness to a clinical proof of soothing effects derived from natural ingredients in a moisturizer**, Int J Cosmet Sci, 2022;44: p. 486–499

Objective: To decode the feeling of skin tightness after application of a cosmetic product and how to soothe this discomfort. To pursue this aim, we considered the ingredient's effect on *stratum corneum* (SC) biomechanics to differentiate between consumers prone to tightness from those that are not and correlate these effects with mechanoreceptor activation.Methods: In vivo clinical trials were used to assess the tightness perception dichotomy between groups of Caucasian women; in vitro experiments were used to measure the mechanical stresses induced in the SC after cleanser and moisturizer application; and in silico simulations were used to illustrate how the measured mechanical stresses in the SC result in the development of strains at the depth of cutaneous mechanoreceptors, triggering tightness perceptual responses. Results: Before any cream application, women prone to tightness tend to have a more rigid SC than their less sensitive counterparts, however cleanser application increases SC stiffness in all women. Surprisingly, no correlation was found between tightness perception and hydration measurements by the Corneometer or barrier function, as evaluated by transepidermal water loss. Self-declared tightness and dryness scores were strongly associated with a self-described sensitive skin. After application of the optimized moisturizing formula, Osmoskin® containing natural waxes with good filming properties, consumers report a strong decrease in tightness and dryness perception. These results match with laboratory experiments where the cleanser was shown to increase SC drying stresses by 34%, while subsequent application of Osmoskin® decreased stresses by 48%. Finite element modelling, using experimental results as input, elucidates the differences in perception between the two groups of women. It makes clear that Osmoskin® changes the mechanical status of the SC, producing strains in underlying epidermis that activates multiple cutaneous mechano-receptors at a level correlated with the self-perceived comfort. Conclusion: Integration of the in vivo, in vitro and in silico approaches provides a novel framework for fully understanding how skin tightness sensations form and propagate, and how these sensations can be alleviated through the design of an optimized moisturizer.

K. Chilicka, M Rusztowicz, A.M. Rogowska, R Szyguła, B. Asanova, D. Nowicka, **Efficacy of Hydrogen Purification and Cosmetic Acids in the Treatment of Acne Vulgaris: A Preliminary Report**, J. Clin. Med. 2022, 11, 6269

Acne and skin lesions that appear in its course deteriorate the quality of life of patients, cause depression and the emergence of suicidal thoughts. Cosmetic treatments can have a positive effect on improving skin condition by cleaning up skin eruptions, thus improving the well-being of affected people. Hydrogen purification is a treatment that uses alkaline water generated by a device, which reduces sebum from the surface of the epidermis. This is a novel treatment that has recently been introduced to beauty salons. On the other hand, cosmetic acids have been used for many years for treating people with acne vulgaris and give spectacular results in terms of improving the skin condition. In this study, skin condition was evaluated with a Derma Unit SSC 3 device. The Global Acne Grading System (GAGS) was used to check acne severity. Twenty-four women aged 19–21 years (M = 20.13, SD = 0.80) diagnosed with mild acne vulgaris and a high sebum level participated in the study. Group A underwent a hydrogen purification treatment using an H2jet manipulator, which ejected alkaline water from the manipulator under pressure. Group B underwent a hydrogen purification treatment with the use of a phytic, pyruvic, lactic and ferulic acids at 40% mixture (pH 1.4). A series of four treatments was performed at 14-day intervals in both groups. Skin parameters were measured before and 30 days after the series of treatment. Very good resultswere obtained in both groups. The skin eruptions in patients were reduced and we also observed lower amounts of sebum on the surface of the epidermis, and an improvement in skin hydration. However, in group B, the results were better than in group A. The study showed that the synergy of the treatments produced much better effects than those obtained by completing the hydrogen purification treatment alone.

B. Bravo, P. Correia,| J.E. Gonçalves Junior, B. Sant'Anna, D. Kerob, **Benefits of topical hyaluronic acid for skin quality and signs of skin aging: From literature review to clinical evidence**, Dermatologic Therapy. 2022;35

Skin aging goes beyond a chronological process and also results from extrinsic factors referred to as the exposome. Hyaluronic acid (HA) is an important component of the extracellular matrix, with loss starting at 25 years old. While many studies of HA concern topical use, few literature reviews only address the use of topical HA in dermatology. This review describes the different characteristics of HA-containing cosmeceuticals, with a focus on skin aging and the impact of exposome factors on HA synthesis and degradation. A review was performed using the terms HA, hyaluronan, topical, dermatology, cosmetic, aging treatment, exposome, and cosmeceuticals. Results are also presented from a recent randomized controlled trial (RCT), which investigated the additional benefit of using a HA epidermic filler (HA-filler serum) combined with Botulinum toxin type A (BoNTA) to treat signs of skin aging. Subjects were randomized to two groups: HA-filler serum starting 24 h after the BoNTA injection then twice daily for 24 weeks, or the control group, which received BoNTA. HA is a key ingredient used in cosmeceuticals for its hydration/antiaging properties (hygroscopic, rheological, and viscoelastic). Several clinical studies indicate that HA is both well tolerated and effective, adjuvant to both post-surgical and facial rejuvenation procedures. In the RCT, one of few studies to combine BoNTA and HA with a 6-month follow-up, the HA-filler serum lengthened the duration of BoNTA's effect in reducing wrinkles. Numerous studies support HA-based cosmeceuticals as a noninvasive, effective solution for improving skin hydration and rejuvenation.

C. Ye, Y. Zhang, Z. Su, S. Wu, Y. Li, J. Yi, W. Lai, J. Chen, Y. Zheng, **hMSC exosomes as a novel treatment for female sensitive skin: An in vivo study**, Frontiers in Bioengineering and Biotechnology, 10, 2022

Background: Recent studies have reported that the incidence of sensitive skin is increasing. Skin sensitivity and skin barrier functions were related to many skin diseases including atopic dermatitis, psoriasis, rosacea, and so on. Mesenchymal stem cell (MSC)-derived exosomes (hMSC) might be considered as a new effective therapeutic scheme. Aims: This study aims to investigate the safety and efficacy of hMSC exosomes as a novel topical treatment for sensitive skin. Patients/Methods: Exosomes were extracted from primary hMSC via ultracentrifugation method. The morphology of hMSC exosomes was studied via transmission electron microscope. Expression of exosome specific surface marker was detected via Western blot. 22 subjects (female, aged 18–55) diagnosed with sensitive skin were enrolled. Follow-up was conducted before, 7-day, 14-day, and 28-day after hMSC exosomes use.
Transepidermal water loss (TEWL), surface hydration, sebum secretion, and L*a*b* value were simultaneously tested at the same time point in an environment-controlled room. Results: Under transmission electron microscopy, the extracted hMSC exosomes were circular or elliptical with intact membrane structure, and their diameters ranged mainly from 40 to 80 nm. Western blot showed that

the expression of markers CD63, CD9, and Tsg101 was positive. Brownian motion based nanoparticle trajectory analysis (NTA) showed that the main peak of particle size distribution occurred around 96 nm, the average particle size was 122 nm, and the main peak accounted for 96.7%. All this conformed to the biological characteristics of exosomes standardized by the International Society for Extracellular Vesicles. In the clinical trial, scores of objective symptoms including roughness, scales, erythema, and subjective symptoms including tension, burning, or itching, were improved after 7-, 14-, and 28- day using hMSC-exosomes. TEWL, hydration, sebum, pH, and a* values were tended to return to the level of healthy skin.

C. Alonso, X. Qu, A. Rani Ram, P. Vichare, S. Patil, T. Nuutinen, K. Kapsime, **Improving the efficacy and skin feel of hand sanitisers**, PERSONAL CARE MAGAZINE, October 2022, p. 75-77

The COVID-19 pandemic have heightened consumer awareness of hand hygiene, which has resulted in increased use of hand sanitisers. To address a larger market, more brands have launched products, resulting in a saturated market with a multitude of offerings often undistinguished from one another. So, the question then becomes – how to differentiate your product in a crowded marketplace? The answer lies in improved performance, consumer experience and sustainability.

L. von Oppen-Bezalel, J.S. Jurenka, **Unleashing the power of Nigellasativa black seedoil**, PERSONAL CARE MAGAZINE, October 2022, p. 89-92

Oil from the small black seeds of *Nigella sativa* has been studied for its antiinflammatory, antioxidant, and anti-ageing benefits. To harness the power of *the N. sativa* seed oil, its active constituent, thymoquinone, and their demonstrated benefits, a patent-pending cold-pressed extract high in thymoquinone has been developed to deliver full-spectrum black seed oil, standardized to 3% thymoquinone and very low free fatty acids. Branded as B'utyQuin for cosmetic use, this coldpressed black seed oil has been studied in vitro to determine mechanisms related to mitochondrial biogenesis and revitalization. This has been followed by clinical researchto establish the safety, compatibility, and efficacy of B'utyQuin as a topical anti-ageing cosmetic aid for human skin. This placebo-controlled clinical trial demonstrates topical application to a variety of healthy skin types over 28 days yields statistically significant improvements in skin hydration, luminosity, firmness, and elasticity, when compared to a placebo cream, resulting in a more flawless appearance.

N. Kaul, **Clinical testing for a booming men's sector**, Personal Care Magazine, October 2022

The male grooming industry is growing at a rapid pace Entlre ailes of drug stores are dedicated to men s grooming products. Product demand in the skin care, hair care, and fragrance Industries has grown dramatically and is expected to keep pace in the coming years. Whether this growth stems from celebrity advertising or social media influence, one thing is clear: men have come a long way from the days of merely using a soap bar as face and body wash. The modern man stands ready and willing to invest in skin and hair products that maintain their health and youth.

T. Puaratanaarunkon, C. Washrawirul, N. Chuenboonngarm, N. Noppakun, P. Asawanonda, C Kumtornrut, **Efficacy and safety of a facial serum containing snail secretion filtrate, *Calendula officinalis*, and *Glycyrrhiza glaba* root extract in the treatment of maskne: A randomized placebo-controlled study**, Journal of Cosmetic Dermatology, Volume 21, Issue 10, October 2022, p. 4470-4478

Introduction: During the ongoing COVID-19 outbreak, face mask use has increased and became a part of our daily lives. While wearing, prolonged contact time and microenvironmental change profoundly lead to an acne flare-up, defined as "maskne." Aims: We aimed to assess the efficacy and safety of snail secretion filtrate, *Calendula officinalis*, and *Glycyrrhiza glaba* root extract combination serum (SCGS) in treating the maskne. Methods: This was a randomized, double-blind, placebo-controlled trial study. This study enrolled 66 participants with mild-to-moderate maskne. The SCGS and placebo were randomly assigned for participants to use twice daily for 12 weeks. Percentage change of acne lesion count, acne severity by Investigator Global Evaluation Acne (IGEA), sebum levels, corneometry levels, transepidermal water loss (TEWL), erythema score by Visia®, and adverse events were evaluated 4-weekly at baseline to Week 12. At Week 12, all participants evaluated their satisfaction scores using a 10-point visual analog scale (VAS). Results: In the mask-covered area, the percent reduction in inflammatory acne lesions from the treatment group was significantly greater than the placebo group at all time points (coefficient of percentage change of inflammatory lesions = −33.89 [95% CI −65.24, −2.53]; $p = 0.03$). Also, a subgroup analysis with participants using concurrent acne treatments revealed similar results (12 participants, coefficient = −50.30 [95% −88.65, −11.95]; $p = 0.01$). However, there were no significant differences in non-inflammatory lesions, all skin biophysics, and VAS between groups. Adverse events were mild and occurred in a few cases in both

groups. Conclusions: The SCGS could significantly improve inflammatory acne lesions and had a favorable tolerability profile, suggesting its role as an adjunctive treatment in maskne.

N. Abiakam, H. Jayabal, K. Mitchell, D. Bader, P. Worsley, **Biophysical and biochemical changes in skin health of healthcare professionals using respirators during COVID-19 pandemic**, Skin Research & Technology, October 2022

Background: Personal protective equipment, including respirator devices, has been used to protect healthcare workers (HCWs) during the COVID-19 pandemic. These are fitted to skin sites on the face to prevent airborne transmission but have resulted in reports of discomfort and adverse skin reactions from their continued usage. The present study addresses the objective changes in both the structural integrity and biological response of the skin following prolonged and consecutive use of respirators. Materials and methods: A longitudinal cohort study, involving 17 HCWs who wear respirators daily, was designed. Changes in the barrier properties and biological response of the skin were assessed at three facial anatomical sites, namely, the nasal bridge, left cheek and at a location outside the perimeter of respirator. Assessments were made on three different sessions corresponding to the first, second and third consecutive days of mask usage. Skin parameters included transepidermal water loss (TEWL), stratum corneum (SC) hydration and erythema, as well as cytokine biomarkers sampled from sebum using a commercial tape. Results: The cheek and the site outside the perimeter covered by the respirator presented minimal changes in skin parameters. By contrast, significant increases in both the TEWL (up to 4.8 fold) and SC hydration (up to 2.7 fold) were detected at the nasal bridge on the second consecutive day of respirator-wearing. Therewas a high degree of variation in the individual expression of pro-and anti-inflammatory cytokines. Increasing trends in nasal bridge TEWL values were associated with the body mass index ($p < 0.05$). Conclusions: The most sensitive objective parameter in detecting changes in the skin barrier proved to be the increase in TEWL at the nasal bridge, particularly on the second day of consecutive respirator usage. By contrast, other measures of skin were less able to detect remarkable variations in the barrier integrity. Consideration for protecting skin health is required for frontline workers, who continue to wear respirators for prolonged periods over consecutive days during the pandemic.

M.B. Young, W. Lai, T. Kononov, A.S. Zahr, **A Rejuvenating treatment targeting "tech neck" lines and wrinkles in Chinese women: A prospective, open-label, single-center study**, J Cosmet Dermatol. 2023;22: p. 226–235

Background: Aging of neck and jawline skin is caused by intrinsic and extrinsic factors and is evidenced by wrinkling, laxity, skin dyspigmentation, loss of the mandibular contour, accumulation of submental fat, density loss, and prominent platysma bands. Early intervention with topical cosmeceuticals, especially in younger subjects with "tech neck," can offer a solution and potentially mitigate aging of the neck and jawline. Aim: The objective of this prospective, open-label, single-center clinical study was to assess the efficacy and tolerability of a topical anti-aging neck treatment (TNT) in a cohort of Chinese women with mild to moderate signs of aging on the neck and jawline. Subjects/Methods: This study was approved by an ethics committee and involved healthy Chinese subjects. Thirty-five female subjects, 25–50 years old, with mild to moderate signs of aging of the neck and jawline were recruited. Subjects applied the TNT to the neck and jawline twice daily for 84 days. Long-term efficacy and tolerability, clinical photography, bioinstrumentation, and a self-assessment questionnaire were performed at baseline and post-baseline. Results: The TNT significantly improved horizontal neck fold lines and neck skin elasticity, hydration, gloss/radiance, and skin tone evenness post-baseline. Clinical photography and ultrasound corroborated these findings. The product was well perceived and well tolerated by subjects. Conclusion: This study demonstrated the TNT was effective against both extrinsic and intrinsic aging of the neck and jawline. The TNT provides a topical solution for Chinese women concerned with an aging appearance of the neck including "tech neck."

K.A. Capone, D.L. Friscia, J. Nikolovski, L.S. Telofski, G.N. Stamatas, **A randomized clinical study on the effects of emollient use on the developing infant skin microbiome and metabolome**, Experimental Dermatology, October 2022

There is little debate that the microbiome plays an overall role in health; however, there is much to be learned about potential factors influencing the microbiome, particularly that of the skin, since it has the most exposure to the environment. It has been shown that the skin microbiome of newborns evolves to an infant-like profile, after rapid diversification throughout the neonatal period and into infancy.[1] Evidence shows that the presence of certain commensal microbial species limits access to opportunistic pathogens and may play a role in immune modulation.[2] By contrast, an alteration in the relative abundances of bacteria has been shown to be related to certain skin diseases. For example, the diversity of the skin microbiome is decreased in patients with atopic dermatitis (AD).[3] Emollients are

frequently used in AD management because of their effects on improving the skin barrier and reversing microbial dysbiosis.[4] Limited information is available on the effects of skin care products on the microbiome of healthy individuals. One study in adults suggested that the microbiome can be altered by skin care products.[5] The current report is the first study to evaluate the impact of baby skin care products on the microbiome in infants. More specifically, we evaluated if the addition of an emollient, which has been shown to enhance the richness and diversity of the microbiome in AD, would have a similar effect in healthy infants when added to the regimen of baby bath wash.

L. Schmidt, M. Larnicol, J. Hans, T. Vergne, M. Roche, C. de Almeida, E. Prestat-Marquis, M. Jomier, **Microrelief x Capacitance Reveal Moisturizing Effects of an Upcycled Postbiotic in Hand Skin**, Cosmetics & Toiletries, October 2022, p. 38-47

Hydration has been a key cosmetics concern and core marketing benefit claim for decades. Especially now, hand skin dehydration is a common concern for many consumers using aggressive hygiene procedures. Responding to this need, a novel sustainable cosmetic ingredient for moisturizing skin care was developed by upcycling side streams from Lactobacillus probiotics manufacturing.

W.-C. Lu, C.-S. Chiu, Y.-J. Chan, T.-P. Guo, C.-C. Lin, P.-C. Wang, P.-Y. Lin, A. Tresiliana Mulio, P.-H. Li, **An In Vivo Study to Evaluate the Efficacy of Blue Shark (*Prionace glauca*) Cartilage Collagen as a Cosmetic**, Mar. Drugs 2022, 20, 633

The “blue shark”, *Prionace glauca* (class: Chondrichthyes), is a pelagic shark species commonly found in tropical and temperate oceans. This shark is mainly sold in Asian countries as food and as traditional Chinese medicine. According to the Red List of the International Union for the Conservation of Nature, *P. glauca* is classified as low-risk to near endangered. *P. glauca* cartilage contains collagen type II, which makes it suitable as a bioactive ingredient in cosmeceutical products. This study evaluated the effects of a gel containing various concentrations (0.125–5%) of lyophilized hydrolyzed *P. glauca* cartilage on the human inner wrist skin compared to a placebo (base). A skin properties evaluation test was conducted before and after applying various concentrations (0.125–5%) of the *P. glauca* cartilage gel for 10 and 20 min on the inner wrists of participants using a skin analyzer that determined the moisture level, oil level, texture level, complexion level, and the 3D level. Adding lyophilized hydrolyzed shark cartilage (LHSC) significantly improved the moisture, texture, and complexion of the skin while controlling oil and providing a wrinkle-smoothing effect. The result indicated that LHSC formulations were prepared at different concentrations, and they had significantlyenhanced effects on skin hydration and elasticity (texture) and the smoothing of wrinkles (3D level). The LHSC also effectively controlled oil secretion and the complexion.

M. Saleem Qureshi, Q.A. Jamil, N. Akhtar, **Formulation and characterization of Anacyclus Pyrethrum Emulgels and its in vitro and in vivo evaluation as cosmeceutical product**, J Cosmet Dermatol, September 2022

Background: Plants containing high phenolic and flavonoids contents used widely as antioxidant agent byreducing skin photo damaging effects and play important role in skin rejuvenating. Aims: This study was performed to explore the cosmetic effects of Anacyclus Pyrethrum extract and to developstable oil in water (O/W) emulsion base gel loaded with Anacyclus Pyrethrum 10% extract. Objective: To explore and quantify phenols and flavonoids present in Anacyclus Pyrethrum extract and determine its cosmetic effects on human skin. Method: Emulgel formulation were developed by mixing o/w emulsion with carbopol gelling agent loaded with Anacyclus Pyrethrum (AP) extract and base gel without AP extract. In vitro study was done for the evaluation of color change, liquefaction, hardness, and pH change at different storage condition for the duration of 12 weeks. For in vivo study, emulgel applied on 13 healthy human volunteer's cheeks to evaluate its cosmetics effects and compared with placebo (base). Facial parameters including skin melanin, redness, sebum, moisture content, and skin elasticity were determined by using mexameter, sebumeter, corneometer, elastometer for the study duration of 12 weeks. Results: Total phenolic content in Anacyclus Pyrethrum extract was 80.04 ± 0.0043 mg GAE/g, and flavonoids were54.64 ± 0.0076 mg QE/g. Anacyclus Pyrethrum extract found significantly effective in reducing skin photo-damage effects ($p \leq 0.05$) as compared base gel. Conclusion: Anacyclus Pyrethrum extract being rich source of flavonoid and phenolic content, acts as strongantioxidant to protect skin against photo-damaging effect and improve skin conditions.

T. Nakamura, H. Yoshida, M. Haneoka, S. Nakamura, Y. Takahashi, **Season- and facial site-specific skin changes due to long-term mask wearing during the COVID-19 pandemic,** Skin Reasearch & Technology, Volume 28, Issue 5, September 2022, p. 749-758

Background: As people have regularly worn facial masks due to the coronavirus disease 2019 (COVID-19) pandemic, mask-wear-related adverse effects on the skin have been recognized. The aim

of this study was to explore skin changes, their seasonal variations in the general population caused by commonly used masks and a possible mechanism underlying negative effects of mask-wearing. Materials and methods: Eighteen Japanese females participated in the study during summer and winter in Japan. Skin characteristics were measured in the non-mask-wearing preauricular area and the mask-wearing cheek and perioral areas. Results: Trans-epidermal water loss (TEWL) on the cheek area tended to be increased in winter, which was positively correlated with skin scaliness on the same area. Ceramide (CER) content and composition in the mask-covered stratum corneum (SC) were slightly changed between summer and winter, and CER [NP]/[NS] ratio was negatively correlated with the TEWL on the perioral skin in winter. Skin hydration and sebum secretion were higher on the cheek compared to the perioral area in summer. Skin redness was particularly high on the cheek in winter. Conclusion: Mask-wear-related skin changes were season- and facial site-specific, and alterations in SC CER may play a role in barrier-related skin problems caused by mask use.

D. Kocsis, V. Klang, E.-M. Schweige, Z. Varga-Medveczky, A. Mihály, C. Pongor, Z. Révész, Z. Somogyi, F. Erdó, **Characterization and ex vivo evaluation of excised skin samples as substitutes for human dermal barrier in pharmaceutical and dermatological studies,** Skin Reasearch & Technology, Volume 28, Issue 5, September 2022, p. 664-776

Background: Excised animal and human skins are frequently used in permeability testing in pharmaceutical research. Several factors exist that may have influence on the results. In the current study some of the skin parameters that may affect drug permeability were analysed for human, mouse, rat and pig skin. Materials and methods: Classic biophysical skin parameters were measured (e.g. pH, hydration, permittivity, transepidermal water loss). Physiological characteristics of the skins were also analysed by confocal Raman spectroscopy, scanning electron microscopy and two-photon microscopy. Results: Based on biophysical testing, skin barrier function was damaged in psoriatic mouse skin and in marketed pig skin. Hydration and pH values were similar among the species, but freezing and thawing reduced the water content of the skins and shifted the surface pH to acidic. Aging reduced hydration and permittivity, resulting in impaired barrier function. Mechanical sensitization used in permeability studies resulted in proportional thinning of dead epidermis. Discussion: Results indicate that depending on the scientific question it should be considered whether fresh or frozen tissue is used, and for certain purposes rodent skins are well usable. The structure of the skin tissue (ceramide, cholesterol, keratin, natural moisturizing factor or urea) is similar in rats and mice, but due to the higher skin thickness the lipid distribution is different in porcine skin. Psoriasis led to irregular chemical composition of the skin. Conclusion: A comprehensive evaluation of skin samples of four species was performed. The biophysical and microscopic observations should be considered when selecting drug penetration models and experimental conditions.

P. Pericu, **Upcycled, moisturizing and skin-friendly xylitol**, PERSONAL CARE MAGAZINE, September 2022, p. 27-30

The number of new skin care products featuring a microbiome-related claim has increased sharply over the last few years and it has become one of the most talked about drivers of product innovation in the category. At the same time, consumers'interest in environmental and ethical beauty continue to soar and influence purchasing decisions. A comparison between product launches featuring a sustainability claim between 2012 and 2022 showed an increase of nearly 70%. Of course, this does not mean that consumers are willing to compromise on the skin-hydrating performance of their chosen moisturiser.

Y. Ying, L. Yanan, J. Ligang, C. Yuyan, **Improvement of aged skin in Chinese subjects with a cream containing five peptides**, 32nd IFSCC Congress London, September 2022

Background: Some peptides are developed and utilized in cosmetics, but little in vivo efficacy of the finished cosmetics containing peptides was reported, especially in the Chinese population. Five different peptides as effective ingredients were formulated to evaluate the anti-wrinkle efficacy ex vivo and in vivo. Methods: Systematic studies were conducted to verify the anti-aging efficacy of the peptides-containing cream. An ex vivo study was performed on human skin explants via topical surface application. In the clinical trial, thirty-one healthy Chinese females with visible facial wrinkles were enrolled and instructed to apply the cream for 8 weeks. Skin aging parameters were measured at 0, 4, and 8 weeks. Subject self-assessments were conducted via questionnaire at each visit. Results: The results showed the peptides-containing cream treated ex vivo skin produced an increased expression of collagen fibers (collagen I & III) in the dermis, and collagen IV and XVII in the dermal-epidermal junction structure. Global facial anti-aging efficacy was demonstrated by instrumental data and self-assessments. The cheek lines, nasolabial folds, and forehead wrinkles experienced significant reduction to varying degrees at early 4 weeks. At 8 weeks, the dermal density and thickness were significantly

increased. The test cream was well accepted by subjects due to its mildness throughout the study. Conclusion: Collagen content increasing ex vivo and the dermal density and thickness increasing in vivo mutually confirmed its anti-aging mechanism of preventing collagen breakdown and boosting collagen synthesis.

C.S. Park, E.O. Lee, J.W. Kim, K.-H. Liu, S. Lee, K.-M. Lim, **Synthesis and Characterization of a Novel Phytosphingosine-Based 1-*O*-Acylceramide,** 32nd IFSCC Congress London, September 2022

Sphingosine-based 1-O-acylceramides were frst identifed in 2013 and speculated to contribute to the stability of lipid lamella organization in the human stratum corneum (SC). A novel phytosphingosine-based 1-O-acylceramide was synthesized and characterized via physicochemical analyses, to show its effect on a Reconstructed Human Epidermis (RHE), and in vivo human study. Selective conjugation of stearic acid to the frst hydroxyl group of a ceramide NP was performed to yield 1-O-stearoyl-ceramide NP (CerENP). LC/MS and 1H NMR analyses confrmed its correct 1-O-acyl conformation. The stability of liposomes prepared using lecithin, ceramide NP, and CerENP was markedly enhanced with the increasing amount of CerENP against deoxycholate, an anionic detergent. The RHE treated with CerENP showed a dense and compact SC indicating CerENP seemed to tighten the lipid lamella structure of SC. A human study demonstrated that a moisturizer formulated with 0.1% of CerENP and 0.5% of ceramide NP showed better performance than 0.5% of ceramide NP alone concerning hydration and the retention of hydration. Taken all together, CerENP seems to have a novel function in stabilizing SC lamellar organization. Based on the characteristic structure of CerENP, we propose a bidirectional anchoring model as the mode of action for this new class of ceramide.

N. Kaul, E. Kohoot, B. Drewitt, **Clinical Testing of Dermo-Protective Products against Environmental, Chemical and Climatic insults**, 32nd IFSCC Congress London, September 2022

Our skin reflects the state of our health. Exposure of the skin to external insults like chemicals (detergents, soaps), climate (dry, cold, hot conditions) and environment (pollution), besides harming the protective ability of the skin, impacts skin properties and causes acute or chronic damage to the skin barrier. There is need to protect the skin from onslaught of various insults and to restore and conserve hydration, barrier function and protect it from pollutants. Many dermo-protective products are available and new ones are being introduced with actives to clean, soothe, restore, reinforce, protect, treat and maintain our skin in good condition. Our objective was to assess the efficacy of dermo-protectants against environmental, chemical, and climatic insultsusing clinical grading, imaging, along with bioinstrumentation in three *in-vivo* models.Methods: Three clinical studies were carried out each following a randomized, blinded, untreatedcontrol design in 35 healthy female subjects. The methodology included clinical grading, imaging and the use of various bio-instruments to measure the parameters of interest. Results: Our results from the three skin models using test methods presented under standardizedconditions show the extent of dermo-protection in relation to hydration, barrier protection and removal of pollution evident with the test articles used.Conclusions: Being in direct contact with the skin, dermo-protectants help protect and modulate skin characteristics and functioning, thus making them unique and versatile, outstepping the original boundaries of a product for providing beauty alone. Clinical trials with dermo-protectants for proving product efficacy and its extent, with proper study designs and techniques, is important in not only adding value for the consumer but also important for maintaining a competitive edge.

T. Richard, C. Messaraa, **Glycerin inclusion levels for skin hydration: a data-driven approach**, 32nd IFSCC Congress London, September 2022

Introduction: Skin hydration claims have been around for many decades and are still one of the most sought after benefit from cosmetic products. There are several strategies to deliver such benefit, with a myriad of formulation available on the market. Glycerin, a by-product of soap manufacturing, is among recurring ingredients with a long history of use for skin hydration. Easiness to formulate and affordability makes it an attractive option, yet it may come at the expense of a tacky feeling in formulation when used in high quantities. We thus aimed at retrospectively analyse the minimum levels of glycerin required in some formulation types that allow to deliver a significant skin hydration effect, measured in clinical settings using the corneometeter. Methods: Retrospective corneometer data of 134 products were compiled. Formulation types consisted of emulsions (e.g. creams, lotions, foundations) watery gels or solutions (e.g. toners). These data encompasses skin hydration at baseline and at 2, 8 and 24 hours following a single application of a product. Product were evaluated on the forearms with mixed panels of men and women. The whole dataset was investigated using descriptive statistics and bootstrapped 95% confidence intervals (CI) were calculated.. A linear mixed effect models (LMM) was used to estimate the magnitude of skin hydration increase according to the glycerin content. Results:When corrected to an untreated site, similar level of glycerin were found to be sufficient to elicit a significant

skin hydration at 2 and 8 hours, while higher quantities were required for a 24 hour sustained effect, as per corneometer measurements. Estimates of expected skin hydration were computed with LMM although the variance explained by themodel suggest that explanatory power of the model deserved to be improved, in particular for estimates at 24 hours. Discussion and Conclusion: Probing relevant levels of glycerin to achieve skin hydration in clinical settings can help addressing several objectives: gain confidence on expected performance, reduce reliance on prototypes screening but more importantly, inclusion of a sensible amount of glycerin to mitigate detrimental effects on sensorial attributes.

M.Y. Fujii, A. Okishima, S.H. Ichiwata, O. Masatoshi, T. Oka, Y. Ashida, E. Hara, **Shape-Shifting Technology of High-Molecular-Weight Hyaluronic Acid Realizing Youthful Skin**, 32nd IFSCC Congress London, September 2022

Introduction: Hyaluronic acid (HA) is essential to maintain youthful skin. However, the level of HA in the epidermis diminishes with aging. This study was established todevelop novel technology that delivers high-molecular-weight HA (HMW-HA) to theepidermis without reducing its original functions to realize youthful skin. Methods: The size of HA was evaluated by multi-angle light scattering, partial specific volume, and molecular dynamics simulations. The amount of HA penetration was evaluated by the tape-stripping and cross-sectional observation of skin. The efficacy of the proposed technology was evaluated by measuring the softness and transparency ofstratum corneum (SC), water retention capacity of HA, SC water content, and skin surface contours. Results: It is difficult to achieve the skin penetration of HMW-HA without reducing its structure and properties. We demonstrated that HA shrank with the addition of magnesium chloride and that this shrunken HMW-HA showed drastic increases in HA penetration to the epidermis. In addition, the softness and transparency of SC were improved. Moreover, it was revealed that the addition of sodium metaphosphate expanded the overall volume of the shrunken HA. Combining this expansion method with shrunken HA achieved a fine and uniform skin texture because of restoration of HA's original water retention capacity.Conclusion: The shape-shifting technology made it possible not only to provide the highest reported levels of HMW-HA to the epidermis, but also to regenerate its original water retention capacity and volume. This technology can supply natural HMW-HA noninvasively as a promoter of youthful skin in daily care.

M.C. Reimberg, H. Chajra, M. Frechet, ***In vivo*** **performance of a social and environmentally sustainable blend of Brazilian Kaolin**, 32nd IFSCC Congress London, September 2022

Background: Clays are used since ancient times for medicinal and beauty purposes and their mineral compositions depend on their geological origins. Clays originated from volcanic soil are colored and rich in minerals while clays derived from the Amazonian lateritic soil are richin minerals and organic matter. Combining these different sources of clays opens the way to the creation of an infinite variety of clays with amazing cosmetic and aesthetic properties. This work demonstrates new skin benefits and multifunctional properties of Brazilian clays containing kaolinites, "the kaolin" for cosmetic applications. Methods: Proof of concept clinical study: skin hydration (Corneometer™), TEWL (Tewameter™), sebum (Sebumeter™) and firmness /tensor (Cutometer™). Short term or long term of product use respectively after 4 hours or 7 days of consecutive use. Results: The positive impact of kaolin on skin health was demonstrated such as the maintenance of hydration, protection of skin barrier function and increase of skin firmness (tensor effect). The use of kaolin was not associated with an increase in sebum secretion, a phenomenon classically observed with the use of clays and known as "rebound effect" due to the constant use of clays. Conclusion: The positive attributes show that kaolin can be used in multifunctional formulations, even for skin care. Kaolin provides also rheological stability for the formulations and can bring benefits to the mineral make up, color cosmetic products, face products, besides sunscreens, BB creams and CC creams. New formulations and uses of kaolin can be addressed with several benefits for skin and hair care.

S. Bom, M. Ferreira, C. Santos, R. Cláudio, P. Pinto, H.M. Ribeiro, J. Marto, **Towards the personalization of 3D printed patches for cosmetic applications**, 32nd IFSCC Congress London, September 2022

Background: The production of cosmetic products by semi-solid extrusion 3D printing has been explored as a solution to personalize skincare products. Therefore, the main goal of this work was to develop an innovative and versatile gelatin-based 3D printed patch with controlled network topology for multipurpose cosmetic applications, such as anti-aging, and which can be easily personalized by changing print parameters. Methods: 3-Layered gelatin-based patches with several infill patterns were printed in an extrusion-based 3D printer (Allevi2, USA), varying the line distance and the angles. Measurements of pore width were performed using the ImageJ® software and Visioscan® was used to record the topography. Afterwards, Visia-CR™ was employed as: i) biometric equipment to record the bioactive fluorescence; and, ii) 2D scanner for designing a personalized eye patch with controlled

network topology. Results: Gelatin-based patches with different degrees of porosity were successfully printed and showed good bioactives release modulation properties. As a proof-of-concept, an antiaging purified tomato extract, IBR-TCLC®, was incorporated into the personalized eye patch. Topographic analysis showed that the printing accuracy and pore shape fidelity were not largely affected by this incorporation, reinforcing the versatility of the technology employed. Additional data also showed that it is possible to visualize and quantify the fluorescence of the bioactive incorporated using Visia-CR™. Conclusion: The 3D printing approach employed opens a new perspective in the production of personalized skincare products for different cosmetic applications. Moreover, the possibility to evaluate the bioactive release *in vivo* is being explored.

S. Hettwer, E. Besic Gyenge, B. Suter, B. Obermayer, **A multi-sensorial active ingredient to reduce stress and improve skin condition**, 32nd IFSCC Congress London, September 2022

Background: The recently discovered olfactory receptors on skin cells paved the way to develop cosmetic active ingredients which stimulate those receptors and drive keratinocyte differentiation and maturation. As such, scents can not only stimulate the brain and act de-stressing but can also act positively on the skin. Methods: A scenting cosmetic active ingredient from the resurrection bush *Myrothamnus flabellifolia* (INCI: Caprylic/Capric Triglyceride, Myrothamnus Flabellifolia Leaf/Stem Extract) was used for studies stimulating the mood of test subjects and to investigate the effects on skin. Characterisation of the scent profile has been done with a panel of 12 trained people. The composition of the essential oil fraction was determined by GC-MSD. Double-blind, placebo controlled studies were performed (n = 25 - 75). Mood parameters were evaluated by hormone measurements of saliva, questionnaire and EEG recording. Skin parameters were evaluated with standard equipment. Corneometer values were mapped on the images of representativefaces by means of computer aided colour mapping. Investigation of bitter taste receptor activation on keratinocytes was assessed by measuring the calcium influx and the cAMP level.Conclusion: Myrothamnus extract was able to improve the mood of study participants using an emulsion containing 3 % of the active. It further improved skin parameters like hydration, TEWL and anti-ageing parameters. The mode of action combines subconscious smelling via olfactory sensory neurons in the nose and activation of bitter receptors on keratinocytes. This combination is the first-of-its-kind approach of a cosmetic active ingredient to destress the mind and skin at the same time.

H.-Y. Yoo, D.-R. Jung, M. Jeong, M.-J. Kim, Y.-J. Jang, S.-H. Park, B.-J. Park, J.-H. Shin, **Comparison of Scalp Microbiome According to the Severity of Androgenic Alopecia and Gender in a Korean Cohort**, 32nd IFSCC Congress London, September 2022

Introduction: Androgenic alopecia (AGA) is the most common alopecia case of men and women with hair loss and thinning at the parietal scalp and vertex. The treatment of AGA is not only a difficult and long-term process, but also reduces people's quality of life. Various factors influencing AGA induction have been suggested including environmental, genetic, and hormones. The studies have recently shown that bacteria community of scalp (*Cutibacterium* and *Staphylococcus*) affects scalp and hair-related diseases such as dandruff or seborrhoeic dermatitis. The purpose of this study is to analyze the difference in scalp bacterial flora between men and women according to the severity of AGA (normal, weak and severe hair loss). In addition, we intend to apply it to the prevention of hair loss by functional gene prediction analysis of beneficial or harmful bacteria associated with AGA. Methods: A total of 141 Korean men and women (47.2±1.4) aged 20 to 65 participated in the study, consisting of 46 normal group (21 men and 25 women) and 95 AGA group (46 men and 49 women). AGA group was further classified into stages 1 and 2 according to the severity of symptoms by referring the Basic and Specific (BASP) classification criteria with visual assessment of researchers. In order to standardize the scalp condition, subjects were prohibited from using hair care products and shampoo for one day before sampling. After measuring the clinical conditions of the scalp (moisturizing, sebum, desquamation, and temperature) and hair (thickness, density, and gloss), scalp microbial samples were collected by sterile swabbed cotton. 16S rRNA gene was amplified from V4 to V5 hypervariable region and next generation sequencing was performed. Alpha and beta diversity, and taxa abundance differences were identified between groups. Functional analysis was predictied by PICRUSt2 and bacterial associations networks were revealed. In this study, all statistical analysis and visualization of our results results were performed with RStudio 1.4.1717. Results: In comparison with the overall clinical measurements between the normal and AGA groups, the results excluding the moisturization, density, and thickness of the scalp showed little difference significantly depending on whether or not hair loss was present. However, the structure of scalp bacterial communities was significantly different both by gender and severity of AGA. The men had a relatively diverse bacterial composition compared to women, and as AGA progressed, alpha diversity increased compared to normal group. The phylum and genus-level differences were identified. These differences included: (1) In both women and men, the ratio of total *Cutibacterium* and

Staphylcoccus (dominating genus of healthy scalp) decreased in the AGA group compared to normal group, (2) In the AGA group, *Bifidobacterium* for women and *Corynebacterium* and *Massilia* for men increased, (3) Especially, in the men group, *Lawsonella* decreased significantly according to AGA stage. As a result of predicting the metabolic function of the microbial communities, lipoic acid and folate biosynthetic pathways, substances that stimulate proliferation of hair follicles, were relatively more predominant in healthy subjects than in AGA subjects. Depending on the severity of AGA, the bacterial co-occurence network became more diverse and complex, and the number of unique associations between bacteria increased compared to healthy subjects.Discussion and Conclusion: The results of this study indicated differences in the scalp bacterial communities associated with gender and severity of AGA. The increased diversity as hair loss progresses may be caused by increased contact with the scalp and external environment, decreasing *Cutibacterium* and *Staphylococcus* and increasing non-skin commensal bacteria. The decline of two genera bacteria involoved in maintaining scalp homeostasis and immune regulation was a very interesting founding. The results of this study demonstrated that, while it is important to understand the differences of individual microbes between each groups, the entire bacterial communities exhibited unique and distinct variations in the scalp. Futhermore, it can also serve as a scientific basis for future research on AGA by presenting candidate microbes and metabolic pathways that can lead a comprehensive understanding of AGA related scalp microbiome.

H.Y. Sung, K.W. Kim, Y.S. Choi, I.H. Kim, H.S. Yeom, H.J. Lee, Y.M. Kim, J.O. Park, **Moisturizing and anti-wrinkle effect of Korean Natural citrion Junos Oil and bioconverted ethylhexyl Korean citron Junos oil**, 32nd IFSCC Congress London, September 2022

Background: The prepared naturally-derived vegetable oil and bioconversion oil showeddifferent properties and properties from each other. As the number of consumers seeking eco-friendly materials increases, preference for natural vegetable oils is increasing, but there are limitations in application to cosmetic formulations due to the heavy feeling and stickiness of vegetable oils. Methods: The moisturizing and anti-wrinkle effects of natural vegetable oil and ethylhexyl bioconversion oil were confirmed. Hyaluronic Acid (HA) and Filaggrin (FLG) production were used as indicators for moisturizing efficacy evaluation using keratinocytes (HaCaT cells), and pro-collagen synthesis amount using human fibroblasts (NHDF cells) for wrinkle improvement efficacy evaluation. Results: In the case of Korean citron oil and ethylhexyl citron oil, HA increased by sample treatment, but FLG silver increased insignificantly. Both increases in pro-collagen wereweak. However, in clinical trials, both citron oil and ethylhexyl citron oil showed statistically significantly higher moisture improvement and moisture retention effects than the control group after 4 hours and 8 hours without adverse skin reactions. Conclusion: In this study, the feeling of use was improved when applied to the skin through biocatalytic conversion technology, and it is expected that it will be continuously expanded as a cosmetic material by confirming the moisturizing and anti-wrinkle effects.

P. Ward, T. Welsby, A. Corcoran, L. McLundie, R. Goodwin, S. Long, **Changes to abdominal striae distensae (stretch marks): Biophysical measurements and histological examination by in vivo confocal microscopy following 8 weeks use of a cosmetic product**, 32nd IFSCC Congress London, September 2022

Striae distensae are commonly formed on the abdomen, thighs and some other body sites and the aetipathogenesis is multifactorial, including following pregnancy or as a result of significant changes in body mass, genetic pre-disposition, growth spurts in puberty or as an association with Marfans or Cushings syndromes. They are twice as common in females, compared to males, and display as linear scars, initially with a significant erythematous appearance and often with itch (striae rubra or striae gravidarum), which fades to silvery grey over a period of several years (striae alba). Histologically, the change from striae rubra to alba involves distension and tearing of elastic fibres, initial inflammatory cell involvement and eventual thinning of the epidermis. Several treatments are available that claim to improve the appearance of striae including laser ablation, intense pulsed light and other minor surgical approaches. In addition, there are several cosmetic products available that similarly claim to improve the visible appearance of striae. In this study, we will present results from a study to evaluate the biophysical changes in the skin of females with striae gravidarum that were less than 3 years since formation and whether regular use of a topical cosmetic product over 8 weeks could lead to changes in the biophysical measurements. Thirty female volunteers were recruited from the test panel at Cutest Systems Ltd, Cardiff, U.K. who met the inclusion and exclusion criteria and who consented to enter the study. Baseline measurements of skin moisturization using a Corneometer™, skin elasticity using a Cutometer™ and skin colour adjacent to and over the striae, using a Chromameter™ were made. In addition, standardized digital images were taken of the striae with a Canon DSLR and controlled lighting and volunteers completed self-evaluation questionnaires. In addition to the biophysical measurements, dermatoscopic images and invivo confocal images were taken of selected striae using a Canfield

VisioMed D200™ and Vivascope 150™ instrument respec. The volunteers were given a cosmetic body product (cream) to apply to the abdomen twice daily for 8 weeks. The volunteers were asked to return to the clinic after 4 weeks and again after 8 weeks of use for repeat measurements. The dermatoscopic images and invivo confocal images were taken only after 8 weeks. Data were compared statistically using ANOVA for multiple comparisons (Tukey-HSD method). Changes in moisturization of the skin were statistically significant at both 4 weeks and 8 weeks ($p<0.001$ for both), with Corneometer measurements changing from 26.55+6.12 a.u. at baseline to 36.09+10.50 a.u. after 8 weeks. Skin colour measurements using the Chromameter™ a* values on the target striae changed from 5.35+1.63 units at baseline to 5.24+2.02 a.u. after 8 weeks, which was statistically significant ($p=0.023$). These preliminary data demonstrate an improvement in biophysical skin parameters following regular use of the cosmetic product. We will present the histological comparisons and clinical evaluation by the dermatologist and the complete dataset from the study in the full paper, in order to determine whether use of a cosmetic product for 8 weeks can result in clinically relevant changes in the appearance of striae and whether this is associated with histological changes as imaged using in vivo confocal microscopy.

H. Vergnaud, Z. Charton, M. Ma, M. Sun, M. Beauferey, N. Eladan Bertein, D. Blumenthal, E. Loescher, L. Caisey, G. Gazano, **Skin color diversity and skin quality of Chinese women**, 32nd IFSCC Congress London, September 2022

Skin color is a key aspect (even tone, without pigmented spots, and transparent skin) in the concept of Chinese beautiful skin. Even if skin color overlaps between ethnic groups, Asian skin color has its specificities and diversity. The aim of this study was to measure and identify skin color and skin quality typologies among the diversity of Asian skin color as identify in the literature. A 2-phases study was set up. First, we conducted a literature review of skin color, focused on Asian skin color. Secondly, a pre-inclusion study was run with 176 Chinese women with the objective to select about 100 women to represent the full range of Asian skin color as identified in the literature. Skin color and skin quality items were quantified on 102 women among them. 10 publications corresponding to more than 8000 subjects were gathered to obtain a map of the Asian skin color, showing that Asian skin color tends to be lighter and a little bit quite yellower, with important differences between countries, cities and between women. Skin color characterization on 102 women highlighted that Chinese skin has a great variety of colors and qualities, with modulation of skin items from skin color, skin color homogeneity to translucency, hydration, elasticity and firmness but also pores, allowing to identify several typologies of skin. The skin color with its skin quality items is a key tool for understanding the diversity of concerns and needs of Chinese women.

*Z. Zhou, M. Guo, Y. Guo, F. Ya*ng, **Rice fermented liquid as an alternative for water that retains skin moisture and its application for cosmetics**, 32nd IFSCC Congress London, September 2022

Background: Fermentation is a technology that creates new substances or metabolites by conversion using the metabolic pathways of microorganisms and is applied in various fields such as foods and cosmetics. We focused on the combination of rice and yeast as microbial fermentation and developed a rice fermented liquid. The aim of this study is to evaluate the effects of rice fermented liquid on skin moisture and elasticity.Methods: The double-blind, placebo-controlled, left-right randomized clinical trial was carried out. A lotion formulation including 94.5% rice fermented liquid or a blank was topically applied to the left or right half face in healthy twenty-five volunteers twice daily for 8 weeks. The water content in the stratum corneum (SC), transepidermal water loss (TEWL) and skin elasticity was measured using noninvasive devices at baseline, 4 and 8 weeks. Facial analysis was also performed at the same time. Results: Application of the lotion containing rice fermented liquid for 8 weeks significantly increased the water content in the SC and the number of skin textures as compared with that of the blank. The lotion tended to decrease TEWL. In an age-stratified analysis, the lotion tended to improve skin elasticity in subjects aged under 50 years. Conclusion: Rice fermented liquid is useful as a functional water having the ability to retain skin moisture and elasticity.

F. Yang, Z. Zhou, M. Guo, Y. Guo, J. Zhang, Z. Zhou, **The study of mRNA expression, skin hydration, shrink pores and smooth skin function of Lens esculenta seed extract in cosmetics**, 32nd IFSCC Congress London, September 2022

Background: With the increase of age, the skin become grain, and the pores become thicker. During age-related skin slackening, the pore walls slacken and widen, supported by the epidermis and the dermis. The skin microrelief, defined by the orientation and the depth of the furrows, also contributes to pore distortion and age. Pore dilation, which leading to accumulation of nucleated cells around the pores, also seems to be related to an abnormal accelerated keratinization process. This study is to evaluation the effect of the lens esculenta seed extract (LESE) to restores the normal keratinization

process, stimulate the expression of collagen I and reinforcing the pore wall support structures. And it is also researching the extract's function of reduced nucleated cells and limited pore wall slackening. The clinical efficacy shown the actives function in formulation. Methods: Evaluation of promoting effects on mRNA expression of genes related to skin barrier function, Keratinocytes were incubated with a test sample and gene expression levels of Transglutaminase 1 and Involucrin (IVL) were analyzed by real-time RT-PCR. Staining of nucleated cells is to assess in vivo the effect of active formulated in emulsiion on the keratinization process on the cheeks in comparison with placebo. A 8-weeks Clinical testing was conducted on 30 chinese subjects around pore and wrinkle by VISIA and Primos, and professional dermatologists evaluation. Results: Tested at 1% on normal human keratinocytes, Lens esculenta seed extract significantly increased the expression of mRNAs coding for transglutaminase 1 by 34% ($p<0.05$), involucrin by 27%($p<0.05$). thus, favors keratinocyte differentiation. Lens esculenta seed extract significantly reduces the number of nucleated cells located around pores by 20.8% ($p<0.05$). The sample with 3% Lens esculenta seed extract (LESE) produced good clinical improvements on skin hydration, shrink pore and tighten skin. In promos testing, the pore become shrinker after 56D treatment than before. The clinical dermatologist evaluation showed increase of 34.75% in skin fineness and smooth. The average clinical score of the skin texture in the sample area was significantly increased by 34.75%, the number of blackheads and pimples was significantly reduced by 99.10%, the grade of inflammatory acne was significantly reduced by 30.16%, and the effective rate of facial acne reduction was 77%. Conclusion: In summary, Lens esculenta seed extract has a significant increase of TGM-1 and IVL mRNA expression and reduce nucleated cells, which help to shrink pores. In a clinical efficacy trail the sample contain 3% Lens esculenta seed extract shows good improvement in shrink pores and skin smooth function.

L. Verzeaux, R. Rao, R. Vyumvuhore, N. Belloy, E. Aymard, S. Baud, M. Manfait, M. Dauchez, B. Closs, **From molecular modelling to Raman microspectroscopy: unprecedented demonstration of the hygroscopic properties of apiogalacturonans**, 32nd IFSCC Congress London, September 2022

To meet the needs of dehydrated skin, molecules with a high hygroscopic potential are necessary to hydrate it effectively and durably. In this context, SILAB was interested inpectins, and more precisely in APGs (APG), a singular one that is currently only found in afew species of aquatic plants. As key structures in water regulation of aquatic plants, we hypothesized that it could have beneficial role for skin hydration. *Spirodela polyrhiza* is a duckweed used in traditional Chinese medicine for its effects on water metabolism and known to be naturally rich in APG. SILAB thus supplied in this natural raw material. The aim of this study was to investigate the hygroscopic potential of APG and their moisturizing potential on skin suffering from dehydration. Firstly, an APG model was built based on structural information obtained from the literature. Molecular dynamics (MD) simulations were performed, and the hygroscopic potential was predicted *in silico* by analyzing the frequency of interaction of water molecules with each APG residue. Secondly, the hygroscopic properties were investigated directly *in vivo.* The water capture in the skin was tracked *in vivo* by Raman microspectroscopy. Measurements were also conducted on Caucasian and Asian volunteers with a dehydrated skin to investigate respectively the *stratum corneum (SC)* and epidermis to superficial dermis hydration levels. Quantification of interactions identified the presence of 23 water molecules on average in contact with each residue of APG. Thanks to the *in vivo* deuterated water (D20) tracking by Raman microspectroscopy, investigations revealed that APG significantly capture and retain more water in the epidermis and deeper than a placebo control and hydrate the skin from the *SC*. Not only do these original natural molecules interact with water molecules, but they capture and retain them efficiently and durably in the skin. Hence, APG are of great interest for the care of dehydrated skin.

J.P. de la Roche, A. Barata, M.R. de Mora, I. Cordon, **Harnessing marine organic osmolytes for better ageing**, PERSONAL CARE MAGAZINE, September 2022, p. 32-36

Marine life extends beyond the ocean waters to the rocky coastline. A living marine micro-ecosystem develops on this hard substrate: the epilithic holobiont. This supra-organism composed of phytoplankton and its microbiota is a source of natural organic moisturisers. By applying Phycosphere Biodynamic® Technology we biomimic the extreme environment where this holobiont lives.The organic osmolyte-rich extract is extracted to create Osmocean Phycoskin®, an original moisturising and dermoprotective bioactive ingredient reduces the impact of photoageing and restores the skin's natural well-ageing.

S.-R. Park, J. Han, Y.M. Yeon, Y. Na, Y. Kang, E. Kim, B.-F. Suh, **Effects of one year of daily face mask wearing on the skin during the coronavirus disease 2019 pandemic**, Skin Reasearch & Technology, Volume 28, Issue 5, September 2022, p. 729-739

Background: As coronavirus disease 2019 (COVID-19) continues, the long-term daily use of

masks is increasing. A full year includes the four seasons of spring, summer, autumn, and winter. Skin may have been affected by the seasons and further affected by the use of masks. In a previous study, we confirmed the short-term and 6-month effects of wearing face masks. In this study, we investigated how certain characteristics of the skin change when wearing a mask for 1 year. Furthermore, we compared skin covered by the mask (mask-skin zone) to skin that was not covered. Materials and methods: The participants were 18 healthy adults (8 men; 10 women) who were asked to wear masks in their daily lives from June 2020 to June 2021. During this period, participants' skin characteristics, such as trans-epidermal water loss, skin hydration, skin elasticity, skin keratin amount, skin pore area, skin temperature, skin redness, and skin color, were measured five times. Results: Trans-epidermal water loss, skin keratin amount, skin pore area, skin color, and skin elasticity changed significantly during the year. Furthermore, trans-epidermal water loss, skin hydration, skin keratin amount, skin pore area, and skin color were significantly different between the mask-wearing and non-mask-wearing areas of the face. Conclusion: The skin characteristics of the mask-skin zone can be affected by longterm wearing of a face mask under lifestyle and environmental conditions. During the COVID-19 pandemic, skin care for the mask-skin zone is also necessary for people who do not wear masks on a daily basis.

C.R. Sigit Prakoeswa, Damayanti, S. Anggraeni, M.A. Umborowati, S.A. Febriana, K. Oginawati, I. Tanziha, **Profile of Transepidermal Water Loss (TEWL), Skin Hydration, and Skin Acidity (pH) in Indonesian Batik Workers**, Hindawi Dermatology Research and Practice Volume 2022

Chemical substances used during batik processing may affect the physiological function of the batik worker's skin barrier. (is study assessed the level of transepidermal water loss (TEWL), skin hydration, and skin acidity in 61 batik workers from the batik center in Paseseh village, Tanjung Bumi subdistrict, Madura Island, Indonesia. Forty-five batik workers involved in dry work including drawing patterns on the cloth with wax and sixteen batik workers involved in wet work including dyeing the cloth with a dye bath were included in this study. (e mean TEWL level in the dry work section was 59.87± 11.94 g/m2/h on the palmar and 29.00± 13.09 g/m2/h on the dorsal side of the hand, while the mean TEWL in the wet work section were 47.39± 9.66 g/m2/h on the palmar and 37.07± 10.00 g/m2/h on the dorsal side of the hand. (e mean skin hydration level in the dry work section was 49.80± 19.16 arbitrary units (a.u.) for the palmar side and 52.77± 16.21 a.u. for the dorsal side of the hand, while the mean levels of skin hydration in the wet work section were 47± 12.73 a.u. and 62.94± 10.09 a.u. for palmar and dorsal side, respectively. (e mean levels of skin acidity in the dry work section were 5.45± 0.19 for the palmar side and 5.30± 0.20 for the dorsal side of thehand, while the wet work section had 5.30± 0.19 and 5.10± 0.19 for the palmar and dorsal side of the hand, respectively. (e TEWL levels were found to be higher on the palmar side of the hand in both the dry work and wet work sections, which was consistent with the measurement of skin hydration levels that were lower on the palmar side of the hand. (e mean skin pH levels for both work sections were considered within the normal range.

I.M. Gidado, M. Qassem, I.F. Triantis, P.A. Kyriacou, **Review of Advances in the Measurement of Skin Hydration Based on Sensing of Optical and Electrical Tissue Properties**, Sensors 2022, 22, 7151

The presence of water in the skin is crucial for maintaining the properties and functions of the skin, in particular its outermost layer, known as the stratum corneum, which consists of a lipid barrier. External exposures can affect the skin's hydration levels and in turn, alter its mechanical and physical properties. Monitoring these alterations in the skin's water content can be applicable in clinical, cosmetic, athletic and personal settings. Many techniques measuring this parameter have been investigated, with electrical-based methods currently being widely used in commercial devices. Furthermore, the exploration of optical techniques to measure hydration is growing due to the outcomes observed through the penetration of light at differing levels. This paper comprehensively reviews such measurement techniques, focusing on recent experimental studies and state-of-the-art devices.

C.M. Keck, E.-O. Chaiprateep, H. Dietrich, S. Sengupta, **Influence of Mechanical Skin Treatments on Dermal Penetration Efficacy of Active Ingredients**, Pharmaceutics 2022, 14, 1788

The effective dermal penetration of active ingredients (AI) is a major task in the formulation of topical products. Besides the vehicle, the mechanical skin treatments are also considered to impact the penetration efficacy of AI. In particular, professional skin treatments, i.e., professional cosmetic skin treatments, are considered to be optimal for the dermal delivery of AI. However, a systematic study that proves these theories is not yet available and was therefore performed in this study while utilizing an ex vivo porcine ear model with subsequent digital image analysis. Hydrophilic and lipophilic fluorescent dyes were used as AI surrogates and were applied onto the skin without and with professional skin treatments. The skin hydration and the penetration efficacy were determined, respectively. Results showed that professional skin treatments with massage were able to increase the skin hydration,

whereas a professional skin treatment without massage could not increase the skin hydration when compared to skin without professional skin treatment. Regarding the penetration efficacy, it was found that all parameters tested, i.e., type of professional skin treatment, lipophilicity of the AI, and the time point at which the AI are applied onto the skin, can have a tremendous impact on the penetration efficacy of the AI. The most effective penetration and the most effective skin hydration is achieved with a professional skin treatment that includes a professional skin massage. This kind of skin treatment can therefore be used to improve dermal drug delivery.

A. Ziemlewska, M. Wójciak, K. Mroziak-Lal, M. Zagórska-Dziok, T. Bujak, Z. Nizioł-Łukaszewska, D. Szczepanek, I. Sowa, **Assessment of Cosmetic Properties and Safety of Use of Model Washing Gels with Reishi, Maitake and Lion's Mane Extracts**, Molecules 2022, 27, 5090

Natural cosmetics are becoming more and more popular every day. For this reason, this work investigates the properties of mushroom extracts, which are not as widely used in the cosmetics industry as plant ingredients. Water extracts of Grifolafrondosa (Maitake), Hericiumerinaceus (Lion's Mane) and Ganoderma lucidum (Reishi) were tested for their antioxidant properties, bioactive substances content, skin cell toxicity, ability to limit TEWL, effect on skin hydration and pH, and skin irritation. Our research showed that Maitake extract contained the highest amount of flavonoids and phenols, and also showed the most effective scavenging of DPPH and ABTS radicals as well as Chelation of Fe2+ and FRAP radicals, which were 39.84% and 82.12% in a concentration of 1000 µg/mL, respectively. All tested extracts did not increase the amount of ROS in fibroblasts and keratinocytes. The addition of mushroom extracts to washing gels reduced the irritating effect on skin, and reduced the intracellular production of free radicals, compared with the cosmetic base.Moreover, it was shown that the analyzedcosmetics had a positive effect on the pH and hydration of the skin, and reduced TEWL.

S. Preis, L. Schmidt, L. Tizek, M. Schielein, V. Lang, R. Bleuel, A. Duswald, S. Sitaru, A. Blasini, C. Gasteiger, L. Merdha, Z. Kurgyis, B. Kuschel, E. Hauenstein, M. Sander, S. Niedermeier, D. Argiriu, S. Engel, Y. Skabytska, R.L. Silva, M. Hils, B. Evers, S. Kaesler, H. Hufnagel, M. Köberle, Y. Amar, A. Zink, T. Biedermann, **Munich atopy prediction study (MAPS): protocol for a prospective birth cohort addressing clinical and molecular risk factors for atopic dermatitis in early child-hood**, BMJ Open 2022;12:e059256

Introduction: The pathogenesis of atopic diseases is highly complex, and the exact mechanisms leading to atopic dermatitis (AD) onset in infants remain mostly enigmatic. In addition to an interdependent network of components of skin development in young age and skin barrier dysfunction underlying AD development that is only partially understood, a complex interplay between environmental factors and lifestyle habits with skin barrier and immune dysregulation is suspected to contribute to AD onset. This study aims to comprehensively evaluate individual microbiome and immune responses in the context of environmental determinants related the risk of developing AD in the frst 4 years of a child's life. Methods and analyses: The 'Munich Atopic Prediction Study' is a comprehensive clinical and biological investigation of a prospective birth cohort from Munich, Germany. Information on pregnancy, child development, environmental factors, parental exposures to potential allergens and acute or chronic diseases of children and parents are collected by questionnaires together with a meticulous clinical examination by trained dermatologists focusing on allergies, skin health, and in particular signs of AD at 2 months after birth and then every 6 months. In addition, skin barrier functions are assessed through cutometry, corneometry and transepidermal water loss at every visit. These measurements are completed with allergy diagnostics and extensive microbiome analyses from stool and skin swabs as well as transcriptome analyses using skin microbiopsies. The aim is to assess the relevance of different known and yet unknown risk factors of AD onset and exacerbations in infants and to identify possible accessible and robust biomarkers.

H. Wilson, P. Avsar, D Patton, A Moda Vitoriano Budri, Z. Moore, **Skin hydration measurement and the prediction of the early development of pressure ulcers among at risk adults: A systematic review,** Int Wound J, Aug 2022

This systematic review aimed to examine skin hydration and determine if this biophysical parameter can predict pressure ulcer development in at risk adults. A literature search was conducted in March 2022, using PubMed, CINAHL, SCOPUS, Cochrane, and EMBASE databases. A total of 1727 records were returned, with 9 studies satisfying the inclusion criteria. Data were extracted using a pre-designed extraction tool and a narrative synthesis of the data was undertaken. The methodological quality of the included articles was assessed using the evidencebased librarianship checklist. Included studies were published between 1997 and 2021, with most using a prospective cohort design (88.9%, n = 8). The mean sample size was 74 participants (SD = 38.6; median 71). All studies measured skin hydration objectively, with 55.6% (n = 5) using the Corneometer® CM825 and 33.3% (n = 3) of studies

reported a statistically significant association between skin hydration and pressure ulcer development. The mean evidence-based librarianship percentage was 66.6% (SD: 20.7%), however, only 33.3% (n = 3) of studies scored ≥75%, indicating validity. The quality of included studies, methodology variation, and reported results has reduced the homogeneity of outcomes. This review highlights the requirement for future research evidence to ascertain the role of skin hydration in pressure ulcer development.

R. Voegeli, M. Cherel, R. Schoop, A.V. Rawlings, **A comprehensive comparison of facial skin hydration based on capacitance and conductance measurements in Chinese women**, Int J Cosmet Sci. 2022;44: p. 703–718

Objectives: The aim of this study was to compare the data of conductance and capacitance measurements of facial skin hydration and to evaluate and discuss the advantages and disadvantages of the different approaches. Methods: We measured skin capacitance (Corneometer® CM 825) and skin conductance (Skicon-200EX®) on 30 pre-defined facial sites of 125 Chinese women, resulting in 3750 readings per device. The data were analysed and compared, and continuous colour maps were generated on a 3D avatar for capacitance, conductance, relative difference (Δ%) and correlation (R-value) by interpolating between the individual readings and converting the values to colours. This visualization allows a better interpretation of the results. Results: The complexity of facial skin hydration is revealed by this approach. The similarities and discrepancies in the facial hydration maps are clearly apparent. Due to the superiority of the Skicon in measuring high hydration levels, differences in skin hydration were evident on the forehead compared with the Corneometer maps, which may be related to the more superficial measurement of the Skicon within the stratum corneum. Conversely, a greater understanding of the complexity of facial skin hydration in the nasolabial fold was obvious when using the Corneometer. The best congruence between the instruments was foundat two specific but separated facial areas, one around the inner eye region and the other one on a line between the nasolabial sulcus and the oblique, lateral jaw. Interestingly, the data were not normally distributed for both instruments and they had opposite skews. All facial clusters were statistically different from each other ($p < 0.001$), except the cheek and jaw for the Skicon. Larger than expected percentage coefficients of variance were found for the Corneometer on some facial sites that might be explainable by differences in stratum corneum physiology and biochemistry. Corneometer values of 48 AU and Skicon values of 132 µS were taken as the cutoff for normally hydrated facial skin.

A. Kazmierska, I. Bolesławska, A. Polanska, A. Danczak-Pazdrowska, P. Jagielski, S. Drzymała-Czyz, Z Adamski, J. Przysławski, **Effect of Evening Primrose Oil Supplementation on Selected Parameters of Skin Condition in a Group of Patients Treated with Isotretinoin—A Randomized Double-Blind Trial**, Nutrients 2022, 14, 2980

Background: Retinoids, which include isotretinoin, reduce sebum levels, the degree ofepidermal wetness (CORN) and cause an increase in transepidermal water loss (TEWL). Weight gain has also been observed in isotretinoin-treated patients. An agent that can reduce the severityof isotretinoin side effects is evening primrose oil (*Oenothera paradoxa*). The purpose of this study was to evaluate the effect of evening primrose oil supplementation in patients with acne vulgaristreated with isotretinoin on skin hydration status (CORN), transepidermal water loss (TEWL), skin oiliness (sebum) and changes in body weight and BMI. Methods: Patients diagnosed with acne were assigned to the isotretinoin-treated group ($n = 25$) or the isotretinoin and evening primrose oil-treated group ($n = 25$). The intervention lasted 9 months. CORN (with a corneometer), TEWL (with a tewameter) and sebum (with a sebumeter) were assessed twice, as well as body weight and BMI (Tanita MC-780). Results: The isotretinoin-treated group showed statistically significantreductions in CORN ($p = 0.015$), TEWL ($p = 0.004$) and sebum ($p < 0.001$) after the intervention. In the group treated with isotretinoin and evening primrose oil, TEWL and sebum levels also decreased significantly ($p < 0.05$), while CORN levels increased from 42.0 ± 9.70 to 50.9 ± 10.4 ($p = 0.017$). A significant decrease in body weight ($p < 0.001$) and BMI ($p < 0.001$) was observed in both groupsafter 9 months of intervention. Conclusions: During isotretinoin treatment, supplementation with evening primrose oil increased skin hydration. However, there were no differences between groups in transepidermal water loss, skin oiliness, weight loss and BMI.

A. Hohmuth, **Vergleich der klassischen Atopischen Dermatitis mit der Prurigoform der Atopischen Dermatitis sowie der Prurigo Nodularis bei Nicht-Atopikern hinsichtlich der Anamnese, der Klinik, des Immunsystems, der Molekulargenetik und des Mikrobioms,** Dissertation aus der Klinik für Dermatologie, Venerologie und Allergologie im Universitätsklinikum Schleswig-Holstein an der Christian-Albrechts-Universität zu Kiel

Die Haut besteht aus drei Schichten: Epidermis, Demis und Subkutis. Die Epidermis ist die äußere Schicht und schützt den Organismus vor dem Eindringen von Umweltstoffen. Sie bildet die Grenzschicht zur Umwelt und ist nicht nur einemechanische, sondern auch eine chemische und

immunologische Barriere. Aufgebaut ist die Epidermis vorwiegend aus Keratinozyten.

K. Chilicka, A.M. Rogowska, R Szyguła, M Rusztowicz, D. Nowicka, **Efficacy of Oxybrasion in the Treatment of Acne Vulgaris: A Preliminary Report**, J. Clin. Med. 2022, 11

There are many cosmetic methods to reduce skin eruptions in people with acne vulgaris. As oxybrasion is a safe method of exfoliating dead epidermis, our objective was to investigate its effectiveness in young women with acne vulgaris. The Global Acne Grading System (GAGS) and Derma Unit SSC 3 device (Sebumeter SM 815, Corneometer CM 825) were used to assess acne vulgaris and skin properties. Twenty-four women aged 19–21 years (M = 19.50, SD = 0.66) with diagnosed mild acne vulgaris and a high level of sebum (more than 100 µg/cm2) participated in the study. Women on any dermatological treatment within the last 12 months and/or hormonal contraceptionwere excluded. Probands were randomly assigned to two equal groups. Group A (experimental) wasoxybrased with 0.9% sodium chloride solution simultaneously with compressed oxygen. Group B(placebo) was the group treated with non-carbonated mineral water and oxygen from the device (not pure). A series of five treatments was performed at 10-day intervals. Skin parameters were measured before and 30 days after the end of treatment. As a result, in group A (experimental), skin hydration and GAGS improved, while sebum on the epidermis was reduced. No side effects were noted. Weconcluded that oxybrasion is effective in women with acne and safe, as it improved skin parameters; however, further research is needed.

A. Idée, M. Mosca, D. Pin, **Skin Barrier Reinforcement Effect Assessment of a Spot-on Based on Natural Ingredients in a Dog Model of Tape Stripping**, Vet. Sci. 2022, 9, 390

Skin barrier restoration is an important part of atopic dermatitis therapy. We investigated the effect of a spot-on containing plant-based essential fatty acids and essential oils on skin barrier parameters in a dog model of acute skin barrier disruption, using five healthy beagle dogs maintained in a laboratory setting. Four test sites on the dorsum and a control site on the abdomen were defined on each dog. Transepidermal water loss (TEWL) and skin surface hydration (SSH) were measured before and after tape stripping on the first day and then for three consecutive days, over four consecutive weeks. The spot-on was applied at the end of each of the first three weeks. The increase in TEWL after tape stripping was reduced after the spot-on application and reached control values in Weeks 3 and 4. SSH after tape stripping was reduced in Week 4 compared with the baseline. Thus, the ATOP 7® spot-on significantly reduced acute skin barrier impairment in a dog model. The use of this product should be further evaluated as a potential treatment for skin barrier defects such as canine atopic dermatitis.

D. Martinovic, S. Lupi-Ferandin, D. Tokic, M. Usljebrka, A. Rados, A. Pojatina, S. Kadic, E. Puizina, A. Mihovilovic, M. Kumric, M. Vilovic, D. Leskur, J. Bozic, **Objective Skin Quality Assessment after Reconstructive Procedures for Facial Skin Defects**, J. Clin. Med. 2022, 11

Abstract: Local random skin flaps and skin grafts are everyday surgical techniques used to reconstruct skin defects. Although their clinical advantages and disadvantages are well known, there are still uncertainties with respect to their long-term results. Hence, the aim of this study was to evaluate outcomes more than one-year post operatively using objective measurement devices. The study included 31 facial defects reconstructed with local random flap, 30 facial defects reconstructed with split-thickness skin grafts (STSGs) and 30 facial defects reconstructed with full-thickness skin grafts (FTSGs). Skin quality was objectively evaluated using MP6 noninvasive probes (Courage + Khazaka GmbH, Cologne, Germany), which measure melanin count, erythema, hydration, sebum, friction and transepidermal water loss. The results showed that there were no significant differences in melanin count, erythema, hydration, sebum level, friction value and transepidermal water loss (TEWL) between the site reconstructed with random local flaps and the same site on the healthy contralateral side of the face. However, both FTSGs and STSGs showed significantly higher levels in terms of TEWL and erythema, whereas the levels of hydration, sebum and friction were significantly lower compared to the healthy contralateral side. Moreover, STSGs resulted in a significant difference in melanin count. These findings imply that the complex pathophysiology of the wound-healing process possibly results in better skin-quality outcomes for random local flaps than skin autografts. Consequently, this suggests that random local flaps should be implemented whenever possible for the reconstruction of facial region defects.

D. Sobkowska, J. Gornowicz-Porowska, A. Seraszek-Jaros, D. Słomińska, Z. Adamski, M. Pawlaczyk, **Evaluation of Skin Biophysical Parameters and Angiogenesis Using CD34 as a Biomarker in Older Diabetic Women Treated with Radiofrequency**, Clin Cosmet Investig Dermatol, 2022 Jul 14:15: p. 1347-1355

Background: The prevalence of type 2 diabetes mellitus (t2DM) has been steadily increasing. Patients with t2DM need to slow down the skin ageing processes and to obtain a rejuvenating effect. Treatments that do not damage the superficial layers of the epidermis could be a promising solution for those patients. Purpose: The aim of this study was to evaluate the effects of radiofrequency therapy on the biophysical parameters and angiogenesis of facial skin, using CD34 as a biomarker in older diabetic women treated with metformin. Patients and methods: A total of 45 subjects with phototype 2 or 3 (Fitzpatrick scale) were investigated (25 t2DM - study group, 20 - healthy controls). A series of 6 treatments (once a week) with a Radio Frequency Skin Rejuvenation System device was used on facial skin. Measurements of skin hydration, transepidermal water loss (TEWL), melanin and erythema index, temperature, and pH, at baseline and after radiofrequency therapy were performed with the Courage + Khazaka MPA-9 device. Immunohistochemistry on paraffin-embedded sections was used to evaluate the intensity of CD34 expression. Results: Radiofrequency treatment significantly improved facial skin hydration ($p < 0.0001$). Enhancement of the epidermal barrier observed, by reduced TEWL as a result of a series of treatments with radiofrequency on the facial skin ($p < 0.0001$), was observed. CD34 was more abundantly expressed after radiofrequency treatment. No side effects were observed. Conclusion: Treatment with radiofrequency is an effective and non-invasive method of facial skin rejuvenation in older women with t2DM, with a relatively short post-procedure recovery time and low potential for severe adverse effects.

H. Cheng, R. Zhang, F. Zhuo, **Synergistic effect of microneedle-delivered extracellular matrix compound and radiofrequency on rejuvenation of periorbital wrinkles**, Frontiers in Medicine July 2022

Background: A combination of minimally invasive modalities can induce collagen regeneration more quickly and promote the penetration of topical agents, thus promoting skin rejuvenation. In this study, we aimed to investigate the synergistic e_cacy of extracellular matrix compound (ECM-C) *via* microneedle (MN) and radiofrequency (RF) on periorbital wrinkles. Method: A total of 25 participants with periorbital wrinkles were selected for this study. The left and right side of the periorbital area was randomly given ECM-C *via* MN or ECM-C *via* MN combined with RF. MN combined with ECM-C treatment was given 5 times at 2 weeks intervals, whereas RF treatment was given 3 times at 4-week intervals. The following items were assessed: wrinkles by VISIA® system; biophysical parameters such as skin hydration, transepidermal water loss (TEWL), erythema index, and melanin index by CK multiple probe adapter; and skin elasticity and skin thickness by DermaLab Combo®; photographs were taken at the baseline and 2 weeks after the last treatment. Subjective assessments, such as Crow's Feet Grading Scale (CFGS) and Global Aesthetic International Scale (GAIS), were also recorded. Result: A total of 25 participants with an average age of 43 years participated in this trial. Periorbital wrinkles on both sides decreased after the treatment, and the side treated with ECM *via* MN and RF showed better improvement than the other side with ECM-C *via* MN alone. Skin hydration increased after the treatment on both sides. TEWL, skin erythema, and skin melanin indexes were not changed. Skin elasticity and skin thickness increased more on the side of ECM-C *via* MN and RF than on the other side of ECM-C *via* MN alone. The evaluation scores for CFGS improved on either side; however, no di□erence was found for CFGS and GAIS between intergroup comparisons after the treatment. Conclusion: The objective assessment of wrinkles, elasticity, and thickness of periorbital skin improved more on the side with ECM-C treatment *via* MN combined with RF than on the other side of ECM-C treatment *via* MN only. However, no statistically significant di□erence was found between the subjective CFGS and GAIS evaluation of the two sides.

E. Peltier, S. Trapp, R. de Salvo, C. Sun, M. Brandt, S. Laing, N. Hennighausen, A. Barrionuevo-Gonzalez, **A new dexpanthenol-containing liquid cleanser for atopic-prone skin: Results from two prospective clinical studies evaluating cutaneous tolerability, moisturization potential, and effects on barrier function**, J Cosmet Dermatol. 2022;21: p. 3859–3866

Background: Gentle cleansing of the skin without further compromising its barrier function and moisture content and being simultaneously devoid of adverse effects on the skin microbiome are important features of body cleansers for atopic-prone skin sufferers. For this population, a new dexpanthenol-containing liquid cleanser (DCLC) was developed. Methods: Two prospective 4-week studies have been conducted. Study 1 investigated the effect of once-daily DCLC on stratum corneum (SC) hydration, transepidermal water loss (TEWL), skin pH, and skin microbiome (all on the volar forearm) in adult subjects with dry skin (N = 44). Study 2 explored the cutaneous tolerability of DCLC and its effect on the microbiome biodiversity of the volar forearm skin in infants/children with atopic-prone skin (N = 33, aged 6 months to 6 years). In the latter study, DCLC was applied 2–3 days/week in combination with an emollient applied at least twice daily. Results: In Study 1, on Day 29, the mean change in skin surface capacitance from baseline was significantly greater in the forearm test area

treated with DCLC than in the contralateral test area (control) treated with water only (5.16 vs. 3.65 a.u.; p = 0.011), suggesting long-term SC hydration. DCLC use was not associated with changes in TEWL, skin pH, or microbiome biodiversity if compared to control. In Study 2, the 4-week use of DCLC in combination with an emollient was well tolerated according to pediatrician skin assessment, and no flare-ups were recorded. The microbiome biodiversity did not shift during the study. Conclusion: These findings support the use of DCLC in subjects with atopic-prone skin.

S. Caggiari, D.L. Bader, F. Foxell, N. Pipe, S. Couch, A. Turner, P.R. Worsley, **Biomechanical and Physiological Evaluation of Respiratory Protective Equipment Application**, Medical Devices: Evidence and Research 2022:15, p. 241–252

Purpose: Respiratory protective equipment is widely used in healthcare settings to protect clinicians whilst treating patients with COVID-19. However, their generic designs do not accommodate the variability in face shape across genders and ethnicities. Accordingly, they are regularly overtightened to compensate for a poor ft. The present study aims at investigating the biomechanical and thermal loads during respirator application and the associated changes in local skin physiology at the skin–device interface. Materials and Methods: Sixteen healthy volunteers were recruited and reflected a range of gender, ethnicities and facial anthropometrics. Four single-use respirators were evaluated representing different geometries, size and material interfaces. Participants were asked to wear each respirator in a random order while a series of measurements were recorded, including interface pressure, temperature and relative humidity. Measures of transepidermal water loss and skin hydration were assessed pre- and post-respirator application, and after 20 minutes of recovery. Statistical analysis assessed differences between respirator designs and associations between demographics, interface conditions and parameters of skin health. Results: Results showed a statistically signifcant negative correlation ($p < 0.05$) between the alar width and interface pressures at the nasal bridge, for three of the respirator designs. The nasal bridge site also corresponded to the highest pressures for all respirator designs. Temperature and humidity signifcantly increased ($p < 0.05$) during each respirator application. Signifcant increases in transepidermal water loss values ($p < 0.05$) were observed after the application of the respirators in females, which were most apparent at the nasal bridge. Conclusion: The results revealed that specifc facial features affected the distribution of interface pressures and depending on the respirator design and material, changes in skin barrier function were evident. The development of respirator designs that accommodate a diverse range of face shapes and protect the end users from skin damage are required to support the long-term use of these devices.

Y. Du, C. Doraiswamy, J. Mao, Q. Zhang, Y. Liang, Z. Du, R. Vasantharaghavan, M. Kumar Joshi, **Facial skin characteristics and concerns in Indonesia: A cross-sectional observational study**, Skin Research & Technology, July 2022

Background: Facial skin characteristics and appearance vary according to ethnicity. While much of this knowledge is derived from the Caucasian population, lately there have been efforts to gain such understanding in various regions in Asia. In this paper, we have built an understanding of such features in Indonesia. In Indonesia, a section of females wears a traditional veil (hijab) to cover the scalp and part of face. The influence of the hijab on facial skin attributes was also investigated. Methods: In a cross-sectional observational study design involving 419 female volunteers in Jakarta, Indonesia, facial skin attributes (colour, radiance, hydration, trans-epidermal water loss [TEWL], wrinkles, fine lines, pores, and sebum levels) and conditions (melasma, post-inflammatory hyperpigmentation (PIH), solar lentigines/ senile lentigines, seborrheic keratoses and acne) were assessed by trained operators and dermatologists using standard validated instruments and scales. Results: With age, facial skin colour showed darkening in cheek; forehead on the other hand showed slight lightening. The skin evenness and radiance decreased, substantially. Aging attributes measured in terms of lines, wrinkles, and under-eye dark circles showed deterioration with age; the decline was progressively faster than colour change. Facial image data analysis corroborated these findings. Skin hydration remained similar across the age groups even though the skin barrier function measured in terms of TEWL improved with age. Sebum levels in the skin were similar up to the age of 50 but declined in the next group of 50–60 year. Pore severity increased with age. Melasma, seborrheic keratosis and PIH showed a high prevalence (>~50%) at the young age group (20–30 years), itself. Melasma prevalence attained 100% in the age group of 41–50 year and onwards, and its severity similarly showed a steady rise with age. PIH on the other hand showed a steady decline with age. Solar lentigines prevalence (~30%) did not change much across age groups, and the severity scores were similar in age groups up to 50 year but increased substantially in 51–60-year age groups. Seborrheic keratosis was similar (~47%) in age groups up 20–40 year but steadily increased in upper age groups. Its severity was similar in the age groups of 20–30 year and 31–40 year but showed a two-fold increase in subsequent age groups. Acne was 10% in the age group of 20–30 year and declined gradually to 0.7% in the 51–60-year age group. Hijab wearers showed slight

protection in skin colour darkening and improvement of evenness and radiance but were similar on aging (fine lines and wrinkles on crow's feet, under eye and peri-oral areas) markers to non-wearers. In general, in majority of age-groups, hijab wearers showed a higher prevalence of melasma, solar/senile lentigines, seborrheic keratosis and PIH.

R. Darlenski, P. Menzel, R. Schwarzer, B. Kaestle, M. Arens-Corell, L. Praefke, N. Tsankov, D.G. Nikolaeva, L. Miséry, J.W. Fluhr, **Acidic skin care promotes cutaneous microbiome recovery and skin physiology in an acute stratum corneum stress model**, ISBS Congress Berlin, June 2022

Background *context*: skin microbiome and skin physiology are important indicators of the epidermal homeostasis status. Stress models are able to reveal pathological conditions and modulating effects. *Purpose:* we investigated the cutaneous microbiome (16S-rRNA-gene amplicon sequencing) in relation to skin physiology (barrier function, stratum corneum hydration, surface-pH) after mild tape stripping (TS) without treatment compared to two cosmetic leave-on lotions (pH5.5 vs. pH9.3) in 25 healthy volunteers. Results: TS reduced the alpha-diversity with a recovery over 7 days without treatment. Both lotions significantly accelerated the recovery of the alpha-diversity after 2 days with a slightly higher rate for lotion pH5.5. After TS, the relative abundance of Proteobacteria was increased, whereas Actinobacteria were reduced. TS reduced the relative abundances of skin-associated genera. Taxa compositions normalized after 7 days in all treatment groups. Both lotions accelerated the normalization. Lotion pH9.3 induced a significant increase of skin-pH. Both lotions induced an increase in stratum corneum hydration. Conclusion: The study proved the suitability of an experimental stress model to assess skin surface microbiome in relation to skin physiology. The positive effect of an (acidic) skin care on cutaneous microbiome in relation to skin physiology has a significant modulatory effect on exogenous stress-induced epidermal alterations.

T.K. Leo, E.S. Sing Tan, F. Amini, N. Rehman, E.S. Chye Ng, C.K. Tan, **Effect of Rice (*Oryza sativa* L.) Ceramides Supplementation on Improving Skin Barrier Functions and Depigmentation: An Open-Label Prospective Study**, Nutrients 2022, 14, 2737

Ceramides plays a crucial role in maintaining skin barrier function. Although foregoing evidence supported beneficial effects of topical ceramides for restoration of the skin barrier, studies on oral ceramides are extremely scarce, with most published data collected from in vivo and in vitro models. Thus, this study aimed to evaluate the efficacy of rice ceramides (RC) supplementation to improve skin barrier function and as a depigmenting agent through comprehensive clinical assessments. This study investigated the beneficial effects of orally administered RC supplementation in 50 voluntary participants. Skin hydration, firmness and elasticity, transepidermal water loss (TEWL), melanin index (MI), erythema index (EI), sebum production, pH, and wrinkle severity were assessed at baseline and during monthly follow-up visits. RC supplementation was found to significantly ($p < 0.01$) improve skin hydration, sebum production, firmness and elasticity, and wrinkle severity for three assessed areas, namely the left cheek, dorsal neck, and right inner forearm. Additionally, RC significantly ($p < 0.01$) reduced the rates of TEWL, levels of MI and EI. Analyses of data indicated that participants at older age were more responsive towards the effect of RC supplementation. Our findings suggest that RC supplementation can effectively improve skin barrier function, reduce wrinkle severity, and reduce pigmentation.

G. Boyer, G. Bellemère, C. de Belilovsky, C. Baudouin, **Mapping of the biophysical properties of pregnant women abdomen skin: a pilot study**, ISBS Congress Berlin, June 2022

During pregnancy mechanical stretching of abdomen skin due to baby growth is very important and could lead to stretch mark (also known as striae distensae). Recent work demonstrated that biomechanical proper ties of healthy abdomen skin change drastically during pregnancy and that these properties remain altered 4 months after delivery1. It remains unclear if these observed modifcations are homogeneous on the abdomen area or if a specifc area is more affected.

R. Shawahna, **Effects of a grapeseed oil (Vitis vinifera L.) loaded dermocosmetic nanoemulgel on biophysical parameters of facial skin: A split-face, blinded, placebo-controlled study**, J Cosmet Dermatol, June 2022

Background: Worldwide, grapes (Vitis vinifera L.; family: Vitaceae) are one of the most important fruits. Grapeseed oil is rich in bioactive constituents that could be beneficial to the health and aesthetic features of human skin. Objective: This study was conducted to evaluate the effects of a novel grapeseed oil-loaded dermocosmetic nanoemulgel on biophysical parameters of facial skin. Methods: This was a split-face, blinded, placebo-controlled study. A novel grapeseed oil-loaded dermocosmetic nanoemulgel was developed and its effects on the biophysical parameters of the facial skin were evaluated and compared to those of a placebo formulation on the cheeks of 15 healthy volunteers.

Melanin, erythema, sebum production, fine and large facial pores, moisture, and elasticity levels were measured using Mexameter®, Corneometer®, Sebumeter®, Cutometer®, and VisioFace®. Measurements were made on weekly basis for 12 weeks. Results: Compared to the placebo, the novel grapeseed oil-loaded dermocosmetic nanoemulgel received significantly higher sensory scores with regard to appearance, color, odor, consistency, adhesion, sensation, cohesiveness, and spreadability (p-value < 0.05). Additionally, the novel nanoemulgel continuously and significantly reduced skin melanin, erythema, sebum production, and fine and large pores (p-value < 0.05). On the other hand, the novel nanoemulgel continuously and significantly increased skin moisture contents and elasticity (p-value < 0.05). Conclusion: The novel grapeseed oil-loaded dermocosmetic nanoemulgel had attractive cosmetic attributes that could be useful for improving imperfections of the human skin. Future studies are still needed to test and evaluate the benefits of this novel grapeseed oil-loaded dermocosmetic nanoemulgel in disease conditions.

C.-K. Hsu, N.-Y. Cheng, C.-C. Yang, Y.-Y. Yen, S.-H. Tseng, **Investigating the clinical implication of Corneometer and Mexameter readings towards objective, efficient evaluation of psoriasis vulgaris severity**, Scientifc Reports, (2022) 12:7469

In clinical settings, although Psoriasis Area and Severity Index (PASI) scoring system can provide a quick visual assessment of the severity of psoriasis vulgaris, there is still a strong demand for higher efciency and accuracy in quantifying the infammation status of psoriatic lesions. Currently, there are already commercial systems, such as the Courage + Khazaka Corneometer and Mexameter that measure skin capacitance and optical refectance, for conveniently quantifying the status of skin barrier function and erythema of skin. Despite numerous comparisons of the Courage + Khazaka system with the PASI scoring system, they are rarely compared on parity with difuse reflectance spectroscopy (DRS) based systems. In this study, we employed a custom-built DRS system shown to be able to determine the skin water-protein binding status and the hemoglobin concentration, and we performed cross-validation of the DRS measurement results with the readings derived from the Corneometer and Mexameter as well as a portion of the PASI scores. Our results revealed that the erythema readings from the Mexameter were a good representation of skin oxygenated hemoglobin but not the deoxygenated hemoglobin. On the other hand, the dermatologists recruited in this study were inclined to rate higher scores on the “erythema” category as skin’s deoxygenated hemoglobin level was higher. Thus, the Mexameter derived erythema readings may not be coherent with the PASI erythema scores. Further, the Corneometer derived skin capacitance readings were well correlated to the PASI “desquamation” and “thickness” scores, while the PASI “desquamation” evaluation was andominating factor contributing to the DRS deduced water-protein binding status. We conclude that the DRS method could be a valuable addition to existing skin capacitance/refectance measurement systems and the PASI scoring system toward achieving a more efcient and objective clinical psoriasis vulgaris severity evaluation.

N. Chaiwong Y. Phimolsiripol, P. Leelapornpisid, W. Ruksiriwanich, K. Jantanasakulwong, P. Rachtanapun, P. Seesuriyachan, S.R. Sommano, N. Leksawasdi, M.J. Simirgiotis, F.J. Barba, W. Punyodom, **Synergistics of Carboxymethyl Chitosan and Mangosteen Extract as Enhancing Moisturizing, Antioxidant, Antibacterial, and Deodorizing Properties in Emulsion Cream**, Polymers 2022, 14, 178

Carboxymethyl chitosan (CMCH) from native chitosan of high molecular weight (H, 310–375 kDa) was synthesized for improving water solubility. The water solubility of high-molecularweight carboxymethyl chitosan (H-CMCH) was higher than that of native chitosan by 89%. The application of H-CMCH as enhancing the moisturizer in mangosteen extract deodorant cream was evaluated. Different concentrations of H-CMCH (0.5–2.5%) were investigated in physicochemical characteristics of creams, including appearance, phase separation, pH, and viscosity, by an accelerated stability test. The different degrees of skin moisturizing (DM) on pig skin after applying H-CMCH solution, compared with untreated skin, water, and propylene glycol for 15 and 30 min using a Corneometer®, were investigated. The results showed that the 0.5% H-CMCH provided the best DM after applying the solution on pig skin for 30 min. Trans-2-nonenal, as an unsatisfied odor component, was also evaluated against components of the mangosteen extract deodorant cream, which were compared to the standard, epigallocatechin gallate (EGCG). In addition, DPPH and ABTS radical scavenging activity, ferric reducing antioxidant power (FRAP), and antibacterial activities were examined for the mangosteen extract deodorant cream using 0.5% H-CMCH. Results indicated that the mangosteen extract synergized with H-CMCH, which had a good potential as an effective skin moisturizing agent enhancer, deodorizing activity on trans-2-nonenal odor, antioxidant properties, and antibacterial properties.

L. Shao, S. Jiang, Y. Li, Y. Shi, M. Wang, T. Liu, S. Yang, L. Ma, **Regular Late Bedtime Signifcantly**

Affects the Skin Physiological Characteristics and Skin Bacterial Microbiome, Clinical, Cosmetic and Investigational Dermatology 2022:15, p. 1051–1063

Background: Late bedtime is a common form of unhealthy sleep pattern in adulthood, which influences circadian rhythm, and negatively affects health. However, little is known about the effect of regular late bedtime on skin characteristics, particularly on skin microbiome. Objective: To investigate the changes and effects of the regular late bedtime on skin physiological parameters and facial bacterial microbiome of 219 cases of Chinese women aged 18–38 years living in Shanghai. Methods: Based on the Self-Evaluation Questionnaire, bedtime was categorized as 11:00 PM; thus, the volunteers were divided into early bedtime group (S0) and late bedtime group (S1). The physiological parameters of facial skin were measured by non-invasive instrumental methods, and the skin microbiome was analyzed by 16S rRNA high-throughput sequencing. Results: The skin physiological parameters of the late bedtime group exhibited signifcant decrease in skin hydration content, skin frmness (F4) and elasticity (R2), while TEWL, sebum and wrinkle signifcantly increased. The result indicated that late bedtime signifcantly impaired the integrity of skin barrier, damaged skin structure, and disrupted water–oil balance. Furthermore, the analysis of α-diversity, Sobs, Ace and Chao index were found to signifcantly decrease ($P < 0.05$) in the late bedtime group, suggesting that late bedtime reduced both the abundance and the diversity of facial bacterial microbiota. Moreover, the abundance of *Pseudomonas* increased signifcantly, while *Streptococcus*, *Stenotrophomonas*, *Acinetobacter, Haemophilus, Actinomyces* and *Neisseria* decreasedsignifcantly. In addition, Spearman correlation analysis revealed strong correlations between the microbiota and the physiologicalparameters. Notably, the abundance of *Pseudomonas* signifcantly positively correlated with skin frmness and elasticity, butsignifcantly negatively correlated with skin hemoglobin content, melanin content and skin hydration. Conclusion: Bedtime is an important factor in maintaining skin health. Regular late bedtime not only damages the skin barrier and skin structure but also reduces the diversity and composition of facial bacterial microbiome.

C.-M. Kuan, C.-H. Liang, W.-H. Chuang, T.-Y. Lin, P.-K. Hsu, **Ameliorating Effect of *Crassocephalum rabens (Asteraceae)* Extract on Skin Aging: A Randomized, Parallel, Double-Blind, and Placebo-Controlled Study**, Nutrients 2022, 14, 2655

Crassocephalum rabens (Asteraceae) is a common herb used in Taiwanese folk medicine to treat inflammation-related syndromes. Pharmacological studies have revealed that galactolipids exhibit anti-oxidative, anti-inflammatory, and anti-hyaluronidase activities and improve skin wrinkles, moisture, and elasticity in healthy subjects. However, the anti-aging effects of C. rabens and its primary active compound, 1,2-di-O-linolenoyl-3-O-_-galactopyranosyl-sn-glycerol (dLGG), remain elusive. Here, we investigated whether *C. rabens* can improve skin conditions in healthy individuals using a double-blind approach. Forty enrolled volunteers were randomly and equally assigned to the control or treatment group and were required to take either a placebo or a *C. rabens* extract capsule daily for one month. Skin parameters were measured before and after the study. The results showed significant differences in skin elasticity, wrinkles, collagen content, brightness, and hydration between the baseline and week 4 in the treatment group. Particularly, compared with those in the placebo group, skin wrinkles ($p < 0.05$), brightness ($p < 0.001$), collagen content ($p < 0.01$), and UV spots ($p < 0.05$) were notably improved after treatment with the *C. rabens* extract. Our study successfully demonstrated the application of *C. rabens* in preventing skin aging. Further investigations will be conducted to study the underlying anti-aging mechanism of dLGG.

A. Samadi, T Yazdanparast, M. Shamsipour, H. Hassanzadeh, M. Hashemi Orimi, R. Firooz, A. Firooz, **Stratum corneum hydration in healthy adult humans according to the skin area, age and sex: a systematic review and meta-analysis**, J Eur Acad Dermatol Venereol, June 2022

Stratum corneum (SC) hydration is one of the most important skin biophysical parameters, which is affected by age, sex and anatomic site. We conducted a systematic review and meta-analysis to provide detailed information on baseline values of SC hydration in healthy human adults, according to the skin area, age and sex. The databases Medline, Embase, Web of Science and Scopus were searched for primary reports, with in vivo corneometry measurements, which were conducted on disease-free skin of human subjects, aged 18+ years in English. Risk of bias was evaluated using the critical appraisal tools for JBI Systematic Reviews, and only low-risk studies were selected. The comparison was performed in each skin area between males and females and also between youngand middle-age subjects. Among 323 Retrieved titles, full texts of 259 articles were read, and 240 studies were excluded due to unclear or insufficient reporting of SC hydration, as well as high or medium risk of bias. 19 studies (including 113 records) providing data about SC hydration in 12 skin areas were included in the final data synthesis. Pooled sample sizes ranged from n = 32 for lips to a maximum of n = 3202 for cheeks. The lowest hydration of 12.5 [95% CI 11.05-13.94] was reported for the back, and

the highest hydration of 64.34) [95 CI% 62.07-64.59] for the periorbital area. Facial skin showed higher water content compared with other areas. There were also site-dependent differences in the hydration level of the facial skin. Comparisons between two age groups, and male and female participants, did not show any statistically significant differences. The main limitation was we included studies using only one measurement device. The quality of reporting SC hydration in humans should be increased in future studies.

C. Theerawattanawit, P. Phaiyarin, S. Wanichwecharungruang, N. Noppakun, P. Asawanonda, C. Kumtornrut, **The Efficacy and Safety of Chitosan on Facial Skin Sebum**, Skin Pharmacol Physiol 2022;35: p. 23–30

Introduction: Seborrhea or oily skin has been one of the most common complaints affecting both men and women physically and psychologically. Chitosan is a biopolymer obtained from the alkaline deacetylation of chitin. Due to its positively charged nature, chitosan can effectively bind to lipids. Therefore, chitosan nanoparticle (CN) formulation may benefit in the reduction of skin sebum. Objective: The aim of this study was to evaluate the efficacy and safety of CN formulation in the reduction of skin sebum. Method: The study was a randomized, double-blinded, placebo-controlled trial in 24 participants aged 18-40 years with clinical seborrhea. Participants were randomly assigned to apply the CN and gum (CN-G) or placebo (gum alone) twice daily for 4 weeks. Sebum level, corneometry, transepidermal water loss (TEWL), and clinical seborrhea grading were evaluated at baseline and week 2 and 4. Results: In the T-zone, sebum levels in the CN-G group were significantly lower than the placebo group at week 4 ($p = 0.043$), while for the U-zone, sebum levels were not different between groups. There were no statisticaldifferences in corneometry and TEWL at any visit. Although the clinical seborrhea grading in CN-G was lower, itwas not significantly different from the placebo. A few cases reported mild and self-limiting scaling and acneiform eruption. Conclusion: The CN-G gel could significantly reduce sebum levels on seborrhea patients with acceptable safety profiles.

S. Altgilbersa, F. Rippkea, A. Filbrya, S. Conzelmann, **A Biomimetic Combination of Actives Enhances Skin Hydration and Barrier Function via Modulation of Gene Expression: Results of Two Double-Blind, Vehicle-Controlled Clinical Studies**, Skin Pharmacol Physiol 2022;35: p. 102–111

Introduction: Xerosis cutis is characterized by a decreased stratum corneum (SC) hydration and an impaired skin barrier function. Urea, the most prevalent natural moisturizing factor (NMF), is currently considered the gold standard. Its efficacy can further be increased by combining urea with other NMF and skin barrier lipids (SBLs). Objective: We set out to evaluate physiological effects of a novel functional moisturizer containing 10% urea, additional NMF components, and a combination of SBLs on skin hydration and skin barrier integrity on a cellular and phenotypic level in female volunteers suffering from xerosis. Methods: Two doubleblind, vehicle-controlled clinical studies were conducted. In the first study, 44 female subjects having very dry body skin applied the moisturizer or its vehicle twice daily to their volar forearms. Twenty-four hours after a single product application as well as 24 h after 2 weeks of treatment, SC hydration was measured by corneometry. Skin barrier function was assessed by transepidermal water loss 24 h and 48 h after 2 weeks of regular use. Twenty-four hours after 2 weeks of application, skin tape stripping was performed, and urea content was determined in the 3rd strip by means of high-performance liquid chromatography/tandem mass spectrometry. In the second study, 22 women with self-reported very dry skin applied the moisturizer or vehicle twice daily to their volar forearms for 2 weeks. Then, suction blister samples were obtained for gene expression analysis using RT-PCR. Results: Application of the actives led to significantly improved skin hydration and barrier function at all points in time. Compared to the vehicle, application of the moisturizer for 2 weeks resulted in a significant increase in SC urea content. Relative gene expression data revealed significant upregulation of genes associated with skin barrier function, hydration, differentiation, and lipid metabolism compared to the vehicle-treated area. Conclusions: Overall, our data demonstrate that the functional moisturizer provides an adequate bioavailability of urea and a beneficial biophysical impact on xerotic skin. Topical treatment with a combination of urea and additional NMF as well as SBL can modify mRNA expression of important epidermal genes stimulating cellular processes and functions. The well-tolerated novel functional moisturizer stimulates molecular mechanisms involved in skin hydration and barrier function and is a profoundly effective treatment option for xerosis cutis.

S. Sangthong, P. Pintathong, P. Pongsua, A. Jirarat, P. Chaiwut, **Polysaccharides from *Volvariella volvacea* Mushroom: Extraction, Biological Activities and Cosmetic Efficacy**, J. Fungi 2022, 8, 572

Abstract: Polysaccharides from Volvariella volvacea (VVP) were investigated for their cosmetic-related activities and in vivo efficacy for use as a multifunctional active cosmetic ingredient. Three

different polysaccharide extraction methods, including hot water shaking (HS), microwave-assisted (MA) and ultrasonic-assisted (UA), were used. Extractable yield, polysaccharide contents and biological activities, including antioxidant, anti-tyrosinase and anti-elastase activities, were compared. The polysaccharides from HS provided the highest extraction yield (15.58 0.96% w/w) and the highest beta-glucan content (18.80 0.81% w/w). The HS polysaccharides also possessed the highest inhibitory effects toward lipid peroxidation (IC50 of 0.0378 mg/mL), tyrosinase (51.46 mg KAE/g), and elastase (604.21 73.66 mg EGCG/g). The cytotoxicity of the VVP was determined for safe use. A cosmetic gel cream containing VVP was developed and 0.2% VVP formulation was observed to be the most stable in color. UV protection factors, skin irritation by single patch test, and in vivo efficacy, including skin moisturization, anti-wrinkle and whitening, were measured. The VVP showed no cytotoxicity against human dermal skin fibroblast. The gel cream containing VVP provided less sun protection factor; however, it significantly exhibited the skin benefits of increasing moisture, gross elasticity, net elasticity, and skin firmness. Improvements to skin roughness, scaliness, wrinkles and in melanin content were also depicted gradually along 8 weeks. V. volvacea, therefore, could be a good source for polysaccharides being used as a moisturizing, anti-wrinkle, and whitening agent in cosmetic preparations.

Y. Gabe, M. Uchiyama, S. Sasaoka, N. Amari, A. Imai, A. Hachiya, A. Kiyomine, **Efficacy of a fine fiber film applied with a water-based lotion to improve dry skin,** Skin Research & Technology, May 2022

Background: Dry skin can trigger eczema that affects >10% of the US population. Dressing films have been developed to improve diseased skin, but there is limited knowledge about their effects, especially for dry skin-related symptoms. We developed an electrospinning method that creates a coating film, called a fine fiber (FF) film, characterized by the production of a transparent, thin, flexible, and adherent membrane on the skin surface. Objective: The aim of this pilot study was to examine the effects of the FF film on dry skin. Methods: Three treatments (lotion only, lotion with the FF film, and lotion with an alternative film) were designed to treat subjects with rough skin on their lower legs. Twenty-four females were enrolled and used either a water-based lotion U or a petrolatum-based lotion P and the FF film for 2 weeks followed by a regression phase for 1 week. Skin hydration and roughness scores were assessed as were the subjects' perceptions of the effects. Results: When the FF film was applied with lotion U, skin hydration was significantly improved even after 1 week, accompanied by a significant improvement of skin roughness and an increase in skin hydration by the end of the regression phase. An evaluation of moisture permeability suggested that the FF film, especially with lotion U, performed as a semipermeable membrane with optimal moisture healing effects on dry skin. Conclusion: The FF film together with a water-based lotion is a promising treatment to quickly improve dry skin conditions.

M.A. Yoo, S.H. Kim, H.S. Han, J.W. Byun, K.H. Park, **The effects of wearing a face mask and of subsequent moisturizer use on the characteristics of sensitive skin,** Skin Research & Technology, May 2022

Background: COVID-19 is a serious respiratory disease, and wearing masks has become essential in daily life. Nevertheless, the number of people complaining of skin problems caused by wearing masks is increasing. Therefore, we investigated the characteristics of changes in sensitive skin caused by wearing a mask. Materials and methods: Twenty healthy Korean women with sensitive skin participated in this study. To determine any skin-related changes caused by mask-wearing, we evaluated redness, hydration, transepidermal water loss (TEWL), and moisture at 2.5 mm below the surface before and 4 h after wearing a Korea Filter 94 mask. In addition, we tested whether applying a moisturizer for 30 min after mask removal could reverse any mask-induced changes. Results: Skin redness and TEWL were significantly increased at 4 h after wearing a mask ($p < 0.05$), otherwise skin hydration and the 2.5 mm moisture were significantly decreased ($p < 0.05$). After applying the moisturizer, skin redness and TEWL were significantly decreased compared to their values 4 h after wearing masks ($p < 0.05$), whereas skin hydration and the 2.5 mm moisture were significantly increased ($p < 0.05$). Moreover, after applying the moisturizer, skin redness and TEWL were significantly reduced compared to the pre-masking baseline ($p < 0.05$), whereas skin hydration was significantly increased ($p < 0.05$); the 2.5 mm moisture showed no significant change. Conclusion: We observed that wearing masks causes physiological changes in sensitive skin, whereas applying a moisturizer after removing the mask improved skin conditions.

H. Stettler, R. de Salvo, M. Brandt, A.-K. Effertz, S. Laing, S. Trapp, **Performance and Acceptability of a New Dexpanthenol-Containing Hand Cream in Subjects with Sensitive and Very Dry Skin: A Randomized Controlled Study,** Cosmetics 2022, 9, 44

Dry, sensitive skin is a common condition that is associated with lack of water in the stratum corneum (SC). The SC of dry skin sufferers displays an altered lipid organization/composition and lipid

content, thereby markedly contributing to the development of impaired skin barrier function with increased transepidermal water loss (TEWL) and consequently reduced skin hydration. Often, dry skin involves the hands. Dry handscan be a condition in itself, but in most instances, it is triggered by environmental factors, such as frequent washing, cold weather, or exposure to chemicals/detergents. The hands feel dry and rough; they are tense, reddened, and painful cracks appear. People with dry hands have an increased risk of eczema formation. Regular use of a moisturizing hand cream can help to restore hydration and barrier function of the skin as illustrated by a study in healthy subjects showing that skin dryness and roughness caused by frequent hand washing can be alleviated by applying a moisturizing hand cream after each hand wash. However, to be accepted by users, a hand cream must have special features in addition to its moisturizing effect. It must be absorbed quickly so that the hands are immediately ready for use again. The hand cream should be non-greasy and non-sticky and instantly relieve the feeling of tightness and roughness of dry hands.

S.Y. Kim, T. Hong Yoon, J. Na, S.J. Yi, Y. Jin, M. Kim, T.-H. Oh, T.-W. Chung, **Mesenchymal Stem Cells and Extracellular Vesicles Derived from Canine Adipose Tissue Ameliorates Inflammation, Skin Barrier Function and Pruritus by Reducing JAK/STAT Signaling in Atopic Dermatitis,** Int. J. Mol. Sci. 2022, 23, 4868

Canine atopic dermatitis (AD) is a common chronic inflammatory skin disorder resulting from imbalance between T lymphocytes. Current canine AD treatments use immunomodulatory drugs, but some of the dogs have limitations that do not respond to standard treatment, or relapse after a period of time. Thus, the purpose of this study was to evaluate the immunomodulatory effect of mesenchymal stem cells derived from canine adipose tissue (cASCs) and cASCs-derived extracellular vesicles (cASC-EVs) on AD. First, we isolated and characterized cASCs and cASCs-EVs to use for the improvement of canine atopic dermatitis. Here, we investigated the effect of cASCs or cASC-EVs on DNCB-induced AD in mice, before using for canine AD. Interestingly, we found that cASCs and cASC-EVs improved AD-like dermatitis, and markedly decreased levels of serum IgE, (49.6%, p = 0.002 and 32.1%, p = 0.016 respectively) epidermal inflammatory cytokines and chemokines, such as IL-4 (32%, p = 0.197 and 44%, p = 0.094 respectively), IL-13 (47.4%, p = 0.163, and 50.0%, p = 0.039 respectively), IL-31 (64.3%, p = 0.030 and 76.2%, p = 0.016 respectively), RANTES (66.7%, p = 0.002 and 55.6%, p = 0.007) and TARC (64%, p = 0.016 and 86%, p = 0.010 respectively). In addition, cASCs or cASC-EVs promoted skin barrier repair by restoring transepidermal waterloss, enhancing stratum corneum hydration and upregulating the expression levels of epidermal differentiation proteins. Moreover, cASCs or cASC-EVs reduced IL-31/TRPA1-mediated pruritus and activation of JAK/STAT signaling pathway. Taken together, these results suggest the potential of cASCs or cASC-EVs for the treatment of chronic inflammation and damaged skin barrier in AD orcanine AD.

J. Droux, A. Werle, ***Camellia japonica:*** **Protecting from pollution**, PERSONAL CARE GOBAL, p. 35-37, May 2022

The World Health Organisation (WHO) defines air pollution as the contamination of indoor or outdoor environments by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere. Alarmingly, recent data indicated that around 92% of the world's population lives in places where air quality levels exceed WHO limits. This can be explained by urbanization and associated pollution, as well as highyield agriculture, both of which are constantly growing.

A. Kroma, M. Pawlaczyk, A. Feliczak-Guzik, M. Urbańska, D. Jenerowicz, A. Seraszek-Jaros, M. Kikowska, J. Gornowicz-Porowska, **Phytoecdysteroids from *Serratula coronata* L. for Psoriatic Skincare,** Molecules 2022, 27, 3471

Phytoecdysones from Serratula coronata seem to be promising agents for skincare in patients with psoriasis. The aim of the study was to determine the effects of creams containing the extract of S. coronata on psoriatic lesions. Creams with different formulas were prepared: 0-Lekobaza®, 1-Lekobaza®, S. coronata, 2-Lekobaza®, Salicylic acid, 3-Lekobaza®, S. coronata, Salicylic acid. After examination of skin penetration and biosafety, the designated cream was applied twice daily for 6 weeks on 72 psoriatic plaques located on elbows or knees. The lesions were assessed at baseline and follow-up of 6 weeks. The lesions area was measured, and severity of scaling, erythema, and infiltration was assessed using a 5-point scale (from 0—none to 4—very severe). Skin hydration and structure, pH, transepidermal water loss, erythema, and melanin index were analyzed instrumentally. Creams 1, 2, and 3 significantly reduced the area of psoriatic plaques. Improvement in erythema and infiltration was observed for creams 1 and 3. Creams 1–3 reduced scaling. Our study confirmed a beneficial effect of creams containing S. coronata extract on psoriatic lesions.

N. Li, X.-X. Yang, R.-Y. Yang, F. Yi, **Study of the characteristics of facial skin tone status in 1092 young Chinese females according to the ITA°**, J Cosmet Dermatol. 2022 May;21(5): p. 2073-2081

Background: The ITA° is the gold standard for skin tone classification. Different skin tones are often associated with different skin characteristics and issues. Different skin types are often associated with different skin characteristics and issues in China. Aims: To study the population's skin color distribution and accompanying skin problems according to the ITA° classification standard. Methods: A total of 1092 women aged 22-42 years were recruited in 7 cities in China. All biophysical parameter measurements (SM, CM, TWEL, pH, R2, GLOSS_DSCT, MEXA, ERYTH, ITA°; 9 indexes total) were quantified with noninvasive instruments. All volunteers provided consent before enrollment. Result: The main skin color categories were light (II), very light (I), intermediate (III), and tan (IV). The results demonstrated that the characteristics of the facial skin based on the ITA° were significantly different among cities and age groups and were associated with different skin issues. Conclusions: Lighter skin was associated with worse skin elasticity; intermediate skin was associated with worse skin hydration content and was most prone to being oily; and darker skin was associated with poor barrier function. Established principal component regression (PCR) indicated that pH, gloss GLOSS_DSC, MEXA, ERYTH, TEWL, and SM had significant effects on the ITA°.

K. Zduńska-Pęciak, R. Dębowska, A. Kołodziejczak, H. Rotsztejn, **Ferulic acid - A novel topical agent in reducing signs of photoaging**, Dermatol Ther, April 2022

Continuous production of reactive oxygen species, induced by UV radiation, is one of the main mechanisms contributing to skin photoaging. Therefore, the use of novel superior antioxidants, which ferulic acid belongs to, is an innovative treatment option. The aim of this study was to evaluate the effect of 14% ferulic acid peel on skin hydration, topography, the level of melanin, and the severity of erythema, in people with skin photoaging symptoms. Twenty women aged 45-60, received eight treatments of chemical peeling in 1- week intervals. Efficacy was measured using The Multi Probe Adapter (MPA) Systems (Courage + Khazaka electronic GmbH, Köln, Germany). The measurements were taken before, 8, and 12 weeks after the first treatment. Additionally, the photo documentation was made with Fotomedicus (Elfo) and VISIA® Complexion Analysis System (Canfield Scientific, Inc.). The objective evaluation showed statistically significant improvement in all measured skin parameters $p < 0.05$). The best results of skin hydration and melanin level were observed right after the end of the series ($p < 0.001$). The best improvement in erythema reduction was noted a month after the last treatment ($p < 0.0001$). At the control, untreated point none of the probes showed statistically significant changes. In conclusion, a series of treatments with 14% ferulic acid peel has a significant bleaching, erythema-reducing, and moisturizing activity. The results achieved by apparatus, are reflected by photo documentation. The effects achieved during a series persist over time.

A. Saleem Q.A. Jamil, H.M.Shaib Khan, S. Ijaz, **Development, characterization, and clinical investigation of Spinacia oleracea-based ultra-high pressure homogenized emulsion system for facial physiological parameters**, Cosmet Dermatol, April 2022

Background: Spinacia oleracea (SO) exhibits radical scavenging and tyrosinase inhibition activity indicating potential as a depigmenting agent. Aims: To develop and characterize a stable emulsified system containing SO extract through ultra-high pressure homogenization, evaluate skin permeability, and enumerate in vivo performance in terms of melanin index, skin spots analysis, and related skin physiological parameters. Method: Free radical scavenging and tyrosinase inhibition potential of SO extract was quantified through DPPH radical scavenging and mushroom tyrosinase inhibition assay, respectively. Six SO extract loaded ultra-high pressure emulsified systems (UHSO) were developed using ultra-high pressure homogenizer and assessed for size and polydispersity index (PDI). Among the prepared formulations, the optimized formulation (UHSO6) was subjected to 90 days stability studies performed at 8°C, 25°C, 40°C, and 40°C+75% RH (relative humidity) for organoleptic features, pH, and rheology. Ex vivo skin permeability studies were performed on abdominal skin from male albino rat. Changes in skin physiological parameters were evaluated in healthy female volunteers ($n = 13$) for 12 weeks utilizing Mexameter®, Corneometer®, and Sebumeter®. Skin spots were analyzed through computerized analysis of high-resolution images by VisioFace®. Results: SO extract exhibited promising antioxidant (88±0.0096%) and tyrosinase inhibition potential (90.6 ± 0.0015 mg of Kojic Acid Eq/g of extract). Optimized UHSO was found to be stable with respect to stability evaluation, globule size (1110 nm), zeta potential (-27.6), and PDI (0.34). Ex vivo skin permeation of UHSO was significantly higher than SO loaded coarse emulsion. Moreover, the formulation showed a significant decrease in skin melanin, spot count, and spot % area, whereas skin hydration index was improved significantly. Conclusion: Stable SO extract loaded emulsion system was successfully developed by a novel, cost-effective technique of ultra-high pressure homogenization which showed improved performance in terms of skin permeation and other skin physiological parameters.

J. Sahmel, G. Ramachandran, **Potential Influence of Skin Hydration and Transepidermal Water Loss on the Dermal Transfer and Loading of Elemental Metallic Lead**, Ann Work Expo. Health, April 2022

The factors influencing transfer of chemicals or other contaminants to and from the surface of the skin are often poorly understood. Previous research has indicated that environmental conditions, skin hydration, and repeated contacts may all influence the quantity of dermal transfer. The aim of this analysis was to evaluate the influence of skin hydration and condition on quantitative chemical transfer in a series of systematic measurements using human subjects for 5 and 10 repeated contacts. Elemental metallic lead was used as the exemplar test substance for the measurements collected. Skin hydration index (HI) was assessed using a corneometer and skin condition and barrier function were measured using an open-chamber transepidermal water loss (TEWL) instrument. Results indicated that for the palmar surface of the index finger where sampling was conducted, the relative hydration level of the skin was higher for males (n = 6) versus females (n = 4) (mean HI = 4.0 for females; mean HI = 5.5 for males) but this difference was not statistically significant. Overall, the skin hydration level was not significantly associated with dermal loading for either the 5 contact scenario (Pearson correlation = 0.27; R2 = 0.07; P = 0.45) or the 10 contact scenario (Pearson correlation = 0.26; R2 = 0.07; P = 0.47). When the results were stratified by higher versus lower hydration levels (HI = 1-5 versus HI = 5-10), for the higher hydration levels (HI = 5-10; mean HI = 7), there was a moderately positive association between skin hydration and loading, but this was not statistically significant for either the 5 contact scenario (Pearson correlation = 0.75; R2 = 0.56; P = 0.15) or the 10 contact scenario (Pearson correlation = 0.6; R2 = 0.36; P = 0.28). No clear relationship was observed between the lower hydration levels (HI = 1-5) and dermal loading. For the palmar index finger, there was a negative correlation between the TEWL measurements and both the 5 contact (Pearson correlation = -0.45; R2 = 0.2; P = 0.19) and 10 contact (Pearson correlation = -0.3; R2 = 0.09; P = 0.4) scenarios, but this was not statistically significant. The results of this study are consistent with the limited results of other analyses, which have suggested that there may be nuances with respect to the effects of skin hydration on the quantitative dermal transfer to and from the skin, although additional data are needed to better understand these potential differences.

Ł. Kaniuk, A. Podborska, U. Stachewicz, **Enhanced mechanical performance and wettability of PHBV fiber blends with evening primrose oil for skin patches improving hydration and comfort**, J. Mater. Chem. B, 2022, 10, 1763

The growing problem of skin diseases due to allergies often causing atopic dermatitis, which is characterized by itching, burning, and redness, constantly motivates researchers to look for solutions to soothe these effects by moisturizing skin properly. For this purpose, we combined poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) electrospun fibers with evening primrose oil (EPO) into a system of patches to ensure skin hydration. Moreover, the dressing or patch application requires appropriate stretchability and wettability of the electrospun material. Thus, we examined the mechanical properties of the PHBV blend with EPO, as well as changes in wettability of the fiber surface depending on the share of EPO additive in the blend. The effectiveness of the patches has been characterized using the water vapor transmission rate as well as by the skin moisturizing index. The thermal insulation effect of the patches on human skin has been verified as well. The patches made by combining the polymer with natural oil showed enhanced mechanical properties and increased skin hydration, indicating the potential applicability of PHBV-based patches. The presented discovery of PHBV patches with EPO is a prospective and alternative treatment for patients for whom current state-of-the-art methods do not bring satisfactory results.

C. Pichler, J. Freidl, M. Bischof, M. Kiem, R. Weißböck-Erdheim, D. Huber, G. Squarra, P.C. Murschetz, A. Hartl, **Mountain Hiking vs. Forest Therapy: A Study Protocol of Novel Types of Nature-Based Intervention**, Int. J. Environ. Res. Public Health 2022, 19, 3888

Introduction: The global rise of urbanization has much triggered scientific interest in how nature impacts on human health. Natural environments, such as alpine landscapes, forests, or urban green spaces, are potential high-impact health resources. While there is a growing body of evidence to reveal a positive influence of these natural environments on human health and well-being, further investigations guided by rigorous evidence-based medical research are very much needed. Objective: The present study protocol aims at testing research methodologies in the context of a prospective clinical trial on nature-based interventions. This shall improve the standards of medical research in human–nature interactions. Methods: The ANKER Study investigates the influence of two novel types of nature-based therapy—mountain hiking and forest therapy—on physiological, psychological, and immunological parameters of couples with a sedentary lifestyle. Two intervention groups were formed and spent a seven-day holiday in Algund, Italy. The “forest therapy group” participated in daily guided low-power

nature connection activities. The “hiking group”, by contrast, joined in a daily moderate hiking program. Health-related quality of life and relationship quality are defined as primary outcomes. Secondary outcomes include nature connection, balance, cardio-respiratory fitness, fractional exhaled nitric oxide, body composition and skin hydration. Furthermore, a new approach to measure health-related quality of life is validated. The so-called “intercultural quality of life” comic assesses the health-related quality of life with a digitally animated comic-based tool.

S. Hettwer, E. Besic Gyenge, B. Suter, B. Obermayer, **Ease Stress – But Quickly, Please,** SÖFW 3/22

The positive effect of aromatherapy on humans has been known for a long time. The effect is essentially based on the stimulation of the olfactory receptors in the nose. Certain smells have a relaxing and stress-reducing effect. Recent research has shown that the skin also has olfactory receptors and even bitter receptors that can be activated with appropriate molecules. In the keratinocytes, differentiation and maturation are thus stimulated via an induced influx of calcium. Here we show how a cosmetic active ingredient with a pleasant fragrance profile both reduces stress, detected by measuring stress hormones, and positively influences the skin by activating bitter receptors.

Y. Ahn, M.G. Kim, K. Jo, K.-B. Hong, H.J. Suh, **Effects of Sphingomyelin-Containing Milk Phospholipids on Skin Hydration in UVB-Exposed Hairless Mice**, Molecules 2022, 27, 2545

Reactive oxygen species (ROS) generated by ultraviolet (UV) exposure cause skin barrier dysfunction, which leads to dry skin. In this study, the skin moisturizing effect of sphingomyelincontaining milk phospholipids in UV-induced hairless mice was evaluated. Hairless mice were irradiated with UVB for eight weeks, and milk phospholipids (50, 100, and 150 mg/kg) were administered daily. Milk phospholipids suppressed UV-induced increase in erythema and skinthickness, decreased transepidermal water loss, and increased skin moisture. Milk phospholipidsincreased the expression of filaggrin, involucrin, and aquaporin3 (AQP3), which are skin moisturerelated factors. Additionally, hyaluronic acid (HA) content in the skin tissue was maintained by regulating the expression of HA synthesis- and degradation-related enzymes. Milk phospholipids alleviated UV-induced decrease in the expression of the antioxidant enzymes superoxidase dismutase1 and 2, catalase, and glutathione peroxidase1. Moreover, ROS levels were reduced by regulating heme oxygenase-1 (HO-1), an ROS regulator, through milk phospholipid-mediated activation of nuclear factor erythroid-2-related factor 2 (Nrf2). Collectively, sphingomyelin-containing milk phospholipids contributed to moisturizing the skin by maintaining HA content and reducing ROS levels in UVBirradiated hairless mice, thereby, minimizing damage to the skin barrier caused by photoaging.

D.A. Schmid, M.P. Domingues, A. Nanu, N. Kluger, R. de Salvo, S. Trapp, **Exploratory evaluation of tolerability, performance, and cosmetic acceptance of dexpanthenol-containing dermo-cosmetic wash and sun-care products for tattoo aftercare**, Health Sci. Rep. 2022;5

Background and Aims: Tattoo prevalence has significantly increased over the last decades. Proper tattoo aftercare, such as cleansing, moisturizing, and protection against sunlight, is essential to prevent complications and to keep the beauty of the tattoo. The tolerability, performance, and cosmetic acceptability of two dexpanthenol- containing dermo-cosmetic products, a wash and a sun-care, were investigated on tattooed skin in two separate trials. Methods: Two single-center, exploratory, open-label cosmetic studies were conducted between August and November 2020 to evaluate the dexpanthenol-containing dermo-cosmetic products. In the first study, healthy adults applied the 2.5% dexpanthenol-containing wash right after their tattoo session daily for 14 consecutive days. In the second study, healthy adults applied the 2.5% dexpanthenol-containing sun-care sun protection factor 50+ cream on existing tattoos that were daily exposed to sunlight for 28 consecutive days. Clinical examination by a dermatologist and self-assessment through subject questionnaires were used to assess the tolerability, acceptance, ease of use, and cosmetic outcomes of both products. Additionally, transepidermal water loss and moisturization assessments were performed to evaluate skin hydration after use of the sun-care product. Results: Both study products were well tolerated, and no product related adverse events were reported during the studies. At least 90% of the study participants appreciated the performance of the dexpanthenol-containing wash and sun-care product, including moisturizing properties, relief of unpleasant sensations, and preservation of the cosmetic appearance of the tattoo. For the sun-care, it was shown that its application supported maintaining the skin barrier of tattooed skin, while keeping it hydrated.

*A. Ziemlewska, Z. Nizioł-Łukaszewska, M Zagórska-Dziok, T. Bujak, M. Wójciak, I. Sowa***, Evaluation of Cosmetic and Dermatological Properties of Kombucha-Fermented Berry Leaf Extracts Considered to Be By-Products**, Molecules 2022, 27, 2345

Leaves of *Rubus fruticosus* L., *Vaccinum myrtillus* L., *Ribes nigrum* L. and *Fragaria vesca* L. are

considered agro-waste of the berry industry, but they can be a rich source of valuable bioactive compounds used in cosmetic industry. In this study, kombucha-fermented and non-fermented extracts were compared in terms of chemical composition and biological activity. Polyphenol compounds were identified by HPLC/DAD/ESI-MS. The antioxidant potential was analyzed by evaluating the scavenging of intracellular free radicals contained in keratinocytes and fibroblasts and by DPPH and ABTS assay, obtaining a higher radical scavenging capacity for the ferments, especially for *R. fruticosus* and *V. myrtillus* ferments. Assessment of the cytotoxicity on skin cell lines showed their positive effect on the viability of fibroblasts and keratinocytes (especially for the ferments after 10 days of fermentation). The potential anti-ageing properties were determined by their ability to inhibit the activity of metalloproteinases, obtaining almost 30% inhibition of collagenase and elastase in the case of fermented *V. myrtillus*. Moreover, when the samples were applied to the skin, the positive effect of ferments on skin hydration and pH was demonstrated, which indicates that kombucha berry leaf extracts may be an innovative cosmetic ingredient.

I. De Decker, H. Hoeksema, E. Vanlerberghe, A. Beeckman, J. Verbelen, P. de Coninck, M.M. Speeckaert, P. Blondeel, S. Monstrey, K.E.Y Claes, **Occlusion and hydration of scars: moisturizers versus silicone gels**, Burns, April, 2022

Background: The mainstay of non-invasive scar management, consists of pressure therapy with customized pressure garments often combined with inlays, hydration by means of silicones and/or moisturizers as well as UV protection. It is generally accepted that scar dehydration resulting from impaired barrier function of the stratum corneum and expressed by raised transepidermal water loss (TEWL) values, can lead to increased fibroblast activity and thereby hypertrophic scar formation. However, we have reached no consensus on exactly what optimal scar hydration is nor on barrier function repair: by means of silicone sheets, liquid silicone gels or moisturizers. Occlusive silicone sheets almost completely prevent TEWL and have been shown to be effective. Nevertheless, many important disadvantages due to excessive occlusion such as difficulties in applying the sheets exceeding 10-12 h, pruritus, irritation, and maceration of the skin are limiting factors for its use. To avoid these complications and to facilitate the application, liquid silicone gels were developed. Despite a reduced occlusion, various studies have shown that the effects are comparable to these of the silicone sheets. However, major limiting factors for general use are the long drying time, the shiny aspect after application, and the high cost especially when used for larger scars. Based on excellent clinical results after using three specific moisturizers for scar treatment in our patients, we wanted to investigate whether these moisturizers induce comparable occlusion and hydration compared to both each other and the widely recognized liquid silicone gels. We wanted to provide a more scientific basis for the kind of moisturizers that can be used as a full-fledged and cost-effective alternative to silicone gel. Methods: A total of 36 healthy volunteers participated in this study. Increased TEWL was created by inducing superficial abrasions by rigorous (20x) skin stripping with Corneofix® adhesive tape in squares of 4 cm^2. Threemoisturizers and a fluid silicone gel were tested: DermaCress, Alhydran, Lipikar and BAP Scar Care silicone gel respectively. TEWL reducing capacities and both absolute (AAH) and cumulative (CAAH) absolute added hydration were assessed using a Tewameter® TM300 and a Corneometer® CM825 at different time points for up to 4 h after application. Results: We found an immediate TEWL increase in all the zones that underwent superficial abrasions by stripping. Controls remained stable over time, relative to the ambient condition. The mean percentage reduction (MPR) in TEWL kept increasing over time with Alhydran and DermaCress, reaching a maximum effect 4 h after application. Silicone gel reached maximal MPR almost immediately after application and only declined thereafter. The silicone gel never reached the minimal MPR of Alhydran or DermaCress. Hydration capacity assessed through CAAH as measured by the Corneometer was significantly less with silicone gel compared to the moisturizers. Compared to silicone gel Lipikar provided similar occlusion and the improvement in hydration was highly significant 4 h after application. Conclusion: Based on the results of both our previous research and this study it is clearly demonstrated that the occlusive and hydrative effect of fluid silicone gel is inferior to the moisturizers used in our center. Lipikar hydrates well but is less suitable for scar treatment due to the lack of occlusion. A well-balanced occlusion and hydration, in this study only provided by Alhydran and DermaCress, suggests that moisturizers can be used as a scar hydration therapy that replaces silicone products, is more cost-effective and has a more patient-friendly application.

T.-C. Hsiao, F.-W. Pan, C.-F. Hsiao, X.-L. Wang, Y.-Y. Gao, Y.-F. Zhang, Y. Chen, **Effective Components of the *Prunus Speciosa* Flower Extract on Blue Light Filtration, Whitening and Skin Repair,** IFSCC Magazine, Volume 25 (1), April 2022

Prunus speciosa of the Rosaceae family has shown promising results for skin health. In 2013, the “Guangzhou Cherry Blossom” was named after the city of Guangzhou, China. This singleleafed pink

flower is the most weatherproof and heat-tolerant of all varieties of cherry blossom. Natural active ingredients extracted from Prunus speciosa flower, such as flavonoids and quercetin, had proved to be the most effective at blue light fltration, skin whitening and skin repair. Skin adaptive responses helped to increase repair of light-induced damage. Prunus speciosa flower extract (PSFE) inhibited tyrosinase activity and reduced melanin content in experiments in vitro. To study skin barrier effects, sodium lauryl sulfate was used to irritate the skin in 3D models in order to establish an alternative human patch test. At the same time, a clinical trial was conducted using PSFE facial cream twice daily for 28 days. Changes in skin moisture content, melanin content and elasticity were studied in 20 human subjects. The skincare effects of PSFE reported in human clinical trials demonstrated by changes in skin moisture content, melanin content and skin elasticity. PSFE has good blue light-fltering properties and inhibits tyrosinase activity, achieving a whitening effect. Thus PSFE shows promising performance as a functional ingredient for photoaging defense and inflammation relief in skin repair products.

Z.J. Krysiak, P.K. Szewczyk, K. Berniak, E.A. Sroczyk, E. Boratyn, U. Stachewicz, **Stretchable skin hydrating PVB patches with controlled pores' size and shape for deliberate evening primrose oil spreading, transport and release**, Biomaterial Advances, 136 (2022) 212786

With the increasing number of skin problems such as atopic dermatitis and the number of affected people, scientists are looking for alternative treatments to standard ointment or cream applications. Electrospun membranes are known for their high porosity and surface to volume area, which leads to a great loading capacity and their applications as skin patches. Polymer fbers are widely used for biomedical applications such as drug delivery systems or regenerative medicine. Importantly, fbrous meshes are used as oil reservoirs due to their excellent absorption properties. In our study, nano- and microfbers of poly (vinyl butyral-*co*-vinyl alcohol-covinyl acetate) (PVB) were electrospun. The biocompatibility of PVB fbers was confrmed with the keratinocytes culture studies, including cells' proliferation and replication tests. To verify the usability and stretchability of electrospun membranes, they were tested in two forms as-spun and elongated after uniaxially stretched. We examine oil transport through the patches for as-spun fbers and compare it with the numerical simulation of oil flow in the 3D reconstruction of nano- and microfber networks. Evening primrose oil spreading and water vapor transmission rate (WVTR) tests were performed too. Finally, for skin hydration tests, manufactured materials loaded with evening primrose oil were applied to the forearm of volunteers for 6 h, showing increased skin moisture after using patches. This study clearly demonstrates that pore size and shape, together with fberdiameter, influence oil transport in the electrospun patches allowing to understand the key driving process of electrospun PVB patches for skin hydration applications. The oil release improves skin moisture and can bedesigned regarding the needs, by manufacturing different fbers' sizes and arrangements. The fbrous based patches loaded with oils are easy to handle and could remain on the altered skin for a long time and deliver the oil, therefore they are an ideal material for overnight bandages for skin treatment.

S.-W. Jung, G.H. Park, E. Kim, K.M. Yoo, H.W. Kim, J.S. Lee, M.Y. Chang, K.-O. Shin, K. Park, E.H. Choi, **Rosmarinic Acid, as an NHE1 Activator, Decreases Skin Surface pH and Improves the Skin Barrier Function**, Int. J. Mol. Sci. 2022, *23*, 3910

Stratum corneum (SC) pH regulates skin barrier functions and elevated SC pH is an important factor in various inflammatory skin diseases. Acidic topical formulas have emerged astreatments for impaired skin barriers. Sodium proton exchanger 1 (NHE1) is an important factor in SC acidification. We investigated whether topical applications containing an NHE1 activator could improve skin barrier functions. We screened plant extracts to identify NHE1 activators in vitro and found *Melissa officinalis* leaf extract. Rosmarinic acid, a component of *Melissa officinalis* leaf extract, significantly increased NHE1 mRNA expression levels and NHE1 production. Immunofluorescence staining of NHE1 in 3D-cultured skin revealed greater upregulation of NHE1 expression by NHE1 activator cream, compared to vehicle cream. Epidermal lipid analysis revealed that the ceramide level was significantly higher upon application of the NHE1 activator cream on 3D-cultured skin, compared to application of a vehicle cream. In a clinical study of 50–60-year-old adult females ($n = 21$), application of the NHE1 activator-containing cream significantly improved skin barrier functions by reducing skin surface pH and transepidermal water loss and increasing skin hydration, compared to patients who applied vehicle cream and those receiving no treatment. Thus, creams containing NHE1 activators, such as rosmarinic acid, could help maintain or recover skin barrier functions.

X. Shu, R. Wan, W. Huo, Z. Li, L. Zou, Ying Tang, L. Li, X. Wang, **Effectiveness of a Radiofrequency Device for Rejuvenation of Aged Skin at Home: A Randomized Split-Face Clinical Trial**, Dermatol Ther (Heidelb) (2022) 12: p. 871–883

Introduction: Several techniques, including the use of radiofrequency (RF) devices, are currently utilized for the treatment of skin aging. This study aimed to evaluate the anti-aging effects imparted by a home-based RF beauty device and to compare these results with those of a marketed anti-aging cosmetic in vivo. Methods: Thirty-three women aged 35–60 years were enrolled in this randomized, controlled, split-face trial. This study involved a 12-week trial with five repeated measurements (at baseline, 2, 4, 8 and 12 weeks). One side of the face was randomly selected to be part of the experimental group and treated with the RF beauty device, while the other side was considered as control and was treated with an anti-aging cosmetic. Treatment safety was evaluated. Skin wrinkles, hydration, radiance, elasticity, color and thickness were evaluated using noninvasive equipment. Results: Thirty-two participants completed the study; one withdrew for personal reasons. Compared with the anti-aging cosmetic-treated facial side, the experimental side showed statistically significant improvements in wrinkles, skin radiance, color and thickness ($p < 0.05$). Conclusions: The home-based RF beauty device was safe and effective for rejuvenation. The device was more effective than the commercially available anti-aging cosmetics.

H.M. Kim, Y.M. Lee, E.H. Kim, S.W. Eun, H.K. Sung, H. Ko, S.J. Youn, Y. Choi, W. Yamada, S.M. Shin, **Anti-Wrinkle Efficacy of Edible Bird's Nest Extract: A Randomized, Double-Blind, Placebo-Controlled, Comparative Study**, Front. Pharmacol., Volume 13, March 2022

This study aimed to evaluate skin health's functional improvement, such as wrinkles, elasticity, moisture, and whitening, and safety following the consumption of "edible bird's nest extract" for 12 weeks by women. This single-center, double-blinded, parallel-group, placebo-controlled study included women aged 40–60 years. Our primary purpose was to assess improvement in skin wrinkles, elasticity, and moisture after 12 weeks using an SV700, cutometer, and corneometer, respectively, compared to baseline measurements. Our secondary purpose was to evaluate skin wrinkle, elasticity, and moisture changes at 4 and 8 weeks from baseline using the aforementioned equipment, and measure transdermal water loss and melanin and erythema indexes using a tewameter and mexameter, respectively. Experts performed the visual evaluation of skin wrinkles at 4, 8, and 12 weeks from baseline. The participants were randomly allocated in a 1:1 ratio into the edible bird's nest extract or the placebo group with 43 participants each, where they consumed 100 mg of the extract or placebo, respectively, daily for 12 weeks. The outcomes were measured at every visit. In this study, upon comparing changes in the skin elasticity value between the two intake groups at 12 weeks of ingestion, skin elasticity in the edible bird's nest extract group decreased significantly compared with that in the placebo group. Adverse reactions were absent in both groups. In the case of laboratory test results, changes before and after the ingestion of the extract were within the normal range, thus indicating no clinically significant difference. The edible bird's nest extract was effective in improving skin wrinkles. Moreover, it is beneficial for skin health and can be used as a skin nutritional supplement. Compared with the placebo, the edible bird's nest extract was identified as safe.

M. Safa, A. Natalizio, C.K. Hee, **A Prospective, Open-Label Study to Evaluate the Impact of VYC-12L Injection on Skin Quality Attributes in Healthy Volunteers**, Clinical, Cosmetic and Investigational Dermatology 2022:15 411–426

Purpose: Age-related changes in skin structure and function can negatively impact skin quality. VYC-12L is a crosslinked hyaluronic acid fller for treating fne lines and improving hydration and elasticity. The goal of this study was to understand skin quality, histologic, and genomic changes underlying long-term clinical benefts of VYC-12L treatment. Patients and Methods: In this prospective, nonrandomized, open-label study, 11 healthy men (n = 2) and women (n = 9) received intradermal VYC-12L treatment on the volar forearm. Clinical probes assessed skin quality at baseline and months 1 and 3 posttreatment. Punch biopsies were collected 1 and 3 months post-treatment to evaluate histologic and genomic changes. Safety was evaluated throughout. Results: Participants had a mean age of 41 years and Fitzpatrick skin phototypes II (54.5%) and III (45.5%). At months 1 and 3, VYC-12L-treated skin had higher hydration in the stratum corneum than untreated skin. Cutometer measurements indicated treated skin that was frmer and more resistant to deformation. Histology showed increased epidermal AQP3 and Ki67 expression 1 and 3 months post-treatment and a qualitative increase in papillary dermal collagen I at month 3. Genomic analyses demonstrated treatmentrelated upregulation of genes involved in adipocyte differentiation, lipid metabolism, keratinocyte renewal, and dermal extracellular matrix (ECM) maintenance. Injection site reactions were mild-to-moderate in severity and resolved by month 1. Five participants reported 19 adverse events; most (68.4%) were related to the biopsy and none to VYC-12L. Conclusion: VYC-12L produced changes in hydration, frmness, and ECM density and composition consistent with improved skin properties, demonstrating that VYC-12L can act as a substrate for tissue repair.

J.I. Seo, H.I. Ham, J.H. Baek, M.K. Shin, **An objective skin-type classification based on non-invasive biophysical parameters**, J Eur Acad Dermatol Venereol, Volume 36, Issue 3, March 2022, p. 444-452

Background: Despite the invention of various non-invasive bioengineering tools, skin-type analysis has largely been based on subjective assessments. However, advancements in the functional cosmetic industry and artificial intelligence-assisted dermatology are creating a greater demand for an objective skin-type classification system. Objectives: To propose an objective skin-type classification system solely based on non-invasive, bioengineering devices; provide reference values applicable to the Korean population; and compare our reference values with those of published studies. Methods: Biophysical parameter measurements were obtained from the 2018 International Skin Characteristics Data Bank Project conducted by the Foundation of Korea Cosmetic Industry Institute. The participants were 434 healthy South Korean adults. Each participant was assessed using eight bioengineering devices (Tewameter®, pH-meter®, Corneometer®, Sebumeter®, Cutometer®, Spectrophotometer®, PRIMOS® lite, and Janus®). The measurements were divided into tertiles to determine reference points. Results: Our objective skin-type classification consists of five main categories (sensitivity, hydration, oiliness, elasticity, and skin tone) and five corresponding subcategories (erythema, roughness, pores, wrinkles, and pigmentation, respectively). Each skin type was assigned based on the reference point of the biophysical parameter, which was established as the tertile value associated with 'unfavourable' skin characteristics. Individuals were categorized as having sensitive skin when the TEWL scores were over 18.0 g/m^2/h or the pH was over 5.45; dehydrated skin when the corneometric value measured below 47.17 A.U.; oily skin when the sebumetric value exceeded 70 µg/cm^2; and loose skin when the cutometric R^2 value was below 0.68 E/mm. Conclusions: This study is the first to provide a comprehensive skin-type classification system based solely on non-invasive biophysical parameters. As measurement data accumulate, the reference points will progress to become more accurate, and they will be subdivided according to gender, age, and ethnic group. Therefore, our classification system serves as a basis for artificial intelligence-based skin-type analysis.

C.M. Keck, A. Abdelkader, O. Pelikh, S. Wiemann, V. Kaushik, D. Specht, R.W. Eckert, R.M. Alnemari, H. Dietrich, J. Brüßler, **Assessing the Dermal Penetration Efficacy of Chemical Compounds with the Ex-Vivo Porcine Ear Model**, Pharmaceutics 2022, 14, 678

Background: The ex vivo porcine ear model is often used for the determination of the dermal penetration efficacy of chemical compounds. This study investigated the influence of the post-slaughter storage time of porcine ears on the dermal penetration efficacy of chemical compounds. Methods: Six different formulations (curcumin and different fluorescent dyes in different vehicles and/or nano carriers) were tested on ears that were (i) freshly obtained, (ii) stored for 24 or 48 h at 4 ◦C after slaughter before use and (iii) freshly frozen and defrosted 12 h before use. Results: Results showed that porcine ears undergo post-mortem changes. The changes can be linked to rigor mortis and all other well-described phenomena that occur with carcasses after slaughter. The post-mortem changes modify the skin properties of the ears and affect the penetration efficacy. The onset of rigor mortis causes a decrease in the water-holding capacity of the ears, which leads to reduced penetration of chemical compounds. The water-holding capacity increases once the rigor is released and results in an increased penetration efficacy for chemical compounds. Despite different absolute penetration values, no differences in the ranking of penetration efficacies between the different formulations were observed between the differently aged ears. (4) Conclusions: All different types of ears can be regarded to be suitable for dermal penetration testing of chemical compounds. The transepidermal water loss (TEWL) and/or skin hydration of the ears were not correlated with the ex vivo penetration efficacy because both an impaired skin barrier and rigor mortis cause elevated skin hydration and TEWL values but an opposite penetration efficacy. Other additional values (for example, pH and/or autofluorescence of the skin) should, therefore, be used to select suitable and non-suitable skin areas for ex vivo penetration testing. Finally, data from this study confirmed that smart Films and nanostructured lipid carriers (NLC) represent superior formulation strategies for efficient dermal and transdermal delivery of curcumin.

N. Akhtar, **Development of stable tocopherol succinate-loaded ethosomes to enhance transdermal permeation: In vitro and in vivo characterizations**, J Csmet Dermatol, March 22

Background: Tocopherol succinate (TS) represents synthetic derivative of α-tocopherol (vitamin E), it act as anti-aging, moisturizing, and antioxidant. Ultraviolet (UV) photo stability of TS is low, and it cause skin irritation. Aim: To develop tocopherol succinate loaded ethosomal gel for topical TS delivery and to evaluate its moisturizing and anti-aging effects. Method: Cold method technique was used to produce ethosomal formulations (N = 9) by varying ethanol and lipid concentrations (F1-F9). The most optimized formulation (F5) was selected for further study on the basis of characterization. F5 Formulation was incorporated into gel. Ex vivo permeation study was done by using Franz diffusion cell.

Non-invasive in vivo study was performed using corneometer for the evaluation of skin moisture content and skin mechanical properties by using cutometer, for 12 weeks on human subjects (N = 13). Results: Particle size (PS), zeta potential (ZP) and polydispersity index (PDI), Entrapment efficiency were found to be 179.1 nm, -13.7 mV and 0.345, and 99.71%, respectively. Transmission electron microscopy (TEM) depicted spherical ethosomal particles. Ethosomal gel and control gel were evaluated for conductivity and pH. Rheological analysis revealed a non-Newtonian flow. The release profile showed initial burst and then, sustained release, release data followed Korsmeyer-Peppas model. TS-loaded ethosomal gel appeared physically stable and showed significant results in terms of skin capacitance and mechanical properties. Conclusion: The prepared ethosomal gel formulation containing TS is more stable with enhanced antioxidant, moisturizing properties, and increased TS deposition into the skin layer.

S. Huma, H.M. Shoaib Khan, S. Ijaz, M. Sarfraz, H. Saqib Zaka, A. Ahmad, **Development of Niacinamide/Ferulic Acid-Loaded Multiple Emulsion and Its In Vitro/ In Vivo Investigation as a Cosmeceutical Product**, Biomed Res Int, 2022 Mar 17:2022:1725053

Objective: Multiple emulsions have the ability to incorporate both lipophilic and hydrophilic actives in the same preparation and facilitate permeation of active ingredients through skin. The current study was aimed at formulating niacinamide/ferulic acid-loaded stable multiple emulsion (MNF) and its in vitro/in vivo characterization as a cosmeceutical product. Methods: Both the compounds were evaluated for their radical scavenging potential by the DPPH method and FTIR analysis. Then, placebo and active formulations were prepared using a double emulsification method and were investigated for stability testing (changes in color, odor, and liquefaction on centrifugation, pH, and globule size) for a period of three months. Afterwards, MNF was investigated for in vitro sun protection factor, rheological studies, entrapment efficiency, zeta potential, zeta size, and ex vivo permeation. Moreover, after ensuring the hypoallergenicity and safety, it was also checked for its cosmeceutical effects on human skin using noninvasive biophysical probes in comparison with placebo. Results: Results demonstrated that MNF showed a non-Newtonian behavior rheologically and both MNF and placebo were stable at different storage conditions. Entrapment efficiency, zeta potential, and zeta size were 93.3%, -5.88 mV, and 0.173 □m, respectively. Moreover, melanin, sebum, and skin erythema were significantly reduced while skin elasticity and hydration were improved. Conclusion: It is evident that niacinamide and ferulic acid can be successfully incorporated in a stable multiple emulsion which has potent cosmeceutical effects on human skin.

Y.-M. Ham, S.-A. Yoon, H. Hyeon, H.-B. Hyun, S.-C. Kim, B. Go, Y.-H. Jung, W.-J. Yoon, **Clinical Evidence of Effects of Green Mandarin (Putgyul) Extract on Skin Aging: A Randomized, Double Blind, Placebo-Controlled Study**, Nutrients 2022, 14, 1352

Green mandarins are widely consumed unripe as mandarin oranges (Citrus unshiu Marcov.), which exhibit anti-inflammatory and anti-wrinkle effects by inhibiting the production of inflammatory cytokines and matrix metalloproteinase. A randomized, double-blind, placebo-controlled clinical study was performed to verify the skin improvement efficacy and safety of green mandarin extract (PTE). For the standardization of PTE, narirutin was set as a marker compound, and PTE with a constant narirutin content was prepared for the study. After randomizing subjects with periorbital wrinkles, they were orally administered PTE (300 mg/day) or a placebo for 12 weeks. Periorbital wrinkles were measured using PRIMOSCR SF. Skin elasticity, moisture content, transepidermal water loss, and gloss were also measured. In the study results, the depth, volume, and skin roughness of the periorbital wrinkles were significantly improved compared to the control group ($p = 0.011$, 0.009, and 0.004, respectively). The survey confirmed that the skin condition improved after PTE consumption for 12 weeks. No adverse reactions associated with PTE were observed during the study period. Thus, the results demonstrate that PTE effectively improves UV-induced skin wrinkles. Therefore, it is considered that PTE has sufficient value as a functional food ingredient that can prevent skin aging.

A. Nikolis, K.M. Enright, L.E. Avelar, S. Rice, H. Sinno, D. Rizis, S. Cotofana, **A Prospective, Multicenter Trial on the Efficacy and Safety of Poly-L-Lactic Acid for the Treatment of Contour Deformities of the Buttock Regions**, JDD online, March 2022

Background: There is a significant emphasis on minimally invasive whole-body rejuvenation throughout the world. Recently, gluteal aesthetics have become an increasingly common patient concern. Although the application of poly-L-lactic acid (PLLA) to the face is already well known, there are relatively fewer publications on its use in other corporeal regions. This study aims to extend previous findings by evaluating the efficacy and safety of PLLA in the treatment of contour (including lifting) deformities of the buttock region. Methods: This was a prospective, multicenter (3 sites), single cohort, open-label clinical trial. Thirty female subjects were treated with PLLA in the bilateral buttocks, with three

treatment sessions, each spaced one month apart and followed for six months after completion of the treatment regimen. At each visit, various safety and clinical efficacy parameters were collected, these included: Global Assessment of Improvement Scale (GAIS), subject satisfaction, skin hydration, elasticity, scaliness, roughness, and 3-dimensional imagery. Results: Six months following the last treatment, 84.00% of patients were rated as having “improved” or more on the physician assessed GAIS, accompanied by a 96.00% patient satisfaction rate. Approximately three vials of PLLA, per buttock and treatment were used. There were no serious adverse events throughout the duration of the trial, nor adverse events related to the investigational device. The most common subject-reported adverse events included pain during treatment (Mean: 70.97%) and bruising (Mean: 28.80%). Objective improvements were persistent after treatment in measurements of skin elasticity (improved 63.5% - 82.5% from weeks 16-32), hydration (increased ~11 Corneometer® units by week 16), roughness (decreased 36.95% at week 32), and scaliness (desquamation; decreased 60.41% at week 32). Conclusions: PLLA is safe and effective for the indication of buttock contouring and improving parameters of skin health. PLLA can provide long-lasting effects with a high level of patient and physician satisfaction.

C. Zanchetta, D. Vilanova, C. Jarrin, A. Scandolera, E. Chapuis, D. Auriol, P. Robe, J. Dupont, L. Lapierre, R. Reynaud, **Bacterial taxa predictive of hyperpigmented skins**, Health Sci. Rep. 2022;5: e609.

Background and Aims: Dark spots, brown spots, or hyperpigmented spots (HPS) are oval or irregular brown areas of skin. Their emergence is associated with dysregulation of the immune system, and may also be caused by a deficiency in stromal cell-derived factor-1, leading to perturbed melanogenesis and accumulation of melanosomes within neighboring keratinocytes. The skin microbiota (living microorganisms present on the surface of the skin) is known to play essential roles in maintaining skin homeostasis and in regulating the immune system. Here, we investigated whether the microbiota could play a role in the emergence of HPS. Methods: The clinical study involved 38 European women, selected from among 74 volunteers. Participants were divided into two groups depending on the spot areas measured on their faces. The study was designed to avoid conflicting factors: both groups presented similar skin pH, hydration, transepidermal water loss, and sebum levels. The two cohorts were also age-matched, with a mean of 29-years-old for both. Results: Alpha-diversity of the microbiota was similar for the two groups. On skins with more HPS, seven bacterial genera were identified in significantly higher proportions and included opportunistic pathogens and inflammatory bacteria. Six bacterial genera, including bacteria showing antioxidant and anti-UV properties, were identified in significantly higher proportions on less spotted skins. Cross- domain association networks revealed distinct co-occurrences of genera between the two groups, suggesting nonidentical community structures and exchanges, depending on the HPS status. Conclusion: Our results reveal specific microbiota composition and networks on skins based on HPS status. Changes could alter communication with the immune system, leading to the emergence of dark spots. As an essential part of the overall skin ecosystem, and through its interaction with the skin matrix, the skin microbiota and its maintenance could be considered a new target for skincare applications.

S.M. Henning, J.B. Guzman, G. Thames, J. Yang, C.H. Tseng, D. Heber, J. Kim, Z. Li, **Avocado Consumption Increased Skin Elasticity and Firmness in Women - A Pilot Study**, J Cosmet Dermatol. 2022

Background: Avocados are a rich dietary source of monounsaturated fatty acids, carotenoids, and phenolic compounds. Clinical studies have demonstrated that oral consumption of carotenoids improved skin aging. However, no studies have investigated whether oral intake of avocado will reduce skin aging. Objectives: We therefore performed this pilot study to assess whether oral consumption of one avocado daily for 8 weeks can reduce skin aging in healthy overweight women assessing skin physical characteristics and resistance to UVB radiation. Methods: Thirty-nine female participants (age 27–73 years) with Fitzpatrick skin type II-IV were randomly assigned to consume either one avocado daily or continue habitual diet for 8 weeks. Facial skin elasticity, firmness, pigmentation, sebum, and hydration were determined using a cutometer on the forehead and under eye. Minimal erythema dose (MED) was determined by standardized protocol at inner arm. Results: Elasticity and firmness were increased at forehead comparing 8 weeks to baseline in the avocado group. Comparing avocado to control, change in firmness marker from baseline to week 8 indicated a significant increase in forehead skin firmness in the avocado group. We did not observe any change in hydration, pigmentation, sebum, and UVB resistance between the avocado and control group, although changes in melanin and erythema were observed in both groups over time. Conclusions: Our findings suggest that daily oral avocado consumption may lead to enhanced elasticity and firmness of the facial skin in healthy women. Further studies of other skin locations are required to establish the connection between avocado consumption and skin aging.

W. Liu, L. Jie, D. Liu, E.T. Makino, J. Krutmann, R.C. Mehta, **Protective effects of a day/night dual-antioxidant serum on skin: A randomized, regimen-controlled study in Chinese women exposed to air pollution**, J Cosmet Dermatol. 2022

Background: Chronic exposure to air pollution can negatively affect skin health. Aims: To assess the efficacy of the LUMIVIVE® System (LVS), a skincare system consisting of individual day and night serums, in Chinese women exposed to air pollution. Patients/Methods: In this single-center, vehicle-controlled study, eligible females (mean age, 49.02 years) were randomized 1:1 to treatment group (LVS plus basic moisturizer) or control group (basic moisturizer). Skin color, sebum content, barrier function, elasticity, and texture were measured at baseline and at each follow-up visit (days 28, 56, and 84). Air pollution parameters were collected throughout the study. Results: Air pollution levels, including PM2.5 and NO2, were consistently high during the study. The treatment group showed significantly higher skin color L* ($p \leq 0.0001$) and lower a* values ($p \leq 0.05$) at all follow-up visits compared with the control group, indicating lower skin pigmentation and redness, respectively. Skin color L* and a* values remained unchanged over time for the control group but were significantly different at all follow-up visits compared to baseline ($p \leq 0.0001$ and $p \leq 0.05$, respectively) for the treatment group. There was an increasing trend for sebum content in the control group, which was not observed in the treatment group. Both groups showed improvements over time in other skin physiology parameters. Conclusions: The current analysis demonstrates the efficacy of LVS plus basic moisturizer compared with basic moisturizer alone to reduce skin pigmentation and redness, as well as to mitigate sebum production, in Chinese women exposed to air pollution.

P. Montero, M. Pérez-Leal, J.A. Pérez-Fidalgo, C. Sanz, C. Estornut, I. Roger, J. Milara, A. Cervantes, J. Cortijo, **Paclitaxel Induces Epidermal Molecular Changes and Produces Subclinical Alterations in the Skin of Gynecological Cancer Patients**, Cancers 2022, 14, 1146

Background: Paclitaxel is a microtubule-stabilizing chemotherapeutic agent. Despite its widespread use, it damages healthy tissues such as skin. The goal of this study was to prove that the real impact of paclitaxel-induced skin toxicity could be underestimated because the adverse events might appear asymptomatic. Methods: Gynecological cancer patients were recruited. Skin parametersmeasurements were taken after three and six paclitaxel cycles. Measurements were conducted using specific probes which measure hydration, transepidermal water loss (TEWL), sebum, elasticity and firmness, erythema, roughness, smoothness, skin thickness, and desquamation levels. Further, a 3D epidermis model was incubated with paclitaxel to analyze gene and protein expression of aquaporin 3, collagen type 1, elastin, and fibronectin. Results: Paclitaxel induced alterations in the skin parameters with no visible clinical manifestations. Gynecological cancer patients under paclitaxel treatment had a decrease in hydration, TEWL, sebum, elasticity, and thickness of the skin, while erythema, roughness, and desquamation were increased. The molecular markers, related to hydration and the support of the skin layers, and analyzed in the 3D epidermis model, were decreased. Conclusions: Results suggest that paclitaxel modifies gene and protein expression of skin-related molecular markers, and impairs different physical, physiological, and biomechanical properties of the skin of cancer patients at a subclinical level.

Y. Sakata, H. Mayama, Y. Nonomura, **Friction dynamics of moisturized human skin under non-linear motion**, Int J Cosmet Sci, Feb;44(1), 2022: p. 20-29

Objective: Evaluating friction in human skin is important to assess its condition and the effects of skincare cosmetics. In this study, we evaluated the friction dynamics of moisturized skin to show the effects of moisturization on its mechanical properties. Methods: Friction force was evaluated using a sinusoidal motion friction evaluation system. The skin of the upper arm of 20 subjects was rubbed using a contact probe. The water content of the stratum corneum and the softness of the skin were measured using a Corneometer and a Cutometer, respectively. Results: When human skin was treated with water or 10 wt% glycerol aqueous solution, the friction coefficients increased by 0.23 ± 0.01 and 0.17 ± 0.14, respectively, and the delay times (normalized by calculating the time interval from contact with the probe to the friction response divided by the friction time for one round trip) increased by 0.048 ± 0.034 and 0.055 ± 0.024, respectively. Three different friction profiles were observed: (a) a stable pattern, in which a smooth profile was observed during the sliding process; (b) an oscillation pattern, in which significant oscillation was obtained; and (c) a stick pattern, in which the friction coefficient increased even during the deceleration process. In the case of untreated skin, the oscillation pattern was observed for the majority of subjects. The appearance rate of the stick pattern increased by 80.3% ± 29.4% after treatment with 10 wt% glycerol aqueous solution. These characteristic friction profiles can be explained by a two-step friction model consisting of two modes: (a) friction at the skin surface and (b) the delayed response due to skin deformation. Conclusion: Moisturizing the skin with water or 10 wt% glycerol

aqueous solution increased the friction coefficient and delay time, dramatically changing the friction profile. These changes were considered to be due to the swelling and softening of the stratum corneum and the increased true contact area between the contact probe and the skin surface.

C. Confalonieri, **The Korea Pink Yeast, a new moisturrising and soothing way,** HPC Today, Vol. 17(2) 2022

The Korean-originated new active ingredient, based on Aureobasidium pullulans, is a pink yeast derived from the Jeju King cherry blossom. It has a particular soothing and moisturising effect thanks to its film forming ability; those properties have been confirmed by different *in vitro* and *in vivo* tests. It can be used in serums, lotions and creams formulations because of its specific texture. This article aims to show the relevance of the local flora, how important it is to value and respect it and how nature can always surprise us with the discovery of new active ingredients that can make changes to our bodies, improving their characteristics and appearance.

J. Igielska-Kalwat, S. Połoczańska-Godek, D. Murawa, R. Poźniak-Balicka, M. Wachowiak, G. Demski, S. Cieśla, **The effect of the RadioProtect cosmetic formulation on the skin of oncological patients treated with selected cytostatic drugs and ionizing radiation,** Advances in Dermatology and Allergology 1, February/2022, XXXIX (1): p. 47–51

Introduction: According to the Polish Central Statistical Ofce and the National Cancer Registry, cancer is the main cause of death in the world. Every year over 8 million people die from cancer worldwide, while in Poland the disease kills nearly 100,000 people. The group of patients analysed in this study suffered from breast, colorectal and lung cancers, and underwent radio- and chemotherapy. The patients were treated with a cosmetic formulation toaccelerate the healing of their skin and improve the functioning of the hydrolipidic barrier. Aim: To examine oncological patients' skin and to improve its biophysical parameters with a specialized cosmetic preparation. Material and methods: The study was conducted on 60 female cancer patients treated at the University Hospital in Zielona Gora, Poland. The patients volunteered for *in vivo* tests of the cosmetic formulation. Results: The emulsions applied to the patients undergoing chemotherapy signifcantly increased the hydration of their epidermis. After 4 months of regular use of the preparation, their skin hydration level increased by 22%.The skin hydration of the patients undergoing radiotherapy increased by 3%, as compared with the levels at thebeginning of the study. Conclusions: Cosmetic formulations for oncological patients restore the adequate level of skin hydration, aid the reconstruction of the skin and its protective barrier, soothe irritations, accelerate the healing of pathological lesions and prevent their development. Adverse effects may delay or prevent further treatment. Therefore, appropriately tailored care is very important and should not be overlooked.

M. Termer, A. Jaeger, C. Carola, A. Salazar, C. Keck, H. Kolmar, J. von Hagen, **MeO-MBM: Protect Skin from UV induced-Damage and Prevent Signs of Inflammation While Improving the Skin Barrier**, IFSCC Magazine Volume 24, No. 4, February 2022

Sun protection is important in skin care and requires special attention as ineffcient protection may trigger severe diseases like skin cancer and less serious effects with a physiological and psychological impact on humans like polymorphic light eruption (PLE). The reduce-improve-protect (RIP) concept is of importance in skin care for avoiding onset of UV irradiation-induced diseases or damage to human skin. Potential molecular targets of methoxymonobenzoylmethane (MeO-MBM) were identifed by in silico docking experiments followed by microarray analysis of genes after MeO-MBM treatment. Randomized, double-blind, intraindividual comparison vs. placebo studies were conducted to assess the effect of MeO-MBM in vivo. The effect after UV-induced inflammation was evaluated in a protective and curative set-up on the basis of the change in blood flow. The barrier function of the skin after treatment with MeO-MBM was studied by measuring the change in transepidermal water loss (TEWL), skin scaling and skin thickness. Additionally, the effect of MeO-MBM after UV-induced stress on the activation of ferritin in human explants was determined ex vivo. From this study, it can be concluded that MeO-MBM reduces (R) inflammation and prevents downstream effects like irritation, redness and itching. Moreover, MeO-MBM improves (I) the skin barrier and protects (P) the skin from UV-induced cellular damage. The benefcial combinatorial effects of MeO-MBM were demonstrated with in silico, in vitro, ex vivo and in vivo experiments.

J.T. Parker, **Clinical Study to Assess the Efficacy of a Novel Hair Loss Treatment,** Malaysian Journal of Medical and Biological Research, Volume 9, No 1/2022

Hair loss and thinning are typical disorders in clinical dermatology (Gordon, 2011). Some potential reasons for hair loss include androgenetic alopecia, alopecia areata, telogen effluvium, and chemotherapy-induced alopecia (Otberg et al., 2007; Ghanaat, 2010; Wasserman et al., 2007; Trueb, 2009). Many communities place a large importance on hair. Males and females alike are under constant

societal pressure to maintain their physical appearance as it relates to body image, hair, cosmetics and apparel (Helfert and Waschburger, 2013; Dohnt and Tiggemann, 2006; Chen and Jackson, 2012; Andersson, 1979; Jones et al., 2004). Hair loss studies have shown the importance of hair during social and sexual interactions (Randall, 2001), as well as it being a contributing factor to the outlook of the human body (Randall, 2007; Shorter et al., 2008). Numerous studies conducted internationally have been directed toward determining the best route to regrow hair on humans. Some researchers have attempted to use mammals like rats, hamsters, rabbits and sheep to understand the hair regrowth process in laboratory conditions (Hamilton, 1958; Hamilton, 1951; Ludwig, 1977; Chase et al., 1951). Other researchers have studied human hair and the effect of transplanting that patient's hair from one location of their license lets others remix, tweak, and build upon work non-commercially, and although the new works must also acknowledge and be non-commercial. scalp to another, unfortunately, this option is limited by cost and patient supply of donor hair (Rogers and Avram, 2008). Although everyone is not eligible for hair transplantation, Abaci is studying ways to regrow human hair in a petri dish first, to open hair restoration surgery for more individuals (Abaci et al., 2018). Another method that has shown some success for human hair regrowth is light therapy (Metelitsa and Green, 2011; Avci et al., 2014). Currently, there are only two Food and Drug Administration (FDA) approved hair loss drugs available for medical management of hair loss: minoxidil and finasteride (Tsuboi et al., 2007; Price, 1999). Unfortunately the efficacy of Minoxidil ranges from 20-40%, causing discontinuity of treatment in the majority of patients (Tosti, 2009). Studies have shown Finasteride to have an adverse reaction with some individuals causing sexual dysfunction in 4% of cases (Mc Phee et al., 2007; Kondo et al., 1990). According to Orasan et al. (2016a) "finasteride and minoxidil (2% or 5%) have temporary effects and unpredictable efficacy, better pharmacological options are necessary for managing hair loss" (Gordon, 2011). Orasan et al. (2016b) went on to review hair loss techniques and stated "further studies are required not only to compare the efficiency of different therapies, but more importantly to establish their long term safety" (p.327). There is little data on topical formulations that can naturally stimulate new hair follicles to grow, improve skin health and increase hair count. This research will discuss the effects of a clinical study conducted by Eurofin Scientific whereby participants used Lotus 39 to address their hair loss.

B. Cui, Y. Wang, J. Jin, Z. Yang, R. Guo, X. Li, L. Yang, Z. Li, **Resveratrol Treats UVB-Induced Photoaging by Anti-MMP Expression, through Anti-Inflammatory, Antioxidant, and Antiapoptotic Properties, and Treats Photoaging by Upregulating VEGF-B Expression**, Oxidative Medicine and Cellular Longevity, Volume 2022

UVB exposure is one of the primary factors responsible for the development of photoaging, and the aim of this study was to investigatethe mechanism involved in the photoprotective properties of resveratrol (RES) in UVB-induced photoaging. Photoaging models of Hacat cells and ICR mice were established by UVB irradiation. The effect of RES on cell viability was then assessed using the MTT assay. The effect of RES on reactive oxygen species (ROS) production was detected through a fluorescent probe assay. The effect of RES on oxidized glutathione (GSSH) content, and superoxide dismutase (SOD) activity in photoaging Hacat cells, were measured separately, using kits. An enzyme-linked immunosorbent assay (ELISA) was used to measure the effect of RES on IL-6 secretion. The effect of VEGF-B on RES photoprotection was examined through the RT-qPCR method, after silencing VEGF-B through siRNA transfection. For animal experiments, the relative water content of the skin of ICR mice was determined using the Corneometer CM825 skin moisture tester. Starting from the third week of the study, the back skin of photoaging ICR mice was photographed weekly using the TIVI700 camera, and the depth of skin wrinkles in photoaging ICR mice was also analyzed. The thickness of the epidermis in photoaging ICR mice was assessed by the hematoxylin-eosin (HE) staining method. The content of collagen fibers in the skin dermis of photoaging ICR mice was measured by the Masson trichrome staining method. The content of collagen III in the dermis of the skin in photoaging ICR mice was measured through immunohistochemistry (IHC) techniques. The effect of RES on the mRNA expression levels of MMP-1, MMP-9, HO-1, GPX-4, IL-6, TNF-α, VEGF-B, caspase9, and caspase3 in photoaging Hacat cells, and that of MMP-3, Nrf2, HO-1, NQO1, SOD1, GPX-4, caspase9, caspase3, and IL-6 in the skin of photoaging ICR mice, was measured by RT-qPCR. The effects of RES on caspase3, Nrf2 (intranuclear), COX-2, P-ERK1/2, ERK1/2, P-P38MAPK, and P38MAPK in photoaging Hacat cells, and on MMP-9, caspase3, COX-2, P-JNK, P-ERK1/2, and PP38MAPK protein expression in the skin of photoaging ICR mice, were assayed by the WB method. The results of this study, therefore, show that RES has a protective effect against UVB-induced photoaging in both Hacat cells and ICR mice. Its mechanism of action may include reducing the expression of MMPs and the secretion of collagen and inflammatory factors by inhibiting the ROS-mediated MAPK and COX-2 signaling pathways, balancing oxidative stress in the skin of Hacat cells and ICR mice by promoting the Nrf2 signaling pathway, inducing antiapoptotic effects by inhibiting caspase activation, and exerting

antioxidant and antiapoptotic effects by targeting the VEGF-B, demonstrating its photoprotective effects against UVB irradiation-induced photoaging.

D. Léger, C. Gauriau, C. Etzi, S. Ralambondrainy, C. Heusele, S Schnebert, A. Dubois, D. Gomez-Merino, M. Dumas, **"You look sleepy…" The impact of sleep restriction on skin parameters and facial appearance of 24 women**, Sleep Medicine 89 (2022), p. 97-103

Background: Total sleep deprivation has a visible impact on subjective facial appearance. However, there is a lack of knowledge on how moderate sleep restriction objectively impairs skin quality and facial aspect. Methods: Twenty-four healthy good-sleeping women, aged 30e55, volunteered for this study on the impact of sleep restriction (SR) on their facial skin. SR was limited to 3 h per night for 2 consecutive nights. We assessed the following parameters at the same time of day, before and after SR: sebumetry (Sebumeter SM 815), hydration (Corneometer CM 825), trans-epidermal water loss (Tewameter TM 210), biomechanical properties (Cutometer MPA 580), pH (PH-meter 900), desquamation quantification (DSquameter and microscopy), and image analysis (ColorFace - Newtone Technologies). We also obtained skin samples (swab) for malondialdehyde quantification (MDA). Results: We observed that some skin parameters are significantly associated with SR in both the morning and afternoon, including: lower hydration ($p < 0.001$), increased trans-epidermal water loss (PIE) ($p < 0.001$), and decreased extensibility (Uf; p ¼ 0.015) and viscosity (Uv; $p < 0.001$) of the skin. The average pH increased from 4.8 (±0.2) to 4.9 ± 0.4; $p < 0.001$. For face photography, brightness and saturation also significantly decreased with SR in mornings and afternoons ($p < 0.001$ for all tests). Finally, we observed a significant decrease in isolated corneocytes after desquamation associated with SR ($p < 0.001$ for all tests). SR was also associated with significantly increased MDA levels ($p < 0.001$ for all tests). Conclusions: Two nights of SR significantly altered the skin and facial appearances in our test group of typically good-sleeping women.

K. Zduńska-Pęciak, A. Kołodziejczak, H. Rotsztejn, **Two superior antioxidants: Ferulic acid and ascorbic acid in reducing signs of photoaging - A split-face comparative study**, Dermatol Ther, 2022 Feb;35(2)

The assessment of the signs of photoaging in mexametric (melanin and erythema index), corneometric (hydration level), and cutometric (elasticity) examination after the treatment with ascorbic acid and ferulic acid. This study was conducted in a group of 20 women aged 39-61 (mean age 54), with Fitzpatrick skin types II and III. The study included a series of eight treatments performed once a week. Two layers of peeling, based on 14% ferulic acid (left half of the face) and 12% l-ascorbic acid serum (right half of the face) were applied. To determine skin parameters: moisture, elasticity, melanin level, and erythema intensity, the Multi Probe Adapter Systems (Courage + Khazaka electronic GmbH, Köln, Germany) were used. Additionally, before and after the series of treatments, photographs were taken with the standardized photographic system Fotomedicus (Elfo®). The results of mexametric measurement for melanin level and erythema intensity were statistically significant ($p < 0.0001$) for both acids. Slightly greater lightening of the skin was demonstrated for ascorbic acid. The results of corneometric measurement of hydration level for ferulic acid and ascorbic acid were both statistically significant ($p < 0.0001$). First beneficial changes in improved elasticity could be observed as early as after 8 weeks but the increase in flexibility grew with time (after 12 weeks). These changes affected both acids and all measurement points. The changes in parameters were highly statistically significant ($p < 0.0001$). Based on the conducted research, it is not possible to state which of the tested acids is more effective in reducing the symptoms of photoaging. Both acids (ascorbic and ferulic), which have a high antioxidant potential, affect the measurable parameters of the skin: pigmentation (melanin index), erythema (erythema index), skin hydration, and elasticity.

S. Rubatto, G. Argenziano, G. Babino, P. Frascione, E. Dika, L. Giacomelli, A. Parodi, P. Qualglino, **Clinical evaluation of hydration index using a corneometer in metastatic melanoma patients treated with BRAF/ MEK inhibitors: a prospective study**, EJD, vol. 32, n◦ 1, January-February 2022

Adverse skin effects of antineoplastic therapies can reduce compliance, lead to skin complications and be associated with major psychological impact. Xerosis cutis has been associatedwith targeted therapies, such as BRAFMEK inhibitors used in the treatment of metastatic melanoma (MM). However, data on this topic are scant. In pivotal trials, xerosis cutis was reported as an adverse event in up to 16% of patients on these agents and up to 23% of those on MEK inhibitors only [3-6]. Xerosis cutis is difficult to diagnose given individual variability due to emollient use, occupational exposure and difficulties in assessing severity. No data are reported regarding the time at onset and modality of assessment.

S. Gladstone, R. Ott, **Postbiotic care for sensitive skin from golden millet**, PERSONAL CARE

Magazine, January 2022

In a functioning ecosystem, all living beings are coordinated in their function. Externalinfluences throw the ecological system out of balance – and can even throw it off completely. The same applies to our skin. Healthy skin requires a balanced variety of bacteria. If this is out of balance, our skin becomes vulnerable.

Ò. Exposito, A. Guirado, R. Vallecillo, D. Robustillo, A. Gallego, M. Mas, P. Riera, D. Luna, S. Laplana, T. Ruiz, S. Ruiz, M. Gibert, **Optimising vitamin D: A plant stem cell strategy,** PERSONAL CARE Magazine, January 2022

Vitamin D deficiency is a worldwide pandemic affecting over 1 billion people, and it urgently needs to be addressed to prevent morbidity, mortality and the increasing expenses related to the treatment of the involved chronic illnesses.

*J. Gallinger, A. Kuhn, S. Wessel, P. Behm, S. Heinecke, A. Filbry, L. Hillemann, F. Rippke***, Depth-dependent hydration dynamics in human skin Vehicle-controlled efficacy assessment of a functional 10% urea plus NMF moisturizer by near-infrared confocal spectroscopic imaging (KOSIM IR) and capacitance method complemented by volunteer perception**, Skin Research & Technology, January 2022

Background: Stratum corneum (SC) hydration is vital for the optimal maintenance and appearance of healthy skin. In this context, we evaluated the efficacy of an NMFenriched moisturizer containing 10% urea on different aspects of SC hydration of dry skin. Material and Methods: In two clinical studies, the hydration efficacy of the moisturizer in comparison to its vehicle was investigated. In the first study, 42 subjects applied the moisturizer and the vehicle to one lower leg each. Thirty minutes and 24 h after this single treatment, SC hydration was measured by corneometry. Volunteers also rated skin moisturization and evaluated product properties. In the second study, 27 subjects each treated one forearm twice daily for 2 weeks with the moisturizer and the vehicle. Then, depth-resolved water-absorption spectra were measured by near-infrared confocal spectroscopic imaging (KOSIM IR). Results: The moisturizer exerted a superior hydrating effect compared to the vehicle. KOSIM IR measurements show that, compared to the vehicle, the moisturizer significantly improved the water gradient in the SC from the surface to a depth of 15 μm. Moreover, the moisturizer received high acceptance ratings from the volunteers and was preferred to the vehicle. Conclusion: The humectants applied in the investigated moisturizer improved SC water content in total and as a function of depth. The combination of depth-resolved data (KOSIM IR) with classical corneometry provides an integrated concept in the measurement of skin hydration, rendering both methods complementary. These findings were in line with the volunteers‘ self-assessments of the moisturizer properties that are relevant to treatment adherence.

M. Herrero-Fernandez, T. Montero-Vilchez, P. Diaz-Calvillo, M. Romera-Vilchez, A. Buendia-Eisman, S. Arias-Santiago, **Impact of Water Exposure and Temperature Changes on Skin Barrier Function**, J. Clin. Med. 2022, 11, 298

The frequency of hand hygiene has increased due to the COVID-19 pandemic, but there is little evidence regarding the impact of water exposure and temperature on skin. The aim of this study is to evaluate the effect of water exposure and temperature on skin barrier function in healthy individuals. A prospective observational study was conducted. Temperature, pH, transepidermal water loss (TEWL), erythema and stratum corneum hydration (SCH) were measured objectively before and after hot- and cold-water exposure and TempTest® (Microcaya TempTest, Bilbao, Spain) contact. Fifty healthy volunteers were enrolled. Hot-water exposure increased TEWL (25.75 vs. 58.58 g·h-1·m-2), pH (6.33 vs. 6.65) and erythema (249.45 vs. 286.34 AU). Cold-water immersion increased TEWL (25.75 vs. 34.96 g·h-1·m-2) and pH (6.33 vs. 6.62). TEWL (7.99 vs. 9.98 g·h-1·m-2) and erythema (209.07 vs. 227.79 AU) increased after being in contact with the hot region (44 °C) of the TempTest. No significant differences were found after contact with the cold region (4 °C) of the TempTest. In conclusion, long and continuous water exposure damages skin barrier function, with hot water being even more harmful. It would be advisable to use cold or lukewarm water for handwashing and avoid hot water. Knowing the proper temperature for hand washing might be animportant measure to prevent flares in patients with previous inflammatory skin diseases on their hands.

M. Kowalska, A. Zbikowska, M. Woźniak, A. Amanowicz, **Quality of Emulsions Based on Modified Watermelon Seed Oil, Stabilized with Orange Fibres**, Molecules 2022, 27, 513

The aim of the study was to evaluate emulsion systems prepared on the basis of blended fat in different ratios (watermelon seed oil and mutton tallow) stabilised by orange fibres and xanthan gum. Emulsions were subjected to stability testing by Turbiscan and were assessed in terms of mean droplet

size, colour, viscosity, texture, skin hydration and sensory properties. The most stable systems were found to be the ones containing a predominance of mutton tallow in a fat phase. For these emulsions the lowest increase in mean particle size during storage was observed. The study also confirmed the synergistic effect of the thickeners used. The presented emulsions despite favourable physicochemical parameters, did not gain acceptance in sensory evaluation.

S.H. Kim, J.H. Kim, S.J. Lee, M.S. Jung, D.H. Jeong, K.H. Lee, **Minimally invasive skin sampling and transcriptome analysis using microneedles for skin type biomarker research,** Skin Research & Technology, January 2022

Background: Minimally invasive skin sampling is used in various fields. In this study, we examined whether it was possible to obtain skin specimens using biocompatible microneedles composed of sodium hyaluronate and performed transcriptome analysis. Materials and methods: Thirty-three subjects with different skin conditions, such as skin aging, skin hydration, skin pigmentation, oily skin and sensitive skin, were recruited. Skin types were evaluated based on age, non-invasive measurement devices, 10% lactic acid stinging test and visual assessment; the skin specimens were sampled from the face using microneedles. Total RNA was extracted, and microarray was performed. Correlations between various biomarkers and skin condition parameters were analysed. Results: Several skin-type biomarkers are correlated with age, non-invasive device measurements, LAST score and visual assessment of acne lesions. Representatively, COL1A1 (Collagen type 1 alpha 1 chain), FN1 (Fibronectin 1) and PINK1 (PTEN-induced putative kinase protein 1) for skin aging, FLG (Filaggrin), KLF4 (Kruppel-like factor 4) and LOR (Loricrin) for skin hydration, GPNMB (Glycoprotein non-metastatic melanoma protein B), MLANA (Melan-A) and TYR (Tyrosinase) for skin pigmentation, IGF1 (insulin-like growth factor-1), MPZL3 (Myelin protein zero like 3) and AQP3 (Aquaporin 3) for oily skin and PGF (placental growth factor), CYR61 (cysteine-rich angiogenic inducer 61), RBP4 (retinol-binding protein 4), TAC1 (Tachykinin precursor 1), CAMP (Cathelicidin antimicrobial peptide), MMP9 (Matrix metallopeptidase 9), MMP3, MMP12 and CCR1 (C-C motif chemokine receptor 1) for sensitive skin. Conclusion: Microneedle skin sampling is a new and minimally invasive option for transcriptome analysis of human skin and can be applied for diagnosis and treatment efficacy evaluation, as well as skin type classification.

S. Wiemann, C.M. Keck, **Are lipid nanoparticles really superior? A holistic proof of concept study**, Drug Delivery and Translational Research (2022) 12: p. 1433–1444

Lipid nanoparticles are a successful carrier system for dermal drug delivery. They possess various beneficial properties, i.e. increased chemical stability for chemically labile compounds, increased dermal penetration of active compounds, or skin carrying properties after dermal application due to the formation of a so-called “invisible patch.” Despite manifold studies showing these properties individually, a study that investigates if one lipid nanoparticle formulation can really combine all the above-mentioned benefits at once is not yet available. In the present study, lipid nanoparticles (NLC) were produced and characterized regarding their physico-chemical properties. The chemical stability of the incorporated active ingredient (AI) was determined, as well as the dermal penetration efficacy of the AI, and the skin carrying properties of the NLC after dermal penetration. The properties of the NLC were compared to classical formulations, i.e., AI dissolved in pure oil, an o/w cream base and a nanoemulsion. All formulations contained similar lipids and emulsifiers, which allowed for a direct comparison of the different properties. NLC were shown to provide most efficient chemical stabilization and most effcient dermal penetration for the AI. The formation of the invisible patch was shown for the NLC but not for the other formulations. Skin hydration and skin carrying properties were also most pronounced for the NLC. Results provide evidence that NLC can combine all beneficial effects that were previously described in one formulation. Thus, providing evidence that NLC are a holistically superior formulation principle when compared to other formulation principles.

A. Ali, L. Skedung, S. Burleigh, E. Lavant, L. Ringstad, C.D. Anderson, M. Wahlgren, J. Engblom, **Relationship between sensorial and physical characteristics of topical creams: *A comparative study on effects of excipients*,** International Journal of Pharmaceutics 613 (2022) 121370

Rising consumer demands for safer, more natural, and sustainable topical products have led to increased interest in fnding alternative excipients, while retaining functionality and cosmetic appeal. Particle-stabilized Pickering creams have emerged as possible alternatives to replace traditional surfactant-stabilized creams and are thus one of the focuses in this study. The aim of this paper was to study relationships between sensorial characteristics andphysical properties to understand how different excipients affect these aspects, comparing one starch particle–stabilized and three surfactant-stabilized formulations. A human panel was used to evaluate sensorial perception, while physical properties were deduced by rheology and tactile friction, together with *in vivo* and *ex vivo* skin hydration measurements.

The results show that sensorial attributes related to the application phase can be predicted with rheology, while afterfeel attributes can be predicted with tactile friction studies. Differences in rheological and sensory properties among surfactant-based creams could mainly be attributed to the type of emollients used, presence of thickeners and surfactant composition. Differences between surfactant-based creams and a Pickering cream were more evident in relation to the afterfeel perception. Presence of starch particles in the residual flm on skin results in high tactile friction and low perception of residual coating, stickiness, greasiness, and slipperiness in sensorial afterfeel.

R. Folster-Holst, C. Naß, S. Dahnhardt-Pfeiffer, S. Freitag-Wolf, **Analysis of the structure and function of the epidermal barrier in patients with ichthyoses—clinical and electron microscopical investigations**, JEADV 2022, 36, p. 726–738

Background: Ichthyoses are pathogenetically characterized by a pronounced disorder of the epidermal barrier. Clinically, hyperkeratosis, severe scaling and erythroderma are present on the entire integument. The time-consuming therapy includes daily baths and the application of skin care products to restore the epidermal barrier. Objectives and methods: To enhance the knowledge about the structure and function of the epidermal barrier in ichthyoses, we conducted clinical, biophysical and electron microscopical measurements on 46 patients with ichthyoses, including autosomal recessive ichthyoses, keratinopathic ichthyoses, X-chromosomal-recessive ichthyosis and Netherton syndrome. Results: The patients displayed a significantly decreased skin hydration along with unexpectedly low transepidermal waterloss values. Electron microscopical examinations demonstrated a severe occlusion of the epidermis by lipid remnants of skin care products in the stratum corneum. We found decreased intercellular lipid lamellae and an increased undulation of the corneocyte membrane of all ichthyoses, mostly pronounced in Netherton syndrome. The lipid profiles of ichthyoses showed decreased esterified Ω-hydroxy-sphingosine (EOS) ceramide levels. Conclusions: The results demonstrate the extent of the epidermal barrier disruption in ichthyoses. In combination with the knowledge about pathogenetic causes, individually improved therapeutic options can be derived from our results. In the future, the analyses of the organization of intercellular lipid lamellae and corneocyte membrane undulation will enable improved investigations of the epidermal barrier in ichthyoses and may be used to study and evaluate possible effects of topical skin preparations.

M. Nagae, T. Nishio, K. Ohnuki, K. Shimizu, **Effects of oral administration of equine placental extract supplement on the facial skin of healthy adult women: A randomized, double-blind, placebo-controlled study**, Health Sci Rep., January 2022;5

Introduction: Placenta extract is used as an ingredient in ointments for treating dermatological diseases, skin dryness, and for skin beautification. However, the clinical effects of the equine placenta on humans and the underlying mechanism of action are unclear. This randomized, controlled, double-blind study aimed to clinically evaluate the effect of oral intake of equine placental extract on human skin quality. Methods: Healthy women volunteers between the ages of 30 and 59 years (n = 29) were randomly assigned to receive 220 mg of equine placental extract–placebo orally, once daily for 4 weeks. Skin quality parameters such as skin hydration, skin barrier function (transepidermal water loss [TEWL]), and melanin index were assessed at baseline and after 4 weeks of administration. Results: The melanin index was significantly increased in the placebo group, whereas it remained unchanged in the equine placenta group. The pattern of melanin index change was significantly different due to intake or no intake of equine placenta supplements over 4 weeks. No significant difference was found in skin hydration and TEWL between the two groups at 4 weeks of postadministration. It was shown that the intake of the equine placenta was more effective in protecting the skin condition against the change of ultraviolet (UV) sensitively than the change in temperature and humidity. Conclusions: Effect of equine placental extract intake was evident on the cheek skin of the equine placenta group where participants were protected from UV-induced pigmentation. Equine placental extract is useful for decreasing melanin synthesis and melanin content in the human skin and can be used as an effective food supplementto maintain human skin quality.

Y. Ahn, M.G. Kim, Y.J. Choi, S.J. Lee, H.J. Suh, K. Jo, **Photoprotective effects of sphingomyelin-containing milk phospholipids in ultraviolet B–irradiated hairless mice by suppressing nuclear factor-κB expression**, J. Dairy Sci. 2022, 105: p. 1929–1939

Ceramide-containing phospholipids improve skin hydration and barrier function and are ideal for use in skin care products. In this study, we evaluated the photoprotective effect of milk phospholipids on the skin condition of UVB-irradiated hairless mice. Skin parameters were assessed following oral administration of milk phospholipids. The UVB irradiation induced photoaging in mice. The animals were divided into 5 groups: a control group (oral administration of saline with no UBV irradiation), UVB group (oral administration of saline with UVB irradiation), and 3 UVB irradiation groups receiving the milk

phospholipids at 3 different concentrations of oral administration, 50 mg/ kg (ML group), 100 mg/kg (MM group), and 150 mg/ kg (MH group), for 8 wk. An increase in skin hydration and transepidermal water loss were improved in the150 mg/kg of milk phospholipid–administered group.Hematoxylin and eosin staining revealed a decrease inepidermal thickness in the milk phospholipid–administered groups (50, 100, and 150 mg/kg of body weight). In particular, the 100 and 150 mg/kg groups showed significant changes in the area, length, and depth of the wrinkles compared with the UVB group. Moreover, the gene expression of matrix metalloproteins was attenuated, and that of proinflammatory cytokines, especially tumor necrosis factor-α, was significantly reduced inthe milk phospholipid–administered groups than inthe UVB group. The reduced ceramide and increased sphingosine-1-phosphate levels in the skin tissue due to UVB exposure were restored to levels similar to those of the control group following milk phospholipid administration. These results were confirmed to be due to the downregulation of protein expression of nuclear factor kappa-B (NF-κB) and phosphorylated IκB-α (inhibitor of κB α). Collectively, oral administration of milk phospholipids improves skin health through a synergistic effect on photoprotective activity.

V. Rasmont, A. Valois, A. Gueniche, G. Sore, D. Kerob, M. Nielsen, E. Berardesca, **Vichy volcanic mineralizing water has unique properties to strengthen the skin barrier and skin defenses against exposome aggressions**, JEADV 2022, 36 (Suppl. 2), p. 5–15

Exposome aggressions are known to weaken certain skin functions, such as skin barrier and skin defense functions. Vichy volcanic mineralizing water (VVMW) percolates through volcanic and magmatic rocks in the Auvergne region in France to create a pure, highly mineralized water containing 15 minerals for a total mineral concentration of 5.2 g/L. Here, we provide an overview of the main results of in vitro and ex vivo studies (keratinocyte cultures, 3D reconstructed skin model, skin explants) and clinical studies to evaluate the effect of VVMW on key skin functions to help elucidate how it counteracts exposome aggressions on the skin. Properties to strengthen the skin barrier: VVMW stimulated the synthesis of tight junction proteins and keratinocyte differentiation markers in vitro. In clinical studies, VVMW accelerated cell turnover and improved skin hydration. Properties to strengthen skin antioxidant defense: VVMW stimulated the expression of antioxidant defense markers and had a higher stimulatory effect than a competitor thermal water on the expression of superoxide dismutase, catalase, and glutathione peroxidase in keratinocytes in vitro. In vivo, VVMW restored endogenous catalase activity after exposure to UVA radiation. Anti-inflammatory action: VVMW reduced substance P-induced inflammation ex vivo and lactic acid-induced stinging in vivo. Topical application of VVMW in subjects with sensitive skin showed soothing and decongestant effects by reducing skin dryness and erythema. After sodium lauryl sulfate -induced skin barrier disruption, recovery from redness and erythema was faster following application of VVMW compared to a competitor water or untreated skin. These studies illustrate that VVMW has unique properties to repair and regenerate the skin barrier, as well as to strengthen antioxidant and immune defenses, which help protect the skin against exposome aggressions.

Y. Huang, J. Sanz, N. Rodríguez, X. Duran, A. Martínez, X. Li, P. Foro, M. Conde, M. Zhao, F. Liu, A. Reig, J. Dengra, I. Membrive, P. Pérez, M. Algara, **Quantitative assessments of late radiation-induced skin and soft tissue toxicity and correlation with RTOG scales and biological equivalent dose in breast cancer**, Clinical and Translational Oncology (2022) 24: p. 836–845

Purpose: Radiation-induced toxicity (RIT) is usually assessed by inspection and palpation. Due to their subjective and unquantitative nature, objective methods are required. This study aimed to determine whether a quantitative tool is able toassess RIT and establish an underlying BED-response relationship in breast cancer. Methods: Patients following seven diferent breast radiation protocols were recruited to this study for RIT assessment with qualitative and quantitative examination. The biologically equivalent dose (BED) was used to directly compare diferent radiation regimens. RIT was subjectively evaluated by physicians using the Radiation Therapy Oncology Group (RTOG) late toxicity scores. Simultaneously an objective multiprobe device was also used to quantitatively assess late RIT in terms of erythema, hyperpigmentation, elasticity and skin hydration. Results: In 194 patients, in terms of the objective measurements, treated breasts showed higher erythema and hyperpigmentation and lower elasticity and hydration than untreated breasts ($p < 0.001$, $p < 0.001$, $p < 0.001$, $p = 0.019$, respectively). As the BED increased, Δerythema and Δpigmentation gradually increased as well ($p = 0.006$ and $p = 0.002$, respectively). Regarding the clinical assessment, the increase in BED resulted in a higher RTOG toxicity grade ($p < 0.001$). Quantitative assessments were consistent with RTOG scores. As the RTOG toxicity grade increased, the erythema and pigmentation values increased, and the elasticity index decreased ($p < 0.001$, $p = 0.016$, $p = 0.005$, respectively). Conclusions: The multiprobe device can be a sensitive and simple tool for research purpose and quantitatively assessing RIT in patients undergoing radiotherapy for breast cancer. Physician-assessed toxicity scores and objective measurements

revealed that the BED was positively associated with the severity of RIT.

I. Diaz, J. Namkoong, J. Qiang Wu, G. Giancola, **Amino acid complex (AAComplex) benefits in cosmetic products: *In vitro* and *in vivo* clinical studies**, J Cosmet Dermatol. 2022;21: p. 3046–3052

Background: Amino acids are major components of skin's natural moisturizing factors and play a role in regulating skin hydration and skin pH. Objective: This research examines a proprietary amino acid complex technology (AAComplex) designed to help reduce skin irritation and repair skin damage. Methods: In- vitro Scratch Assay HaCaT cells are scratched, and the wounds are imaged at different time points until the closure of the scratch wound is detected. In-vitro 3D Reconstructed Human Tissue Evaluation The concentration of heat shock protein 27 (HSP-27) extracted from 3D reconstructed human skin equivalent tissues and IL-1a released to the media was determined using enzyme-linked immunosorbent assays. In Vivo Clinical Study 37 subjects were enrolled in a split-face study design. On test days 1, 2, 4, and 8, subjects visited the test facility to have their face assessed by facial swabbing andbio-instrumentation measurements. Results: In- vitro Scratch Assay The AAComplex demonstrated a strong cell renewal benefit in the HaCaT (human) cells scratch assay. In Vitro 3D Reconstructed Human Tissue Evaluation AAComplex demonstrated a significant skin repair benefit by quantifying Heat Shock Protein, HSP-27. Induced skin irritation was significantly reduced by quantifying interleukin-1 alpha biomarker, IL-1a.In Vivo Clinical Study The test products delivered skin benefits by reducing visual redness and skin irritation while increasing moisturization. Conclusion: The in vitro and in vivo clinical studies demonstrated that the AAComplex technology formulated in the commercially available Skin Recovery System effectively reduced skin irritation and redness as well as accelerating the skin repair process.

Y. Tsunemi, H. Nakahigashi, **Clinical study on the effects of the applied volume of moisturizer in patients with asteatosis**, J Dermatol. 2022;49: p. 75–85.

Asteatosis is characterized by decreased stratum corneum water content, and the basictreatment is to keep the skin moisturized. Poor application of moisturizers by patients may reduce treatment efficiency, so it is important to continue application as instructed by dermatologists. Application instructions based on the finger-tip unit are useful for patients, but there is no clear evidence of its efficacy. We investigated the effects of the volume of the moisturizer (Hirudoid® Cream 0.3%) administrated with 1/3 finger-tip unit and 1 finger-tip unit equivalent doses per target lower leg of patients with asteatosis (twice daily, 28 days) on the overall dry skin scores, itch numerical rating scale scores, and skin physiological parameters (stratum corneum water content, transepidermal water loss, and skin pH). Sixty patients were randomized with a 1:1 allocation ratio into two groups: the 1/3 finger-tip unit and 1 finger-tip unit equivalent dose groups. The results showed that 43.3% of the patients in the 1 finger-tip unit equivalent dose group, compared with 13.3% in the 1/3 finger-tip unit equivalent dose group, presented zero overall dry skin scores 1 week later. As the overall dry skin scores improved, the stratum corneum water content also increased. In patients with moderate itching, the itch numerical rating scale scores of the 1 finger-tip unit equivalent dose group decreased significantly compared with those of the 1/3 finger-tip unit equivalent dose group. The results suggested that the application of 1 finger-tip unit equivalent dose of the moisturizer twice daily in clinical practice could induce remission more quickly. With the 1/3 finger-tip unit equivalent dose, prolonged treatment may be necessary to achieve the desired effect; therefore, application adherence is strictly required. In conclusion, the application of a 1 finger-tip unit equivalent dose would be quite reasonable in clinical practice.

S. Koudounasa, D.L. Badera, D. Voegeli, **An Exploratory Study of the Effects of the pH of Synthetic Urine on Skin Integrity in Healthy Participants**, Skin Pharmacol Physiol 2022;35: p. 166–173

Background: Incontinence-associated dermatitis (IAD) develops from prolonged exposure of skin to urine and/or stool and represents a common complication in older adults, reducing the quality of life. Increased pH is an important etiologic factor of IAD; however, the relationship between urinary pH and skin barrier disruption remains unclear. Objective: The aim of this study is to examine the effects of synthetic urine (s-urine) at various pHs on transepidermal water loss (TEWL), stratum corneum hydration (SCH), and skin surface pH. Methods: S-urine solutions (pH 5.0–9.0) were applied to the volar forearms of 15 healthy participants for 2 h, with another site serving as the untreated control. Measurements of TEWL, SCH, and skin surface pH were obtained at baseline (BL) and after each challenge. Skin buffering capacity was also examined in 5 volunteers by recording skin pH at BL, after 2 h exposure and every 5 min for 40 min. Results: TEWL and SCH were increased following exposure to s-urine compared to BL values. Although there was a tendency for pH to increase after exposure, further investigation showed that changes are only temporal as pH value is restored to BL within 5 mins. There were no significant differences between solutions. Conclusions: This study revealed that urine disrupts healthy skin integrity; however, its effects are not pH dependent. Transient changes were

observed on the acid mantle of the skin due to its innate buffering capacity. Future studies need to examine the effects of urine combined with bacteria responsible for pH elevation in patients with urinary incontinence.

P. Tumsutti, M. Maiprasert, P. Sugkraroek, R. Wanitphakdeedecha, A. Bumrungpert, **Effects of a combination of botanical actives on skin health and antioxidant status in post-menopausal women: A randomized, double-blind, placebo-controlled clinical trial**, J Cosmet Dermatol. 2022;21: p. 2064–2072

Background: Skin aging is one of the most concerning issues during the post-menopausal period. Despite the promising effects of hormonal therapy, there is still concerned about the long-term outcomes from the treatment. Therefore, nutraceuticals that contain estrogenic and antioxidative effects have gained a lot of attention as an alternative therapy for slowing down skin age-related changes in women after menopause. Objective: This study was aimed at evaluating the effects of a combination of nutraceuticals on skin health and antioxidant status in women after menopause. Methods: Post-menopausal women aged 45–60 years old were enrolled and randomly allocated (n = 110) equally to either treatment or placebo group (n = 55 per group). The test product, a nutraceutical containing a blend of Glycine max, Cimicifuga racemosa, Vitex agnus-castus, and Oenothera biennis extracts, was administered over a 12-week period, with dermatological parameters evaluated at baseline, week 6, and week 12 of the study. Additionally, glutathione (GSH) and malondialdehyde (MDA) levels were detected at baseline and week 12 to evaluate the antioxidant status. Results: At week 6, skin roughness was significantly improved in the treatment group (n = 50 completed), while at week 12, a significant improvement and large effect sizes observed in skin elasticity (Cohen's d = 1.56, [SDpooled = 0.10]), roughness (d = 1.53, [0.67]), smoothness (d = −1.33, [34.65]), scaliness (d = −0.80 [0.095]), and wrinkles (d = −1.02 [13.68]) compared to placebo (n = 51 completed). Moreover, GSH was significantly increased (d = 1.54 [32.52]) whereas MDA was significantly decreased (d = −1.66, [0.66]) in the test group, compared to placebo. Blood biochemistry, along with vital signs, did not differ between groups, and no subjects reported any adverse throughout the trial. Conclusion: These data indicate the supplementation with the formulated blend of four herbal extracts is supportive of skin health and antioxidant status in women of menopausal age.

V. Nobile, E. Spartà, V. Zanoletti, F. Sandolo, E. Cestone, **Efficacy Evaluation of a Cosmetic Product for the Periocular Area in Caucasian Women Aged Over 40 Years Old**, Clinical, Cosmetic and Investigational Dermatology 2022:15

Purpose: The present study was aimed at evaluating the efficacy of a cosmetic product in improving the appearance of periocular skin. Patients and Methods: An open-label study on 40 female subjects showing clinical signs of skin aging in the periocular area (including bags under the eye and dark circles) was conducted. At day 0 and day 28 the bags under eye volume, dark circles color, skin texture, skin moisturization, skin elasticity, and skin radiance were measured. The instrumental measurements were integrated by clinical analysis carried out by a board-certified dermatologist and by a self-assessment questionnaire carried out by each subject participating in the study. Results: After 28 days of product use the volume of the bags under the eye was decreased by 6.8% (p = 0.005), the dark circle color red and blue component improved by 7.1% (p = 0.001) and 4.0% (p = 0.001), respectively, wrinkle depth and skin roughness decreased by 15.8% (p = 0.001) and 6.3% (p = 0.011), respectively, skin moisturization increased by 11.7% (p = 0.000), the skin distensibility decreased by 8.9% (p = 0.000), the overall skin elasticity increased by 10.4% (p = 0.000), and the skin radiance increased by 16.3% (p = 0.000). The instrumental measured effects were also confirmed by the clinical analysis of the dermatologist and the selfassessment questionnaire output. Conclusion: Conclusions: our results suggest that the test product is effective for periocular skin aesthetics (reduction of imperfections undermining the periocular area) and wellness.

M. Sulovsky, D. Müller, V. Prinz, N. Moellhoff, M. Cajkovsky, N. Duschek, K. Frank, **A prospective open-label, multicentre study evaluating a non-cross-linked hyaluronic acid based soft-tissue filler in the correction of lateral canthal and perioral lines**, J. Cosmet Dermatol, 2022;21: p. 191-198

Objective: The aim of this investigation was to assess the effectiveness of a non-cross-linked hyaluronic acid based soft-tissue filler in the correction of lateral canthal lines and periorbital lines. Material and methods: A total of 59 female Caucasian patients with a mean age of 52.6 ± 9.0 years were enrolled in this prospective open-label, multicentre study and received intradermal injections of a soft-tissue filler at baseline, after 3 and 6 weeks. Aesthetic improvement and patient satisfaction, skin hydration, skin firmness and skin elasticity, as well as adverse events were assessed at 3, 6, 8, 12 and 16 weeks. Results: At baseline, the lateral canthal skin firmness was 0.206 ± 0.07 mm and increased after 8 weeks to 0.087 ± 0.08 mm with $p < 0.001$, while the perioral skin firmness was 0.205 ± 0.09 mm

and increased after 8 weeks to 0.116 ± 0.08 mm with $p < 0.001$. Increases in skin hydration were observed after 8 weeks in both areas, however, did not reach statistical significance at any point. At week 8, 12 and 16 a majority (93.1%, 91.1% and 73.7% respectively) of the patients stated that they were 'satisfied' or 'very satisfied' with the treatment. Conclusion: Overall, the skin firmness and skin visco-elasticity showed significant increases in the lateral canthal and perioral region. Moreover, albeit not statistically significant, skin hydration increased in both areas after 8 weeks. The procedure has been shown to be safe and satisfactory for the treated patients; however, emergence of oral herpes should be added to the safety profile of intradermally applied hyaluronic acid treatments.

M. Basałygo, J. Śliwińska, M. żbikowska-Gotz, K. Lis, E. Socha, L. Nowowiejska, Z. Bartuzi, B. Zegarska, **Evaluation of the effect of the interleukin-25 serum concentration on the intensity of the symptoms of atopic dermatitis and epidermal barrier**, Advances in Dermatology and Allergology 6, December, 2021

Introduction: Interleukin 25 (IL-25) is a cytokine with proinflammatory and anti-inflammatory effects, and its biological function of reciprocal epidermal hyperplasia and of inhibiting the flaggrin synthesis points to an essential role connecting the inflammatory process with damage to the epidermal barrier in the course of atopic dermatitis (AD). Aim: To assess the IL-25 in serum concentration in AD patients and to analyse its possible correlation with the disease intensity and selected epidermal barrier parameters such as transepidermal water loss (TEWL). Material and methods: The study involved 43 patients with AD and 22 healthy volunteers. The IL-25 concentration was measured using the ELISA method. The intensity of disease symptoms was investigated using W-AZS and EASI indicators. The epidermal barrier was evaluated using a Tewameter TM300 and Corneometer CM825. Results: The concentration of IL-25 in serum was higher in the study group than in the control group. IL-25 serum concentration correlates with W-AZS/EASI in patients with a severe and moderate course of AD. The concentration of IL-25 affects the TEWL within the affected, evaluated skin surface. Conclusions: An elevated IL-25 concentration in serum is characteristic for patients with moderate and severe AD intensity. The IL-25 concentration in serum correlates with TEWL and with the moisture level in the affected area. However, further studies are necessary to determine the role played by IL-25 in the course of the disease and how it affects the functional parameters of the epidermal barrier.

R. Shariff, Y. Du, M. Dutta, S. Kumar, S. Thimmaiah, C. Doraiswamy, A. Kumari, V. Kale, N. Nair, S. Zhang, M. Joshi, U. Santhanam, Q. Qiang, A. Damodaran, **Superior even skin tone and anti-ageing benefit of a combination of 4-hexylresorcinol and niacinamide**, International Journal of Cosmetic Science, December 2021

Objectives: To demonstrate the synergistic effect of 4-hexylresorcinol (4-HR) with niacinamide in boosting anti-melanogenic efficacy in vitro and establish the in vivo efficacy and safety of the combination in a human trial. Methods: Primary human epidermal melanocytes and 3D pigmented skin equivalents were treated with 4-HR, niacinamide, and their combinations for their effect on pigmentation. This was followed by a randomized, double-blind, split-face clinical study in Chinese subjects, and effects on skin tone, hyperpigmentation, fine lines and wrinkles, hydration, and skin firmness were measured for a 12-week study period. Results: In vitro tyrosinase enzyme activity studies showed that 4-HR is one of the most potent tyrosinase inhibitors. The combination of 4-HR and niacinamide showed a synergistic reduction in melanin production in cultured melanocytes and lightened the 3D skin equivalent model. In vitro as well as in the human trial, the combination of 4-HR and niacinamide showed significantly improved efficacy over niacinamide alone on hyperpigmentation spots as measured by L*, the visual appearance of fine lines and wrinkles in crow's feet and perioral area and skin firmness, with no product-related adverse events. Conclusions: A formulation containing a combination of 4-HR and niacinamide delivered superior skin tone and anti-ageing benefits significantly better than niacinamidalone with no adverse events. This study demonstrates that a product designed to affect multiple pathways of melanogenesis, inflammation, and ageing may provide an additional treatment option, beyond hydroquinone and retinoids, for hyperpigmentation and ageing.

K.L. Hon, A.H.Y. Ng, C.C.C. Chan, P.X.Y. Ho, E.P.M. Tsoi, K.Y.C. Tsang, F.W. Ko, T.F. Leung, **Evaluation of bronchial challenge test results for use in assessment of paediatric eczema: a retrospective series**, Hong Kong Medical Journal, 2021

Background: Atopic dermatitis (AD), asthma, and allergic rhinitis are associated diseases involved inthe atopic march. The bronchial challenge test (BCT) is a tool that evaluates airway hyperresponsiveness in patients with asthma. This study aimed to evaluate whether a positive BCT result is useful in assessment of paediatric AD. Methods: This retrospective case series included 284 patients with AD who had BCT results. Clinical information and laboratory parameters were reviewed, including AD severity (using the SCORing Atopic Dermatitis [SCORAD]), skin hydration, and

transepidermal water loss. Results: Of the 284 patients who had BCT, 106 had positive BCT results and 178 had negative BCT results. A positive BCT result was associated with a history of asthma (P<0.0005), sibling with asthma (P=0.048), serum immunoglobulin E (P=0.045), eosinophil count (P=0.017), and sensitisation to food allergens in the skin prick test (P=0.027). There was no association between a positive BCT result and personal allergic rhinitis, parental atopy, sibling allergic rhinitis or AD, skin prick response to dust mites, objective SCORAD score, skin hydration, transepidermal water loss, exposure to smoking, incense burning, cat or dog ownership, or AD treatment aspects (eg, food avoidance and traditional Chinese medicine). Logistic regression showed significant associations of a positive BCT result with a history of asthma (adjusted odds ratio=4.05; 95% confidence interval=1.92-8.55; P<0.0005) and sibling atopy (adjusted odds ratio=2.25; 95% confidence interval=1.03-4.92; P=0.042). Conclusions: In patients with paediatric AD, a positive BCT result was independently and positively associated with personal history of asthma and sibling history of atopy, but not with any other clinical parameters.

U. Ifeanyi, S.G. Danby, R. Lewis, M.J. Carré, R. Maiti, **Effect of seasonal change on the biomechanical and physical properties of the human skin**, Journal of the Mechanical Behavior of Biomedical Materials, 127, 2021

In this study, the effect of one cycle of winter to summer seasonal transition on the mechanical and physical properties of skin was investigated in vivo. Fourteen healthy skin volunteers aged between 22 and 42 years were studied at the volar lower and upper arms. The findings indicate a 22.15% and 34.29% decrease in trans-epidermal water loss (TEWL) and the average epidermal roughness (AER), respectively. Also, improved skin properties were observed such as a 25.48% rise in average epidermal hydration (AEH), 22.59% in skin thickness, 38.64% and 21.92% in melanin and redness, respectively, as well as an 8.25% rise in its firmness and 23.14% in elasticity when strained with axial deformations. An inverse correlation was established between TEWL and AEH with a linear relationship between stratum corneum roughness versus TEWL as well as thickness and hydration. Also, the skin firmness exhibited a direct proportionality with TEWL and an inverse correlation with skin hydration where these relationships were stronger in summer than in winter. Furthermore, time-dependent results demonstrated three-staged elastic, viscoelastic and creep deformations with high, moderate and low strain rates respectively at both anatomical locations. The winter season displayed lower skin firmness and elasticity of 0.37mm and 0.04mm compared to 0.40mm and 0.06mm in summer accordingly. Anatomically, the two arm regionsdisplayed different results with the upper arm having more consistent results than the lower arm. These results will find relevance in sensor skins and exoskeletons in Medicare, robotic and military technologies as well as innovations in cosmetics and dermatology.

V. Kaushik, Y. Ganashalingam, R. Schesny, C. Raab, S. Sengupta, C.M. Keck, **Influence of Massage and Skin Hydration on Dermal Penetration Efficacy of Nile Red from Petroleum Jelly—An Unexpected Outcome**, Pharmaceutics 2021, 13, 2190

The study aimed at comparing the influence of direct and indirect skin hydration as well as massage on the dermal penetration efficacy of active compounds. Nile red was used as a lipophilic drug surrogate and was incorporated into Vaseline (petroleum jelly). The formulation was applied with and without massage onto either dry skin or pre-hydrated, moist skin. It was expected that the occlusive properties of Vaseline in combination with massage and enhanced skin hydration would cause a superposition of penetration-enhancing effects, which should lead to a tremendous increase in the dermal penetration efficacy of the lipophilic drug surrogate. Results obtained were diametral to the expectations, and various reasons were identified for causing the effect observed. Firstly, it was found that Vaseline undergoes syneresis after topical application. The expulsed mineral oil forms a film on top of the skin, and parts of it penetrate into the skin. The lipophilic drug surrogate, which is dissolved in the mineral oil, enters the skin with the mineral oil, i.e., via a solvent drag mechanism. Secondly, it was found that massage squeezes the skin and causes the expulsion of water from deeper layers of the SC. The expulsed water can act as a water barrier that prevents the penetration of lipophilic compounds and promotes the penetration of hydrophilic compounds. Based on the data, it is concluded that dermal penetration is a complex process that cannot only be explained by Fick's law. It is composed of at least three different mechanisms. The first mechanism is the penetration of active ingredients with their solvents into the skin (convection, solvent drag), the second mechanism is the penetration of the active ingredient via passive diffusion, and the third mechanism can involve local penetration phenomena, e.g., the formation of liquid menisci and particle-associated penetration enhancement, which occur upon the evaporation of water and/or other ingredients from the formulation on top of the skin.

E. Klimaszewska, M. Zieba, K. Gregorczyk, L. Markuszewski, **Application of Blue Honeysuckle Powder Obtained by an Innovative Method of Low-Temperature Drying in Skincare Face Masks**,

Molecules 2021, 26, 7184

Traditional technologies applied for obtaining plant raw materials for cosmetic production are based primarily on high-level processing, which is reflected in the qualitative composition of the resulting materials. By using low-temperature drying, it is possible to retain in the raw materials a range of valuable ingredients. In this study, blue honeysuckle powder was used as an ingredient of cosmetic face masks. The stability of the masks was evaluated. Dynamic viscosity, yield point and texture analysis of the cosmetics was performed. The color of the emulsions and the level of skin hydration after face mask application was determined. Emulsions were found to be stable. A decrease in dynamic viscosity of the emulsions as a function of increasing concentrations of the additive and under the conditions of rising rotational speed were observed. Similarly, an increase in the concentration of blue honeysuckle in the emulsions resulted in a decrease in the value of the yield point. Based on the results, it can be stated that the addition of blue honeysuckle caused a decrease in hardness of the masks, while the opposite trend was observed for adhesive force. It was found that an increase in the concentration of blue honeysuckle gave a reddish-yellow color to the samples. Corneometric assessment confirmed proper skin hydration after the application of the emulsions.

L. Moretti Aiello, M. Massufero Vergilio, S. Arandas Monteiro e Silva, T. Anselmo, G. Ricci Leonardi, **Skin effect of facial cleansing combined with an electric sonic device**, J Cosmet Dermatol, 2021 Nov;20(11): p. 3537-3544

Background: New technologies, such as sonic devices, have been developed to optimize the skin cleansing process and improve its efficiency. To evaluate the effectiveness of these cosmetic procedures, skin bioengineering is an objective method to assess the biophysical parameters of the skin. Aims: This study aimed to assess the effect of facial cleansing on the physiological properties of the skin by comparing a cleansing process with cosmetic product applied manually to cleansing with cosmetic product associated with the use of an electric sonic device. Patients/methods: A gentle skin cleanser was applied to the entire face of 12 subjects; the sonic device was used on one half of the face and the manual process was performed on the other half. Instrumental skin analyses included sebumetry, corneometry, transepidermal water loss (TEWL), infrared thermography, and high-frequency ultrasound and were measured before and up to 90 min after cleansing. Results were compared using two-way ANOVA and Friedman tests. Results: Data obtained from the statistical analysis of sebummetry, TEWL, thermography, and ultrasound parameters did not show any significant difference. When assessing the corneometry parameters, a significant reduction in hydration values (17.19%) was observed in the manual cleansing area, while the values remained similar to baseline values in the area where the sonic device was used. Conclusion: The cleansing process with a sonic device did not cause a significant hydration reduction, suggesting better preservation of skin homeostasis when compared to manual cleansing.

V.M. Tadić, A. Žugić, M. Martinović, M. Stanković, S. Maksimović, A. Frank, Nešić, **Enhanced Skin Performance of Emulgel vs. Cream as Systems for Topical Delivery of Herbal Actives (Immortelle Extract and Hemp Oil),** Pharmaceutics 2021, 13, 1919

Immortelle, as rich source of chlorogenic acid and the phloroglucinol alpha-pyrone compound arzanol, possesses anti-inflammatory and antioxidant properties, affects cell regeneration, and has positive effect on many skin conditions. Hemp oil, characterized by a favorable omega-6 to omega-3 ratio, as well as an abundance of essential fatty acids and vitamin E, participates in immunoregulation and also act as an anti-inflammatory. In the present study, we examined the effect on the skin of creams and emulgels with immortelle extract and hemp oil, by comparing them to placebo samples and a non-treated control. A long-term in vivo study of biophysical skin characteristics, which lasted for 30 days, was conducted on 25 healthy human volunteers. Measured parameters were electrical capacitance of the stratum corneum, trans-epidermal water loss (TEWL), and skin pH and erythema index. Further, a sensory study was carried out in which the panelists had to choose descriptive terms for sensory attributes in questionnaire. The results showed that application of all preparations led to increase of skin hydration and TEWL reduction, while the skin was not irritated, and its normal pH was not disrupted. This study also showed importance of the carrier. Not only were emulgels described by panelists as preparations with better sensory properties, there was a significant difference between the skin hydration effect of emulgel with immortelle extract and hempoil compared to the placebo emulgel, which was not the case with creams. Such findings indicated enhanced delivery of herbal active substances from emulgel compared to the cream.

E. Besic Gyenge, S. Hettwer, B. Obermayer, **Minimal Care – Spa-Feeling für Haut und Haare**, SOFW Journal 11/21, 147 Jahrgan,| Thannhausen, 15. November 2021

Skinimalism oder minimal skin care ist ein neuer Trend, der in der Kosmetikwelt Einzug hält.

Zum einen geht es darum, so wenig verschiedene Inhaltsstoffe wie möglich in kosmetische Produkte zu formulieren, zum anderen aber auch darum, mit z.B. nur einem Wirkstoff maximale Schönheitseffekte zu erzeugen. Hier stellen wir zwei Hydration-Produkte vor, die genau das leisten können. Im Skin Care und auch im Hair Care Bereich.

E. Alves, J. Gregório, A. Rolim Baby, P. Rijo, L.M. Rodrigues, C. Rosado, **Homemade Kefir Consumption Improves Skin Condition - A Study Conducted in Healthy and Atopic Volunteers**, Foods, 2021, 10, 2794

Diet has a fundamental role in the homeostasis of bodily functions, including the skin,which, as an essential protective barrier, plays a crucial role in this balance. The skin and intestine appear to share a series of indirect metabolic pathways, in a dual relationship known as the “gut-skin axis”. Hence, the gut-skin axis might be receptive to modulation via dietary modification, where probiotics can be included, thus representing a potential therapeutic target in inflammatory skin diseases, such as atopic dermatitis (AD), in order to control and/or ameliorate symptoms. Kefir is one of the most ancient fermented foods, with probiotic characteristics that have been associated with a wide variety of health-promoting benefits, and it presents a microbiological diversity that makes its application as a probiotic in the gut-skin relationship of the utmost interest. However, the impact of a diet containing kefir on skin health has yet to be reported in scientific literature. This study aimed to assess the impact of the intake of homemade kefir in the skin of healthy and atopic volunteers. The intervention resulted in a boost on barrier function in both skin types verified only in the respective kefir intake groups. An improvement in the degree of severity of AD was alsoconfirmed for the kefir intake group. Atopic individuals may benefit from kefir intake, especially in regard to their skin hydration. Finally, the effects observed on skin barrier function in this study probably culminate from the effects of all the ingredients in kefir, including the complex microbiota, its metabolites and macro- and micronutrients resulting from the fermentation. This work opens the way for more advanced research on the impact of the probiotic kefir on cutaneous health, further clarifying its mechanism of action namely via gut-skin axis.

A. Ziemlewska, Z. Nizioł-Łukaszewska, T. Bujak, M. Zagórska-Dziok, M. Wójciak, I. Sowa, **Effect of fermentation time on the content of bioactive compounds with cosmetic and dermatological properties in Kombucha Yerba Mate extracts**, Scientifc Reports, (2021) 11:18792

Kombucha is a beverage made by fermenting sugared tea using a symbiotic culture of bacteria belonging to the genus *Acetobacter, Gluconobacter*, and the yeasts of the genus *Saccharomyces* along with glucuronic acid, which has health-promoting properties. The paper presents the evaluation of ferments as a potential cosmetic raw material obtained from Yerba Mate after diferent fermentation times with the addition of Kombucha. Fermented and unfermented extracts were compared in terms of chemical composition and biological activity. The antioxidant potential of obtained ferments was analyzed by evaluating the scavenging of external and intracellular free radicals. Cytotoxicity was determined on keratinocyte and fbroblast cell lines, resulting in signifcant increase in cell viability for the ferments. The ferments, especially after 14 and 21 days of fermentation showed strong ability to inhibit (about 40% for F21) the activity of lipoxygenase, collagenase and elastase enzymes and long- lasting hydration after their application on the skin. Moreover, active chemical compounds, including phenolic acids, xanthines and favonoids were identifed by HPLC/ESI–MS. The results showed that both the analyzed Yerba Mate extract and the ferments obtained with Kombucha may be valuable ingredients in cosmetic products.

H.R. Yun, S.W. Ahn, B. Seol, E.A. Vasileva, N.P. Mishchenko, S.A. Fedoreyev, V.A. Stonik, J. Han, K.S. Ko, B.D. Rhee, J.E. Seol, H.K. Kim, **Echinochrome A Treatment Alleviates Atopic Dermatitis-like Skin Lesions in NC/Nga Mice via IL-4 and IL-13 Suppression**, Mar. Drugs 2021, 19, 622

Atopic dermatitis (AD) is a chronic inflammatory skin disease in which skin barrier dysfunction leads to dryness, pruritus, and erythematous lesions. AD is triggered by immune imbalance and oxidative stress. Echinochrome A (Ech A), a natural pigment isolated from sea urchins, exerts antioxidant and beneficial effects in various inflammatory disease models. In the present study, we tested whether Ech A treatment alleviated AD-like skin lesions. We examined the anti-inflammatory effect of Ech A on 2,4-dinitrochlorobenzene (DNCB)-induced AD-like lesions in an NC/Nga mouse model. AD-like skin symptoms were induced by treatment with 1% DNCB for 1 week and 0.4% DNCB for 5 weeks in NC/Nga mice. The results showed that Ech A alleviated AD clinical symptoms, such as edema, erythema, and dryness. Treatment with Ech A induced the recovery of epidermis skin lesions as observed histologically. Tewameter® and Corneometer® measurements indicated that Ech A treatment reduced transepidermal water loss and improved stratum corneum hydration, respectively. Ech A treatment also inhibited inflammatory-response-induced mast cell infiltration in AD-like skin lesions and suppressed the expression of proinflammatory cytokines, such as interferon-γ, interleukin-

4, and interleukin-13. Collectively, these results suggest that Ech A may be beneficial for treating AD owing to its anti-inflammatory effects.

J. Gallinger, A. Kuhn, S. Wessel, P. Behm, S. Heinecke, A. Filbry, L. Hillemann, F. Rippke, **Depth-dependent hydration dynamics in human skin: Vehicle-controlled efficacy assessment of a functional 10% urea plus NMF moisturizer by near-infrared confocal spectroscopic imaging (KOSIM IR) and capacitance method complemented by volunteer perception,** Skin Research & Technology, Volume 27, Issue 6, November 2021

Background: Stratum corneum (SC) hydration is vital for the optimal maintenance and appearance of healthy skin. In this context, we evaluated the efficacy of an NMFenriched moisturizer containing 10% urea on different aspects of SC hydration of dry skin. Material and Methods: In two clinical studies, the hydration efficacy of the moisturizer in comparison to its vehicle was investigated. In the first study, 42 subjects applied the moisturizer and the vehicle to one lower leg each. Thirty minutes and 24 h after this single treatment, SC hydration was measured by corneometry. Volunteers also rated skin moisturization and evaluated product properties. In the second study, 27 subjects each treated one forearm twice daily for 2 weeks with the moisturizer and the vehicle. Then, depth-resolved water-absorption spectra were measured by near-infrared confocal spectroscopic imaging (KOSIM IR). Results: The moisturizer exerted a superior hydrating effect compared to the vehicle. KOSIM IR measurements show that, compared to the vehicle, the moisturizer significantly improved the water gradient in the SC from the surface to a depth of 15 □m. Moreover, the moisturizer received high acceptance ratings from the volunteers and was preferred to the vehicle. Conclusion: The humectants applied in the investigated moisturizer improved SC water content in total and as a function of depth. The combination of depth-resolved data (KOSIM IR) with classical corneometry provides an integrated concept in the measurement of skin hydration, rendering both methods complementary. These findings were in line with the volunteers‘ self-assessments of the moisturizer properties that are relevant to treatment adherence.

M. Kerscher, W. Prager, T.C. Fischer, G.G. Gauglitz, T. Pavicic, U. Kühne, M. Kravtsov, M. Hofmann, H. Dersch, S. Sattler, **Facial Skin Revitalization with Cohesive Polydensifed Matrix-HA20G: Results from a Randomized Multicenter Clinical Study**, Plast Reconstr Surg Glob Open 2021;9

Background: There is a growing interest in the application of hyaluronic acid (HA) derivatives in skin quality improvement. The aim of this study was to confrm safety and effectiveness of cohesive polydensifed matrix-hyaluronic acid + glycerol (CPMHA20G; Belotero Revive) in revitalization of early-onset photodamaged facial skin. Methods: A total of 159 subjects with early signs of facial photodamaged skin were randomized in a 2:1 ratio to multiple- or single-dose treatment with CPMHA20G. Effectiveness assessments included biophysical measurements of skin hydration; elasticity, frmness, and roughness; investigator- and subject-assessed Global Aesthetic Improvement Scales; and FACE-Q Skin Changes and Treatment Satisfaction questionnaires. Results: In both treatment groups, skin hydration improved from baseline to all follow-up visits in subjects with dry or very dry skin. This improvement was signifcant at week 16 after initial treatment in the multiple-dose group ($P = 0.0013$). Investigator- and subject-reported outcomes showed that the majority of subjects across all skin hydration types benefted from treatment, with higher satisfaction rates observed in the multiple-dose group. According to investigator-assessed Global Aesthetic Improvement Scale, 90.7% of subjects at week 12 in the multipledose and 74.6% of subjects at week 4 in the single-dose group were rated as at least “improved.” All related treatment-emergent adverse events were transient, expected injection-site reactions of mild to moderate intensity. Conclusions: Effectiveness of CPM-HA20G for skin hydration in subjects with dry or very dry skin was demonstrated up to 9 months after last injection. Overall, CPMHA20G demonstrated effective and safe use in facial skin revitalization among subjects with early-onset photodamaged skin.

K.M. Hahm, S.-H. Park, S.W. Oh, J.-H. Kim, H.S. Yeom, H.J. Lee, S. Yang, J.Y. Cho, J.O. Park, J. Lee, ***Aspergillus oryzae*-Fermented Wheat Peptone Enhances the Potential of Proliferation and Hydration of Human Keratinocytes through Activation of p44/42 MAPK**, Molecules 2021, 26, 6074

Identifying materials contributing to skin hydration, essential for normal skin homeostasis, has recently gained increased research interest. In this study, we investigated the potential benefits and mechanisms of action of Aspergillus oryzae-fermented wheat peptone (AFWP) on the proliferationand hydration of human skin keratinocytes, through in vitro experiments using HaCaT cell lines. Thefindings revealed that compared to unfermented wheat peptone, AFWP exhibited an improved amino acid composition, significantly ($p < 0.05$) higher DPPH scavenging capability and cell proliferationactivity, and reduced lipopolysaccharide-induced NO production in RAW 264.7 cells. Furthermore,we separated AFWP into eleven fractions, each ≤2 kDa; of these, fraction 4 (AFW4) demonstrated thehighest efficacy

in the cell proliferation assay and was found to be the key component responsible for the cell proliferation potential and antioxidant properties of AFWP. Additionally, AFW4 increased the expression of genes encoding natural moisturizing factors, including filaggrin, transglutaminase-1, and hyaluronic acid synthase 1–3. Furthermore, AFW4 activated p44/42 MAPK, but not JNK andp38 MAPK, whereas PD98059, a p44/42 MAPK inhibitor, attenuated the beneficial effects of AFW4 on the skin, suggesting that the effects of AFW4 are mediated via p44/42 MAPK activation. Finally, in clinical studies, AFW4 treatment resulted in increased skin hydration and reduced trans-epidermal water loss compared with a placebo group. Collectively, these data provide evidence that AFW4 could be used as a potential therapeutic agent to improve skin barrier damage induced by external stresses.

M. Basałygo, J. Śliwińska, M. żbikowska-Gotz, K. Lis, E. Socha, Z. Bartuzi, B. Zegarska, **Assessment of serum concentrations of matrix metalloproteinase 1, matrix metalloproteinase 2 and tissue inhibitors of metalloproteinases 1 in atopic dermatitis in correlation with disease severity and epidermal barrier parameters**, Advances in Dermatology and Allergology 5, October/2021

Introduction: Matrix metalloproteinases (MMPs) are a group of proteolytic enzymes, conditioning the integrity of skin cells, however, their role in the inflammatory process of atopic dermatitis (AD) and the direct effect on the epidermal barrier parameters remain unexplained. Aim: To assess MMP-1, MMP-2, tissue inhibitors of metalloproteinases (TIMP)-1 concentrations in blood serum in the context of transepidermal water loss (TEWL) and stratum corneum hydration in AD. Moreover, serum levels of MMPs and TIMP-1 were analysed in relation to the Eczema Area and Severity Index (EASI). Material and methods: Forty-three AD patients and 22 control group subjects have been investigated. Serum concentrations of MMP-1, MMP-2, and TIMP-1 have been evaluated with ELISA. TEWL and stratum corneum hydration have been assessed with a TM300 Tewameter and a CM825 Corneometer. Skin lesions in patients with AD have been evaluated with the Eczema Area and Severity Index. Results: MMP-1 and MMP-2 serum concentrations were signifcantly higher in the AD group. The results of TIMP-1 serum concentration were similar for both groups. The correlation between the serum concentration and the EASI was demonstrated only for MMP-2 for patients with severe and moderate AD. Patients with AD and TIMP-1 serum concentration greater than MMP-1 presented lower TEWL and higher epidermal hydration. Conclusions: The results of this study warrant further investigation. The predominance of TIMP-1 over MMP-1 in blood serum can potentially limit TEWL and maintain the proper water content of the epidermis. Future work is necessary to establish how reliable the role of MMP-2 concentration is as an indicator of the severity of AD.

S. El Moussaoui, I. Abo-Horan, L. Halbaut, C. Alonso, L. Coderch, M.L. Garduño-Ramírez, B. Clares, J.L. Soriano, A.C. Calpena, F. Fernández-Campos, M. Mallandrich, **Polymeric Nanoparticles and Chitosan Gel Loading Ketorolac Tromethamine to Alleviate Pain Associated with Condyloma Acuminata during the Pre- and Post-Ablation**, Pharmaceutics 2021, 13, 1784

This study describes the preparation and evaluation of two formulations, a hydrogel and a nanostructured system, containing ketorolac tromethamine as an anti-inflammatory agent for the local therapy against the inflammatory process derived from the surgical excision of Condyloma acuminata. Both formulations were physicochemically characterized. In vitro release profiles show that the nanoparticles release 92% ± 2.3 of the total ketorolac tromethamine encapsulated, while the chitosan gel releases 18.6% ± 0.2. The ex vivo permeation and distribution through human skin were also assayed and was observed how the main amount of ketorolac tromethamine is retained in the epidermis. In vivo studies were accomplished to evaluate the anti-inflammatory efficacy in mice which also involved the histological analysis to confirm the in vivo results. The nanoparticles present a significantly higher anti-inflammatory efficacy than chitosan gel. The tolerability of developed formulations was assessed by monitoring the biomechanical properties of the skin before and after application of both formulations. No statistical differences in trans-epidermal water loss and skin hydration with respect to the basal values were observed and the formulations exhibited higher anti-inflammatory activity compared to a reference ketotorlac tromethamine solution. Therefore, it can be concluded that both formulations can be proposed as outstanding candidates for offering a local anti-inflammatory therapeutical tool with potential clinical application.

T. Esposito, T. Mencherini, F. Sansone, G. Auriemma, P. Gazzerro, R.V. Puca, R. Iandoli, R.P. Aquino, **Development, Characterization, and Clinical Investigation of a New Topical Emulsion System Containing a *Castanea sativa* Spiny Burs Active Extract**, Pharmaceutics 2021, 13, 1634

The study focused on the development and characterization of an O/W emulsion for skincare containing *Castanea sativa* spiny burs extract (CSE) as functional agent. The emulsion was stable and had suitable physicochemical and technological properties for dermal applicationand CSE showed no cytotoxicity in spontaneously immortalized keratinocytes (HaCaT) at active concentrations. A single-

blind, placebo-controlled, monocentric study was designed to evaluate the skin tolerability and the skin performance of the CSE-loaded emulsion on healthy human volunteers. An improvement was observed in skin biomechanical properties such as hydration, skin elasticity and a reduction in the periorbital wrinkles in 30 days without altering the skin barrier function, sebum, pH, and erythema values. A significant skin moisturizing effect was detected while the skin barrier function was preserved. The selected natural ingredient combined with the designed formulation and the optimized preparation method has led to a final product that satisfies the physico-chemical and technological requirements underlying the safety of use and the formulative stability over time. With no negative skin reactions and highly significant effects on skin elasticity, wrinkles, and moisturization, the CSE-based emulsion achieved very satisfying outcomes representing a promising functional formulation for skin care.

T.-C.Hsiao X.-F Lin, Y.-Y. Gao, Y.-F. Zhang, F.-W. Pan, C.-C-Chyau, **Beneficial Effects on Skin Health of Narcissus Bulb Polysaccharides**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Numerous works of literature have reported that polysaccharides-basedcosmetics present multifunctional effects in the skin for reducing transepidermal water loss (TEWL) and protecting the skin barrier function. The aim of the study was to investigate the chemical properties of a polysaccharide extracted from Narcissus Bulb (NBP) and to evaluate its effects on skin moisture, as well as anti-allergy and anti-inflammation effects. Results indicated that a yield of 6% (w/w) of polysaccharides was obtained from Narcissus Bulb by using cold water extraction and ethanol precipitation methods. In the monosaccharide of NBP, mannose was the predominant sugar followed by glucose. In the basophils RBL-2H3 cell model tests, NBP concentrations at 100-250 μg/mL showed doseresponsive effects on histamine release and 600-1000 μg/mL NBP could significantly inhibited the release of NO from Raw264.7 cells. These findings demonstrated that the prepared NBP in the study could present potential skin protection effects, including moisture content and TEWL, anti-allergy, and anti-inflammation effects. It could therefore be considered an excellent candidate for polysaccharide-based cosmetics.

M.A. Kim, Y.C. Jung, E. Kim, **Correlation between various skin biophysical properties and erythemal response to ultraviolet radiation**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Ultraviolet (UV) radiation induces acute and long term damages on human skin, such as sunburn, photocarcinogenesis and photoaging. As an indicator of individual skin response to UV radiation, minimal erythema dose (MED) is commonly used. MED is defined as the lowest erythemal effective radiant dose that produces the first perceptible unambiguous erythema with defined borders appearing over more than 50% of exposure subsite, 16 h to 24 h after UV exposure. MED has been known to be affected by various factors including Fitzpatrick skin types, skin color, pigmentation, anatomical body sites, and so on. A number of studies found that individuals with the lower skin type and with the lighter skin color showed the lower MED, indicating the higher sensitivity to UV radiation. However, studies on the relation between skin biophysical properties and erythemal response to UV radiation remain rare. Therefore, the aim of this study was to investigate various skin biophysical properties determining individual skin sensitivity to UV radiation.

H.-L. Jo, J. Han, B.-F. Suh, E. Kim, **Digital aging: Skin Changes by digital device**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Visible light is emitted from natural and artificial sources. As a major natural source, solar radiation contains a large proportion of visible light. Visible light exposure from artificial sources can originate from a variety of instruments, including computers, smartphones, televisions, and light-emitting diodes (LEDs).1 With the rapid technological development of the modern society, skin aging is also connected to digital. In the past, there have been many discussions about extrinsic aging such as sunlight, but recently, aging caused by digital devices such as smartphones has emerged as an issue. Recently, in the UK, it is being pointed out that the selfie craze is the main cause of skin aging, and it is drawing attention. Our previous studies have reported that repeated exposure to blue light energy can cause skin damage including increase of erythema index and melanin index and decrease of skin hydration and transparency.2 However, there is no clinical test report on the visible light source emitted by digital devices. In this study, we have studied that the harmful skin effects on visible light source emitted by digital devices.

T.-C. Hsiao, F.-W. Pan, X.-F. Lin, X.-L. Wang, Y.-Y. Gao, Y. Chen, **Effective Components of the *Prunus Speciosa* Flower Extract on Blue Light Filtration, Whitening and Skin Repair**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

The *Prunus Speciosa Guangzhou, Rosaceae* has shown promising results for skin health. In

2013, the “Guangzhou Cherry Blossom” was named after the city of Guangzhou, China. The single-leafed pink flower is the most weather proof and heat-tolerant of all varieties of Cherry Blossom. Natural active ingredients extracted from Prunus Speciosa Flour (PSFE), such as flavonoids, quercetin, have proved to be the most effective at blue light filtration、 skin whitening and repair. Skin adaptive responses help to increase production from light-induced damage. The PSFE achieves the inhibition of tyrosinase activity and melanin content in vitro experiments. In order to study skin barrier effects, sodium lauryl sulfate (SLS) was used to irritate the skin of 3D models to establish an alternative human patch test. At the same time, a clinicaltrial was conducted using PSFE facial cream twice a day for 28 days. The changes inskin moisture, melanin content and skin elasticity of 20 human subjects were studied.

J. Li, W. Zhang, J. Song. S. Dong Y. Qin, N. Lu, **The best compatibility between formulation type and efficacy: an appropriate formulation type brings better efficacy**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

There are different types of formulation of skin care products, such as toner, serum, lotion, cream and so on. From the technical characteristic of the formula, it can be divided into toner (single water phase), oil in water, water in oil and water in siliconeoil. They have different effects on skin physiological parameters due to their respective technical characteristics. Toner brings instant moisture to the skin. Oil in water system usually brings fresh skin feeling, while water in oil system tends to moisturize the skin.

J.-H. Shin, J.H. Park, H.-K. Lee, **The pattern of skin properties as distinctive facial area**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Chronically and environmentally stimulated skin turns its appearance. The skin mechanical properties are able to be evaluated through measurement devices such as Primos, Antera 3D CS, Corneometer® CM825, Sebumeter® SM815 and Spectrophotometer CM-700d. Primos is a three-dimensional skin-surface measurement device that uses fringe projection to assess skin topography and can visualize skin texture and wrinkle on the skin surface. Antera takes a photograph for skin topography and color-related skin chromophores and is more sensitive for wrinkle measurement.

C. Messaraa, R. Thibault, D. McNamee, S. Hurley, L. Doyle, A. Mansfield, **Exploratory investigation on the characteristics of Mexican Women’s skin**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Mexico population stems from a rich mosaic of various ethnic background and ancestries. In skin research, its population has been captured under several terms, some of them not always adequate. “Hispanics” for instance, rather define people of Spanish descendant. “Latin Americans” applies to persons or communities of Latin American geographic origin, which have a heterogeneous ancestry. “Latino”, a shortened term from Spanish “Latino Americano” is applied for both people living in the U.S. who are of Latin American origin and their U.S.-born descendant.

H. Kim, J. Kim, H. Shin, S. Kim, Y.-M. Kim, S. Park, **Development and Evaluation of a Novel Skin Peeling System Containing Natural Fatty Acid for Skin Aging**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Curently, our skin is losing transparent skin due to severe air pollution and slowing skin regeneration (skin turnover) due to various harmful substances, and due to excessive keratin accumulation. It is aging as it turns into a dull skin that has lost transparent skin as a symbol of healthy skin. Facial skin aging is one of the most prevalent cosmetic concerns to women. The many noticeable manifestations such as wrinkles, sagging, uneven skin tone, and dull and dry skin can significantly impact self-esteem and social relations.

Z. Zhou, Y. Guo, M Guo, Z. Miao, J. Zhang, F. Yang, W. Zhang, Weiyang, X. Li, **Formulating “Clean Beauty” cosmetics with natural origin ingredients**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

The skin, like the other organs, is subject to a complex physiological process of aging. Intrinsic or chronological aging is the consequence of a genetically programmed senescence and of biochemical alterations due to endogenous factors. The aging process is characterized by a slow-down in the regeneration of cells and extracellular matrices, a gradually loss of dermal collagen and elastic fibers resulting in dermal and epidermal atrophy, dryness, a reduction in elasticity and firmness of the skin, the appearance of fine lines and wrinkles hyperpigmentation or hypopigmentation blemishes. Extrinsic aging, on the other hand, is due to environmental attack such as pollution, sun light irradiation (including UV radiation) and diseases.

D. Kang, J. Li, N. Li, J. Shen, N. Lu, **To find the missing link between clinical study CM-SS-568 and sensory test result**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Along with the "Standards for the Evaluation of Cosmetic Efficacy Claims" released by the National Medical Products Administration of China (NMPA) in 2021 (No. 50 in 2021), NMPA requires that the cosmetic efficacy claims should be evaluated by clinical test, or consumer test or other in-vitro test, or by references literature. Regulations and public's criterion have pushed the pursuit of cosmetic efficiency to a new level. Cosmetics as a fast-moving consumer goods, has its own particularity. The efficacy and sensory feeling that meet the needs of consumers are the key to the extension of its life cycle.

Z. Qiao, S. Huang, F. Leng, Y. Bei, Y. Chen, M. Chen, Y. Hu, Y. Huang, Q. Xiang, **Analysis of the Bacterial Flora of Sensitive Facial Skin Among Women in Guangzhou**, Clinical, Cosmetic and Investigational Dermatology 2021:14, p. 655–664

Background: Sensitive skin (SS) is easily irritated by various environmental stimuli, and epidemiological surveys surprisingly fnd that self-perceived SS is widespread worldwide. Objective: To investigate whether SS is linked to changes in the skin bacterial population using 16S rRNA sequencing and bioinformatic analysis. Patients and Methods: According to both the Huaxi SS Questionnaire and Lactic Acid Stimulation Test, 60 female volunteers in Guangzhou were classifed into normal skin (NS) and SS groups. Skin barrier parameters were assessed by the CK skin tester. The DNA of the bacterial flora on the facial skin surface was extracted and was subjected to 16S rRNA sequencing. Results: The skin hydration was signifcantly lower in the SS group compared to the NS group (P =0.032). Based on 16S rRNA sequencing and bioinformatic analysis, the number of operational taxonomic units (OTUs) signifcantly decreased in the SS group (P =0.0235, SS vs NS). The relative abundance of *Neisseriaceae* in SS group decreased significantly (P <0.05, SS vs NS), while that of *Neisseria* (within the *Neisseriaceae* family) increased signifcantly (P <0.05, SS vs NS). Conclusion: SS is accompanied by a decrease in species diversity and richness, which may be relevant to the weakening of the microbial barrier (due to the increase of *Neisseria* or the decrease of *Neisseriaceae*). Thus, corresponding treatment for *Neisseriaceae* may be a new idea in the treatment of SS.

A. Pany, M. Wohlgenannt, S. Klopprogge, M. Wolzt, T. Heuser, H. Kotisch, C. Valenta, V. Klang, **Effect of hydroxypropyl-β-cyclodextrin in fluid and semi-solid submicron emulsions on physiological skin parameters during regular in vivo application**, International Journal of Cosmetic Science, 2021, 43, p. 263–268

Objective: The aim of the present study was to evaluate the effect of hydroxypropyl-β-cyclodextrin (HP-β-CD) in cosmetic submicron emulsions and submicron emulsion gels on physiological skin parameters during regular application in a clinical set-up. Methods: Formulation morphology was investigated using cryotransmission electron microscopy. Stability of the employed formulations was determined by photon correlation spectroscopy, measurement of pH and rheological properties. Effect on physiological skin parameters was evaluated during regular application over four weeks in a parallel group study (n = 15, healthy forearm skin) with a Corneometer, Sebumeter, skin-pH-Meter, Aquaflux and an Epsilon sensor. Confocal Raman spectroscopy was employed to monitor urea and NMF levels. Results: Both submicron emulsions and gels showed satisfying storage stability irrespective of cyclodextrin incorporation. No statistically significant effects on skin barrier function and any of the observed parameters were obtained, indicating good skin tolerability of all tested formulations. Conclusion: Results suggest good skin tolerability of the developed cosmetic submicron emulsions and gels with HP-β-CD.

M. Randhawa, T. Meyer, M. Sachde, R.K. Chaudhuri, **Standardized *Terminalia chebula* Fruit Extract: A Natural Ingredient That Provides Long-Lasting Antioxidant Protection and Reverses Visible Signs of Pollution-Induced Skin Damage**, Clinical, Cosmetic and Investigational Dermatology 2021:14, p. 1257–1269

Background: Identifcation of long-lasting natural antioxidants to protect against and repair skin damage induced by exposure to environmental pollution is in high demand. Objective: To investigate a standardized *Terminalia chebula* (TC) fruit extract for its longlasting antioxidant and anti-inflammatory properties and its ability to reverse the visible signs of pollution-induced skin damage in an 8-week clinical study. Material and Methods: Chemical and cell-based in vitro studies were performed to characterize long-lasting antioxidant and anti-inflammatory properties; a clinical study with subjects with normal to dry skin living in a high-pollution city for the previous 5 years was conducted to assess if a formulation containing 1% standardized TC fruit extract affected signifcant improvements in skin's visible condition and appearance compared with its placebo. Results: The standardized TC fruit extract provided longer-lasting and more efficient neutralization of reactive oxygen species (ROS) than

tocopherol; treatment of keratinocytes with the fruit extract prior to being stressed with urban dust safeguarded against increases in intracellular ROS, inhibited release of inflammatory cytokines IL-6 and IL-8 and protectedmembrane lipids against peroxidation. A clinical study yielded statistically signifcant improvements in dermatologist scores and subject self-assessments for skin texture, hydration, tone, frmness and radiance as compared to its placebo. Conclusion: These studies validate the use of this standardized TC fruit extract not only as a restorative to diminish visible signs of existing damage but also as a preventative to help defend skin against damages caused by chronic exposure to environmental pollution.

Y. Pan, X. Ma, Y. Song, J. Zhao, S. Yan, **Questionnaire and Lactic Acid Sting Test Play Different Role on the Assessment of Sensitive Skin: A Cross-sectional Study**, Clinical, Cosmetic and Investigational Dermatology 2021:14, p. 1215–1225

Background: Questionnaires and lactic acid sting test (LAST) are two widely used methods to identify sensitive skin. However, the self-perceived sensitive skin by questionnaires was not consistent with the determination of LAST. Objective: The aim of the study was to measure the biophysical properties noninvasively of sensitive skin evaluated by questionnaire and LAST and to investigate their correlations with the scores of questionnaire and LAST. Methods: A total of 209 healthy Chinese females completed the study. Self-assessment questionnaire and LAST were both performed to identify sensitive skin. Epidermal biophysical properties, including skin hydration, transepidermal water loss (TEWL), sebum content, erythema index (EI), a* value, L* value, skin elasticity, and skin pH, were measured with noninvasive instruments. Results: The frequency of sensitive skin was 50.2% and 66.0% by questionnaire and LAST, respectively. Subjects with self-assessed sensitive skin had a slightly higher LAST positive rate. Skin hydration, sebum content, a* and EI values were signifcantly higher in the selfassessed sensitive skin group, while TEWL, a* and EI values increased but L* value decreased with signifcance in the LAST positive group. The LAST stingers among sensitive skin subjects had higher EI but not in the healthy skin subjects. In addition, questionnaire scores positively correlated with skin hydration, sebum content, a* and EI values, while a positive relationship of LAST scores with TEWL, a* and EI values was observed. The scores of questionnaire and LAST both negatively related to L* value. Conclusion: Self-assessed questionnaire is associated with sensitive skin featured by oily and red face without impaired barrier function, whereas LAST is suitable to identify fragile skin barrier and enhanced blood flow on the face. Combination of both methods to diagnose sensitive skin might be more reliable.

A. Barrionuevo-Gonzalez, S. Trapp, R. de Salvo, M. Reitmann, E. Cassar, S. Rharbaoui, F. Reber, H. Stettler, **Three New Dexpanthenol-Containing Face Creams: Performance and Acceptability after Single and Repeated Applications in Subjects of Different Ethnicity with Dry and Sensitive Skin,** Cosmetics 2021, 8, 93

Three novel face creams containing dexpanthenol with different lipid contents were developed for dry skin sufferers: a day face cream (DFC), a day face cream with sun protection (DFC-SPF), and a night face cream (NFC). Three identically designed studies (N = 42–44 each) were conducted with healthy adults of three ethnicities (African, Asian, Caucasian) with dry/sensitive skin. Effects on stratum corneum (SC) hydration, SC lipid content, and skin elasticity were quantified by established noninvasive methods during the 4-week studies. After single and repeated oncedaily applications of the face creams, facial hydration significantly increased from baseline. On day 28, the mean increments in skin hydration amounted to 27%, 26%, and 27% ($p < 0.0001$ each) for DFC, DFC-SPF, and NFC, respectively. Favorable effects of DFC, DFC-SPF, and NFC on facial moisturization were observed in all three ethnic groups. The enhancements in SC hydration were not paralleled by improvements in skin elasticity parameters but lipid analyses showed significant increases in SC cholesterol, SC free fatty acid, and/or SC ceramide levels. All three face creams were well tolerated and achieved a high product satisfaction and acceptability by study participants. Our findings support the once-daily use of the face creams in adults of different ethnicities with dry and sensitive skin.

Y.I. Lee, S.G. Lee, J. Kim, S. Choi, I. Jung, J.H. Lee, **Proteoglycan Combined with Hyaluronic Acid and Hydrolyzed Collagen Restores the Skin Barrier in Mild Atopic Dermatitis and Dry, Eczema-Prone Skin: A Pilot Study**, Int. J. Mol. Sci. 2021, 22, 10189

Dry and eczema-prone skin conditions such as atopic dermatitis and xerotic eczema primarily indicate an impaired skin barrier function, which leads to chronic pruritus. Here, we investigated the effects of a novel emollient containing H.ECMTM liposome, which contains a soluble proteoglycan in combination with hydrolyzed collagen and hyaluronic acid. A prospective, singlearm study was conducted on 25 participants with mild atopic dermatitis or dry skin to assess the hydration and anti-inflammatory effect of the novel emollient applied daily over four weeks. All efficacy parameters, including itching severity, transepidermal water loss, and skin hydration, improved significantly after four

weeks. The in vitro and ex vivo studies confirmed the restoration of the skin's barrier function. The study revealed the clinical and laboratory efficacy of H.ECMTM liposome in reducing itching and improving the skin's barrier integrity. Thus, the use of H.ECMTM liposome can be considered a therapeutic option for dry and eczema-prone skin.

H. Rajaiah Yogesh, T. Gajjar, N. Patel, R. Kumawat, **Clinical study to assess efficacy and safety of Purifying Neem Face Wash in prevention and reduction of acne in healthy adults**, J Cosmet Dermatol.. 2021 Sep 30

Background: Acne vulgaris is a chronic, inflammatory skin condition of pilosebaceous units. The standard treatment involves topical and oral antibiotics, retinoids, benzoyl peroxide, and other synthetic compounds, mostly associated with adverse effects. Hence, herbal skincare products are considered nowadays. Aim: To evaluate the safety and efficacy of Purifying Neem Face Wash (PNFW), an herbal skincare product in the prevention and/or reduction of mild-to-moderate acne. Methods: An open-label, single-center, single-arm, four-week clinical study was conducted with subjects having either mild-to-moderate acne or oily skin and non-existent acne. The performance of PNFW in the reduction and/or prevention of acne was detected by counting cutaneous inflammatory and non-inflammatory acne lesions in each of the four visits. Sebum level and skin hydration of both cheeks were measured via sebumeter and corneometer, respectively. Self-assessment questionnaires were used to assess the subjects' responses toward PNFW. Results: Out of 120 study subjects, 79% and 72% showed either reduction or no new appearance of inflammatory and non-inflammatory acne lesions, respectively, from baseline to Visits 3 and 4. Skin sebum level and skin hydration showed a statistically significant decrease ($p < 0.001$) and increase ($p < 0.001$), respectively, in Visits 3 and 4. Self-assessment surveys showed the satisfaction of the subjects about the product in terms of condition improvement, ease in use, and fragrance. Conclusion: The present study indicated the beneficial effect of the herbal ingredients (neem and turmeric) of Himalaya's PNFW in the prevention and reduction of mild-to-moderate acne with no side effects.

S.-J. Lee, S.-E. Kim, K.-O. Shin, K. Park, S.E. Lee, **Dupilumab Therapy Improves Stratum Corneum Hydration and Skin Dysbiosis in Patients with Atopic Dermatitis**, Allergy Asthma Immunol Res. 2021 Sep;13(5):p. 762-775

Purpose: We aimed to investigate the effects of dupilumab on 1) the permeability and antimicrobial barrier, 2) the composition of the skin microbiome, and 3) the correlation between changes in skin barrier properties and microbiota in atopic dermatitis (AD) patients. Methods: Ten patients with severe AD were treated with dupilumab for 12 weeks. Disease severity was assessed using the Eczema Area and Severity Index (EASI). Skin barrier function was evaluated by measuring transepidermal water loss, stratum corneum (SC) hydration, and pH. The following parameters were analyzed in the pre- and post-treatment SC samples; 1) skin microbiota using 16S rRNA gene sequencing, 2) lipid composition using mass spectrometry, and 3) human β-defensin 2 (hBD-2) expression using quantitative reverse transcription polymerase chain reaction. Results: SC hydration levels in the lesional and non-lesional skin increased afer 12-week dupilumab therapy (24.2%, $P < 0.001$ and 59.9%, $P < 0.001$, respectively, vs. baseline) and correlated with EASI improvement ($r = 0.90$, $P < 0.001$ and $r = 0.85$, $P = 0.003$, respectively). Dupilumab increased the long-chain ceramide levels in atopic skin (118.4%, $P = 0.028$ vs. baseline) that correlated with changes in SC hydration ($r = 0.81$, $P = 0.007$) and reduced the elevated hBD-2 messenger RNA levels (-15.4%, $P = 0.005$ vs. baseline) in the lesional skin. Dupilumab decreased the abundance *of Staphylococcus aureus.* In contrast, the microbial diversity and the abundance of *Cutibacterium* and *Corynebacterium species* increased, which were correlated with an increase in SC hydration levels (Shannon diversity, $r = 0.71$, $P = 0.027$; *Cutibacterium*, $r = 0.73$, $P = 0.017$; *Corynebacterium*, $r = 0.75$, $P = 0.012$). Increased abundance of *Cutibacterium species* was also correlated with EASI improvement ($r = 0.68$, $P = 0.032$). Conclusions: Th2 blockade-induced normalization of skin microbiome in AD patients is associated with increased SC hydration.

Y. Endo, H. Yoshida, Y. Akazawa, K. Yamazaki, Y. Ota, T. Sayo, Y. Takahashi, **Antiwrinkle efficacy of 1-ethyl-*β*-*N*-acetylglucosaminide, an inducer of epidermal hyaluronan production**, Skin Research and Technology, Volume 27, Issue 5, September 2021

Background: Hyaluronan (HA) has a unique hydration capacity that contributes to firmness and bounciness of the skin. Epidermal HA declines with skin aging, which may lead to clinical signs of aging including skin wrinkles and loss of hydration and elasticity. Recently, we developed a new cosmetic agent 1-ethyl-*β*-*N*-acetylglucosaminide (*β*-NAG2), which enhances HA production in cultured human keratinocytes. The aim of this study was to explore antiaging potential of *β*-NAG2 in reconstructed human epidermal models and human clinical trial. Materials and methods: The amount of HA in *β*-NAG2-treated epidermal models by topical application was analyzed by enzyme-linked immunosorbent assay

(ELISA)-like assay. A randomized, double-blind and placebo-controlled study was conducted in Japanese females (n = 33) by topically treating each side of the face with a lotion formulated with *β*-NAG2 or placebo for 8 weeks. Results: Topically applied *β*-NAG2 dose dependently increased HA production in epidermal models. Treatment with *β*-NAG2-formulated lotion significantly improved skin hydration and elasticity and reduced skin wrinkling in crow's foot areas when compared to the placebo formulation. Conclusion: Topically applied *β*-NAG2 promoted epidermal HA production in vitro and showed antiwrinkle activity in vivo accompanying the improvement in skin hydration and elasticity. Our study provides a novel strategy for antiwrinkle care through *β*-NAG2-induced epidermal HA production.

S.-R. Park, J. Han, Y. Min, Y. Na, Y. Kang, E. Kim, B.-F. Suh, **Long-term effects of face masks on skin characteristics during the COVID-19 pandemic**, Skin Research and Technology, Volume 27, Issue 5, September 2021

Background: Nowadays, face masks are a crucial part of our daily life. Previous studies on their impact on the skin usually focused on the adverse effects of face masks. Few studies have assessed their influence on skin characteristics. In a previous study, we identified the short-term effects of wearing face masks. Herein, we describe the longterm skin effects of face masks, for a period of 6 months. Materials and methods: Healthy volunteers (19 men and women), who wore face masks, participated in the study from June 2020 to December 2020. In all participants, skin characteristics such as trans-epidermal water loss (TEWL), skin hydration, skin elasticity, skin pore area, skin keratin amount, skin temperature, skin redness, skin temperature, skin redness, and skin color were measured three times. Results: TEWL, skin hydration, skin elasticity, skin pore area, skin keratin amount, and skin color changed significantly after 6 months. TEWL, skin hydration, skin pore area, skin keratin amount, and skin color were significantly different between the maskwearing and non-mask-wearing areas. Conclusion: Long-term daily use of face masks can alter skin characteristics. Specialcare should be focused on the mask-wearing regions.

K. Hayashi, I. Mori, K. Takeda, Y. Okada, A. Hayase, T. Mori, Y. Nishioka, K. Manabe, **Analysis of hand environment factors contributing to the hand surface infection barrier imparted by lactic acid**, Skin Research and Technology, Volume 27, Issue 5, September 2021

Background: Organic acids on the surface of human hands contribute to the barrier against transient pathogens. This is the first study to explore the synergistic contribution of lactic acid and other hand environment-related features on the antibacterial properties of the hand surface. Materials and Methods: We estimated the contribution of fingerprint depth, skin pH, stratum corneum water content, skin temperature, and sweat rate of the hands to the infection barrier using an observational survey of 105 subjects. The relationship between each factor and the antibacterial activity of the hands was analyzed using Pearson's correlation coefficient. We performed molecular dynamics simulations to study the interaction between lactic acid and bacterial membranes. Results: The amount of lactic acid on the hands and skin temperature contributed positively to the antimicrobial activity (r = 0.437 and P = 3.18 × 10-6, r = 0.500 and P = 5.66 × 10-8, respectively), while the skin pH contributed negatively (r = -0.471, P = 3.99 × 10-7). The predicted value of the combined antimicrobial effect of these parameters was [antimicrobial activity] = 0.21 × [lactic acid] - 0.25 × [skin pH] + 0.26 × [skin temperature] + 0.98. The coefficient of determination (R2) was 0.50. Conclusion: The increase in the amount of non-ionic lactic acid due to lower pH and improvement in the fluidity of the cell membrane due to higher temperatures enable the efficient transport of lactic acid into cells and subsequent antimicrobial activity. The proposed mechanism could help to develop an effective hand infection barrier technology.

I. Konya, H. Iwata, M. Hayashi, T. Akita, Y. Homma, H. Yoshida, R. Yano, **Reliability and validity of the Japanese version of the overall dry skin score in older patients**, Skin Research and Technology, Volume 27, Issue 5, September 2021

Background: Dry skin is the most common skin problem, especially in the elderly. However, there is no effective instrument to assess dry skin in Japan. This study aimed to evaluate the reliability and validity of the Japanese version of the overall dry skin score (ODS-J), the gold standard for dry skin assessment. Materials and methods: A cross-sectional study was conducted on 47 patients aged > 65 years. Images of skin on their limbs were captured using a digital camera; both upper and lower limbs were assessed (n = 4/patient). One dermatologist; two wound, ostomy, and continence nurses; and three nursing researchers independently evaluated the images using the ODS-J to assess the intraclass correlation coefficient (ICC) for inter-rater reliability. Stratum corneum hydration (SCH) and transepidermal water loss (TEWL) were the external criteria used to verify concurrent and knowngroups validity. Results: In total, 182 sites at which the SCH and TEWL could be measured were evaluated for the ODS-J. The ICC for inter-rater reliability of the six raters was 0.939 (p < 0.001). A higher ODS-J was

associated with lower SCH (ρ = -0.374; $p < 0.001$) and lower TEWL (ρ = -0.287; $p < 0.001$) values. The ODS-J for the lower legs was significantly higher than that of the forearms ($p < 0.001$). Conclusions: The ODS-J showed good inter-rater reliability, concurrent validity, and known-groups validity. It can be used by clinical nurses in Japan to observe patients' skin and is an effective indicator for the evaluation of skin care.

P. Chaikul, M. Kanlayavattanakul, J. Somkumnerd, N. Lourith, ***Phyllanthus emblica* L. (amla) branch: A safe and effective ingredient against skin aging**, J Tradit Complement Med. 2021 Sep; 11(5): p. 390–399

Background and aim: Skin aging influences the changes in skin, including skin dryness, wrinkle, and irregular pigmentation. Amla (*Phyllanthus emblica* L.) branch has shown several benefits, but not the anti-skin aging. The study aimed to evaluate the anti-skin aging efficacy of amla branch. Experimental procedure: Amla branches were standardized the phenolic acids. The extract was investigated anti-skin aging activities, including antioxidant, anti-tyrosinase, anti-melanogenesis, and matrix metalloproteinase-2 inhibitory assays. Topical gel containing extract was prepared and evaluated the skin irritation by a single closed patch test. Randomized, double-blind, placebo-control study was performed in 20 volunteers for 84 consecutive days. The tested skin was evaluated by Chromameter® CR 400, Dermalab® USB, Mexameter® MX 18, Corneometer® CM 825, and Visioscan® VC 98. Results: Amla branch extract, a dark brown powder, consisted a variety of phenolic acids, mainly sinapic and ferulic acids. The extract exhibited the potent antioxidant and tyrosinase inhibitory activities *in vitro* assays and the melanin suppression through inhibition of tyrosinase and tyrosinase-related protein-2 activities, the strong antioxidant, and the potent matrix metalloproteinase-2 in cellular assays at 0.1 mg/mL. Topical gel containing 0.1% extract was a stable and safe formulation. Clinical study was proved the superior anti-skin aging efficacy, including the lightening skin color, the enhanced skin elasticity and hydration, and the skin wrinkle reduction. Conclusion: The study results suggested that amla branch is a rich source of bioactive compounds and can be a potential ingredient for utilization in anti-skin aging products.

N. Kaul, **Clinical testing for a booming men's sector,** PERSONAL CARE Magazine, September 2021, p. 25-28

The male grooming industry is growing at a rapid pace. Entire aisles of drug stores are dedicated to men's grooming products. Product demand in the skin care, hair care, and fragrance industries has grown dramatically and is expected to keep pace in the coming years. Whether this growth stems from celebrity advertising or social media influence, one thing is clear: men have come a long way from the days of merely using a soap bar as face and body wash. The modern man stands ready and willing to invest in skin and hair products that maintain their health and youth. Globe News Wire reports the men's grooming market worldwide will reach $183.2 Billion by 2027, with the U.S. market alone estimated at $38 Billion, and China Forecast to grow at 6.9%.1 As men continue to open their wallets for new and improved grooming products, brands catering to this market are stepping up to meet those needs by expanding offerings to include anti-ageing, SPF and antiacne products. Customisation of products is proving equally important, such as specialized regimens for every combination of skin and hair.

T. Montero-Vilchez, A. Martinez-Lopez, A. Sierra-Sanchez, M. Soler-Gongora, E. Jimenez-Mejias, A. Molina-Leyva, A. Buendia-Eisman, S. Arias-Santiago, **Erythema Increase Predicts Psoriasis Improvement after Phototherapy**, J. Clin. Med. 2021, 10, 3897

Psoriasis is a major global health problem. There is a need to develop techniques to help physicians select the most appropriate cost-effective therapy for each patient. The main objectives of this study are (1) to evaluate changes in epidermal barrier function and skin homeostasis after phototherapy and (2) to explore potentially predictive values in epidermal barrier function and skin homeostasis to assess clinical improvement after fifteen sessions of phototherapy. A total of 76 subjects, 38 patients with plaque-type psoriasis and 38 gender- and age-matched healthy volunteers, were included in the study. Erythema, transepidermal water loss (TEWL), temperature, stratum corneum hydration (SCH), pH, sebum, and antioxidant capacity were measured before and after the first and fifteenth phototherapy session. Erythema (401.09 vs. 291.12 vs. 284.52 AU, $p < 0.001$) and TEWL (18.23 vs. 11.44 vs. 11.41 g·m-2·h-1, $p < 0.001$) were significantly higher at psoriatic plaques than in uninvolved psoriatic skin and healthy volunteers, respectively, while SCH was lower (9.71 vs. 44.64 vs. 40.00 AU, $p < 0.001$). After fifteen phototherapy sessions, TEWL (–5.19 g·m-2·h-1, $p = 0.016$) decreased while SCH (+7.01 AU, $p = 0.013$) and erythema (+30.82 AU, $p = 0.083$) increased at psoriatic plaques. An erythema increase exceeding 53.23 AU after the first phototherapy session, with a sensitivity of 71.4% and specificity of 84.2%, indicates that a patient may improve Psoriasis Area and Severity Index (PASI) by ≥3 points after fifteen phototherapy sessions. In conclusion, phototherapy improves epidermal

barrier function in psoriatic patients and the erythemaincrease after one phototherapy session could help doctors select psoriasis patients who are more likely to respond to phototherapy.

J.L. Santiago, J.R. Muñoz-Rodriguez, M.A. de la Cruz-Morcillo, C. Villar-Rodriguez, L. Gonzalez-Lopez, C. Aguado , M. Nuncia-Cantarero, F.J. Redondo-Calvo, J.M. Perez-Ortiz, E.M. Galan-Moya, **Characterization of Permeability Barrier Dysfunction in a Murine Model of Cutaneous Field Cancerization Following Chronic UV-B Irradiation: Implications for the Pathogenesis of Skin Cancer**, Cancers 2021, 13, 3935

Chronic ultraviolet B (UV-B) irradiation is known to be one of the most important hazards acting on the skin and poses a risk of developing photoaging, skin with cutaneous field cancerization (CFC), actinic keratosis (AKs), and squamous cell carcinomas (SCCs). Most of the UV-B light is absorbed in the epidermis, affecting the outermost cell layers, the stratum corneum, and the stratum granulosum, which protects against this radiation and tries to maintain the permeability barrier. In the present work, we show an impairment in the transepidermal water loss, stratum corneum hydration, and surface pH after chronic UV-B light exposure in an immunologically intact mouse model (SKH1 aged mice) of skin with CFC. Macroscopic lesions of AKs and SCCs may develop synchronically or over time on the same cutaneous surface due to both the presence of subclinical AKs and in situ SCC, but also the accumulation of different mutations in keratinocytes. Focusing on skin with CFC, yet without the pathological criteria of AKs or SCC, the presence of p53 immunopositive patches (PIPs) within the epidermis is associated with these UV-B-induced mutations. Reactive epidermis to chronic UV-B exposure correlated with a marked hyperkeratotic hyperplasia, hypergranulosis, and induction of keratinocyte hyperproliferation, while expressing an upregulation of filaggrin, loricrin, and involucrin immunostaining. However, incidental AKs and in situ SCC might show neither hypergranulosis nor upregulation of differentiation markers in the upper epidermis. Despite the overexpression of filaggrin, loricrin, involucrin, lipid enzymes, and ATP-binding cassette subfamily A member 12 (ABCA12) after chronic UV-B irradiation, the permeability barrier, stratum corneum hydration, and surface pH were severely compromised in the skin with CFC. We interpret these results as an attempt to restore the permeability barrier homeostasis by the reactive epidermis, which fails due to ultrastructural losses in stratum corneum integrity, higher pH on skin surface, abundant mast cells in the dermis, and the common presence of incidental AKs and in situ SCC. As far as we know, this is the first time that the permeability barrier has been studied in the skin with CFC in a murine model of SCC induced after chronic UV-B irradiation at high doses. The impairment in the permeability barrier and the consequent keratinocyte hyperproliferation in the skin of CFC mightplay a role in the physiopathology of AKs and SCCs.

H.G Azaryan, K.M. Khachikyan, A. Taha, E. Badawy, **Comparative analysis of effects induced by hyaluronic acid and its combined formula on skin functional parameters in second-degree photoaging**, J Cosmet Dermatol, 2021 Aug;20(8): p. 2542-2551

Background and aims: The study aimed to compare the effectiveness of intradermal injections of modified hyaluronic acid (mHA) and combined injections of platelet-rich plasma (PRP) and mHA (HA-PRP) on clinical and functional parameters in women with second-degree photoaging. Methods: Seventy-six healthy female participants diagnosed with second degree of skin photoaging were involved in two interventional study groups. The first group was treated with "bio-reparative" method (mHA) and the second group with "combined HA-PRP therapy". Additionally, 20 practically healthy women, with the first degree of photoaging according to Glogau classification, constituted the control group. Parameters of facial skin were evaluated in all groups before and after the injections. The patients in both interventional groups were compared based on skin therapy outcomes, using corneometry, sebumetry, cutometry, transepidermal water loss (TEWL), and skin pH assessments. A post-interventional analysis was conducted to evaluate the level of satisfaction in physicians and study participants in accordance with GAIS. Intragroup and between-group analysis for the selected parameters was performed. Results: Compared with the control group, the combined therapy group did not show significant difference in parameters ($p > 0.05$) and the scores were significantly improved compared to mHA group ($p < 0.001$). Control and HA-PRP-treated groups were different only in sebumetry scores (SigDev = 2.1%). Significant difference was observed in the GAIS scores for patients between the interventional groups ($p = 4.03297E-11$ and 3.4093E-09, respectively). Conclusion: Implementation of combined therapy is significantly effective compared to the mHA therapy alone. The higher efficacy is derived from significant recovery of functional parameters and GAIS survey results.

P. Chaturvedi, P.R. Worsley, G. Zanelli, W. Kroon, D.L. Bader, **Quantifying skin sensitivity caused by mechanical insults: A review,** Skin Research & Technology, August 2021

Background: Skin sensitivity (SS) is a commonly occurring response to a range of stimuli,

including environmental conditions (e.g., sun exposure), chemical irritants (e.g., soaps and cosmetics), and mechanical forces (e.g., while shaving). From both industry and academia, many efforts have been taken to quantify the characteristics of SS in a standardised manner, but the study is hindered by the lack of an objective definition. Methods: A review of the scientific literature regarding different parameters attributed to the loss of skin integrity and linked with exhibition of SS was conducted. Articles included were screened for mechanical stimulation of the skin, with objective quantification of tissue responses using biophysical or imaging techniques. Additionally, studies where cohorts of SS and non-SS individuals were reported have been critiqued. Results: The findings identified that the structure and function of the stratum corneum and its effective barrier properties are closely associated with SS. Thus, an array of skin tissue responses has been selected for characterization of SS due to mechanical stimuli, including: transepidermal water loss, hydration, redness, temperature, and sebum index. Additionally, certain imaging tools allow quantification of the superficial skin layers, providing structural characteristics underlying SS. Conclusion: This review proposes a multimodal approach for identification of SS, providing a means to characterise skin tissue responses objectively. Optical coherence tomography (OCT) has been suggested as a suitable tool for dermatological research with clinical applications. Such an approach would enhance the knowledge underlying the multifactorial nature of SS and aid the development of personalised solutions in medical and consumer devices.

M. Tasic-Kostov, M. Martinović, D. Ilic, M. Cvetkovic, **Cotton versus medical face mask influence on skin characteristics during COVID-19 pandemic: A short-term study,** Skin Research & Technology, August 2021

Background: In the still ongoing COVID-19 pandemic, one of the main prevention strategy remain to be the use of protective face masks. Changes in skin characteristics and dermatological problems related to wearing different types of masks have been observed. The aim of this study was to compare the short-term effects of cotton versus medical masks on skin biophysical parameters in general population. Materials and methods: Twenty-eight human volunteers were enrolled and divided in cotton mask and medical mask wearing groups. We measured four skin biophysical parameters: trans-epidermal water loss (TEWL), stratum corneum hydration (SCH), skin pH, and erythema index (EI) before and 3 h after wearing masks on both uncovered and mask-wearing face area.Results: TEWL increased after 3 h on exposed skin in cotton mask group and slightly decreased in medical mask group There was an increase in SCH after 3 h of wearing protective face masks in both groups. pH of the covered skin slightly decreased whileEI increased after 3 h in both groups; changes were not statistically significant. Parameters did not change significantly on uncovered skin. Conclusion: There were no differences between the influence of cotton versus medical protective masks on the skin of healthy volunteers in our study. Both types of masks could be recommended for short-time protection in individuals with healthy skin during COVID-19 pandemic.

K. Ooi, **Onset Mechanism and Pharmaceutical Management of Dry Skin**, Biol. Pharm. Bull., Vol**.** 44, No. 8, p. 1037–1043 (2021)

Dry skin is a common symptom of various conditions, and elderly individuals commonly exhibit this physiological symptom. Dry skin develops owing to sebum deficiency; however, the use of moisturizers can typically overcome this issue, particularly in patients in whom there are no other skin problems. If dry skin is left untreated, itching and eczema can occur, resulting in skin damage. Additionally, hemodialysis patients exhibit reduced barrier function and can experience pain associated with repeated needle insertion; the repeated use of lidocaine tape to manage the pain can cause further skin damage. To reduce the occurrence of dry skin, the skin is hydrated using moisturizers. Dry skin is also prominent in patients with varicose veins in the lower extremities, and many biochemical studies have shown that skin immunity is altered in patients with dry skin. Moreover, the incidences of dry skin and pruritus differ in male and female patients. Furthermore, in elderly patients, zinc deficiency is likely to cause dry skin, and zinc supplementation may maintain skin hydration. To date, few reports have described dry skin from a clinical point of view. In this review, research on dry skin is presented, and the findings of basic research studies are integrated.

*R. Nitiyarom, T. Withitanawanit, W. Wisuthsarewong***, Capacitance and transepidermal water loss after soaking in water for different durations: A pilot study,** Skin Research & Technology, August 2021

Background: There is a scarcity of data on the effects of duration of bathing and cutaneous properties. Aims: This study aimed to investigate the changes of capacitance and transepidermal water loss (TEWL) after soaking in water for the different durations. Method: This experimental biophysical study included healthy volunteers whose forearms were randomized to receive 3, 5, 10, 15, or 20 min of soaking of the volar aspect of the forearm. Skin hydration and integrity were assessed capacitance

and TEWL measurement before and after soaking. Results: Sixty-five subjects (130 forearms) were enrolled with an average age of 33 ± 10.8 years. The change in capacitance after soaking for durations of 3, 5, 10, 15, and 20 min was 41.54 ± 14.57, 47.13 ± 11.80, 40.25 ± 14.95, 40.48 ± 14.19, and 39.97 ± 9.47 AU, respectively. The highest capacitance was observed after soaking for 5 min; however, there was no significant correlation between bathing duration and capacitance ($p = 0.256$). The capacitance measured immediately after soaking was at the uppermost level, but it rapidly decreased within 5 min. The change in TEWL after soaking for durations of 3, 5, 10, 15, and 20 min was 30.27 ± 9.74, 30.57 ± 7.45, 33.78 ± 9.25, 33.44 ± 7.24, and 35.13 ± 9.37 g/m2/h, respectively. There was also no significant correlation between duration of soaking and TEWL ($p = 0.191$); however, TEWL tended to increase with longer soaking duration. Limitations: This study had a small sample size and measured only capacitance and TEWL. Future studies with more subjects, and that measure other physiologic parameters may further improve our understanding of the effect of bathing on skin. Conclusions: There was no significant correlation between bathing duration and cutaneous properties including capacitance and TEWL. However, a 5-min soaking provided the highest skin hydration for healthy skin.

H. Todo, Y. Hasegawa, A. Okada, S. Itakura, K. Sugibayashi, **Improvement of Skin Permeation of Caffeine, a Hydrophilic Drug, by the Application of Water Droplets Provided by a Novel Humidifier Device**, Chem. Pharm. Bull. 69, No. 8, p. 727–733 (2021)

Recently, a novel humidifier that sprays water fine droplets equipped with a copolymer, poly(3,4-ethylene dioxythiophene)–poly(styrene sulfonate) (PEDOT/PSS) was developed. PEDOT/PSS in the humidifier absorbs water from the environment and releases fine water droplets by heating. In the present study, the effect of hydration on the skin barrier, stratum corneum, was first determined by the application of fine water droplets using the humidifier. The skin-penetration enhancement effect of a model hydrophilic drug, caffeine, was also investigated using the humidifier and compared with a conventional water-evaporative humidifier. More prolonged skin hydration effect was observed after application of the fine water droplet release humidifier using PEDOT/PSS than that using a conventional humidifier. In addition, markedly higher skin permeation of caffeine was observed in both infinite and finite dose conditions. Furthermore, higher skin permeation of caffeine from oil/water emulsion containing caffeine was observed in finite dose conditions by pretreatment with the humidifier using PEDOT/PSS. This device can provide water droplets without replenishing water, so it is more convenient for enhancing the skin permeation of chemical compounds from topical drugs and cosmetic formulations.

C. Borzdynski, C. Miller, D. Vicendese, W. McGuiness, **Brief intermittent pressure offloading on skin microclimate in healthy adults - A descriptivecorrelational pilot study**, J Tissue Viability, 2021 Aug;30(3): p. 379-394

Aim: This study examined microclimate changes to the skin as a result of pressure over a 1 h period. The results were compared to skin parameter results following brief consecutive off-loading of pressure-prone areas. Design: A descriptive-correlational pilot study was undertaken. Method: A convenience sample of 41 healthy adults aged 18-60 years was recruited. Participants engaged in four 1 h data collection sessions. The sessions were conducted in both semi-recumbent and supine positions. Measures of erythema, melanin, stratum corneum hydration, and skin temperature were taken at pressure-prone areas at baseline and after 1 h in an uninterrupted method (continuous pressure-loading) and every 10 min in an interrupted method (brief offloading). The Corneometer and Mexameter (Courage + Khazaka Electronics GMbH, 2013) and Exergen DermaTemp DT-1001 RS Infrared Thermographic Scanner (Exergen Corporation, 2008) provided a digital appraisal of skin parameters. Intraclass correlation coefficients (ICC) were calculated to indicate test-retest reliability and absolute agreement of results between the two methods.

Y. Endo, H. Yoshida, Y. Akazawa, K.Yamazak, Y. Ota, T. Sayo, Y. Takahashi, **Antiwrinkle efficacy of 1-ethyl-*β*-*N*-acetylglucosaminide, an inducer of epidermal hyaluronan production**, Skin Research & Technology, August 2021

Background: Hyaluronan (HA) has a unique hydration capacity that contributes to firmness and bounciness of the skin. Epidermal HA declines with skin aging, which may lead to clinical signs of aging including skin wrinkles and loss of hydration and elasticity. Recently, we developed a new cosmetic agent 1-ethyl-*β*-*N*-acetylglucosaminide (*β*-NAG2), which enhances HA production in cultured human keratinocytes. The aim of this study was to explore antiaging potential of *β*-NAG2 in reconstructed human epidermal models and human clinical trial. Materials and methods: The amount of HA in *β*-NAG2-treated epidermal models by topical application was analyzed by enzyme-linked immunosorbent assay (ELISA)-like assay. A randomized, double-blind and placebo-controlled study was conducted in Japanese females ($n = 33$) by topically treating each side of the face with a lotion formulated with *β*-NAG2 or placebo for 8 weeks. Results: Topically applied *β*-NAG2 dose dependently increased HA

production in epidermal models. Treatment with *6*-NAG2-formulated lotion significantly improved skin hydration and elasticity and reduced skin wrinkling in crow's foot areas when compared to the placebo formulation. Conclusion: Topically applied *6*-NAG2 promoted epidermal HA production in vitro and showed antiwrinkle activity in vivo accompanying the improvement in skin hydration and elasticity. Our study provides a novel strategy for antiwrinkle care through *6*-NAG2-induced epidermal HA production.

C. Phillipart, B. Hendrickx, S. Rhabaoui, A. Natalizio, S. Boisnic, P. Micheels, S. Gauthier, P. Douette, L. Hermitte, **Safety and efficacy of a carboxymethyl chitosan dermal injection device for the treatment of skin defects: a first-in-man, pilot, comparative, split-body study**, Eur J Dermatol July-August 2021; 31(4): p. 549-58

Background: Injectable soft-tissue devices are increasingly used for improving skin defects and deficiencies related to ageing. Objectives: To assess the safety and efficacy of KIO015, a new injectable soft-tissue device formulated with carboxymethyl chitosan for the intradermal treat ment of skin defects associated with ageing. Materials & Methods: Twenty-two subjects (40-65 years) were randomized to eceive injections in the neckline of KIO015 and a non-cross-linked HA-based device, and were followed for up to 10 months. Injection site reactions (ISRs) and adverse events (AEs) were documented. Skin improvement was assessed instrumentally and clinically. Skin biopsies at injection zones in the lower back were taken at Day 28for histopathology and immunohistochemistry analyses, to further assess product performance. Histomorphometric analyses on rabbits and in vitro assessment of KIO015 antioxidant capacity were also conducted. Results: KIO015 was very well tolerated. Only expected and transient ISRs were observed; mainly erythema and hematoma. No adverse local effects or foreign body granuloma were observed histologically. Both clinical and instrumental evaluations confirmed the performance of KIO015. The skin was firmer andmore elastic. Skin hydration showed significant improvement three days after injection. KIO015 exhibited superior overall maintenance of skin hydration after 10 months as compared to HA. These clinical results were supported by in vitro trials and implantation tests in the rabbit. Conclusion: The results from this pilot study support the use of KIO015 as an innovative alternative to HA-based devices for intradermal treatment of skin disorders.

M. Mendes Fossa Shirata, P.M. Berardo Gonçalves Maia Campos, **Sunscreens and Cosmetic Formulations Containing Ascorbyl Tetraisopalmitate and Rice Peptides for the Improvement of Skin Photoaging: A Double-blind, Randomized Placebo-controlled Clinical Study**, Photochem Photobiol., 2021 Jul;97(4): p. 805-815

Photoprotective formulations containing substances with antioxidant properties in combination have been used as a strategy for the improvement of photoaged skin conditions. However, there is a lack of studies evaluating the clinical efficacy of these substances in young women with signs of photoaging. Thus, the objective of the present study was to evaluate the clinical efficacy of sunscreens and cosmetic formulations containing ascorbyl tetraisopalmitate and rice peptides for the improvement of skin photoaging in young women. A double-blind, randomized placebocontrolled clinical efficacy study was conducted on 60 female subjects aged 20-30 years with skin changes related to photoaging and without photoprotective habits. The hydrolipidic layer conditions and structural and morphological characteristics of the skin were evaluated by Photoprotective formulations containing substances with antioxidant properties in combination have been used as a strategy for the improvement of photoaged skin conditions. However, there is a lack of studies evaluating the clinical efficacy of these substances in young women with signs of photoaging. Thus, the objective of the present study was to evaluate the clinical efficacy of sunscreens and cosmetic formulations containing ascorbyl tetraisopalmitate and rice peptides for the improvement of skin photoaging in young women. A double-blind, randomized placebocontrolled clinical efficacy study was conducted on 60 female subjects aged 20-30 years with skin changes related to photoaging and without photoprotective habits. The hydrolipidic layer conditions and structural and morphological characteristics of the skin were evaluated by biophysical and skin imaging techniques. The results showed that the daily use of the formulations under study improved the skin conditions by increasing skin hydration and dermis echogenicity. In addition, the application of the active substances reduced skin hyperpigmentation and increased epidermal cell renewal. In summary, the present study showed the importance of daily application of sunscreens and formulations with antioxidant properties for the prevention and attenuation of skin changes related to photoaging in young women.

A. Puscion-Jakubik, R. Markiewicz-Zukowska, S.K. Naliwajko, K.J. Gromkowska-Kepka, J. Moskwa, M. Grabia, A. Mielech, J. Bielecka, E. Karpinska, K. Mielcarek, P. Nowakowski, K. Socha, **Intake of Antioxidant Vitamins and Minerals in Relation to Body Composition, Skin Hydration and Lubrication in Young Women***,* Antioxidants 2021, 10, 1110

The aim of this study was to estimate the consumption of selected dietary components with

antioxidant properties, undertake body composition analysis, assess skin hydration and lubrication, and establish the relationships between the above parameters. The study was carried out on 172 young women. The consumption of ingredients (vitamins A, C, D and E, and Cu, Mn, Zn) was assessed using the Diet 6.0 program, body composition was assessed using electrical bioimpedance and skin hydration and lubrication were assessed using the corneometric and sebumetric methods, respectively. About one-third of students showed insufficient consumption of vitamin C, vitamin E and zinc, while about 99% showed insufficient vitamin D levels. The highest degree of hydration was observed in the areas of the eyelids, neckline and chin. The greatest amount of sebum was found in the area of the nose and forehead. Low positive correlations between hydration or lubrication and Cu, vitamin A and vitamin E were observed. In conclusion, to properly moisturize and lubricate the skin, young women should eat products that are rich in ingredients with antioxidant properties, in particular fat-soluble vitamins A and E, but also copper.

W. Rungseevijitprapa, B. Yingngam, C. Chaiyasut, **Improvement of Biophysical Skin Parameters of Topically Applied Fermented Soybean Extract-Loaded Niosomes with No Systemic Toxicity in Ovariectomized Rats**, Pharmaceutics 2021, 13, 1068

Despite the known beneficial impacts of estrogen used as hormone replacement therapy to ameliorate signs of skin aging in postmenopausal women, its compliance rates are low. A significant amount of estrogen may be absorbed into the blood circulation and can lead to systemic actions. Soy isoflavone exhibits biological activities similar to synthetic estrogen because it is a heterocyclic phenolic compound. The disadvantage of most topical ingredients based on isoflavone is that they contain biologically inactive glycoside forms, which must be converted to a readily absorbed aglycone for the topical application. The purposes of this study were to develop niosomes-loaded *Aspergillus oryzae*-fermented soybean extract (FSE) to enhance skin absorption with proven systemic side effect compared to estrogen application. Skin hydration and viscoelasticity of 75 days post-ovariectomized (OVX) Wistar rats following 84-day topical treatment with various tested gel formulations containing fermented soybean extract (FSE) were evaluated. The tested formulations were gel + FSE nanoniosomes, gel FSE microniosomes, gel + FSE (200 µg FSE/9 cm2/rat), gel + blank nanoniosomes (a negative control), and gel + 17β-estradiol (E2) nanoniosomes (a positive control, 20 µg E2/9 cm2/rat). Changes in vaginal cornifications and weights of uteri, livers, and kidneys in the OVX rats and signs of primary skin irritation in the rabbits were evaluated for their toxicities. Results showed that FSE-loaded nanoniosomes improved the skin hydration and viscoelasticity better than gel + FSE microniosomes and gel + FSE, respectively, but lower than those of gel + E2 nanoniosomes ($p < 0.05$). Unlike all gel + E2 nanoniosomes, the FSE formulations showed no changes in vaginal cells and weights of uteri, livers, and kidneys and no signs of skin irritation. In conclusion, The FSE niosomebased gels should be promising candidates for delivering phytoestrogens against signs of skin aging with no systemic toxicities.

D. Maroto-Morales, T. Montero-Vilchez, S. Arias-Santiago, **Study of Skin Barrier Function in Psoriasis: The Impact of Emollients**, Life 2021, 11, 651

Psoriasis is a chronic multi-systemic inflammatory disease that affects the epidermal barrier. Emollients can be used as a coadjutant therapy for psoriasis management, but little is known about how the epidermal barrier function in psoriatic patients is modified by moisturizers. The objective of this study is to evaluate the effect of Vaseline jelly and a water-based formula on epidermal barrier function in psoriatic patients. Thirty-one patients with plaque-type psoriasis and thirty-one gender and age-matched healthy controls were enrolled in the study. Temperature, transepidermal water loss (TEWL), stratum corneum hydration (SCH), pH, elasticity and the erythema index were measured using non-invasive tools before and after applying Vaseline jelly and a water-based formula. TEWL was higher in psoriatic plaques than uninvolved psoriatic skin (13.23 vs. 8.54 g·m-2·h-1; $p < 0.001$). SCH was lower in psoriatic plaques than uninvolved psoriatic skin and healthy skin (13.44 vs. 30.55 vs. 30.90 arbitrary units (AU), $p < 0.001$). In psoriatic plaques, TEWL decreased by 5.59 g·m-2·h-1 ($p = 0.001$) after applying Vaseline Jelly, while it increased by 3.60 g·m-2·h-1 ($p = 0.006$) after applying the water-based formula. SCH increased by 9.44 AU after applying the water-based formula ($p = 0.003$). The use of emollients may improve epidermal barrier function in psoriatic patients. TEWL is decreased by using Vaseline, and SCH is increased by using the water-based formula.

T. Yazdanparast, K. Yazdani, S.A. Nasrollahi, L. Izadi Firouzabadi, P. Humbert, A. Khatami, A. Firooz, **Biophysical and ultrasonographic changes in pityriasis rosea compared with uninvolved skin**, International Journal of Women's Dermatology 7 (2021) 331–334

Background: Pityriasis rosea (PR) is a common, self-limited, inflammatory papulosquamous skin disease with a possible viral etiology. Objective: The goal of this study was to evaluate skin

biophysical properties in patients with PR compared with uninvolved skin to better understand the pathogenesis of PR. Methods: Stratum corneum hydration, transepidermal water loss, surface friction, pH, sebum, melanin, erythema, temperature, elasticity parameters (R0, R2, R5), thickness, and echodensity of the epidermis and dermis were measured on lesions of classic PR in 21 patients and compared with control sites (average of uninvolved perilesional and symmetrical skin) with a paired t test. Results: Stratum corneum hydration ($p < .001$), R0 ($p = .003$), R2 ($p = .001$), R5 ($p = .003$), and echodensity of the dermis ($p = .006$) were significantly lower, whereas transepidermal water loss ($p = .001$), pH ($p < .001$), and erythema ($p < .001$) were significantly higher in PR lesions. There was no significant difference in friction index, sebum, melanin content, temperature, thickness of the epidermis and dermis, and echodensity of the epidermis between PR and normal skin. Conclusion: PR skin is characterized by certain alterations in biophysical properties, which are mostly correlated with histologic changes. These changes may be helpful in early, noninvasive diagnosis of PR.

R.D. Pârvănescu (Pană), C.G. Watz, E.-A. Moacă, L. Vlaia, I. Marcovici, I.G. Macas, F. Borcan, I. Olariu, G. Coneac, G.-A. Drăghici, Z. Crăiniceanu, D. Flondor (Ionescu), A. Enache, C.A. Dehelean, **Oleogel Formulations for the Topical Delivery of Betulin and Lupeol in Skin Injuries—Preparation, Physicochemical Characterization, and Pharmaco-Toxicological Evaluation**, Molecules 2021, *26*, 4174

The skin integrity is essential due to its pivotal role as a biological barrier against external noxious factors. Pentacyclic triterpenes stand as valuable plant-derived natural compounds in the treatment of skin injuries due to their anti-inflammatory, antioxidant, antimicrobial, and healing properties. Consequently, the primary aim of the current investigation was the development as well as the physicochemical and pharmaco-toxicological characterization of betulin- and lupeol-based oleogels (Bet OG and Lup OG) for topical application in skin injuries. The results revealed suitable pH as well as organoleptic, rheological, and textural properties. The penetration and permeation of Bet and Lup oleogels through porcine ear skin as well as the retention of both oleogels in the skin were demonstrated through ex vivo studies. In vitro, Bet OG and Lup OG showed good biocompatibility on HaCaT human immortalized cells. Moreover, Bet OG exerted a potent wound-healing property by stimulating the migration of the HaCaT cells. The in ovo results demonstrated the non-irritative potential of the developed formulations. Additionally, the undertaken in vivo investigation indicated a positive effect of oleogels treatment on skin parameters by increasing skin hydration and decreasing erythema. In conclusion, oleogel formulations are ideal for the local delivery of betulin and lupeol in skin disorders.

S.-R. Park, J. Han, Y.M. Yeon, N.Y. Kang, E. Kim, **Effect of face mask on skin characteristics changes during the COVID-19 pandemic**, Skin Research & Technology, Volume 27, Issue 4, July 2021, p. 554-559

Background: Previous studies have demonstrated the possibility of adverse effects of prolonged wearing of personal protective equipment in healthcare workers. However, there are a few studies about the effects on skin characteristics after wearing a mask for non-healthcare workers. In this study, we evaluated the dermatologic effects of wearing a mask on the skin over time. Materials and Method: Twenty-one healthy men and women participated in the study. All participants wore masks for 6 hours consecutively. Three measurements were taken (a) before wearing the mask, (b) after wearing the mask for 1 hour, and (c) after wearing the mask for 6 hours. Skin temperature, skin redness, sebum secretion, skin hydration, trans-epidermal water loss, and skin elasticity were measured. Results: The skin temperature, redness, hydration, and sebum secretion were changed significantly after 1 and 6 hours of wearing a mask. Skin temperature, redness, and hydration showed significant differences between the mask-wearing area and the non–mask-wearing area. Conclusion: Mask-wearing conditions and time can change several skin characteristics. In particular, it is revealed that the perioral area could be most affected.

T.-F. Hsu, Z.-R. Su, Y.-H. Hsieh, M.-F. Wang, M. Oe, R. Matsuoka, Y. Masuda, **Oral Hyaluronan Relieves Wrinkles and Improves Dry Skin: A 12-Week Double-Blinded, Placebo-Controlled Study,** Nutrients 2021, 13, 2220

Hyaluronan (HA) is present in all connective tissues and organs, including the skin and joint fluid. However, few clinical trials have comprehensively evaluated the impacts of oral HA on skin conditions, including wrinkles and moisturization. In this study, we conducted a placebocontrolled, randomized, double-blind trial of daily HA (120 mg) intake for 12 weeks in 40 healthy Asian men and women (aged 35–64 years). Skin condition was determined by the evaluation of wrinkles, stratum corneum water content, the amount of transepidermal water loss, elasticity, and through image analysis. After 12 weeks, skin condition was significantly improved in terms of wrinkle assessment, stratum corneum water content, transepidermal water loss, and elasticity in the HA group compared to the

placebo group. Regarding the percentage change from baseline, wrinkle assessment, stratum corneum water content, and skin elasticity were significantly improved in the HA group versus the placebo group after 8 and 12 weeks of ingestion. The present findings indicate that oral ingestion of HA may suppress wrinkles and improve skin condition.

L. Rüther, W. Voss, **Hydrogel or ointment? Comparison of** fi**ve different galenics regarding tissue breathability and transepidermal water loss**, Heliyon 7, 2021

Purpose: Five different galenics were analyzed and compared concerning tissue breathability and gas exchange with the environment after an application period of 6 h on pig ear skin. Aim was to find the most suitable galenics for efficient moist treatment for everyday injuries (abrasions, lacerations and cuts) without influencing the transepidermal water loss. Methods: A quantity of 0.1 g of the different test preparations was applied once topically to an area of 2 cm2. The analysis of the breathability was performed by TEWL (transepidermal water loss) measurements in the first hour after product application. The moisture retention effect was assessed by corneometry in the first 5 h after product application. Results: The hydrogel preparations showed a higher breathability in contrast to a semi-occlusive ointment and petrolatum. The same applies to the moisture penetration of the skin. Here, all hydrogel formulations showed the highest tissue hydration. After 3 h an additional increase in moisture was observed for the areas treated with Tyrosur® CareExpert Wound Gel and the ointment. Conclusion: In contrast to petrolatum and the semi-occlusive ointment, treatment with the hydrogels led to a preservation of the breathability and good moistening of the tissue, which is due to the galenics of the gels consisting of water, carbomer and propylene glycol. The increase in moisture after 3 h in areas treated with Tyrosur® CareExpert Wound Gel and the semi-occlusive ointment indicates a sustained moisturizing effect mediated by dexpanthenol.

J. Liu, L. Liu, L. Zhou, L. Chen, X. Chen, X. Xiong, Y. Deng, **The Effect of Intense Pulsed Light on the Skin Microbiota and Epidermal Barrier in Patients with Mild to Moderate Acne Vulgaris**, Lasers in Surgery and Medicine 53: p. 1348–1355 (2021)

Background and Objectives: The skin microbiota partly determined by epidermal barrier plays an important role in acne vulgaris and intense pulsed light (IPL) has been verified as a safe and effective therapeutic option for this disease. Nevertheless, the exact role of the IPL treatment on the skin microbiota and epidermal barrier for patients with acne vulgaris remains unclear. This article was designed to solve this problem. Study Design/Materials and Methods: Nineteen healthy controls and 20 patients with mild to moderate acne were enrolled in this study, who received IPL treatment for 12 weeks. The epidermal barrier and skin samples were collected at baseline and after treatment. The microbial diversity was analyzed based on a high-throughput sequencing approach, which targets the V3–V4 region of the bacteria 16S ribosomal RNA genes. Results: After treatment of IPL, the Global Acne GradingSystem (GAGS) scores, sebum, sclererythrin, and red area of patients were significantly improved by IPL treatment ($P < 0.05$). Although there was no difference in microbiota diversity before and after IPL treatment, the Nonmetric Multidimension Scaling (NMDS) analysis showed thatthe samples of the acne patients before and after treatment could be divided into two different sets by skin microbiota ($P = 0.011$), which could be verified by heatmap analysis. Moreover, we found that the relative abundance of Staphylococcus epidermidis (S. epidermidis) significantly increased, but Cutibacterium acnes (C. acnes) decreased after IPL treatment. The sebum concentration was positively correlated with PH value ($R = 0.525$, $P = 0.017$), and the GAGS was positively associated with both sclererythrin ($R = 0.477$, $P = 0.002$) and red area ($R = -0.503$, $P = 0.001$). Conclusions: IPL could successfully improve the GAGS scores of acne vulgaris, as well as regulate the equilibrium between C. acnes and S. epidermidis, and inhibit the sebum secretion.

Sonne, wir kommen, Stiftung Warentest Juli 2021, p. 10-15

Sonnenschutzmittel - Sehr guten UV-Schutz gibt es schon fur wenig Geld. Drei teure Sprays versagen: die von Biosolis, Lavera und Vichy. Noch ein Corona-Sommer, für den wir bleiben wir Plane schmieden. Die einen bleiben weiter zuHause, die anderen wollen los und raus. Mit etwas Vorsicht geht das schon wieder. Egal wo: Neben dem Schutz vor dem Virus gehort auf jeden Fall der Schutz vor der Sonne dazu. Ob auf dem eigenen Balkon, an heimischen Seen und Füssen oder am Mittelmeerstrand- überall kann die UV-Strahlung aus dem Sonnenlicht schmerzhaften Sonnenbrand verursachen, frühzeitige Hautalterung und langfristig auch Hautkrebs.

A.P. Carrieri, N. Haiminen, S. Maudsley-Barton, L.-J. Gardiner, B. Murphy, A.E. Mayes, S. Paterson, S. Grimshaw, M. Winn, C. Shand, P. Hadjidoukas, W.P.M. Rowe, S. Hawkins, A. MacGuire-Flanagan, J. Tazzioli, J.G. Kenny, L. Parida, M. Hoptrof, E.O. Pyzer-Knapp, **Explainable AI reveals changes in skin microbiome composition linked to phenotypic differences**, www.nature.com/scientificreports

2021

Alterations in the human microbiome have been observed in a variety of conditions such as asthma, gingivitis, dermatitis and cancer, and much remains to be learned about the links between the microbiome and human health. The fusion of artifcial intelligence with rich microbiome datasets can ofer an improved understanding of the microbiome's role in human health. To gain actionable insights it is essential to consider both the predictive power and the transparency of the models by providing explanations for the predictions. We combine the collection of leg skin microbiome samples from two healthy cohorts of women with the application of an *explainable artifcial intelligence (EAI)* approach that provides accurate predictions of phenotypes with explanations. The explanations are expressed in terms of variations in the relative abundance of key microbes that drive the predictions. We predict skin hydration, subject's age, pre/post-menopausal status and smoking status from the leg skin microbiome. The changes in microbial composition linked to skin hydration can accelerate the development of personalized treatments for healthy skin, while those associated with age may ofer insights into the skin aging process. The leg microbiome signatures associated with smoking and menopausal status are consistent with previous fndings from oral/respiratory tract microbiomes and vaginal/gut microbiomes respectively. This suggests that easily accessible microbiome samples could be used to investigate health-related phenotypes, ofering potential for non-invasive diagnosisand condition monitoring. Our EAI approach sets the stage for new work focused on understanding the complex relationships between microbial communities and phenotypes. Our approach can be applied to predict any condition from microbiome samples and has the potential to accelerate thedevelopment of microbiome-based personalized therapeutics and non-invasive diagnostics.

A. Ayatollahi, A. Samadi, A. Bahmanjahromi, R.M. Robati, **Efficacy and safety of topical spironolactone 5% cream in the treatment of acne: A pilot study**, Health Sci Rep. 2021

Background: Spironolactone is an effective treatment for female patients with acne vulgaris. However, topical spironolactone could be a valuable treatment option in both male and female acne patients due to the less possibility of systemic side effects with its topical formulation. Objective: To evaluate the efficacy and safety of 5% spironolactone cream in the treatment of mild to moderate acne vulgaris. Methods: In this pilot clinical trial, topical spironolactone 5% was evaluated to treat patients with mild to moderate acne twice a day for 8 weeks. The rate of improvement as any alterations in the number of open and closed comedones, facial inflammatory papules, and acne global grading scores were assessed. Moreover, skin biometric characteristics including skin hydration, erythema, transepidermal water loss (TEWL), pH, sebum, and Propionibacterium acnes bacteria activity were also assessed following the treatment.Results: Fifteen patients participated in our study with a mean age of 25 ± 4.87 years old. A total of 66.6% (n = 10) were female and 33.4% (n = 5) were male. The number of acne papules, open and closed comedones, and acne global grading score decreased significantly 4 and 8 weeks after the beginning of treatment ($P < .05$). No considerable side effect was reported. Moreover, there was no significant difference between the skin hydration, melanin, erythema, TEWL, pH index, sebum, and P acnes bacteria activity before, 4, and 8 weeks after the treatment with topical spironolactone cream ($P > .05$). Conclusion: The topical 5% spironolactone cream seems to be an effective and safe treatment of acne vulgaris in both male and female patients.

Y. Ye, P. Zhao, L. Dou, Y. Zhang, K. Ken, H. Gu, Y. Dou, W. Gao, L. He, X. Chen, X. Huang, L. Zhang, Y. Li, L. Wang, W. Yan, **Dynamic trends in skin barrier function from birth to age 6 months and infantile atopic dermatitis: A Chinese prospective cohort study**, Clin Transl Allergy. 2021

Background: Skin barrier functions develop after birth and may be related to skin disorders in infants. We aimed to assess associations between dynamic trends of four skin barrier functional parameters in early life with infant atopic dermatitis (AD). Methods: Based on the prospective cohort MKNFOAD (NCT02889081), we examined transepidermal water loss (TEWL), stratum corneum hydration (SCH), skin pH, and sebum content at five anatomical sites (cheek, forehead, forearm, abdomen, and lower leg) in 418 term infants at birth, 42 days, and 6 months. Trend differences by sex and association with AD at age 1 year were tested using variance analyses. Associations of the parameters with AD risk were tested using discrete time survival analysis, adjusting extensive covariates including parental history ofallergy, infant's sex, birth weight (kg), and delivery mode. Odds ratios (ORs) and 95%confdence interval (CIs) were reported. Results: Overall TEWL and SCH appeared trends of increase while skin surface pH and sebum content showed trends of decrease within the frst six postnatal months. Sex differences were signifcant for sebum content only ($p < 0.001$). After adjustment for parental and children covariates, cheek TEWL at birth (OR = 1.26, 95% CI 1.00– 1.57, $p = 0.045$) and 42 days (OR = 1.52, 95% CI 1.17–1.97, $p = 0.002$) were signifcantly associated with increased AD risk. Associations were not observed between SCH, skin pH, and sebum content at birth or 42 days with AD. Conclusions: Skin barrier functions of Chinese term infants varied nonlinearly after

birth. Higher postnatal TEWL levels in early life indicate higher risk of early-onset AD.

M. Quadri, R. Lotti, L. Bonzano, S. Ciardo, M.B. Guanti, G. Pellacani, C. Pincelli, A. Marconi, **A Novel Multi-Action Emollient Plus Cream Improves Skin Barrier Function in Patients with Atopic Dermatitis: In vitro and Clinical Evidence**, Skin Pharmacol. Physiol, 2021,34(1): p.8-18

Background: Emollients capable of restoring the skin barrier function would extend their role beyond basic maintenance therapy in atopic dermatitis (AD). Objectives: Investigate the effect of a novel emollient plus cream (EC; Dermoflan®) on the skin barrier in vitro and in patients with mild-to-moderate AD. Methods: The effect of EC on the skin barrier recovery was evaluated using a tape-stripping (TS) model. After TS, organ cultures were treated with EC (undiluted or diluted 1:1 with water) and analyzed at 18-120 h using hematoxylin and eosin, Oil Red O, immunohistochemical, and immunofluorescent techniques. In a double-blind, randomized study, EC or placebo was applied once daily for 2 months to antecubital folds of the upper and lower limbs of patients with mild-to-moderate AD in clinical remission. Epidermal thickness, vascularization, and epidermal hydration were assessed by optical coherence tomography and corneometry, respectively, at baseline, and 1 and 2 months following treatment initiation. Results: Following TS, EC treatment significantly increased epidermal thickness and lipid content versus diluent in the skin organ culture, as well as claudin-1, involucrin, and caspase-14 expression, suggesting skin barrier repair. EC treatment also decreased keratin-16 expression and increased levels of Toll-like receptors 1 and 2 versus diluent, suggesting involvement in regulating the epidermal immune response. In 20 patients randomized 1:1 to EC or placebo, EC treatment at the elbow fold/popliteal fossa significantly decreased epidermal thickness after 2 months, and the number of blood vessels at the elbow fold after 1 and 2 months, versus placebo. EC significantly improved the skin hydration after 2 months versus baseline. Conclusions: This novel multi-action EC may help to restore epidermal homeostasis and improve the skin of patients with AD. Results indicate that this novel multi-action EC could be a valid adjuvant therapy in patients with AD. Key Message: Novel multi-action emollient cream helps to restore epidermal homeostasis and improves the skin affected by AD.

A. Cekiera, J. Popiel, M. Siemieniuch, Z. Jaworski, M. Slowikowska, N. Siwinska, A. Zak, A. Niedzwiedz, **The examination of biophysical parameters of the skin in Polish Konik horses**, PLoS ONE 16(6), June 2021

This study aimed to assess the biophysical parameters of the skin in Polish Konik horses (Polish primitive horses). According to the authors, this is the first assessment performed on such a wide scale in this group of animals. The evaluation carried out is innovative both with regards to the breed of the animals and the wide scope of the physicochemical skin assessment. The study group comprised mares, stallions and geldings, and the evaluations concerned transepidermal water loss, corneometry, pH, skin temperature assessment and mexametry. These parameters were assessed in five skin regions: the lips, the right ear, the prosternum, the right side of the neck and the chest. The measurements were taken after spreading the hair apart, with the use of a Multiprobe Adapter System (MPA®) and dedicated probes (Courage + Khazaka electronic GmbH, Cologne, Germany). The measurements revealed statistically significant differences in the values of transepidermal water loss in the lips in mares compared with stallions ($P = 0.023$) and also in stallions compared with geldings ($P = 0.009$). Corneometry showed significantly higher results in the neck region in mares compared with stallions ($P = 0.037$) and the prosternum areas in mares and geldings compared with stallions ($P = 0.037$ and $P = 0.018$). Skin pH measurement on the right side of the neck rendered significantly higher values in stallions than in mares ($P = 0.037$). In geldings, the skin temperature was significantly higher than in stallions ($P = 0.049$). Once the appropriate physicochemical values for specific animal species and breeds are determined, non-invasive methods of skin examination in many diseases and also methods of evaluation of the efficacy and/or adverse effects of applied medications can be established.

G. Puccetti, **In Vivo Skin Hydration Mapping by Infrared Hyperspectral Imaging,** IFSCC Magazine Volume 24, No. 2, June 2021

Skin hydration has been a very common and fundamental skincare claim for many decades. The main approach to testing relies on local dielectric probes sensitive to the high dielectric constant of water versus tissues. Hydration has now regained prominence in the context of Covid-19 because of the high use of sanitizers and hand washes, both of which dehydrate the consumer's skin. A new method was developed based on hyperspectral imaging of a water band in the near infrared. This approach provided an in vivo noncontact method to image water amounts over large skin surfaces, such as hands, and beyond the 25 **m**m depth reached with electric probes of capacitance or conductance. Moisturizing products were tested quantitatively over time and different skin areas with variable volumes of deep tissues serving as the water reservoir. The resistance of hydrating products to repetitive daily washes was measured in a group of 10 subjects. The deeper measurements obtained with infrared imaging

could be complemented by near-surface local measurements to distinguish between surface and deeper water changes. A Monte Carlo simulation of infrared light reflectance was then used to separate the hydrating actions of skincare ingredients as a function of depth in the skin.

D. Niwa, N. Izawa, A. Imaoka, T. Sone, **Development of a Novel Convenient Method for Analysis of the Relationship Between Human Skin Bacteria and Skin Properties**, IFSCC Magazine Volume 24, No. 2, June 2021

Recently, it is becoming important to relate the skin microbiome to the compounds on the skin to understand the relationship between the microbiome and its host. We evaluated a novel, convenient method for collecting skin samples using polyvinyl alcohol. Samples were prepared by dissolving the formed thin membrane in water after pasting polyvinyl alcohol on the skin. We compared this method with conventional methods. The polyvinyl alcohol samples were fully occupied by stratum corneum in the form of a few piled-up layers compared with conventional tape-stripping samples. The a-diversity of the bacteria and the number of Cutibacterium acnes (C. acnes) in the polyvinyl alcohol samples were not smaller than those in the other conventional swabs, whereas Propionibacteriaceae were the primary microbes in both samples. In addition, the values of fatty acids, triglycerides and the number of C. acnes in the polyvinyl alcohol samples were positively correlated signifcantly with each other in the study on healthy subjects of different genders and ages, which was consistent with previous fndings obtained using different methods. Our results indicate that the polyvinyl alcohol method makes it possible to analyze both sebum components and bacteria from the same sample and is promising for evaluating the relationship between the skin microbiome and its host.

A. Piotrowska, K. Aszklar, A. Dzidek, B. Ptaszek, O. Czerwińska-Ledwig, W. Pilch, **The impact of a single whole body cryostimulation treatment on selected skin properties of healthy young subjects**, Cryobiology, June 2021; 100, p: 96-100

Introduction: Systemic cryotherapy is a popular treatment involving a short stay in a cryogenic chamber at a temperature below -100 °C. This leads to a number of physiological reactions, some of them also observed in the skin. The aim of the study was to analyze the effect of a single cryogenic treatment on selected skin characteristics (skin pH, level of hydration and TEWL - Transepidermal Water Loss) in young, healthy people. Materials and methods: Skin characteristics in 77 young people (23.63 ± 1.36 years) were assessed. In the study, 43 women and 33 men who took part in a one-time treatment (-120 °C) lasting 3 min. Measurements were made on the forearm skin and (in men) on the face twice: before and immediately after the procedure. Results: Initial differences in hydration of the stratum corneum and TEWL were observed between the group of women and men. After one treatment, the examined characteristics of the forearm skin did not change, and an unfavorable increase in TEWL in men was indicated in the facial area. Conclusions: A single stay in the cryogenic chamber, while maintaining the correct methodology of the treatment, is safe for the skin. The changes taking place depend on the body surface area tested, which indicates that the skin on the limbs and on the face reacts differently to the cryogenic stimulus.

G. Boyer, S. Brédif, G. Bellemère, C. de Belilovsky, C. Baudouin, **Investigation of Pediatric Sensitive Skin: Characterization by in vivo approach and development of an in vitro model,** Poster at the ISBS Digital Congress 2021, 3-5 June 2021, Berlin, Germany

Skin sensitivity is a self-reported syndrome which affects about 50% of adult population. Recently, a group of expert defined sensitive skin as “A syndrome defined by the occurrence of unpleasant sensations (stinging, burning, pain, pruritus, and tingling sensations) in response to stimuli that normally should not provoke such sensations.These unpleasant sensations cannot be explained by lesions attributable to any skin disease. The skin can appear normal or be accompanied by erythema. Sensitive skin can affect all body locations, especially the face” [2]. There are therefore two kinds of signs that defined sensitive skin, objective signs characterized by erythema and subjective signs characterized by sensations like stinging, burning or tingling. Concerning children, previous work indicates a prevalence of sensitive skin over 30% under 6 years old [3]. The differences between a “normal” immature skin of infant and a “specific” sensitive skin remain unclear. A clinical study was performed to investigate the sensitive skin syndrome in a pediatric population. Based on clinical findings, an in vitro skin model mimicking the features of pediatric sensitive skin was developed.

L. Weiß, **Charakterisierung hautphysiologischer, lokal inflammatorischer und penetrationsdynamischer Parameter nach milder Hautbarriereschädigung - Praktische Bedeutung für transkutane Vakzinierungsstrategien**, Dissertation an der Medizinischen Fakultät Charité – Universitätsmedizin Berlin, Germany, June 2021 (in German)

Introduction: Transcutaneous vaccination strategies have been in the focus of research for

several years. Amongst these, needle-free vaccination methods avoid many challenges associated with conventional vaccination. Concomitantly, overall efficacy for various different approaches has been shown by other authors with delivery via the cutaneous route favoring the induction of cellular immune responses. Furthermore, an increase in penetration and immune activation have been discovered to be significant aspects in transcutaneous vaccination. Whether physical, chemical or biochemical stimuli are able to procure this is has not been thoroughly investigated. Methods: Based on clinical studies using skin surface treatment in transcutaneous vaccination this project analysed the effects of physical and chemical skin barrier disruption in combination with topical vaccine application. Firstly, skin-physiological parameters were analysed to determine the degree of barrier disturbance by the disruption methods. Secondly, the inflammatory milieu of the epidermis was investigated with ELISA and Array analyses and a more detailed investigation using RT-qPCR was conducted for Cyanoacrylat Skin Surface Stripping (CSSS). Finally, the influence of skin barrier disruption on the penetration of topically applied vaccine was analysed using histological staining and ELISA. Results: For physical disruption no persistent impairment of the skin physiology was found. The evaluation of different inflammation markers however showed signs of IL-1alpha stimulation after tape stripping, and array analyses indicated increased immune response to CSSS compared to tape stripping. RT-qPCR uncovered an increased gene-expression of various pro-inflammatory molecules after CSSS and CSSS combined with topical vaccine application. In regard to the chemical disruption methods, occlusion of water and imiquimod indicated a mild effect on skin physiology, while more severe disruption was seen after 2 % SLS occlusion. Occlusion with water and imiquimod also showed a stimulating effect on the excretion of IL- 1alpha. Penetration was increased following occlusion of SLS. 9 Discussion: Tape stripping and CSSS seemed to result in improved penetration of topically applied vaccine despite only causing mild and temporary skin barrier impairment. Furthermore, CSSS has shown itself to be an efficient immune-stimulus, causing a diverse immune response in combination with topical application of vaccine.

K. Goldie, M. Kerscher, S. Guillen Fabi, C.Hirano, M. Landau, T.S. Lim, H. Woolery-Lloyd, K. Mariwalla, J.-Y. Park, Y. Yutskovskaya, **Skin Quality – A Holistic 360° View: Consensus Results**, Clinical, Cosmetic and Investigational Dermatology 2021:14, p. 643–654

Introduction: Skin quality is an important component of human attractiveness. To date, there are no standardized criteria for good skin quality. To establish a consensus for good skin quality parameters and measurement and treatment options, a virtual skin quality advisory board consisting of a global panel of highly experienced aesthetic dermatologists/ aesthetic physicians was convened. Methods: A total of 10 dermatologists/aesthetic physicians served on the advisory board. A modifed version of the Delphi method was used to arrive at consensus. Members accessed an online platform to review statements on skin quality criteria from their peers, including treatment and measurement options, and voted to indicate whether they agreed or disagreed. Statements that did not have agreement were modifed and the members voted again. Consensus was defned as: strong consensus = greater than 95% agreement; consensus = 75% to 95% agreement; majority consent = 50% to 75% agreement; no consensus = less than 50% agreement. Results: There was strong consensus that good skin quality is defned as healthy, youthful in appearance (appearing younger than a person's chronological age), undamaged skin and that skin quality can be described across all ethnicities by four emergent perceptual categories (EPCs): skin tone evenness, skin surface evenness, skin frmness, and skin glow. The EPCs can be affected by multiple tissue layers (ie, skin surface quality can stem from and be impacted by deep structures or tissues). This means that topical approaches may not be suffcient. Instead, improving skin quality EPCs can require a multilayer treatment strategy. Conclusion: This global advisory board established strong consensus that skin quality can be described by four EPCs, which can help clinicians determine the appropriate treatment option(s) and the tissue or skin layer(s) to address. Skin quality is important to human health and wellbeing and patients' perception for the need for aesthetic treatment.

A. Roca, M. Aso-Perez, B. Martinez-Teipel, J. Bosch, **Balancing epigenetics for skin wellbeing**, PERSONAL CARE MAGAZINE, June 2021

Rather than looking younger, the more mature generations want to feel at one with their age and show off the very best version of themselves. Since more than 90% of decisions are made subconsciously, Provital - with its everlasting commitment to innovation and technological progress in the interests of caring for people – used Artificial Intelligence to demonstrate the emotional impact that its active ingredient Wonderage had on the subconscious of 47 volunteers, providing a holistic approach to an ingredient with a physical improvement on skin luminosity, hydration and density achieved by its effect on the epigenetic signature and on the endogenous hyaluronic acid production. Because overall wellbeing is seen as integrative beauty that embraces both the physical aspect and emotional health. Because happiness is the key to beauty

C. Uhl, D. Khazaka, **Skin sensitization in pandemic times,** PERSONAL CARE MAGAZINE, June 2021

For almost a year and a half, an unprecedented pandemic has had us in its grip worldwide, forcing us to abandon many cherished activities and realign our entire daily lives. It is particularly important in these times to prevent the spread of the pandemic through protective measures, distance and significantly increased requirements for hygiene measures such as the wearing of protective mouth-nose masks and the frequent use of sanitisers on all kinds of surfaces and naturally also on the skin.

P. Bhargava, H. Singdia, S. Nijhawan, D.K. Mathur, R.K. Bhargava, **A study of biophysical profle of inguinal skin: An implication for health and disease**, Indian Journal of Sexually Transmitted Diseases and AIDS Volume 42, Issue 1, January-June 2021

Context: Inguinal skin is prone to various infectious dermatological conditions such as erythrasma, intertrigo, hidradenitis suppurativa, folliculitis, dermatophytic infection, and various sexually transmitted diseases, ascompared to the skin elsewhere. Aim: Our study attempts to compare the biophysical profle parameters (BPPs) of the genital skin with that of the rest of the body, while taking skin of the upper back as control. It alsoattempts to fnd out if there is a difference in BPPs of the two sites and that how the change in the BPPs, bring about change in microbiome and make inguinal skin more prone to infections. Materials and Methods: This was a hospital-based comparative study conducted over 976 patients (600 males and 376 females) of age group 18–60 years, where BPP parameters such as hydration, skin pH, transepidermal water loss (TEWL), and sebum content were measured over the skin of the upper back and right inguinal region, and the results were summarized and presented as proportions (%). Chi-square test was used to compare abnormalfndings. $P \leq 0.05$ was taken as statistically signifcant. MedCalc 16.4 version software was used for all statistical calculations. Results: Signifcant difference was noted in skin pH and TEWL, where *P* value came out to be <0.05, which was statistically signifcant, whereas there was minimal difference in sebum content and skin hydration in both the areas, in males and females. Conclusion: Raised skin pH disturbs organization of lipid bilayers (disturbed barrier), decreases lipid processing (impaired SC cohesion), and increases serine protease activity (reduced AMP). Increased TEWL (defect in physical barrier) and decreased hydration predispose the genital skin to infections. Use of pH buffered solutions (3–4), barrier repair creams containing ceramides, and barrier protective creams with dimethicone can help preventthese inguinal dermatoses.

C. Theerawattanawit, T. Promvaranon, P. Rerknimitr, P. Asawanonda, N. Noppakun, C. Kumtornrut, **Snail Soothing and Repairing Cream Improves Skin Hydration after Ablative Fractional CO2 Laser: A Split-Face Randomized DoubleBlinded Placebo-Controlled Trial**, Skin Pharmacol Physiol, 2021;34(5): p. 262-270

Background: Ablative fractional carbon dioxide laser (AFCO2) resurfacing causes transient skin barrier disruption characterized by decreased skin hydration and increased transepidermal water loss (TEWL). Snail Soothing and Repairing (SSR) cream, containing several glycoproteins with potential antimicrobial and antioxidant effects, may benefit skin hydration promotion after the laser treatment. Objective: To evaluate the efficacy and safety of SSR cream in skin hydration promotion after AFCO2 resurfacing. Method: The study was a double-blinded, split-face, placebo-controlled trial in participants aged 18-50 years with atrophic acne scars on both cheeks. After AFCO2 resurfacing, participants applied the product or placebo on either cheek twice daily for 14 days. Corneometry, TEWL, colorimetry, and clinical assessments (edema, erythema, crusting, pruritus, and tightness score) were evaluated at baseline, day 7, and day 14 after AFCO2 resurfacing. Results: From 22 participants in the study, the SSR cream-treated sides showed significantly higher corneometry levels than placebo-treated sides at day 14 ($p = 0.033$), while TEWL and colorimetry levels were not different at any study visits. Pruritus and tightness scores of the SSR side were lower, but not significant, than the placebo. Other clinical assessments (edema, erythema, and crusting) showed similar results. No significant adverse events took place. Conclusion: The SSR cream significantly improved skin hydration, highlighting skin barrier restoration after AFCO2 resurfacing, with a good safety profile.

T. Bujak, M. Zagórska-Dziok, A. Ziemlewska, Z Nizioł-Łukaszewska, T. Wasilewski, Z. Hordyjewicz-Baran, **Antioxidant and Cytoprotective Properties of Plant Extract from Dry Flowers as Functional Dyes for Cosmetic Products**, Molecules 2021, 26, 2809

Nowadays, natural dyes are expected by the cosmetic and food industries. In contrast to synthetic dyes, colorants derived from natural sources are more environmentally friendly and safer for human health. In this work, plant extracts from *Gomphrena globasa* L., *Clitoria ternatea* L., *Carthamus tinctorius* L., *Punica granatum* L. and *Papaver rhoeas* L. as the natural and functional dyes for the cosmetics industry were assessed. Cytotoxicity on keratinocyte and fibroblast cell lines was determined

as well as antioxidant and anti-aging properties by determining their ability to inhibit the activity of collagenase and elastase enzymes. In addition, the composition of the extracts was determined. The obtained extracts were also applied in face cream formulation and color analyses were performed. It has been shown that the obtained extracts were characterized by no cytotoxicity and a high antioxidant potential. The extracts also show strong ability to inhibit the activity of collagenase and moderate ability to inhibit elastase and provide effective and long-lasting hydration after their application on the skin. Application analyses showed that the extracts of *P. rhoeas* L., *C. ternatea* L. and *C. tinctorius* L. can be used as effective cosmetic dyes that allow for attainment of an intense and stable color during the storage of the product. The extracts of *P. granatum* L. and *G. globasa* L., despite their beneficial effects as active ingredients, did not work effectively as cosmetic dyes, because cosmetic emulsions with these extracts did not differ significantly in color from emulsions without the extract.

V. Nobile, I. Schiano, A. Peral, S. Giardina, E. Spartà, N. Caturla, **Antioxidant and reduced skin-ageing effects of a polyphenolenriched dietary supplement in response to air pollution: a randomized, double-blind, placebo-controlled study**, Food & Nutrition Research 2021, 65: 5619

Background: Air pollution exposure is one of the major threats to skin health and accelerates skin ageing mainly through oxidative stress mechanisms. Since it is diffcult to minimize skin exposure to air pollutants, especially in urban areas, strategies to protect the skin are needed. Plant phenolic compounds have been found to be effective in attenuating cellular oxidative stress and inflammation induced by different air pollutants and a dietary approach based on these compounds could provide an effcient protection measure. Objective: Here we investigated the effcacy of a commercially available polyphenol-enriched dietary supplement (Zeropollution®) in reducing pollution-induced oxidative stress and in improving different skin parameters related to skin ageing of Caucasian and Asian subjects exposed to air pollution. Zeropollution is composed of four standardized herbal extracts: Olea europaea leaf, Lippia citriodora, Rosmarinus offcinalis, and Sophora japonica. Design: A double-blind randomized, parallel group study was carried out on 100 outdoor workers living in a polluted urban European area (Milan) to assess the effcacy of the dietary supplement. The total antioxidant capacity on saliva (FRAP), the oxidative damage on skin (lipoperoxides content), skin moisturization (corneometer), transepidermal water loss (tewameter), skin radiance and colour (spectrophotometer), skin elasticity (cutometer), skin sebum content (sebumeter), and the skin roughness (image analysis) were measured. Results: Both inter-group and intra-group analysis proved that the dietary supplement improved all clinical and biochemical-monitored parameters, in both Caucasian and Asian individuals. Some of the positive effects such as decreased wrinkle depth, increased elasticity and frmness, improved skin moisturization and transepidermal water loss, and reduced dark spots pigmentation were statistically signifcant as early as 2 weeks of product consumption. Conclusions: The results of the study indicate reduced oxidative stress-induced skin damage in both Asian and Caucasian women living in a polluted urban area. Therefore, the oral intake of this four-plant based supplement could be considered a complementary nutrition strategy to avoid the negative effects of environmental pollution exposure.

S. Schliemann, M. Müller, M. Stadeler, P. Elsner, **Double blind randomized repetitive efficacy test of various occupational skin protection preparations against sodium lauryl sulphate**, J Dtsch Dermatol Ges, 2021 Apr;19(4): p. 545-552

Background: Skin protection products, formerly named as barrier creams, are being used as primary and secondary prevention measures against occupational dermatoses. Many of these cosmetic products are claimed by manufacturers to be efficacious against wet work-induced skin barrier impairment if applied prior to exposure. However, results of validated and standardized in vivo efficacy tests allowing the comparison of different products are lacking. Material and methods: Efficacy of six skin protection products against sodium lauryl sulphate-induced irritant contact dermatitis was investigated in a double blind, randomized and controlled repetitive irritation study in healthy volunteers using skin physiological methods. Transepidermal water loss (TEWL) results were used to calculate an efficacy index of protection by mathematical/statistical means according to a protocol developed in a German Statutory Accident Insurance (DGUV) multicenter study (research project FP 275). Results: All tested products had a demonstrable, protective effect against SLS compared to controls, but their relative efficacy varied significantly. Differences were also seen upon evaluation of other parameters such as corneometry and clinical irritation score (visual score). Conclusions: Product ranking as a result of the established differences allows improved selection of appropriate skin protection products based on objective parameters, as compared to heterogenous product claims.

A. Samadi, S. Ahmad Nasrollahi, M. Nateghi Rostami, Z. Rezagholi, F. Abolghasemi, A. Firooz, **Long-term effects of two 24-hour moisturizing products on skin barrier structure and function: A biometric and molecular study**, Health Science Reports, 2021;4

Introduction: Recently, there are a few moisturizers showing hydrating effects up to 24 hours after single application. Aquaporin 3 might be associated with the degree of skin hydration. We aimed to assess the effects of two brands of 24-hour moisturizers on the skin barrier function, as well as the AQP3 gene expression. Method: Two moisturizers were applied once daily by 20 participants age 36.15 ± 9.55 years. Upper right and left forearms were randomly assigned to application of each product, whereas the right lower forearm served as control site for application of a cream base formulation. Biophysical assessments including trans epidermal water loss (TEWL), skin hydration, pH, surface lipids, and elasticity parameters were performed before intervention, 1, 4, and 24 hours after single application, following 2 weeks daily application and 1 week after termination of use. Also 5-mm punch biopsies were performed from application sites of product B and cream base formulation in for five participants after 2 weeks of application. Results: A single treatment with both products led to 24-hour increase in skin moisture in comparison with the control site (P-value <.01). Daily application of both products for 14 days also led to significant improvement in skin moisture (P-value <.01), TEWL (P-value <.01), and elasticity parameters. The increase in skin hydration was associated with upregulation of AQP3 gene expression in treated area for one of the formulations (P-value = .04). Conclusion: The tested 24-hour moisturizers only need to be applied once daily to improve skin barrier function and hydration and up-regulate AQP3 mRNA expression.

P. Cobos-Moreno, Á. Astasio-Picado, A. Martínez-Nova, R. Sánchez- Rodríguez, E. Escamilla-Martínez, B. Gómez-Martín, **Influence of creams with different urea concentrations on plantar skin hydration**, J. Tissue Viability, March 2021

Introduction: The skin is the body's outermost organ, and one of its main functions is to provide protection against potential infections. Hydration is related to the proper functioning of the skin, hindering the appearance of wounds or cracks which could lead to the occurrence of infections or other dermatological alterations. The skin of the foot is thicker than that of the rest of the body due to the load it supports, and it is more complicated to maintain. The intention of this study was to evaluate the efficacy of different concentrations of urea (5% and 20%) in hydrating the foot compared to a placebo cream. Methods: The study was carried out with 60 subjects of ages from 20 to 35 years in age. The experimental protocol was initiated by creating three randomized groups (1:1:1), each being treated with a different cream: placebo, 5% urea cream, and 20% urea cream. The examination was carried out using a non-invasive instrument (Corneometer CM 825®) that detects the skin surface hydration. Results: Analysis of the hydration of the different study zones according to the cream used showed no significant differences between the placebo and 5% urea for the first MTH and heel, but a significant difference for the fifth MTH. There were significant differences in all study areas between the placebo and 20% urea creams, but none between the 5% urea and 20%. Disscusion/Conclusion: The conclusion drawn was that skin hydration was greater with the 20% urea cream versus the placebo, but there were no differences found when comparing either the 20% and 5% urea creams or the placebo and 5% urea creams.

A. Abruzzo, C. Parolin, E Corazza, B. Giordani, M. Pio di Cagno, T. Cerchiara, F. Bigucci 1, Beatrice Vitali, B. Luppi, **Influence of Lactobacillus Biosurfactants on Skin Permeation of Hydrocortisone**, Pharmaceutics 2021, 13, 820

One of the most widely used strategies to improve drug diffusion through the skin is the use of permeation enhancers. The aim of this work was to investigate the effect of two biosurfactants (BS), produced by Lactobacillus crispatus BC1 and Lactobacillus gasseri BC9, on the skin permeation profile of hydrocortisone (HC, model drug). HC aqueous solubility and in vitro diffusion studies through porcine skin were performed in the presence of BC1-BS and BC9-BS at concentrations below and above critical micellar concentrations (CMC). Moreover, skin hydration tests and differential scanning calorimetry (DSC) analysis were performed to further investigate BS interaction with the outermost layer of the skin. Both BS increased HC solubility, especially at concentrations above their CMC. At concentrations below the CMC, drug permeation through the skin was improved, as the result of a dual effect: a) the formation of a superficial lipophilic environment, as confirmed by the reduction in skin hydration and b) the interaction between BS and the stratum corneum (SC), as demonstrated by the DSC curves. From the obtained data, it appears that BC1-BS and BC9-BS could represent new promising green excipients for drug permeation enhancement through the skin.

A. Kyritsi, S. Kikionis, A. Tagka, N. Koliarakis, A. Evangelatou, P. Papagiannis, A. Stratigos, V. Karalis, P. Dallas, A. Vitsos, E. Ioannou , V. Roussis, M. Rallis, **Management of Acute Radiodermatitis in Non-Melanoma Skin Cancer Patients Using Electrospun Nanofibrous Patches Loaded with *Pinus halepensis* Bark Extract**, Cancers 2021, *13*, 2596

Abstract: Acute radiodermatitis is the most common side effect in non-melanoma skin cancer

patients undergoing radiotherapy. Nonetheless, despite the ongoing progress of clinical trials, no effective regimen has been found yet. In this study, a non-woven patch, comprised of electrospun polymeric micro/nanofibers loaded with an aqueous extract of *Pinus halepensis* bark (PHBE), was fabricated and clinically tested for its efficacy to prevent radiodermatitis. The bioactivity of the PHBE patch was evaluated in comparison with a medical cream indicated for acute radiodermatitis. Twelve volunteer patients were selected and randomly assigned to two groups, applying either the PHBE patch or the reference cream daily. Evaluation of radiation-induced skin reactions was performed during the radiotherapy period and 1 month afterwards according to the Radiation Therapy Oncology Group (RTOG) grading scale, photo-documentation, patient-reported outcomes (Visual Analog Scale, questionnaire), biophysical measurements (hydration, transepidermal water loss, erythema, melanin), and image analysis. In contrast with the reference product, the PHBE patch showed significant antiinflammatory activity and restored most skin parameters to normal levels 1 month after completion of radiation therapy. No adverse event was reported, indicating that the application of the PHBE patch can be considered as a safe medical device for prophylactic radiodermatitis treatment.

B.J. Kim, N.R. Lee, C.H. Lee, Y.B. Lee, S.J. Choe, S. Lee, H.J. Hwang, E. Kim, G.G. Lavery, K.-O. Shin, K. Park, E.H. Choi, **Increased Expression of 11β-Hydroxysteroid Dehydrogenase Type 1 Contributes to Epidermal Permeability Barrier Dysfunction in Aged Skin**, Int. J. Mol. Sci., 2021, *22*, 5750

Inactive cortisone is converted into active cortisol by 11β-hydroxysteroid dehydrogenase type 1 (11β-HSD1). Excessive levels of active glucocorticoids could deteriorate skin barrier function; barrier impairment is also observed in aged skin. In this study, we aimed to determine whether permeability barrier impairment in the aged skin could be related to increased 11β-HSD1 expression. Aged humans (n = 10) showed increased cortisol in the stratum corneum (SC) and oral epithelium, compared to young subjects (n = 10). 11β-HSD1 expression (as assessed via immunohistochemical staining) was higher in the aged murine skin. Aged hairless mice (56-week-old, n = 5) manifested greater transepidermal water loss, lower SC hydration, and higher levels of serum inflammatory cytokines than the young mice (8-week-old, n = 5). Aged 11β-HSD1 knockout mice (n = 11), 11β-HSD1 inhibitor (INHI)-treated aged wild type (WT) mice (n = 5) and young WT mice (n = 10) exhibited reduced SC corticosterone level. Corneodesmosome density was low in WT aged mice (n = 5), but high in aged 11β-HSD1 knockout and aged INHI-treated WT mice. Aged mice exhibited lower SC lipid levels; this effect was reversed by INHI treatment. Therefore, upregulation of 11β- HSD1 in the aged skin increases the active-glucocorticoid levels; this suppresses SC lipid biosynthesis, leading to impaired epidermal permeability barrier.

D. Sobkowska, I. Micek, M. Urba□ska, A. Seraszek-Jaros, G. Nowak, L. Zaprutko, R. Czajkowski, Z. Adamski, J. Gornowicz-Porowska, **The effects of baths and wet wraps with a sweet whey solution on the level of hydration and barrier function of the epidermis**, Adv Dermatol Allergol 2021; XXXVIII (5): p. 798–803

Introduction: Sweet whey is known for its various pharmacological uses as an anti-inflammatory and antioxidant agent. This is because whey proteins accelerate the release of bioactive peptides, increase the level of intracellular glutathione and the production of interleukin IL-8. However, the potential skin care effects of whey, especially in its unprocessed state, are still not clear. Aim: To evaluate in vivo the cosmetic features of sweet whey baths and wet wraps on human skin. Material and methods: Thirteen healthy Caucasian adult females with no dermatological diseases were examined. We used the Courage-Khazaka MPA-9 device to evaluate the effects of sweet whey baths/wet wraps on skin hydratation, transepidermal water loss (TEWL) and melanin and erythema index and pH level in human skin. Results: It appeared that bathing in the sweet whey solution significantly improved the barrier function of the skin in comparison with tap water treated control area on the face cheek as well as on the forearm by decreasing the value of transepidermal water loss with statistical significance. Skin hydration was enhanced only on the facial skin. No significant differences concerning other parameters were observed. Conclusions: We showed that sweet whey may have decreased the TEWL level and fixed the barrier function of epidermis in this way. It seems that a bath solution with sweet whey is well tolerated and may promote local blood circulation without affecting the pH value of the skin.

I. Dolečková, A. Čápová, L. Machková, S. Moravčíková, M. Marešová, V. Velebný, **Seasonal variations in the skin parameters of Caucasian women from Central Europe,** Skin Research & Technology, Volume 27, Issue 3, May 2021, p. 353-357

Background: The human skin is greatly affected by external factors such as UV radiation (UVR), ambient temperature (T), and air humidity. These factors oscillate during the year giving rise to the seasonal variations in the skin properties. The aim of this study was to evaluate the effect of seasons, environmental T, relative and absolute humidity on the skin parameters of Caucasian women, perform

a literature review and discuss the possible factors lying behind the found changes.Materials and Methods: We measured stratum corneum (SC) hydration, transepidermal water loss (TEWL), sebum level, erythema index, and elasticity parameters R2 and R7 on the forehead and the cheek of Caucasian women from the Czech Republic throughout the year. We also performed a non-systematic literature review focused on the seasonal variations in these skin parameters. Results: We confirmed a well-documented low SC hydration and sebum production in winter. In spring, we found the lowest TEWL (on the forehead) and the highest SC hydration but also the highest erythema index and the lowest elasticity presumably indicating skin photodamage. For most of the skin parameters, the seasonal variations probably arise due to a complex action of different factors as we extensively discussed. Conclusion: The data about the seasonal variations in the skin parameters are still highly inconsistent and further studies are needed for better understanding of the normal skin changes throughout the year.

F. Spada, I.P. Harrison, T.M. Barnes, K.A. Greive, D. Daniels, J.P. Townley, N. Mostafa, A.T. Fong, P.L. Tong, S. Shumack, **A daily regimen of a ceramide-dominant moisturizing cream and cleanser restores the skin permeability barrier in adults with moderate eczema: A randomized trial**, Dermatologic Therapy. 2021;34

The dysfunctional skin barrier in eczema patients may be attributed to decreased levels of ceramides in the stratum corneum. The aim of this study was to determine whether a two-part system consisting of a ceramide-dominant physiological lipidbased moisturizing cream and cleanser could ameliorate the signs and symptoms of moderate eczema in adults over 28 days compared to placebo. Assessments were conducted at baseline and every 7 days thereafter. Eczema area severity index core decreased significantly across all time points in both groups compared to baseline (P < .0001), however, this decrease was not significant between groups at day 28 (P = .7804). In contrast, transepidermal water loss and skin hydration significantly improved over time in the active group, while it either stayed the same or worsened in the placebo group (P = .0342 and P < .0001, respectively). There was no difference in the use of mometasone furoate as rescue medication over time between groups (P = .1579). Dermatology life quality index scores improved significantly in both groups (P < .0001), with no difference between groups (P = .5256). However, patient satisfaction was greater in the active compared to the placebo group for several parameters including relief of itch, dry skin, skin softness and smoothness (all P < .05). No patients withdrew from the study due to adverse events (AEs) and there were no serious AEs. The ceramide-dominant moisturizing cream and cleanser safely restores skin permeability and improves the signs and symptoms of eczema in adults.

Y. Gabe, K. Takeda, M. Tobiishi,| S. Kikuchi, K. Tsuda, Y. Haryuu, Y. Nakajima, Y. Inomata, S. Nakamura, D. Murase, S. Tokunaga, M. Miyaki, Y. Takahashi, **Evaluation of subclinical chronic sun damage in the skin via the detection of long-lasting ultraweak photon emission**, Skin Research & Technology, 2021, Volume 27

Background: It is well known that solar radiation accelerates skin photoaging. To evaluate subclinical photodamage in the skin especially from the early phase of ultraviolet (UV)-induced damage, we have focused on ultraweak photon emission (UPE), also called biophotons. Our previous study reported that the amount of long-lasting UPE induced by UV, predominantly from lipid peroxidation, is a valuable indicator to assess cutaneous photodamage even at a suberythemal dose, although it was only applied to evaluate acute UV damage. The aim of this study was to further investigate whether long-lasting UPE could also be a useful marker to assess subclinical chronic sun damage in the course of skin photoaging. Materials and Methods: Forty-three Japanese females in their 20s were recruited and were divided into two groups according to their history of sun exposure based on a questionnaire (high- and low-sun-exposure groups). Several skin properties on the cheek and outer forearm were measured in addition to UV-induced UPE. Results: Among the skin properties measured, water content, average skin roughness, and the lateral packing of lipids in the stratum corneum were significantly deteriorated in the high-sun-exposure group as were changes in some skin photoaging scores such as pigmented spots and wrinkles. In addition, those skin properties were correlated with the UPE signals, suggesting the possible impact of oxidative stress on chronic skin damage. Conclusion: Subtle oxidative stress detected by long-lasting UPE may contribute to subclinical cutaneous damage at the beginning phase of chronic sun exposure, which potentially enhances skin photoaging over a lifetime.

C. Fei, Y. Xu, T. Cao, W. Jiang, Y. Zou, H. Maibach, **Effect of scratching and friction on human skin in vivo,** Skin Research & Technology, 2021, Volume 27,

Objective: To investigate effect of scratching and friction on human skin function and functional differences between scratching and friction. Method: Forty healthy volunteers were enrolled. Scratching and friction behavior was modeled by scalpel and sandpaper simulation to forearm for 80 times, respectively. Noninvasive bioengineering devices were used to measure basic skin physiological

parameters and exfoliated stratum corneum collected and protein quantified. Parameters were recorded at baseline (BL) and after every 20 times interventions (20, 40, 60, and 80 times). Results: Compared to BL, transepidermal water loss (TEWL) value increased significantly at both scratched and friction sites ($P < .001$) with a significant higher value for friction ($P < .001$). There was no significant difference in stratum corneum hydration (SCH) value postscratching ($P > .05$), while it decreased first and then increased significantly at friction site ($P < .001$). Roughness values (contract (CONT), variety (VAR), and scaliness (SEsc)) were raised significantly at both sites ($P < .001$). Net change in CONT and SEsc values of friction was higher than scratched sites ($P > .05$). There was no significant difference in blood flow after both scratching and friction ($P > .05$). Quantity of keratinocyte protein from friction sites was statistically higher than scratching after 80 times interventions ($P < .05$). Conclusion: Both noninvasive detections and protein quantification indicated more damage from friction, which may have significance for behavior guidance of patients with pruritus and implication for further investigation.

R. Nitiyarom, L. Anuntarumporn, W. Wisuthsarewong, **Skin hydration and transepidermal water loss after bathing compared between immersion and showering**, Skin Research & Technology, 2021, Volume 27

Background: Various methods of bathing may affect skin properties differently. Aims: To compare the effects of immersion and showering on skin hydration and transepidermal water loss (TEWL). Method: This experimental study included healthy volunteers whose forearms were immersed and showered for 3 minutes. Skin hydration and TEWL were assessed serially before and after immersion and showering of volunteer forearms. Results: Seventy-eight healthy volunteers (49 females, 29 males) were enrolled with an age range of 12-55 years (mean 31.41 ± 10.33). Both methods significantly increased skin hydration and TEWL ($P < .001$). The capacitance value significantly increased immediately after bathing, and then rapidly decreased within 3 minutes. It returned to baseline by 10 minutes after bathing. There was no statistically significant difference of capacitance between the two methods at any measurement ($P > .05$). TEWL at every measurement after bathing was significantly increased compared to baseline for both bathing methods ($P < .001$). The highest TEWL was observed immediately after bathing, but then significantly decreased compared to the previous measurement ($P < .001$). Conclusion: Immersion and showering similarly demonstrated significant increase in skin hydration and TEWL. The increment of capacitance after bathing returned to baseline level within 10 minutes.

S. Jarząbek-Perz, P. Mucha, H. Rotsztejn, **Corneometric evaluation of skin moisture after application of 10% and 30% gluconolactone,** Skin Research & Technology, 2021, Volume 27

Background: Dry skin, caused by improper care or genetic conditions, can affect people of all ages. Skin hydration is determined its lipid content, which inhibits water loss from the epidermis, as well as other substances such as polyhydroxy acids and gluconolactone that can bind water. The aim of this study was to evaluate skin hydration after the application of 10% and 30% gluconolactone solution in a split face model. Materials and methods: Sixteen healthy women were qualified for the study. Three split face treatments were performed, with 10% and 30% gluconolactone solution applied to two sides of the face. Skin moisture was measured before each treatment and a week after the last treatment at three measurement sites on either side of the face, that is, on the forehead, around the eye and on the cheek. Results: Corneometric measurements showed a significant increase in facial skin hydration after gluconolactone treatment. No significant differences were observed between the application of 10% and 30% solution. Conclusion: Gluconolactone is a moisturizing substance which works well in dry skin care.

H. Stettler, R. de Salvo, R. Olsavszky, E.A. Nanu, V. Dumitru, S. Trapp, **Performance and Tolerability of a New Topical Dexpanthenol-Containing Emollient Line in Subjects with Dry Skin: Results from Three Randomized Studies**, Cosmetics 2021, *8*, 18

Three studies were conducted with three new dexpanthenol-containing emollients containing increasing lipid contents (Emollients 1–3) to assess their performances in healthy adults with dry skin. All three studies (N = 42 each) followed virtually the same design. A single skin application of the study product was performed followed by once-daily usage. Skin hydration, transepidermal water loss (TEWL), skin biomechanical properties, and lipid content of the stratum corneum (SC) were regularly assessed over the 28-day study period; a subset (N = 22) underwent a sodium lauryl sulfate (SLS) challenge prior to product application. All three emollients were well tolerated and showed good performances with only minor differences in instrumental measurements. After single and prolonged once-daily applications of Emollients 1–3 to dry skin and dry SLS-damaged skin, skin hydration significantly increased from baseline (BL) (by 38.1–72.4% in unchallenged skin, $p < 0.001$ for all three). This was paralleled by significant increases in skin elasticity parameters. Usage of Emollients 1 and 3 caused increases from BL in SC cholesterol (by 9.8–12.5%, $p < 0.05$ for both) and SC free fatty acid levels (by 3.7–26.3%, $p <$

0.05 for both) at the end of the study. No sustained effects on TEWL were recorded. Our findings support the once-daily use of all three emollients in adults with dry skin.

N. Cameli, M. Silvestri, MMariano, E. Berardesca, **Effects of food supplements and a topical solution containing nanosilicon on skin hydration, barrier function, and elasticity**, J Cosmet Dermatol, 2021 Apr;20 Suppl 1: p. 32-35

Background: Silicon is an abundant element in the human body and plays an important role in the skin, taking part in the synthesis of collagen and glycosaminoglycans. The use of nanotechnology methods, which processes materials at an atomic and molecular scale, has allowed the development of nanosilicons. Aims: The study evaluates the effectiveness of a food supplement and a topical solution containing nanosilicon in improving skin hydration and elasticity. Methods: A total of 30 female subjects were randomized to receive the placebo (n = 15) and the active compound (n = 15). All enrolled subjects took the food supplement twice a day for 20 days and then once a day for the next 20 days, and they also had to apply the nanosilicon solution on the right forearm four times a day. Evaluation of several parameters was performed after 20 and 40 days through the use of non-invasive instrumental methods (Corneometer® CM 825, Cutometer® MPA 580, Visioscan® VC, Tewameter® TM 200). Results: Both treatment groups showed a statistically significant improvement in barrier function and in skin hydration on the right forearm after 20 days; increase in skin elasticity was observed only in the group taking the active compound. Conclusions: The study showed that the administration of a food supplement and a topical solution, both containing nanosilicon, improves hydration, elasticity, and skin barrier function.

S. Sipos, E.-A. Moacă, I.Z. Pavel, S. Avram, O.M. Cret, D. Coricovac, R.-M. Racoviceanu, R. Ghiulai, R.D. Pană, C.M. Şoica, F. Borcan, C.A. Dehelean, Z. Crăiniceanu, ***Melissa officinalis* L. Aqueous Extract Exerts Antioxidant and Antiangiogenic Effects and Improves Physiological Skin Parameters**, Molecules 2021, 26, 2369

Melissa officinalis (MO) is a medicinal plant well-known for its multiple pharmacological effects, including anti-inflammatory, anticancer and beneficial effects on skin recovery. In this context, the present study was aimed to investigate the in vitro and in vivo safety profile of an MO aqueous extract by assessing cell viability on normal (HaCaT—human keratinocytes) and tumor (A375—human melanoma) cells and its impact on physiological skin parameters by a non-invasive method. In addition, the antioxidant activity and the antiangiogenic potential of the extract were verified. A selective cytotoxic effect was noted in A375 cells, while no toxicity was noticed in healthy cells. The MO aqueous extract safety profile after topical application was investigated on SKH-1 mice, and an enhanced skin hydration and decreased erythema and transepidermal water loss levels were observed. The in ovo CAM assay, performed to investigate the potential modulating effect onthe angiogenesis process and the blood vessels impact, indicated that at concentrations of 100 and 500 µg/mL, MO aqueous extract induced a reduction of thin capillaries. No signs of vascular toxicity were recorded at concentrations as high as 1000 µg/mL. The aqueous extract of MO leaves can be considered a promising candidate for skin disorders with impaired physiological skin parameters.

A. Prokopová, J. Pavlačková, P. Mokrejš, R. Gál, **Collagen Hydrolysate Prepared from Chicken By-Product as a Functional Polymer in Cosmetic Formulation**, Molecules 2021, 26, 2021

Chicken stomachs can be processed into collagen hydrolysate usable in cosmetic products. The aim of the study was to verify the effects of a carbopol gel formulation enriched with 1.0% (*w*/*w*) chicken hydrolysate on the properties of the skin in the periorbital area after regular application twice a day for eight weeks in volunteers ageed 50 ± 9 years. Skin hydration, transepidermal water loss (TEWL), skin elasticity and skin relief were evaluated. Overall, skin hydration increased by 11.82% and 9.45%, TEWL decreased by 25.70% and 17.80% (always reported for the right and left area). Generally, there was an increase in skin elasticity, a decrease in skin roughness, as the resonancetimes decreased by 85%. The average reduction of wrinkles was 35.40% on the right and 41.20% on the left. For all results, it can be seen that the longer the cosmetic gel formulation is applied, the better the results. Due to the positive effect on the quality and functionality of the skin, it is possible to apply the cosmetic gel formulation in the periorbital area. The advantage of the product with chicken collagen hydrolysate is also the biocompatibility with the skin and the biodegradability of the formulation.

G. Boyer, S. Bredif, A. Ferret, S. Leclere-Bienfait, M. Le Roux, **Algae-derived active for sensitive skin**, PERSONAL CARE, April 2021, p. 29-35

Born from a close collaboration between two French companies, the active ingredient Algaenia®, made from the green gold produced by the culture of *Chlamydomonas acidophila* (Glycerin, Propanediol, Water, *Chlamydomonas Acidophila* Extract) was developed through a biotechnological process (enzymatic hydrolysis). Algaenia®, a 100% made-in-France active ingredient, is thus bio-

inspired from the ecosystem of this microalgae: as it prospered in very inhospitable waters, the resulting peptides allow the skin to withstand the harsh conditions of its environment.

N. Kakitsuba, **Underlying mechanism of diurnal change in thermal sensation response at high relative humidity**, J Therm Biol, April 2021

Diurnal changes in physiological and behavioral responses to constant relative humidity (RH) were investigated in summer to validate a hypothesis that thermal sensation responses (TSR) vary with the diurnal cycle while maintained at stable RH's of 60, 70, or 80%. Seven lightly clothed male subjects were exposed to one of three RH while air temperature (T_a) was held at 28 °C from 9:00- 18:30. Mean skin temperature ($\bar{T}_{sk}$) and tympanic temperature (T_{ty}) were monitored at 2-min intervals throughout the experimental period. Cutaneous warm and cool sensation thresholds and stratum corneum water content (SCWC) on the anterior forearm, posterior forearm, and anterior thigh, finger blood flow rate (S_kBF) were measured by a thermal stimulator controlled by a Peltierelement (Intercross-230; Intercross, Co., Tokyo, Japan), a water content of stratum corneum monitor (Corneometer CM825 & MPA 5; Integral Co., Tokyo, Japan), and a laser flowmeter (ALF21; Advance Co., Tokyo, Japan), accordingly at the end of three periods: 9:30-10:30, 13:30-14:30, and 17:30-18:30. The TSR and the thermal comfort response were also recorded using subjective scales of thermal sensation and comfort thresholds at the end of three periods. The T^{ty} and mean skin temperature ($\bar{T}_{sk}$) remained unchanged during the day under all RH conditions. Temperature difference between warm and cold sensation thresholds and S BF decreased slightly towards the evening under all RH conditions whereas SCWC increased from the morning to the evening at 60% and 80% RH. Behaviorally, the subjects responded more than "slightly warm" at 70%, and 80% RH, and then the TSR changed significantly ($p < 0.05$) to less than "slightly warm" in the evening, although $\bar{T}_{sk}$ remained unchanged at 34.0 °C. The results from the previous study in winter was reconfirmed, and the data verify the hypothesis that TSR changes diurnally even though subjects are exposed to a constant and high RH's and stable T^a. It was confirmed in summertime as previously shown in wintertime that the combined reduction in S_kBF to increases SCWC when exposed to high RH explains the altered TSR although T_a are unchanged.

J. Nawrot, J. Budzianowski, G. Nowak, I. Micek, A. Budzianowska, J. Gornowicz-Porowska, **Biologically Active Compounds in *Stizolophus balsamita* Inflorescences: Isolation, Phytochemical Characterization and Effects on the Skin Biophysical Parameters**, Int. J. Mol. Sci. 2021, 22, 4428

Three germacranolides, as well as five flavonoids, natural steroid and simple phenolic compounds, were isolated from the inflorescence of Stizolophus balsamita growing in Iran. The paper presents active compounds found for the first time in the inflorescence of this species. The flavonoids, simple phenolic compounds and natural steroids have been isolated for the first time in the genus Stizolophus. The MTT assay was employed to study in vitro cytotoxic effects of the taxifolin against human fibroblasts. We also evaluate the possible biological properties/cosmetic effects of Stizolophus balsamita extract and taxifolin on the human skin. Sixty healthy Caucasian adult females with no dermatological diseases were investigated. We evaluate the effects of S. balsamita extract and taxifolin on skin hydration and transepidermal water loss (TEWL). It was revealed that S. balsamita extract might decrease TEWL level and fixed the barrier function of the epidermis. The presence of bioactive phytochemical constituents in S. balsamita inflorescences makes them a valuable and safe source for creating new cosmetics and medicines.

P. Saraogi, V. Kaushik, R. Chogale, S. Chavan, V. Gode, S. Mhaskar, **Virgin coconut oil as prophylactic therapy again,t alcohol damage on skin in COVID times**, *J Cosmet Dermatol.* 2021;20: p. 2396–2408, J Cosmet Dermatol. 2021;20: p. 2396–2408

Background: Increased frequency of using alcohol-based hand sanitizers (ABHS) by consumers during COVID times have resulted in increased incidences of skin issues on palms. Objective: (1) To quantify skin damage with increased usage frequency of ABHS by consumers and (2) To evaluate Virgin Coconut Oil (VCO) as natural prophylactic agent to counter the adverse effects. Methods: In-home usage study was carried out with 60 volunteers for a 15-day intervention—Control Group: 6 applications per day of ABHS and Test Group: Overnight VCO use (6–8 drops) followed by 6× usage per day of ABHS. This leg included dermatological evaluation and WHO Self-Assessment Scale for skin health. Another leg of measurement included non-invasive instrumental study (Moisture & TEWL Probes, Tape Strip for protein content and IR spectroscopy for protein & lipid content) on forearm of 12 subjects (25–60 years age) with and without VCO application and repeated alcohol exposure. Results: In-home usage study established consumer experiencing skin protective effect of VCO in the context of ABHS onslaught. 25% increase in perceived moisture content was recorded for VCO users, using WHO Self-Assessment Scale. Instrumental studies confirmed an increase in TEWL and decrease in lipids & protein

content. Overnight VCO application resists the extraction which builds up with repeated application. Conclusions: Current work provides evidence of compromised hand skin barrier with ABHS daily usage. Overnight VCO application helps prepare the skin for next day alcohol use. Based on the findings, a regimen of overnight VCO application on hands as a natural prophylactic is recommended.

J. Jegal, N.-J. Park, B.-G. Jo, T.-Y. Kim, S.-K. Bong, S. Choi, J.-H. Paik, J.-W. Kim, S.-N. Kim, M.H. Yang, **Wikstroemia ganpi Extract Improved Atopic Dermatitis-Like Skin Lesions via Suppression of Interleukin-4 in 2,4-Dinitrochlorobenzene-Induced SKH-1 Hairless Mice**, Molecules 2021, 26, 2016

Plants of the genus Wikstroemia are used in Chinese traditional medicine to treat inflammatory diseases, such as arthritis, bronchitis, and pneumonia. The present study was designed to determine whether Wikstroemia ganpi (Siebold and Zucc.) Maxim. offers a potential means of treating 2,4-dinitrochlorobenzene (DNCB)-induced atopic dermatitis (AD) in mice. Symptoms such as redness, edema, and keratinization in AD mice induced by DNCB were alleviated by the co-application of an ethanolic extract of W. ganpi for 2 weeks. The severity of skin barrier function damage was evaluated by measuring TEWL (transepidermal water loss). TEWLs of DNCB sensitized mouse dorsal skin were reduced by the application of a W. ganpi ethanolic extract, and skin hydration was increased. In addition, the infiltration of inflammatory cells into the dermis was significantly reduced, as were blood levels of IgE and IL-4, which play an important role in the expression of AD. The results of this experiment suggest that W. ganpi is a potential therapeutic agent for AD.

H. Dumbuya, X. Yan, Y. Chen, J. Wangari-Olivero, S. Lynch, P. Brieva, Q. Zheng, C. Bouez, **Efficacy of Ceramide-Containing Formulations on UV-Induced Skin Surface Barrier Alterations**, J Drugs Dermatol. 2021 Apr 1;20(4), Supplement: p. 29-35.

The human skin, particularly the stratum corneum, serves as a protective barrier against exogenous factors, including ultraviolet radiation (UVR) and pathogen invasions. The impact of UVR on skin cancer and photoaging has been extensively studied. However, the direct impact of UVR on skin barrier integrity under clinical settings remains poorly explored. Due to their benefits in reducing inflammation and promoting skin barrier repair, ceramide-containing formulations can provide added photoprotection benefits. In this study, the efficacy of a ceramide-containing sunscreen and moisturizer were evaluated in preventing UV-induced skin surface barrier changes. Expert grading, instrumental, and tape-stripping assessments demonstrated that UVR induced erythema and hyperpigmentation and caused changes in skin cells surface morphological organization and maturation. Treatment with a ceramide-containing sunscreen and moisturizing cream routine reduced erythema and hyperpigmentation, improved skin hydration, and maintained normal superficial skin cells morphology and turnover after UVR. Our results indicate that barrier-enforcing lipids formulations can provide additional benefits in patients' daily routine by strengthening the barrier and improving skin health overall against chronic sun exposure.

P. Orzol, I. Doleckova, J. Starigazdova, G. Huerta-Angeles, V. Velebny, **Safe and strategic – Hyaluronic and retinoic acid derivate allays aging and acne,** Cosmetics & Toiletries, April 2021, p. 61-70

Retinoids are a group of active molecules comprising vitamin A and its natural and synthetic derivatives. Commonly used in cosmetic products, these lipophilic molecules bind to specific nuclear receptors that modulate the expression of genes involved in cellular proliferation and differentiation, e.g., of keratinocytes, which can normalize desquamation. The topical application of retinoic acid, for one, has been shown to improve clinical features of aged skin by reducing wrinkles and diminishing hyperpigmentation.

M.-J. Kim, K.-P. Kim, E. Choi, J.-H. Yim, C. Choi, H.-S. Yun, H.-Y. Ahn, J.-Y. Oh, Y. Cho, **Effects of Lactobacillus plantarum CJLP55 on Clinical Improvement, Skin Condition and Urine Bacterial Extracellular Vesicles in Patients with Acne Vulgaris: A Randomized, Double-Blind, Placebo-Controlled Study**, Nutrients 2021, 13, 1368

Lactobacillus plantarum CJLP55 has anti-pathogenic bacterial and anti-inflammatory activities in vitro. We investigated the dietary effect of CJLP55 supplement in patients with acne vulgaris, a prevalent inflammatory skin condition. Subjects ingested CJLP55 or placebo (n = 14 per group) supplements for 12 weeks in this double-blind, placebo-controlled randomized study. Acne lesion count and grade, skin sebum, hydration, pH and surface lipids were assessed. Metagenomic DNA analysis was performed on urine extracellular vesicles (EV), which indirectly reflect systemic bacterial flora. Compared to the placebo supplement, CJLP55 supplement improved acne lesion count and grade, decreased sebum triglycerides (TG), and increased hydration and ceramide 2, the major ceramide

species that maintains the epidermal lipid barrier for hydration. In addition, CJLP55 supplement decreased the prevalence of *Proteobacteria* and increased *Firmicutes*, which were correlated with decreased TG, the major skin surface lipid of sebum origin. CJLP55 supplement further decreased the *Bacteroidetes:Firmicutes* ratio, a relevant marker of bacterial dysbiosis. No differences in skin pH, other skin surface lipids or urine bacterial EV phylum were noted between CJLP55 and placebo supplements. Dietary *Lactobacillus plantarum* CJLP55 was beneficial to clinical state, skin sebum, and hydration and urine bacterial EV phylum flora in patients with acne vulgaris.

D. Leskur, I. Perišić, K. Romac, H. Šušak, A. Šešelja Perišin, J. Bukić, D. Rušić, N. Kladar, B. Božin, D. Modun, **Comparison of mechanical, chemical and physical human models of in vivo skin damage: Randomized controlled trial**, Skin Research & Technology, Volume 27, Issue 2, March 2021 p. 208-216

Introduction: Human in vivo models of skin damage were often used in research of cutaneous disorders. The most commonly used models were tape-stripping as mechanical, sodium lauryl sulphate-induced irritation as chemical and ultraviolet radiation as physical damage model. In regard to differences between models, they were expected to have different responses to damage and recovery, with unique skin parameters' changes over time. Objective: The aim was to compare skin parameters in three different skin damage models on the same anatomical location, with and without topical treatment. Methods: Four test sites on each forearm were randomly assigned to three skin damage models with the fourth sites on each forearm chosen as a control, undamaged site. Skin parameters were assessed using non-invasive methods. Results: Sodium lauryl sulphate irritation caused the strongest damage with delayed reaction to the irritant. Tape stripping leads to highest initial skin barrier disruption but afterwards it showed the fastest skin recovery. Ultraviolet radiation did not affect skin barrier function, but it elevated skin erythema and melanin level. Tested preparation did not lead to changes in measured parameters. Conclusion: The skin of the participants had different response to three skin damage models with distinct changes of skin parameters and recovery.

C. Vater, A. Apanovic, C. Riethmüller, B. Litschauer, M. Wolzt, C. Valenta, V. Klang, **Changes in Skin Barrier Function after Repeated Exposition to Phospholipid-Based Surfactants and Sodium Dodecyl Sulfate In Vivo and Corneocyte Surface Analysis by Atomic Force Microscopy**, Pharmaceutics 2021, 13, 436

(1) Background: The aim of the study was to evaluate the effect of pure lecithins in comparison to a conventional surfactant on skin in vivo. (2) Methods: Physiological skin parameters were evaluated at the beginning and the end of the study (day 1 and day 4) (n = 8, healthy forearm skin) with an Aquaflux®, skin-pH-Meter, Corneometer® and an Epsilon® sensor. Confocal Raman spectroscopy was employed to monitor natural moisturizing factor, urea and water content of the participants' skin. Tape strips of treated skin sites were taken and the collected corneocytes were subjected to atomic force microscopy. Circular nano objects were counted, and dermal texture indices were determined. (3) Results: Transepidermal water loss was increased, and skin hydration was decreased after treatment with SDS and LPC80. Natural moisturizing factor and urea concentrations within the outermost 10 µm of the stratum corneum were lower than after treatment with S75 or water. Dermal texture indices of skin treated with SDS were higher than skin treated with water (control). (4) Conclusions: Results suggest very good (S75) or good (LPC80) skin-tolerability of lecithin-based surfactants in comparison to SDS and encourage further investigation

M. Dąbrowska, I. Nowak, **Noninvasive evaluation of the influence of aucubin-containing cosmetic macroemulsion on selected skin parameters,** J Cosmet Dermatol, 2021 Mar;20(3),:p. 1022-1030

Background: Objective evaluation of skin condition on the basis of noninvasive methods has become obligatory and may be a good strategy for verifying the efficiency of new cosmetic active ingredients. Aim: The aim of this study was to assess the influence of aucubin-containing cosmetic macroemulsion on skin parameters using the skin testing equipment. Patients/methods: The study was carried out on the group of 25 female volunteers of the mean age 27 ± 2 years. The skin parameters were measured using the following devices: Tewameter® TM 300 (transepidermal water loss, TEWL), Corneometer® CM 825 (skin hydration), Cutometer® MPA 580 (skin elasticity), Visioscan® VC 98 (skin topography), and Visioline® VL 650 (skin macrorelief). All measurements were performed on the inner part of the left forearm. Results: The skin parameters measured revealed the beneficial influence of aucubin on TEWL and skin hydration level. The application of aucubin-enriched cream caused more significant improvements of all determined SELS parameters, in comparison with cream without it. An analogous tendency was noticed in the case of skin macrorelief parameters; the addiction of the active ingredient led to a decrease in the value of total wrinkle area and diminished the mean length and depth of single wrinkles. Conclusions: Noninvasive methods of skin testing have provided a possibility of

objective evaluation of the action of new active ingredients in cosmetic formulations. The study has proved the positive influence of aucubin on effectiveness of cosmetic macroemulsions, diminishing TEWL, increasing skin hydration level, and improving the values of SELS and skin macrorelief parameters.

Y.-S. Sheen, H.-Y. Huang, Y.-H. Liao, **The efficacy and safety of an antiaging topical serum containing hesperetin and sodium cyclic lysophosphatidic acid: A single-center clinical trial,** J Cosmet Dermatol, March 2021

Background: Skin aging is characterized by dehydration and degradation of the structural components in the dermis. It has been demonstrated that hesperetin possesses collagen synthesis and antioxidant properties and sodium cyclic lysophosphatidic acid (NcPA) increases skin moisture through upregulating the synthesis of hyaluronic acid. Aims: To evaluate the efficacy and safety of a serum containing hesperetin 0.1% and NcPA 0.1% for photoaged skin. Patients/methods: The trial consisted of a 12-week topical application of the test product twice daily. A total of 35 female subjects were enrolled. The primary outcome was the change of skin hydration and elasticity, which were determined by Corneometer and Cutometer measurements. Skin biopsy for histological evaluations and subject's self-assessment were conducted. Results: At week 12, a significant improvement of stratum corneum hydration ($p = 0.015$) and skin elasticity ($p < 0.001$) was detected comparing to baseline. The skin biopsy showed significantly improved scores of hyaluronic acid levels ($p = 0.034$) and elastic fiber structure ($p = 0.023$). Moreover, the test product resulted in a significant subject-reported overall satisfaction rate 94.3% after 12-week application ($p = 0.005$). Conclusion: Skin care product containing hesperetin and NcPA showed significant antiaging effects on skin hydration and elasticity.

A. Roca, M. Perez-Aso, B. Martinez-Teipel, J. Bosch, **Glowing Review - Monk Fruit Encourages Epigenetic Well Aging**, Cosmetics & Toiletries, March 2021, p. 53-62

Aging is characterized by the accumulation of macromolecular damage, impaired tissue renewal and progressive loss of physiological integrity. Over the past decade, a growing number of studies also has revealed that progressive changes to epigenetic information have a major influence on the aging process. Lifestyle habits, diet, pollution and other environmental factors all impact the human life span by altering epigenetic information. Therefore, given the reversible nature of epigenetic mechanisms, these studies provide promising avenues for healthy aging.

E. Besic Gyenge, S. Hettwer, B. Suter, B. Obermayer, **Genderless cosmetics with gender-specific efficacy**, PERSONAL CARE, March 2021, p. 50-52

Unisex was yesterday's trend – genderless beauty is here to stay. The definition of gender has become very fluid. It now goes beyond simply 'male' and 'female', taking the form of a desire for acceptance and empowerment in one's own person. Man, woman, transgender and those who fall under any other definitions of gender should be able not only to share fashion but also their lotions and potions. From the consumers' point of view, this makes cosmetics more practical and sustainable. Nevertheless, genderless cosmetics should not be defined in terms of non-binary fragrances but rather by their mode of action, which should adapt to the respective needs of various skin types. However, where to start? Can genderless skin care truly cater to the distinct needs of male and female skin? Are there differences between male and female skin? With this in view, our approach has been to develop Reforcyl®-Aion, an active ingredient with the capability to spring clean skin cells, activating and rejuvenating them, improving overall skin appearance and positively influencing the personal perception of beauty. Reforcyl-Aion meets the individual needs of skin regardless of gender or age.

H.S. Han, S.H. Shin, J.W. Park, K. Li, B.J. Kim, K.H. Yoo, **Changes in skin characteristics after using respiratory protective equipment (medical masks and respirators) in the COVID-19 pandemic among healthcare workers**, Contact Dermatitis. 2021;85: p. 225–232

Background: The coronavirus disease-2019 (COVID-19) outbreak has presented unique dermatologic challenges due to respiratory protective equipment (RPE)– related skin conditions. Objective: To objectively evaluate the effects of RPE including medical masks and respirators on the skin barrier by measuring various physiological properties of the skin. Methods: A cross-sectional study was designed. Twenty healthy healthcare workers were included in this study. Skin parameters including skin hydration, transepidermal water loss (TEWL), erythema, sebum secretion, pH, and skin temperature were measured in the RPE-covered and RPE-uncovered areas of the face 4 and 8 hours after wearing RPE and 14 hours after not wearing RPE. Results: Skin hydration, TEWL, erythema, pH, and skin temperature increased in the RPE-covered areas after wearing RPE for 4 and 8 hours. By contrast, in the RPEuncovered areas, skin hydration decreased and TEWL, erythema, and pH showed minimal changes over time. Based on the repeated-measure analysis, the changes in skin physiological

properties over time were significantly different between RPEcovered and RPE-uncovered areas. Conclusion: We observed that skin physiological characteristics change with the prolonged use of RPE such as medical masks and respirators. These changes may lead to various adverse skin reactions after long-term use.

M. Zagórska-Dziok, T. Bujak, A. Ziemlewska, Z. Nizioł -Łukaszewska, **Positive Effect of *Cannabis sativa L.* Herb Extracts on Skin Cells and Assessment of Cannabinoid-Based Hydrogels Properties**, Molecules 2021, 26, 802

The skin is an organ that is constantly exposed to many external factors that can affect its structure and function. Due to the presence of different cannabinoid receptors on many types of skin cells, cannabinoids can interact directly with them. Therefore, as part of this work, the impact of two types of *Cannabis sativa L.* herb extracts on keratinocytes and fibroblasts was assessed. The content of biologically active compounds such as phenols, flavonoids, chlorophylls and cannabinoids was evaluated. The antioxidant capacity of prepared extracts using the DPPH radical, H2DCFDA probe and measurement of superoxide dismutase activity was also assessed. The cytotoxicity of hemp extracts was determined using the Alamar Blue, Neutral Red and LDH assays. The ability of the extracts to inhibit the activity of matrix metalloproteinases, collagenase and elastase, was assessed. Preparations of model hydrogels were also prepared and their effect on transepidermal water loss and skin hydration was measured. The obtained results indicate that hemp extracts can be a valuable source of biologically active substances that reduce oxidative stress, inhibit skin aging processes and positively affect the viability of skin cells. The analysis also showed that hydrogels based on cannabis extracts have a positive effect on skin hydration.

H.R. Moldovan, I. Manole, A. Suru, A.-I. Butacu, A.L. Tatu, A. Lupu, M. Dascalu, G.-S. Tiplica, C.M. Salavastru, **Prevention of Hand Eczema among Nurse Apprentice (PREVEDERM): An Interventional Study**, Annals of Work Exposures and Health, 2021, Vol. 65, No. 2, p. 67–175

Background: Workers in the healthcare sector are at high risk of developing occupational hand eczema mainly due to frequent exposure to irritants and/or allergens. Amongst workers in healthcare, nurses are at higher risk of developing hand dermatitis. Objectives: To evaluate the effectiveness of a short educational intervention program in preventing occupational hand eczema in nurse apprentices, using two objective tools, namely TEWL and EH, and the HECSI score. Methods: Data regarding professions, wet work exposure, activities performed during working hours, self-reported eczema were collected from 230 nurse students, divided in two study groups: the intervention and the control group (CG). The intervention group (IG) was given education about risks and proper skin care and was provided with cosmeceuticals to be used for skin care during hospital activity. The evaluation of skin properties was performed using questionnaires, HECSI score, measurement of transepidermal water loss (TEWL) and epidermal hydration (EH). Results: A number of 139 apprentice nurses completed the study. Of those participants who completed the study, 19.1% from CG and 19.6% from IG reported, at T1, hand eczema in the last 3 months, while at T2 (3 months later), 59.52 % of the CG and only 11.34 % from the IG stated having eczema in the last 3 months. In the IG, results showed an improvement of CM with 17% and of TEWL with 16%, with only a 0.5% improvement of CM in CG and a marked impairment of TEWL by 33%. Conclusion: Hand eczema is a common occupational dermatosis affecting the medical staff, even during apprenticeship. Early preventive training programs are effective in reducing the burden of occupational contact dermatitis.

S. Leoty-Okombi, F. Gillaizeau, S. Leuillet, B. Douillard, S. le Fresne-Languille, T. Carton, A. de Martino, P. Moussou, C. Bonnaud-Rosaye, V. André, **Effect of Sodium Lauryl Sulfate (SLS) Applied as a Patch on Human Skin Physiology and Its Microbiota**, Cosmetics 2021, *8*, 6

In this study, we assessed the change in skin microbiota composition, relative abundance, and diversity with skin physiology disruption induced by SLS patch. Healthy women declaring to have a reactive skin were submitted to a 0.5% aqueous sodium lauryl sulfate solution application under occlusive patch condition for 24 h. Skin properties were characterized by tewametry, corneometry, and colorimetry and bacterial diversity was assessed by 16S rRNA sequencing. Analysis before and one day after SLS patch removal revealed an increase of skin redness and a decrease of stratum corneum hydration and skin barrier function. The relative abundance of taxa containing potential pathogens increase (Firmicutes: Staphylococcaceae; Proteobacteria: Enterobacteriaceae, Pantoea) while some of the most occurring Actinobacteria with valuable skin protection and repair capacities decreased (Micrococcus, Kocuria, and Corynebacterium). We observed an impaired skin barrier function and dehydration induced by SLS patch disturb the subtle balance of skin microbiota towards skin bacterial community dysbiosis. This study provides new insights on the skin bacterial composition and skin physiology simultaneously impaired by a SLS patch.

M. Mayer-Yousif, W. Konschake, H. Haase, M. Jünger, H. Riebe, **Influence of Medical Compression Stockings on Skin Hydration in Mainly Health Care Givers with Occupational Leg Symptoms and Edema**, Skin Pharmacol Physiol 2021;34: p.57–73

Background and Objective: Although compression therapy is a very effective therapy in reducing stasis-induced complaints, the wearing comfort is not always as requested. Most frequent problems are dryness of the skin and itching. This randomized, cross-over trial investigated 33 healthy participants and compared 2 different medical compression stockings: conventional stockings (type A = MCS) versus compression stockings with integrated care emulsion (type B = MCSSkC). Methods: Participants were divided into 2 cohorts. Both compression types were worn one after the other, 1 week each. The cohorts were named according to the sequence of the wearing periods (cohort AB/BA). Primary outcome: skin hydration. Secondary outcomes: transepidermal water loss (TEWL), skin roughness, leg volume, interface pressure, and questionnaires about stasis-induced complaints and wearing comfort. Results: Skin hydration: significant reduction after wearing MCS in both cohorts ($p < 0.001$); preservation of skin moisture after wearing MCS-SkC ($p = 0.546$ and $p = 0.1631$). TEWL: significant increase after wearing MCS ($p = 0.007$ and $p = 0.0031$); significant reduction by wearing MCS-SkC ($p = 0.006$ and $p = 0.0005$). Skin roughness: significant increase after wearing MCS ($p = 0.0015$ and $p = 0.010$), and nonsignificant decrease of skin roughness after wearing MCS-SkC ($p = 0.933$ and $p = 0.4570$). Leg volume: significantly reduced with both stockings ($p = 0.004$ and $p = 0.0047$). Regarding stasis-induced complaints, both stockings achieved good results. Conclusions: Both compression stockings are appropriate to reduce leg edema and minimize leg symptoms. MCS-SkC helps to obtain the natural skin barrier function in preserving the epidermal water content and reducing the TEWL.

K. Chilicka, A.M. Rogowska, R. Szyguła, **Effects of Topical Hydrogen Purification on Skin Parameters and Acne Vulgaris in Adult Women**, Healthcare 2021, 9, 144

Background: Acne vulgaris is a prevalent dermatological disease characterized by skin eruptions, which may decrease the sufferer's quality of life. Hydrogen purification treatment is a new procedure used in cosmetology to improve the skin parameters of the face. This study examined the effectiveness of hydrogen purification treatment to improve women's skin conditions with regard to acne vulgaris. Methods: In this study, 30 women participated who suffered from a high level of sebum and acne. The control group was comprised of 30 healthy women with a low level of sebum. The Hellgren–Vincent Scale and Derma Unit SSC 3 device were used to assess acne vulgaris severity and skin properties, respectively. Four hydrogen purification sessions were carried out at 7-day intervals, using the Hebe Hydrogenium+ generating alkaline water. Results: At baseline and 7 and 14 days after finishing the series of treatments, the levels of oiliness, moisture, and skin pH were tested. The main effects of treatment were significant in the following parameters: pH around the bottom lip, moisture between the eyebrows and around the nose, and oily skin in all three face sites. Conclusions: The level of sebum decreased and moisture levels increased during hydrogen purification. Topical hydrogen purification is an effective and safe treatment for acne vulgaris.

J. Kottner, U. Blume-Peytavi, **Reliability and agreement of instrumental skin barrier measurements in clinical pressure ulcer prevention research**, Int Wound J. 2021; p. 1-12

In skin and wound research the instrumental measurement of skin function is established. Despite the widespread use, empirical evidence about measurement errors is widely lacking. The aim of this study was to measure reliability and agreement of skin temperature, transepidermal water loss, epidermal hydration, and erythema at the heel and sacral skin. Four experienced researchers performed skin measurements in 15 subjects. Lowest reliability was observed for transepidermal water loss at the sacral skin (ICC (1) 0.46 (95% CI 0.00-0.78)) and highest for skin temperature at the heel skin (ICC (1) 0.99 (95% CI 0.99-1.00)). Lowest Standard Errors of Measurement were calculated for skin temperature measurements at the heels (0.11°C) and highest for erythema measurements at the sacral skin (26.7 arbitrary units). There was a clear association between variability of estimates and reliability coefficients. Single measurements of skin temperature, stratum corneum, and epidermal hydration at the sacral and heel skin areas can be used in clinical research and practice. Means of at least two measurements should be used for estimating transepidermal water loss and erythema. Evidence is needed to inform researchers about relative and absolute measurement errors of commonly applied instruments and measurements in skin and wound research.

C. Uhl, D. Khazaka, **Pomiar Rzeczywistego Wieku Skóry,** CHEMIA I BIZNES. 1/2021

Nagłówki w czasopismach i blogi coraz częściej ogłaszają, że „50 lat to nowe 30". Czy to faktycznie prawda? Czy osoby „po pięćdziesiątce" rzeczywiście są dziś bardziej sprawne fzycznie i umysłowo – i wyglądają młodziej – niż kiedyś?

A. Tortora, M. Bimonte, A. Tito, C. Zappelli, F. Apone, **Soothing Moves - Cannabis Sativa Cell Culture Alleviates Inflammation**, Cosmetics & Toiletries, January 2021, p. 34-44

Originating from central Asia, Cannabis sativa is an annual herbaceous flowering plant. Although used medicinally for centuries, it recently has experienced a significant resurgence in interest, becoming a buzzword in beauty. The main reasons behind this are the richness of chemical compounds produced by the plant and the significant opening up of regulatory markets. Cannabis plants contain more than 500 known compounds.

G.G. Hillebrand, P. Dimitriu, K. Malik, Y. Park, D. Qu, W.W. Mohn, R. Kong, **Temporal Variation of the Facial Skin Microbiome: A 2-Year Longitudinal Study in Healthy Adults**, Plast. Reconstr. Surg. 147: 50S, 2021

Background: The human skin microbiome is highly personalized, depending on, for example, body site, age, gender, and lifestyle factors. The temporal stability of an individual's skin microbiome—its resiliency and robustness over months and years—is also a personalized feature of the microbiome. The authors measured the temporal stability of the facial skin microbiome in a large cohort of subjects. In addition to measuring microbiome dynamics, they tracked facial skin condition using noninvasive, objective imaging and biophysical measures to identify signifcant facial features associated with temporal changes in microbiome diversity and composition. Methods: The authors used 16S ribosomal RNA amplicon sequencing to track cheek and forehead skin microbiome diversity and composition annually over a 2-year period (2017–2019) in 115 healthy adult men and women. Skin metadata included facial features, such as wrinkles, hyperpigmentation, porphyrins, and skin color tone, as well as biophysical parameters for stratum corneum barrier function, pH, hydration, and elasticity. Results: Across the subject population, the facial skin microbiome composition and diversity were relatively stable, showing minor variation over the 2-year period. However, for some subjects, composition, diversity, and relative abundance of specifc organisms showed substantial changes from one year to the next, and these changes were associated with changes in stratum corneum barrier function and follicular porphyrins. Conclusions: For healthy people, facial skin microbiome diversity and composition are relatively stable from year to year. Tracking the temporal changes in the microbiome along with skin phenotypic changes allows for a deeper understanding of the skin microbiome's role in health and disease. These results should be helpful in the design of longer-term intervention trials with microbiome-based skin care treatments.

H. Stettler, J.M. Crowther, M. Brandt, B. Lu, A. Boxshall, R. de Salvo, S. Laing, N. Hennighausen, S. Bielfeldt, P. Blenkiron, **Targeted dry skin treatment using a multifunctional topical moisturizer**, International Journal of Cosmetic Science, 2021, 43, p. 191–200

Objective: The development of dry skin is a complex process, with a wide variety of factors each playing different roles in its evolution. Given this, it is important when designing a formulation to tackle dry skin that these varied aspects of skin behaviour are addressed. Presented here are the results of a 3-week moisturization study carried out on dry legs. A wide range of traditional and more recently developed biophysical measurement methods have been combined with visual assessment of skin condition to enable multiple aspects of skin function to be determined. The observed changes in the skin are discussed in terms of the ingredients used in the moisturizing formulation. Methods: A range of novel and traditional skin assessment methods and techniques were used to assess the effects of an oil in water-based moisturizing product compared to an untreated site during a 3-week in vivo study on dry lower leg skin. Results: Statistically significant improvements were observed in a range of skin parameters as a result of product usage. Skin hydration assessed using Corneometer, Epsilon and visual dry skin grading all increased after 3 weeks of use. Skin barrier function measured using transepidermal water loss also improved. Levels of cholesterol, free fatty acids and Ceramide NH increased, as well as the average length of the stratum corneum (SC) lipid lamella bilayers, and the ratio of lipid to protein increased (measured using Lipbarvis and in vivo Confocal Raman Spectroscopy). Increases in the levels of Ceramide EOS and NP were also observed, along with an improvement in corneocyte maturity, although these were not statistically significant. Conclusions: Using a variety of traditional and novel skin assessment techniques, a wide range of factors associated with the evolution of dry skin have been assessed upon treatment with a new topical moisturizer. Product usage resulted in significant improvements to skin hydration and barrier function, the levels and morphology of SC barrier lipids, and overall epidermal differentiation. As a result there was a significant reduction in the characteristics associated with the development of dry skin after use of the test product.

H. Stettler, J. M. Crowther, M. Brandt, A. Boxshall,B. Lu, R. de Salvo, S. Laing, N. Hennighausen, S. Bielfeldt, P. Blenkiron, **Multi parametric biophysical assessment of treatment effects on xerotic**

skin, Health and Disease, 1, 2021

Background: Topical moisturizing products are widely used to alleviate the problems associated with xerotic skin. Their use affects many properties of the stratum corneum (SC) in a complex and interrelated manner. The range of measurement techniques available to the researcher has increased in recent years. However, few studies have looked for correlations between the different techniques for assessing how aspects of xerotic skin change over time as a result of topical moisturizer usage. Objectives: A 3-week in vivo study using an oil-in-water based moisturizing product and an untreated site was conducted to determine the clinical signifcance of and any correlations between a range of different approaches for the measurement of skin lipid content and also skin hydration and visual grading of dry skin. Methods: A range of traditional and more recently developed skin measurement techniques have been used to examine a variety of SC properties in normal and xerotic skin during topical moisturizer usage. Results: In vivo confocal Raman spectroscopy and analysis of SC lipids from tape strips both showed an increase in SC lipid level and organization after 3 weeks of moisturizer usage on xerotic skin. Hydration, measured both optically and electrically, also increased and skin barrier function improved, with strong correlations between the different measures of dryness being observed. Conclusions: Strong correlations were observed between the skin measurements for lipid assessment and skin hydration with regard to the assessment of xerotic skin, providing valuable new information for future in vivo clinical research into dry and atopic skin.

J. Kim, H. Yeo, T. Kim, E.-T. Jeong, J.M. Lim, S.-G. Park, **Relationship between lip skin biophysical and biochemical characteristics with corneocyte unevenness ratio as a new parameter to assess the severity of lip scaling**, Int J Cosmet Sci. 2021;43: p. 275–282

Objective: Lip skin dryness and chapping are major concerns related to lip skin care in many populations. The distinctive features of lip skin, such as the low waterholding capacity and weak skin barrier, are strongly associated with these problems; however, few studies have examined lip skin characteristics and the mechanisms underlying these issues. This study was conducted to identify the biophysical properties of dry lip skin and molecular targets affecting lip skin physiology. Methods: Skin hydration, transepidermal water loss and lip skin scaling were evaluated in 40 female subjects. Skin scaling was assessed as a percentage area divided into five categories (G0, G1, G2, G3 and G4) according to the thickness level of tape-stripped corneocytes. The activities and amounts of proteases, cathepsin D and bleomycin hydrolase were measured as markers for the desquamation process and skin hydration, respectively. Results: Skin hydration showed a significantly positive correlation with the percentage area of evenly thin corneocytes (G0) and negative correlations with the percentage areas of slightly thick to severely thick corneocytes (G1-G4). The corneocytes unevenness ratio (CUR) was calculated by dividing the sum of the G1, G2, G3 and G4 values with the G0 value. The CUR was significantly negatively correlated with skin hydration, suggesting that CUR is a new parameter representing the severity of lip scaling. Subjects with lower hydration and higher CUR had higher bleomycin hydrolase activity and lower cathepsin D activity, respectively, than subjects with higher hydration and lower CUR. Conclusion: Our study revealed a correlation between lip skin hydration and severity of lip scaling and verified the association of protease activity with the hydration and chapping state of lip skin. These observations provide a basis for further studies of the persistent problem of lip skin dryness and chapping.

T. Montero-Vilchez, M.-V. Segura-Fernández-Nogueras, I. Pérez-Rodríguez, M. Soler-Gongora, A. Martinez-Lopez, A. Fernández-González, A. Molina-Leyva, S. Arias-Santiago, **Skin Barrier Function in Psoriasis and Atopic Dermatitis: Transepidermal Water Loss and Temperature as Useful Tools to Assess Disease Severity**, J. Clin. Med. 2021, 10, 359

Multiple diagnostic tools are used to evaluate psoriasis and atopic dermatitis (AD) severity, but most of them are based on subjective components. Transepidermal water loss (TEWL) and temperature are skin barrier function parameters that can be objectively measured and could help clinicians to evaluate disease severity accurately. Thus, the aims of this study are: (1) to compare skin barrier function between healthy skin, psoriatic skin and AD skin; and (2) to assess if skin barrier function parameters could predict disease severity. A cross-sectional study was designed, and epidermal barrier function parameters were measured. The study included 314 participants: 157 healthy individuals, 92 psoriatic patients, and 65 atopic dermatitis patients. TEWL was significantly higher, while stratum corneum hydration (SCH) (8.71 vs. 38.43 vs. 44.39 Arbitrary Units (AU)) was lower at psoriatic plaques than at uninvolved psoriatic skin and healthy controls. Patients with both TEWL > 13.85 g·m-2h-1 and temperature > 30.85 ◦C presented a moderate/severe psoriasis (psoriasis area severity index (PASI) ≥ 7), with a specificity of 76.3%. TEWL (28.68 vs. 13.15 vs. 11.60 g·m-2 h-1) and temperature were significantly higher, while SCH (25.20 vs. 40.95 vs. 50.73 AU) was lower at AD eczematous lesions than uninvolved AD skin and healthy controls. Patients with a temperature > 31.75 ◦C presented a

moderate/severe AD (SCORing Atopic Dermatitis (SCORAD) ≥ 37) with a sensitivity of 81.8%. In conclusion, temperature and TEWL values may help clinicians to determine disease severity and select patients who need intensive treatment.

J.N. Li, S.M. Henning, G. Thames, O. Bari, P.T. Tran, C.-H. Tseng, D. Heber, J. Kim, Z. Li, **Almond consumption increased UVB resistance in healthy Asian women**, J Cosmet Dermatol. 2021;20,: p. 2975–2980

Background: Almonds are a rich source of phenolic and polyphenolic compounds, which have antioxidant activity. In vitro and in vivo studies have demonstrated that topical application of almond oil and almond skin extract reduces UVB-induced photoaging. Ultraviolet-B (UVB) protection by oral almond consumption has not been previously studied in humans. Objectives: To investigate whether oral almond consumption can increase resistance to UVB radiation and reduce skin aging in healthy Asian women. Methods: Thirty-nine female participants (18-45 years) with Fitzpatrick skin type II-IV were randomly assigned to consume either 1.5 oz of almonds or 1.8 oz of pretzels daily for 12 weeks. Minimal erythema dose (MED) was determined using a standardized protocol, which determined the minimal radiation needed to induce erythema on the inner arm following UVB exposure. Facial skin texture was evaluated by two dermatologists using the Clinician's Erythema Assessment scale and Allergan Roughness scale. Facial melanin index, hydration, sebum, and erythema were determined using a cutometer. Results: The MED was increased in the subjects consuming almonds compared to the control group consuming pretzels. There were no differences noted between the groups consuming almonds versus pretzels in Allergan roughness, melanin, hydration, or sebum on facial skin. Conclusions: Our findings suggest that daily oral almond consumption may lead to enhanced protection from UV photodamage by increasing the MED.

*K. Ogai, K. Ogura, N. Ohgi, S. Park, M. Aoki, T. Urai, S. Nagase, S. Okamoto, J. Sugama***, Stability of Skin Microbiome at Sacral Regions of Healthy Young Adults, Ambulatory Older Adults, and Bedridden Older Patients After 2 Years**, Biological Research for Nursing, 2021, Vol. 23(1) p. 82-90

Objective: The sacral skin of bedridden older patients often develops a dysbiotic condition. To clarify whether the condition changes or is sustained over time, we analyzed the skin microbiome and the skin physiological functions of the sacral skin in patients who completed our 2017 study. Methods: In 2019, we collected the microbiome on the sacral region and measured sacral skin hydration, pH, and transepidermal water loss from 7 healthy young adults, 10 ambulatory older adults, and 8 bedridden older patients, all of whom had been recruited for the 2017 study. For microbiome analysis, 16S ribosomal RNA-based metagenomic analysis was used. Results: No significant differences in the microbial compositions or any alpha diversity metrics were found in the bedridden older patients between the 2017 and 2019 studies; the higher gut-related bacteria were still observed on the sacral skin of the bedridden older patients even after 2 years. Only skin pH showed a significant decrease, approaching normal skin condition, in the bedridden older patients over 2 years. Conclusion: This study indicated that gutrelated bacteria stably resided in the sacral skin in bedridden patients, even if the patient had tried to restore skin physiological functions using daily skin care. We propose the importance of skin care that focuses more on bacterial decontamination for the sacral region of bedridden older patients, in order to decrease the chances of skin/wound infection and inflammation.

A. Gledovic, A. Janosevic Lezaic, I. Nikolic, M. Tasic-Kostov, J. Antic-Stankovic, V. Krstonosic, D. Randjelovic, D. Bozic, D. Ili, S. Tamburic, S. Savic, **Polyglycerol Ester-Based Low Energy Nanoemulsions with Red Raspberry Seed Oil and Fruit Extracts: Formulation Development toward Effective In Vitro/In Vivo Bioperformance**, Nanomaterials 2021, 11, 217.

This study focuses on the development of biocompatible oil-in-water (O/W) nanoemulsions based on polyglycerol esters, as promising carriers for natural actives: red raspberry seed oil—RO and hydro-glycolic fruit extracts from red raspberry—RE and French oak—FE. Nanoemulsions were obtained via phase inversion composition (PIC) method at room temperature by dilution of microemulsion phase, confirmed by visual appearance, percentage of transmittance, microscopic, rheological and differential scanning calorimetry (DSC) investigations. The results have shown that the basic RO-loaded formulation could be further enriched with hydro-glycolic fruit extracts from red raspberry or French oak, while keeping a semi-transparent appearance due to the fine droplet size (Z-ave: 50 to 70 nm, PDI value ≤ 0.1). The highest antioxidant activity (~92% inhibition of the DPPH radical) was achieved in the formulation containing both lipophilic (RO) and hydrophilic antioxidants (FE), due to their synergistic effect. The nanoemulsion carrier significantly increased the selective cytotoxic effect of RO towards malignant melanoma (Fem-X) cells, compared to normal human keratinocytes (HaCaT). In vivo study on human volunteers showed satisfactory safety profiles and significant improvement in skin hydration during 2 h after application for all nanoemulsions. Therefore, polyglycerol ester-based

nanoemulsions can be promoted as effective carriers for red raspberry seed oil and/or hydro-glycolic fruit extracts in topical formulations intended for skin protection and hydration.

Y.J. Tak, D.K. Shin, A.H. Kim, J.I. Kim, Y.L. Lee, H.-C. Ko, Y.-W. Kim, S.Y. Lee, **Effect of Collagen Tripeptide and Adjusting for Climate Change on Skin Hydration in Middle-Aged Women: A Randomized, Double-Blind, Placebo-Controlled Trial**, Frontiers in Medicine, January 2021, Volume 7

Introduction: Although collagen is widely used in various forms as a functional ingredient in skin care products, the effect of oral supplementation of collagen tripeptides (CTPs) on human skin is unclear. Moreover, the majority of the positive outcomes of CTP reported so far have not considered the effect of weather conditions. Therefore, we tested the effect of CTP and adjusting for climate change on skin properties in middle-aged women.Materials and Methods: A randomized controlled trial was conducted with 84 women between 40 and 60 years of age. Participants were randomized to receive placebo or 1,000 mg CTP daily for 12 weeks. CTP was prepared from the skin of Nile Tilapia by the digestion method using collagenase from non-pathogenic bacteria of the genus Bacillus. Skin hydration, wrinkling, and elasticity were assessed at baseline and after 6 and 12 weeks with adjustments for temperature, humidity, and ultraviolet A exposure during the evaluation time using weather data from the regional meteorological office. Results: Of the 82 participants, 74 completed the trial without adverse effects. Compared with the control group, trans-epidermal water loss was reduced more in the CTP group after 12 weeks ($P < 0.05$). At 12 weeks, even after adjustment for humidity, temperature, and UVA in the region, the difference of the two groups in TEWL remained statistically significant (adjusted for humidity and temperature, $P = 0.024$; adjusted for UVA, $P = 0.032$; adjusted for temperature, high temperature, and ultraviolet A, $P = 0.031$). In terms of skin hydration, more improvement was evident in the CTP group than in the control group. In the subgroup analysis, subjects under 50 years of age showed a significant improvement in total score and moisture in the subjective skin improvement questionnaire after taking CTP for 12 weeks. Application of CTP was well-tolerated, and no notable adverse effect was reported from both groups. Discussion: Our findings suggest that oral ingestion of CTP from the Skin of Nile Tilapia (Oreochromis niloticus) is well-tolerated and helps reduce water loss in in middle-aged women.

B. Kyoung Hwang, S. Lee, J.-O. Myoung, S.J. Hwang, J.M. Lim, E.T. Jeong, S.G. Park, S.H. Youn, **Effect of the skincare product on facial skin microbial structure and biophysical parameters: A pilot study**, MicrobiologyOpen. 2021

Daily use of cosmetics is known to affect the skin microbiome. This study aimed to determine the bacterial community structure and skin biophysical parameters following the daily application of a skincare product on the face. Twenty-five Korean women, who used the same skincare product for four weeks participated in the study. During this period, skin hydration, texture, sebum content, and pH were measured, and skin swab samples were collected on the cheeks. The microbiota was analyzedusing the MiSeq system. Through these experiments, bacterial diversity in facial skin increased and the microbial community changed after four weeks of skincare product application. The relative abundance of Cutibacterium and Staphylococcus increased, significant changes in specific bacterial modules of the skin microbial network wereobserved, and skin hydration and texture improved. It was suggested that daily use of skincare products could affect the microbial structure of facial skin as well as the biophysical properties of the facial skin. These findings expand our understanding of the role of skincare products on the skin environment.

P. Torreao, E. Phua, R. Clark, E. Fernandes, T. Pontes, A.P. Fonseca, N. Singh, B. Seesurn, M. Nielsen, A. Valois, D. Kerob, **Evaluation of the efficacy and tolerance of a cosmetic mask containing 89% of vichy volcanic mineralizing water and hyaluronic acid after facial laser procedures**, J Cosmet Dermatol. 2021;20, p. 2860–2866

Background: M89 M (Mineral 89 mask, Laboratoires Vichy, France), containing 89% Vichy volcanic mineralizing water and hyaluronic acid, aims to strengthen and repair skin barrier. Aims: To assess the efficacy, tolerance, patient satisfaction, and quality of life (QOL) using M89 M after laser procedures (LP). Methods: M89 M was applied immediately post-LP for 10 minutes, then daily for 5 days and 2-3 times a week, up to 28 days on the faces of 51 women. Evaluations were performed immediately post-LP, immediately after M89 M application at D0, D1, D5, and D28, and included criteria such as erythema and skin dryness. Subjects scored burning and warm sensations, itching, skin tightness, and stinging. Skin hydration using a Corneometer, skin barrier integrity using a Tewameter, and erythema using a Chromameter were assessed. Local tolerance and adverse events were recorded. After 28 days, subjects answered a questionnaire regarding the M89 M subjective cosmetic properties and QOL. Results: All subjects were in their mid-forties with a phototype of II, III, or IV. M89 M significantly ($P <$

.001) reduced the immediate cutaneous discomfort sensation and laser procedure-related symptoms (burning, warmth sensation, itching/stinging, skin tightness). Skin hydration, and erythema, assessed using instrumental measures, were also significantly improved immediately after mask application ($P \leq .01$). Subjects highly appreciated M89 M and their QOL improved after 28 days of use. Local tolerance was good to excellent in both studies. Conclusion: M89 M is effective and safe immediately after esthetic procedures such as ablative and nonablative lasers and also improves the subject's QOL.

Y. Tezuka, O. Sekine, A. Hirano, Y. Hanada, I. Nakanishi, M. Ariga, C. Azuma, Y. Yamamoto, J. Ito-Kobayashi, M. Washiyama, M. Iwanishi, M. Furuta, M. Kanamori, A. Shimatsu, A. Kashiwagi, **A Prospective, Open-Label Short-Term Pilot Study on Modification of the Skin Hydration Status During Treatment With a Sodium-Glucose Cotransporter-2 Inhibitor**, Diabetes Ther (2021) 12: p. 431–440

Introduction: Various types of skin lesions with pruritus have been reported in participants of Asian clinical trials on sodium-glucose cotransporter-2 (SGLT2) inhibitors. The aim of this study was to determine whether the diuretic effect of a SGLT2 inhibitor could modify skin hydration status in patients with type 2 diabetes mellitus. Methods: A prospective, short-term, open-label, two-parallel-arm, pilot study was conducted. Eligible patients were assigned to either a SGLT2 inhibitor (50 mg ipragliflozin once daily) group or to a dipeptidyl peptidase-4 inhibitor (50 mg sitagliptin once daily) group (control). The biophysical characteristics of the skin were measured and blood chemistry tests were run in all participants 1 day prior to medication initiation (pre-treatment values) and 14 days thereafter (post-treatment values). Results: Fourteen patients were enrolled in the study, of whom eight were in the ipragliflozin group and six in the sitagliptin group. Compared to the pre-treatment values, the glycated hemoglobin (HbA1c) levels were slightly but significantly reduced in the ipragliflozin group ($p = 0.02$), but the changes in HbA1c from the pre-treatment to post-treatment time points did not significantly differ between the two treatment groups. Serum 3-hydroxy butyrate levels were significantly higher in the ipragliflozin group than in the sitagliptin group (p \ 0.02). Neither electrical capacitance nor electrical conductance of the stratum corneum (SC), parameters that reflect skin water content, was reduced by 14 days of ipragliflozin treatment; similarly, no changes in these parameters were found in the sitagliptin control group. There was also no difference in the changes in water barrier function of the SC between the two treatment groups. There was a significant linear correlation (p \ 0.01) in skin water content at pre-treatment and that 14 days after treatment with each drug, respectively. Conclusion: Ipragliflozin treatment for 14 days did not significantly affect the skin hydration status in patients with well-controlled type 2 diabetes mellitus.

M. Zagórska-Dziok, A. Ziemlewska, T. Bujak, Z. Nizioł -Łukaszewska, Z. Hordyjewicz-Baran, **Cosmetic and Dermatological Properties of Selected Ayurvedic Plant Extracts,** Molecules 2021, 26, 614

Due to the constantly growing interest in ingredients of natural origin, this study attempts to evaluate the possibility of using extracts from three Ayurvedic plants in preparations for the care and treatment of skin diseases. Therefore, studies of antioxidant properties were carried out using DPPH and ABTS radicals, obtaining 76% and 88% of these radical scavenging, respectively. A significant decrease in the intracellular level of free radicals and an increase in the activity of the antioxidant enzyme-superoxide dismutase by almost 60% were also observed. In addition, the extracts were assessed for anti-inflammatory and anti-aging properties, obtaining over 70% inhibition of lipoxygenase activity and almost 40% of collagenase. Additionally, the cytoprotective properties of the obtained extracts on skin cells, keratinocytes and fibroblasts, were demonstrated. To assess the content of biologically active compounds, HPLC-electrospray ionization (ESI)-MS/MS multiple reaction monitoring (MRM) analyses were performed. The obtained results show that all three analyzed plants are a valuable source of biologically active substances with desired properties in the context of skin cell protection. Particularly noteworthy is the extract of *Epilobium angustifolium L.*, for which the most promising results were obtained.

C.M. Kavali, T.Q. Nguyen, A.S. Zahr, L.I. Jiang, T. Kononov, **A Randomized, Double-Blind, Split-Body, Placebo-Controlled Clinical Study to Evaluate the Efcacy and Tolerability of a Topical Body Firming Moisturizer for Upper Arm Rejuvenation**, Aesthetic Surgery Journal 2021, Vol 41(6)

Background: Aging of upper arm skin, induced by intrinsic and extrinsic factors, often results in a loss of contour, elasticity, and frmness, and an increase in laxity, crepiness, roughness, and photodamage. A topical body frming moisturizer (TBFM) was developed to target all aspects of skin aging. Objectives: The aim of this study was to evaluate the efcacy and tolerability of the TBFM for upper arm frming and rejuvenation. Methods: Forty female subjects, 40 to 60 years old, Fitzpatrick skin type II to V, with mild to moderate laxity, crepiness, and photodamage on the upper arms, were recruited into the study, 10 of whom were selected for biopsy analysis. Subjects were randomly allocated to apply the

TBFM and placebo moisturizer on the assigned arms twice daily for 12 weeks. At each visit, efcacy and tolerability evaluation, self-assessment, and standardized clinical photography were performed. Ultrasound measurements were performed at baseline, week 8 and week 12. Results: Efcacy evaluation by a clinical grader and bioinstrumentation analysis showed the TBFM improved all skin parameters of the aged upper arm while outperforming the placebo moisturizer after 12 weeks. Clinical photography showed the test product toned and frmed the skin. The TBFM was well tolerated and well perceived by the subjects. Ultrasound images indicated an improvement in skin density and skin structure at week 12. Conclusions: This clinical trial indicates that the TBFM was well tolerated and was effective in improving crepey, lax, and photodamaged skin of the upper arms after 12 weeks of treatment twice daily.

M. de Tollenaere, E. Chapuis, L. Lapierre, M. Bracq, J. Hubert, C. Lambert, J. Sandré, D. Auriol, A. Scandolera, R. Reynaud, **Overall renewal of skin lipids with Vetiver extract for a complete anti-ageing strategy**, International Journal of Cosmetic Science, 2021, 43, p. 165–180

Objective: Skin lipids are essential in every compartment of theskin where they play a key role in various biological functions. Interestingly, their role is central in the maintenance of hydration which is related to skin barrier function and in the skin structure through adipose tissue. It is well described today that skin lipids are affected by ageing giving skin sagging, wrinkles and dryness. Thereby, developing cosmetic actives able to reactivate skin lipids would be an efficient ant-ageing strategy. Due to the strong commitment of our scientists to innovate responsibly and create value, they designed a high value active ingredient named here as Vetiver extract, using a ground-breaking upcycling approach. We evidenced that this unique extract was able to reactivate globally the skin lipids production, bringing skin hydration and plumping effect for mature skin. Method: In order to demonstrate the global renewal of lipids, weevaluated the lipids synthesis on cutaneous cells that produce lipids such as keratinocytes, sebocytes and adipocytes then on Reconstructed Human Epidermis and skin explants. We evaluated the expression of proteins involved in ceramides transport and barrier cornification. We then evaluated hydration and sebaceous parameters on a panel of mature volunteers. Results: We firstly demonstrated that Vetiver extract induced sebum production from human sebocytes cells lines but also improved its quality as observed by the production of specific antimicrobial lipids. Secondly, we demonstrated that Vetiver extract was able to restore skin barrier with the increase of skin lipids neosynthesis on Reconstructed Human Epidermis and skin explants. We also evidenced that Vetiver extract stimulated the lipids transport and epidermal cornification. Finally, Vetiver extract showed a significant effect on adipogenesis and maturation of adipocytes at in vitro and ex vivo models. We confirmed all these activities by showing that Vetiver extract improved sebum production and brought hydration through an increase of lipids content and their conformation. Vetiver extract induced an improvement of skin fatigue and a plumping effect by acting deeply on adipose tissue. Conclusion: In conclusion, we developed an active ingredient able to bring anti-ageing effect for mature skin by a global increase of skin lipids.

A. Skalska Stochaj, D. Hojan Jezierska, L. Kubisz, **Comparing the Efficacy of Monopolar and Bipolar Radiofrequency Treatment on Facial Skin in Women**, JCAD Journal of Clinical and Aesthetic Dermatology, December 2020, Volume 15, Number 12

Objective: The present research compared the effectiveness of the monopolar radiofrequency method with that of bipolar method in the facial skin of women in selected age groups. Methods: The study included 150 women with good general health and healthy skin. The firrst group comprised 75 female participants who received monopolar radiofrequency electromagnetic field treatment (RFM) and 75 women who were treated using the bipolar method (RFB). In both the RFM and RFB groups, five age groups were distinguished: Group I (20–29 years), Group II (30–39 years), Group III (40–49 years), Group IV (50–59 years), and Group V (60–69 years). Transepidermal water loss (TEWL) was measured using tewametry to determine stratum corneum barrier function and corneometry was used to measure epidermal hydration. Tewametric and corneometric measurements of the facial skin were performed to determine its condition following radiofrequency electromagnetic field therapy and to assess the sustainability of the obtained results after four months of therapy. The follow-up measurement was performed prior to the first treatment session and the subsequent ones after one month, and four months following the first measurement. RESULTS: The best results, indicating an improvement in epidermal hydration were observed for bipolar radiofrequency method in the age group 40-49 years and group 50-59 years.

H.-J. Kwon, S.-B. Han, K.-W. Park, **Antioxidant Activity of Hydrogen Water Mask Pack Composed of Gel-Type Emulsion and Hydrogen Generation Powder**, Int. J. Mol. Sci. 2020, 21, 9731

In this study, hydrogen generation powder samples were prepared using zinc carbonate as a precursor, at a temperature varying from 400 to 700 ◦C in H2 atmosphere, and were characterized in

terms of antioxidant activity. The concentration of dissolved hydrogen obtained by the powdersamples was measured using a dissolved hydrogen meter as a function of time. In addition, the antioxidant activity of the samples was evaluated based on the Oyaizu's method, removal rate of ·OH radicals, and ferric reducing antioxidant power. Finally, the hydrogen mask pack was fabricated using the hydrogen generation powder sample and gel-type emulsion. In the clinical test on the mask pack, the effect of the mask on skin aging was characterized and compared to that of a commercial sample. The skin densities of the participants in the experimental group and the control group increased by 18.41% and 9.93% after 4 weeks, respectively. The improved skin density of theparticipants who used the hydrogen mask pack in the experimental group, might be attributed to the recovery effect of the hydrogen molecule in the mask pack on the denatured thick skin layer.

M. Majeed, S. Majeed, R. Jain, L. Mundkur, H.R. Rajalakshmi, P. Subhash Lad, P. Neupane, **An Open-Label Single-Arm, Monocentric Study Assessing the Efficacy and Safety of Natural Pterostilbene (*Pterocarpus marsupium*) for Skin Brightening and Antiaging Effects**, Clinical, Cosmetic and Investigational Dermatology 2020:13, p. 105–116

Background: Both intrinsic and environmental factors play a role in premature ageing of the skin. Natural extracts have been extensively used to reduce the signs of ageing in recent years. Pterostilbene is a natural analog of resveratrol with therapeutic properties against numerous diseases mainly due to its ability to reduce reactive oxygen species. Methods: We studied the anti-aging and skin brightening effect of a 0.4% formulation of natural pterostilbene in healthy volunteers (N=38) in an open-label, single-arm, monocentricstudy for 8 weeks. The melanogenesis inhibitory, anti-tyrosinase and anti-collagenase and anti-elastase properties of pterostilbene were evaluated in vitro. Results: Natural pterostilbene showed significant inhibition of melanogenesis in vitro. Pterostilbene cream (0.4%) was highly effective in reducing markers of aging and induces even skin tone. The product was effective in reducing wrinkles and fine lines, improved skin hydration elasticity and showed no adverse effects. Conclusion: Our results suggest that natural pterostilbene is a safe and effective ingredient for use in cosmetic preparation to reduce the markers of skin ageing and brighten the skin tone.

S. Anggraeni, M. Ayu Umborowati, D. Damayanti, A. Endaryanto, C.R. Sigit Prakoeswa, **Role of *Centella asiatica* and ceramide in skin barrier improvement: a double blind clinical trial of Indonesian batik workers**, Journal of Basic and Clinical Physiology and Pharmacology, 2020

Objectives: Batik dyes contain irritant chemicals that increase the risk of skin barrier disruption. This study aims to determine the effect of *Centella asiatica* and ceramide in transepidermal water loss (TEWL), hydration of the stratum corneum and skin acidity (pH). Methods: This was a double blind clinical trial of 30 Indonesian batik workers who suffered from skin dryness, but had no clinical manifestation of contact dermatitis. Subjects were given cream containing *C. asiatica* or ceramide that formulated and randomly labeled by manufacturer (PT Paragon Technology and Innovation). Both subjects and researchers were blinded to the type of the cream. Cream was applied to the hands and arms twice a day. Biological function of the skin (TEWL, stratum corneum hydration level, and skin acidity) was examined by Cutometer dual MP-580. Baseline was recorded in the first examination, followed by second and third examinations at two and four weeks after treatment. Results: After four weeks treatment, there were significant improvement of *C. asiatica* application in evaluation of corneometer palmar (p=0.007; CI 95%), corneometer dorsum (p=0.001; CI 95%), and skin acidity dorsum (p=0.017; CI 95%). Ceramide application also gave significant improvement of corneometer palmar (0.038; CI 95%), skin acidity palmar (p=0.001; CI 95%), TEWL dorsum (p=0.023; CI 95%), corneometer dorsum (p=0.002; CI 95%) and skin acidity dorsum (p=0.011; CI 95%). There were no significant differences of *C. asiatica* effectiveness compared to ceramide in skin barrier improvement. Conclusions: *C. asiatica* and ceramide can improve skin barrier hydration in order to prevent the risk of contact dermatitis in batik workers.

I.B.S. Sitohang, S. Ninditya, **Systemic Glutathione as a Skin-Whitening Agent in Adult**, Hindawi Dermatology Research and Practice Volume 2020

Objectives. To compare the efficacy and safety profiles of systemic glutathione as a skin-whitening agent in adults from several randomized controlled trials (RCTs). Methods. *is study is an evidence-based case report with literature search conducted on Clinical Key, Cochrane, Journal of the American Academy of Dermatology, Taylor and Francis Online, ScienceDirect, and PubMed databases. *ree relevant RCTs were extracted and assessed for validity, importance, and applicability. Results. From 3 included trials, one of the studies opposed glutathione as a skin-whitening agent. However, the other two showed significant results only to some parts of the body or to certain age groups. As a skin-whitening agent, studies showed that glutathione yielded other cosmetic benefits as it may improve skin elasticity and reduce skin wrinkles. Furthermore, glutathione was well tolerated in oral preparations, but

not in parenteral preparations. Conclusions. Highestevidence literatures showed that glutathione is not beneficial enough as a skin-whitening agent as it was only effective in some parts of the body and did not elicit long-lasting effects. However, its safety profiles in oral preparations were well tolerated. More researches regarding the time needed for skin color to return to its original state following drug withdrawal need to be conducted as it is yet to be discovered.

M. Streker, M. S. Thill, M. Kerscher, **Einfluss oraler Kollagen-Peptide auf die Hautqualität am ganzen Körper**, Akt Dermatol 2020; 46: 87–93

Die Hautalterung ist ein komplexer Prozess, der sowohl extrinsischen als auch intrinsischen Einflüssen unterliegt. Neben sichtbaren Zeichen wie Falten und einem Verlust an Elastizität spielen sich insbesondere in der Dermis molekulare Veränderungen ab. Ein wesentlicher Faktor ist die Minderung der Qualität und Quantität von kollagenen Fasern sowie weiteren extrazellulären Matrixbestandteilen. Bereits in früheren In-vivo-Human-Studien wurde eine Verbesserung der Hautqualität im Gesicht durch die orale Supplementierung mit Kollagenpeptiden nachgewiesen. Es konnte mittels objektiver, validierter dermatologischer Mess methoden bestätigt werden, dass die orale Aufnahme von speziellen Kollagen-Peptiden über einen längeren Zeitraum die Hautphysiologie (Lipidgehalt der Hautoberfläche, Stratum-corneum-Hydratation, Hautelastizität, Hautglätte und Hautdichte) positiv beeinflusst. In der vorliegenden 12-wö- chigen Studie wurden die positiven Effekte eines Nutraceuticals mit bioaktiven Kollagen-Peptiden (ELASTEN®) auf die Hautqualität erstmals am gesamten Körper (Gesicht, Dekolleté, Arm und Oberschenkel) untersucht.

K. Amano, K. Xiao, S. Wueger, G. Meyer, **A colorimetric comparison of sunless with natural skin tan**, PLoS ONE 15(12), December 2020

The main ingredient of sunless tanning products is dihydroxyacetone (DHA). DHA reacts with the protein and amino acid composition in the surface layers of the skin, producing melanoidins, which changes the skin colour, imitating natural skin tan caused by melanin. The purpose of this study was to characterise DHA-induced skin colour changes and to test whether we can predict the outcome of DHA application on skin tone changes. To assess the DHA-induced skin colour shift quantitatively, colorimetric and spectral measurements of the inner forearm were obtained before, four hours and 24 hours after application of a 7.5% concentration DHA gel in the experimental group (n = 100). In a control group (n = 60), the same measurements were obtained on both the inner forearm (infrequently sun-exposed) and the outer forearm (frequently sun-exposed); the difference between these two areas was defined as the naturally occurring tan. Skin colour shifts caused by DHA tanning and by natural tanning were compared in terms of lightness (L*), redness (a*) and yellowness (b*) in the standard CIELAB colour space. Naturalness of the DHA-induced skin tan was evaluated by comparing the trajectory of the chromaticity distribution in (L*, b*) space with that of naturally occurring tan. Twenty-four hours after DHA application, approximately 20% of the skin colour samples became excessively yellow, with chromaticities outside the natural range in (L*, b*) space. A principal component analysis was used to characterise the tanning pathway. Skin colour shifts induced by DHA were predicted by a multiple regression on the chromaticities and the skin properties. The model explained up to 49% of variance in colorimetric components with a median error of less than 2 ΔE. We conclude that the control of both the magnitude and the direction of the colour shift is a critical factor to achieve a natural appearance.

J. Manosroi, C. Chankhampan, W. Kitdamrongtham, J. Zhang, M. Abe, T. Akihisa, W. Manosroi, *A. Manosroi,* **In vivo anti-ageing activity of cream containing niosomes loaded with purple glutinous rice (Oryza sativa Linn.) extract**, Int J Cosmet Sci, 2020 Dec;42(6): p. 622-631

Objective: To evaluate the anti-ageing activity of cream containing the methanolic purple glutinous rice extract loaded in niosomes. Methods: The in vitro biological activities of the purple glutinous rice extracted by methanol maceration were determined. The extract loaded in niosomes and the cream containing the niosomes were developed. The in vivo anti-ageing activity in 20 human volunteers including skin hydration, pigmentation, roughness and elasticity after daily application for 28 days compared to at initial was evaluated by Corneometer, Mexameter, Visiometer and Cutometer, respectively. Results: The purple glutinous rice extract showed free radical scavenging (SC), lipid peroxidation inhibition (IPC), metal ion chelating (CC) and tyrosinase inhibition (IC) values at 32.31 ± 1.28, 57.40 ± 2.12, 85.05 ± 5.43 and 43.89 ± 2.14 mg/mL which were 0.00031, 0.011, 0.0078 and 0.0016 times of the standards (0.01 ± 0.00, 0.62 ± 0.14, 0.66 ± 0.05 and 0.07 ± 0.01), respectively. The purple glutinous rice extract contained 0.35 µg of anthocyanin/1 mg of the extract determined by HPLC. After loaded in niosomes, the solubility of the extract was not only increased in various solvents, but also the chemical stability in different environments (weak base, reducing agent and acid salt) was improved. The cream formulation containing niosomes loaded with 1%w/v of the purple glutinous rice extract indicated the anthocyanin remaining percentages after 6 cycles of heating and cooling test at 52.28%

of the initial. For in vivo anti-ageing activities, cream containing niosomes loaded with the extract gave significant decreased melanin index and skin roughness reduction of -14.05 and -9.95% of the initial, respectively. The % changes of the increased skin hydration, skin elastic extension and skin elastic recovery when applied on human volunteers' skin with this formulation were +48.73, -24.51 and +35.98%, respectively. Conclusion: The cream containing niosomes loaded with the 1%w/v methanolic purple glutinous rice extract gave not only the suitable in vitro antioxidant activity and physical stability of the active anthocyanin, but also the superior in vivo anti-ageing activity on human skin compared to the cream base and before application which can be further developed as a novel anti-ageing cosmeceutical product.

R. Grabenhofer, **Burt's Bees Proves Bakuchiol's Retinollike and Turmeric's Anti-inflammatory Effects**, C&T online, December 2020

The anti-aging and anti-inflammatory properties of bakuchiol, a natural and gentler alternative to retinol, were demonstrated in skin, as was the efficacy of a natural turmeric lip balm. Following its efficacy-first approach to naturals, Burt's Bees presented research during the virtual Integrative Dermatology Symposium proving the effects of bakuchiol and turmeric to defend and restore healthier-looking skin. More specifically, the anti-aging and anti-inflammatory properties of bakuchiol, a natural and gentler alternative to retinol, were demonstrated in skin, as was the efficacy of a natural lip balm containing turmeric for its benefits in dry or compromised lip conditions.

L. Binder, V. Klang, S. Sheikh Rezaei, O. Neuer, M. Wolzt, C. Valenta, ***In vivo*** **analysis of physiological skin parameters: Confocal Raman spectroscopy and classical biophysical techniques**, Poster University of Vienna, Department of Pharmaceutical Technology and Biopharmaceutica

New drug delivery systems have to overcome the skin barrier without causing irritation. Thus, knowledge of the skin composition is essential to obtain reliable data about the impact of dermal products. Besides the formulations' physicochemical properties and stability, its influence on skin physiology is an important aspect in the development of new dermal drug delivery systems. We have recently developed novel concentrated water-in-oil (W/O) emulsions based on a non-ionic silicone surfactant. The aim of this study was to assess the effect of these formulations on physiological skin parameters of healthy volunteers after repeated application. To this end, confocal Raman spectroscopy (CRS) and classical biophysical techniques were used.

M. Nagae, M. Nagata, M. Teramo-to, M. Yamakawa, T. Matsuki, K. Ohnuki, K. Shimizu, **Effect of Porcine Placenta Extract Supplement on Skin Condition in Healthy Adult Women: A Randomized, Double-Blind Placebo-Controlled Study**, Nutrients 2020, 12, 1671

Placenta extract has been used as a component of ointments for skin dryness and beautification. However, little is known about the effect of oral intake of placenta extract on skin condition. The current study aimed to clinically explore the effect of oral intake of porcine placenta extract on human skin quality. A randomized controlled double-blind trial was performed on healthy women aged 40–59 years (n = 20), who were randomly assigned to receive either placebo or 200 mg of porcine placenta extract once daily for 4 weeks from 28 January 2019 to 25 February 2019. Skin quality parameters and the Simplified Menopausal Index (SMI) were assessed at baseline and after 4 weeks. After 4 weeks, three parameters of skin quality were significantly improved in the porcine placenta group compared with the placebo group. These results suggest that porcine placenta extract can be used as a health food ingredient to maintain humans' skin condition in the dry winter season.

D.J. Son, J.C. Jung, Y.M. Choi, H.Y. Ryu, S. Lee, B.A. Davis, **Wheat Extract Oil (WEO) Attenuates UVB-Induced Photoaging via Collagen Synthesis in Human Keratinocytes and Hairless Mice**, Nutrients 2020, 12, 300

The efficacy of wheat extract oil (WEO), standardized to glucosylceramides, for protectingagainst ultraviolet B (UVB)-induced damage of skin barrier function was assessed using the SHK-1 hairless mouse model and two human skin cell lines, namely, CCD-986sk and HeCaT. The ability of repeated oral administration of 30, 60, and 120 mg of WEO/kg/day for 12 weeks to prevent skin damage of SKH-1 hairless mice induced by UVB irradiation was evaluated. The results demonstrated that UVB-induced water evaporation (transepidermal water loss, TEWL) was significantly decreased by WEO. Similarly, UVB-induced losses in moisture and skin elasticity were improved by WEO supplementation. WEO attenuated the tissue procollagen type I, hyaluronic acid (HA), and ceramide reductions induced by UVB treatment as well. Collagen concentrations in skin tissue were increased in the WEO-treated mice, while UVB-induced epidermal thickening was reduced. In vitro studies using HeCaT human keratinocytes confirmed increased HA and collagen synthesis in response to WEO

treatment. This may occur via WEO suppression of matrix metallopeptidase-1 (MMP-1), since its induction by UVB treatment was diminished in treated CCD- 986sk cells. Oral administration of WEO improves skin barrier function in UVB-irradiated mice by attenuating damage typically observed in photoaging. This research further clarifies the clinical benefits previously observed by dietary WEO consumption.

T. Yazdanparast, K. Yazdani, S.A. Nasrollahi, L. Izadi Firouzabadi, P. Humbert, A. Khatami, M. Kassir, A. Firooz, **Biophysical and ultrasonographic changes in early patch/plaque stage of mycosis fungoides, compared with uninvolved skin,** Skin Research & Technology, Volume 26, Issue 6, November 2020, p. 859-866

Background: The goal of this study was evaluation of the skin biophysical properties in early patch/plaque stage of mycosis fungoides (MF) and its comparison with uninvolved skin in order to gain a better understanding of the pathogenesis of diseases. Materials and Methods: The stratum corneum hydration, transepidermal water loss (TEWL), surface friction, pH, sebum, melanin, erythema, temperature, elasticity parameters (R0, R2, R5), thickness, and echo density of epidermis and dermis were measured on lesions of 21 patients and compared with controls (average measures of uninvolved perilesional and symmetrical skins) by paired sample *t* test. Results: Stratum corneum hydration ($P < 0.001$) and echo density of dermis ($P = 0.044$) were significantly lower, whereas pH (P-value = 0.007), erythema ($P < 0.001$), and melanin content ($P = 0.007$) were significantly higher in lesions. There was not any significant difference in TEWL, friction index, sebum, temperature, R0, R2, R5, thickness of epidermis and dermis, and echo density of epidermis between lesions and normal skin. Conclusion: Parapsoriasis/MF lesions are specified by a set of certain changes in biophysical properties which are mainly correlated with histological changes. These sets of alterations may help in noninvasive, early diagnosis of parapsoriasis/MF.

M. Batory, E. Wołowiec-Korecka, H. Rotsztejn, **The influence of topical 5% tranexamic acid at pH 2.38 withand without corundum microdermabrasion on pigmentation and skin surface lipids**, Dermatol Ther. 2020, Nov;33(6):e14391.

Tranexamic acid (TA) has anti-hemorrhagic effects; however, oral administration has been found to decrease hyperpigmentation. The aim of the work was to compare the effects of treatment with 5% tranexamic acid in combination with corundum microdermabrasion on skin pigmentation, redness, pH, transepidermal water loss (TEWL), sebum level and hydration of back surface and dorsal surface of the hand skin. Six treatments were performed every week on the back surface and both dorsal surfaces of the hands of 12 subjects. The entire back/both hands were treated with 5% tranexamic acid at pH 2.38; left side of the back or left hand were also subjected to corundum microdermabrasion. Skin parameters were measured using the Courage & Khazaka 580 Multi Probe Adapter. Clinical photos were taken using the Fotomedicus system. Significant differences between treatment methods were observed for melanin, erythema and pH. In addition, the two methods differed significantly with regard to the amount of sebum, TEWL and the level of moisture in the skin. Both methods gave similar acidic pH. Summing up tranexamic acid causes a significant reduction in epidermal melanogenesis, has a significant impact on the level of skin hydration, lipids of the epidermis and maintaining the proper TEWL. TA has a significant effect on reducing skin redness.

Y. Pan, X. Ma, J. Zhao, S. Yan, Q. Liu, H. Zhao, **The Interaction of Age and Anatomical Region Influenced Skin Biophysical Characteristics of Chinese Women**, Clinical, Cosmetic and Investigational Dermatology 2020:13, p. 911–926

Background: Ageing is an inevitable physiology process of humans, and skin biophysical parameters change owing to genetic and environmental factors in different ethnic populations. Aim: To gain comprehensive data on the skin biophysical parameters of different anatomical regions and to explore the change trend of the skin characteristics associated with age for the indicated regions by generalized additive model. Methods: We measured various skin biophysical parameters on forehead, cheek, chin and inner forearm of 178 Chinese women aged between 20 and 64 years living in Beijing. These parameters comprised skin hydration, transepidermal water loss (TEWL), sebum content, erythema index (EI), melanin index (MI), L*a*b* values, individual typology angle (ITA) and pH, which were quantifed by non-invasive instruments. Results: Comparing the skin parameters among the four test areas, we observed that the hydration, TEWL, EI and a* values were signifcantly higher for the face than for the forearm, but the L* and ITA values were just the opposite. The cheek was the lightest and brightest region with lowest sebum content, while the chin was much darker and the forehead was yellowish. Considering the change of the skin parameters with age, TEWL, sebum content and melanin and erythema indices had a linear relationship with age, whereas skin hydration, L, a, b, ITA and pH values exhibited a non-monotonic relationship. The turning points of these curves appeared almost at

the thirties, showing the lightest and evenest skin color and more hydration, with lower pH values. Conclusion: This study indicates that the skin biophysical characteristics of Chinese women were signifcantly affected by age and body regions.

E. Berardesca, A. Bonfgli, B. Cribier, F. Flament, M. Vicic, D. Kerob, J. Tan, **A Split-Face Study Assessing the Clinical Beneft, Tolerability and Subject Satisfaction of a Dermo-cosmetic in Subjects with Rosacea Associated with Erythema and Sensitive Skin**, Clinical, Cosmetic and Investigational Dermatology 2020:13, p. 751–758

Objective: This study assessed the effcacy and tolerability of M89 in patients with rosacea associated with erythema and sensitive skin. Methods: Intra-individual study in a split-face design comparing after 30 days M89 twice daily and usual skin care in 20 adult subjects with rosacea and sensitive skin. M89 contains 89% Vichy volcanic mineralizing water (VVMW) and 0.4% hyaluronic acid. It is hypoallergenic and contains no perfume and this convenes in rosacea. Contained minerals reinforce the natural defences of the skin in restoring the natural skin barrier, stimulating antioxidant activity and reducing inflammation, commonly observed in subjects with rosacea. Clinical evaluations included assessment of erythema, desquamation, papules and pustules, skin tightness, dryness, burning sensation, itching, stinging and stinging test as well as local tolerability. Instrumental evaluations included skin hydration and TEWL. Subject satisfaction was assessed at Days 15 and 30. Demodex density was assessed at Day 30. Results: A signifcant superiority of M89 over the standard skin care was observed for erythema, skin tightness and dryness (all $P \leq 0.05$) as early as Day 15, the skin stinging test was signifcantly in favour of M89 ($P<0.05$ at Day 15 and $P<0.01$ at Day 30) and for skin hydration ($P<0.0001$) at Day 15 and 30 with no difference in mean Demodex density between M89 and usual skin care after 30 days. Tolerance was excellent and subject satisfaction very high. Conclusion: Study results concerning M89 are encouraging for its use either alone or as an adjuvant daily skin care to topical medication in patients with persistent centrofacial erythema of rosacea with no more than 3 papules and pustules.

N. Chaiwong, P. Leelapornpisid, K. Jantanasakulwong, P. Rachtanapun, P. Seesuriyachan, V. Sakdatorn, N Leksawasdi, Y. Phimolsiripol, **Antioxidant and Moisturizing Properties of Carboxymethyl Chitosan with Different Molecular Weights**, Polymers 2020, 12, 1445

This research aimed to synthesize carboxymethyl chitosan (CMCH) from different molecular weights of chitosan including low MW (L, 50–190 kDa), medium MW (M, 210–300 kDa) and high MW (H, 310–375 kDa) on the antioxidant and moisturizing properties. The L-CMCH, M-CMCH and H-CMCH improved the water solubility by about 96%, 90% and 89%, respectively when compared to native chitosan. Higher MW resulted in more viscous of CMCH. For antioxidant properties, IC50 values of DPPH and ABTS radical scavenging activity for L-CMCH were 1.70 and 1.37 mg/mL, respectively. The L-CMCH had higher antioxidant properties by DPPH and ABTS radical scavenging assay and FRAP. The moisturizing properties on pig skin using a Corneometer® showed that 0.5% H-CMCH significantly presented (p ¤ 0.05) greater moisturizing effect than that of untreated-skin, distilled water, propylene glycol and pure chitosan from three molecular weights.

J. Pavla¤ková, P. Egner, R. Slavík, P. Mokrejš, R. Gál, **Hydration and Barrier Potential of Cosmetic Matrices with Bee Products**, Molecules 2020, 25, 2510

Honey, honey extracts, and bee products belong to traditionally used bioactive molecules in many areas. The aim of the study was primarily to evaluate the effect of cosmetic matrices containing honey and bee products on the skin. The study is complemented by a questionnaire survey on the knowledge and awareness of the effects and potential uses of bee products. The effect of bee molecules at various concentrations was observed by applying 12 formulations to the skin of the volar side of the forearm by non-invasive bioengineering methods on a set of 24 volunteers for 48 h. Very good moisturizing properties have been found in matrices with the glycerin extract of honey. Matricescontaining forest honey had better moisturizing effects than those containing flower honey. Barrier properties were enhanced by gradual absorption, especially in formulations with both glycerin and aqueous honey extract. The observed organoleptic properties of the matrices assessed by sensory analysis through 12 evaluators did not show statistically significant differences except for color and spreadability. There are differences in the ability to hydrate the skin, reduce the loss of epidermal water, and affect the pH of the skin surface, including the organoleptic properties between honey and bee product matrices according to their type and concentration.

S. Laneri, I. Dini, A. Tito, R. di Lorenzo, M. Bimonte, A. Tortora, C. Zappelli, M. Angelillo, A. Bernardi, A. Sacchi, M.G. Colucci, F. Apone, **Plant cell culture extract of Cirsium eriophorum with skin pore**

refiner activity by modulating sebum production and inflammatory response, Phytotherapy Research. 2020; p. 1–11

Facial pore enlargement is considered a significant esthetic and health concern in skincare cosmetics. The pores fulfill the critical function of keeping the skin surface hydrated and protected against microbial infections. The hyperseborrhea, the stress factors, and the hormonal triggers can cause pore size enlargement, causing higher susceptibility of the skin to microbe aggressions and inflammatory reactions. Thus, reducing excessive sebum production and keeping functional pores are two of the most requested activities in skincare cosmetics. A Cirsium eriophorum cell culture extract was investigated for its role in sebum regulation, stratum corneum desquamation, and anti-inflammation. The extract was able to regulate essential markers associated with sebum secretion and pore enlargements, such as the enzyme 5¤-reductase, which plays a central role in sebum production, and the trypsin-like serine protease Kallikrein 5, which promotes skin exfoliation and antimicrobial response. Moreover, the extract showed a sebum-normalizing and pore refining activity in individuals having seborrheic or acne-prone skins, suggesting a role of the C. eriophorum extract in rebalancing altered skin conditions responsible for pore enlargement.

Y.-J. Kim, H.-J. Ahn, S.-H. Lee, M.-H. Lee, K.S. Kang, **Effects of conditioned media from human umbilical cord blood-derived mesenchymal stem cells in the skin immune response**, Biomedicine & Pharmacotherapy 131 (2020)

Atopic dermatitis (AD) is an inflammatory skin disease in which type 2 allergic inflammation plays a critical role. In this study, the anti-inflammatory effect of conditioned media from human umbilical cord blood-derived mesenchymal stem cells (USC-CM) was investigated in order to apply it as an effective treatment with a low risk of side effects that can overcome the limitations of AD treatment which is currently in use. We found that USC-CM has various growth factors and cytokines associated with anti-inflammatory effect. RT-PCR and ELISA analysis showed that USC-CM inhibited the levels of type 2 cytokine and chemokine Thymus and activationregulated chemokine (TARC), TNF-α and IL-6 in TNF-α/IFN-γ-stimulated HaCaT cells. In addition, USC-CM inhibited IL-4 and IL-13 levels in Th2 cells. Therefore, the results of our study demonstrated that USC-CM has anti-inflammatory effect in TNF-α/IFN-γ-stimulated HaCaT cells which associated with the inhibition of the immunoglobulin (IgE) secretion by activating B cell line. Our *In vivo* results showed that when the USC-CM was applied to lesions of patients with the mild AD for 4 weeks, the skin barrier was strengthened by increasing the level of Corneometer and decreasing the value of transepidermal water loss (TEWL). In conclusion, the results suggest that USC-CM may have therapeutic effect for AD as cosmetics and drug materials.

V.B. Şorop, V.M. Boruga, I.A. Pînzaru, I.R. Barac, C. Utescu, A.L. Maghiari, F. Baderca, L. Bolan, M. Şorop-Florea, V. Dumitraşcu, D. M. Anastasiu, S. Simu, D. Radu, O. Suciu, **Hormone treatment and UVB exposure influences on female mice regarding skin physiological parameters, biochemical parameters and organ histology**, Rom J Morphol Embryol 2020, 61(3): p. 879–887

Females require at a certain period of life the administration or supplementation of specific hormones (estrogen, progesterone), for various needs, such as: prevention of unwanted pregnancies, decreased menstrual bleeding, dysmenorrhea and pelvic pain in endometriosis, alleviation of symptoms associated with menopause, regulation of certain skin processes related to acne or aging and others. Also, hormones could act as oncogenes being known eloquent examples of estrogens labeled both as promoters of cell specific alteration or as mutagenic agents. The use of hormones and exposure to solar radiation is expected to cause a number of adverse changes to the body, especially due to their association with malignant processes. The current study was purported as a basis for understanding certain processes that occur with the administration of hormones and exposure to ultraviolet B (UVB) radiation. The animal model was made on healthy adult female BALB/c mice, which were separated into groups and treated with Ethinylestradiol (EES), Levonorgestrel (LNG) and their combination in the presence of UVB radiation. Changes in skin physiological parameters were analyzed by non-invasive methods, biochemical parameters related to changes in blood circulating system were evaluated by standard methods and histopathological analysis was conducted to point out the changes at the level of the internal body. Measurement of skin parameters such as erythema, melanin, skin hydration, has highlighted some changes in hormone-treated and exposed to UVB radiation groups which were significant only in the case of erythema. Biochemical parameters showed variations in terms of liver enzymes in groups treated with active substances. Histologically, aspects of internal organs revealed significant changes in the group treated with EES and LNG and exposed to UVB radiation.

S.-A. Park, S.-K. Bong, J.W. Lee, N.-J. Park, Y. Choi, S.M. Kim, M.H. Yang, Y.K. Kim, S.-N. Kim, **Diosmetin and Its Glycoside, Diosmin, Improve Atopic Dermatitis-Like Lesions in 2,4-Dinitrochlorobenzene-Induced Murine Models**, Biomol Ther 28(6), p. 542-548 (2020)

Naturally derived diosmetin and its glycoside diosmin are known to be effective in treating inflammatory disease. This study was performed to determine whether diosmin and diosmetin have the effect of improving atopic dermatitis in a 2,4-dinitrochlorobenzen (DNCB)-induced atopic dermatitis (AD) model. DNCB was used to establish AD model in hairless mice. Skin moisture, serum immunoglobulin E (IgE), interleukin 4 (IL-4), and histological analysis were performed to measure the effectiveness of diosmin and diosmetine to improve AD. IL-4 levels were also measured in RBL-2H3 cells. Administration of diosmetin or diosmin orally inhibited the progress of DNCB-induced AD-like lesions in murine models by inhibiting transdermal water loss (TEWL) and increasing skin hydration. Diosmetin or diosmin treatment also reduced IgE and IL-4 levels in AD-induced hairless mouse serum samples. However, in the in vitro assay, only diosmetin, not diosmin, reduced the expression level of IL-4 mRNA in RBL-2H3 cells. Diosmin and diosmetine alleviated the altered epidermal thickness and immune cell infiltration in AD. Diosmin is considered effective in the cure of AD and skin inflammatory diseases by being converted into diosmetin in the body by pharmacokinetic metabolism. Thus, oral administration of diosmetin and diosmin might be a useful agent for the treatment of AD and cutaneous inflammatory diseases.

N. Tomonaga, Y. Manabe, K. Aida, T. Sugawara, **Dietary ceramide 2-aminoethylphosphonate, a marine sphingophosphonolipid, improves skin barrier function in hairless mice**, Scientific Reports (2020) 10:13891

Sphingolipids are one of the major components of cell membranes and are ubiquitous in eukaryotic organisms. Ceramide 2-aminoethylphosphonate (CAEP) of marine origin is a unique and abundant sphingophosphonolipid with a C-P bond. Although molluscs such as squids and bivalves, containing CAEP, are consumed globally, the dietary efficacy of CAEP is not understood. We investigated the efficacy of marine sphingophosphonolipids by studying the efect of dietary CAEP on the improvement of the skin barrier function in hairless mice fed a diet that induces severely dry-skin condition. The disrupted skin barrier functions such as an increase in the transepidermal water loss (TEWL), a decrease in the skin hydration index, and epidermal hyperplasia were restored by CEAP dietary supplementation. Correspondingly, dietary CAEP signifcantly increased the content of covalently bound ω-hydroxyceramide, and the expression of its biosynthesis-related genes in the skin. These effects of dietary CAEP mimic those of dietary plant glucosylceramide. The novel observations from this study show an enhancement in the skin barrier function by dietary CAEP and the effects could be contributed by the upregulation of covalently bound ω-hydroxyceramide synthesis in the skin.

I. Chauhan, M. Yasir, M. Verma, A. Pratap Singh, **Nanostructured Lipid Carriers: A Groundbreaking Approach for Transdermal Drug Delivery**, Adv Pharm Bull, 2020, 10(2), p. 150-165

Nanostructured lipid carriers (NLCs) are novel pharmaceutical formulations which are composed of physiological and biocompatible lipids, surfactants and co-surfactants. Over time, as a second generation lipid nanocarrier NLC has emerged as an alternative to first generation nanoparticles. This review article highlights the structure, composition, various formulation methodologies, and characterization of NLCs which are prerequisites in formulating a stable drug delivery system. NLCs hold an eminent potential in pharmaceuticals and cosmetics market because of extensive beneficial effects like skin hydration, occlusion, enhanced bioavailability, and skin targeting. This article aims to evoke an interest in the current state of art NLC by discussing their promising assistance in topical drug delivery system. The key attributes of NLC that make them a promising drug delivery system are ease of preparation, biocompatibility, the feasibility of scale up, non-toxicity, improved drug loading, and stability.

A.M. Marchena, L. Franco, A.M. Romero, C. Barriga, A.B. Rodríguez, **Lycopene and Melatonin: Antioxidant Compounds in Cosmetic Formulations**, Skin Pharmacol Physiol, 2020;33(5): p. 237-243

Background: The use of antioxidants has become a common practice in the development of antiaging cosmetics. Objective: The aim of this study was to evaluate the clinical efficacy of cosmetic formulations containing lycopene and melatonin antioxidants. Method: Thirty-six healthy women from 32 to 65 years were enrolled in this study. The study was carried out for 10 weeks, 2 preconditioning weeks with a control cream without antioxidants, and 8-week test with creams containing antioxidants in study. A multifunctional skin physiology monitor (Courage & Khazaka electronic GmbH®, Germany) was used to measure skin sebum content, hydration, elasticity, erythema index, and melanin index in 4 different regions of the face. Results: There were significant differences between them.

R. Navarro, A. Pino, A. Martínez-Andrés, E. Garrigós, M.L. Sánchez, E. Gallego, E. Anitua, **Combined therapy with Endoret-Gel and plasma rich in growth factors vs Endoret-Gel alone in the**

management of facial rejuvenation: A comparative study, J Cosmet Dermatol, 2020 Oct;19(10): p. 2616-2626

Background: Skin suffers progressive decrement. An endogenous regenerative technology has been developed that has the versatility to provide an autologous injectable gel (Endoret-Gel) or a liquid plasma rich in growth factors (PRGF) based on the patient´s own platelet-rich plasma. Aims: To compare the efficacy of the combined therapy with Endoret-Gel and PRGF versus Endoret-Gel alone in the management of facial rejuvenation. Methods: Twenty clinically diagnosed patients with aged skin received either Endoret-Gel monotherapy or Endoret-Gel + PRGF combined therapy. Patients underwent three sessions at one-month intervals and were clinically assessed for six months. Corneometry, sebumetry, and high-resolution topographic analysis were carried out. Patient self-assessment questionnaires and clinical improvement scores were also performed. Results: The combined therapy showed to promote a higher hydration index. These results were also significant for spot improvement at three months, while conversely, monotherapy with Endoret-Gel demonstrated higher UVspot improvement. A significant decrease of sebum production and wrinkle development was observed for both treatment groups. Red areas also improved in a similar way at the end of the follow-up period. After Endoret-Gel or Endoret-Gel + PRGF therapy, 30% and 70% of patients referred to be very satisfied, respectively. Accordingly, 40% and 80% showed a "very improved" esthetic performance. None of the patients reported a negative change and no adverse events were recorded. Conclusion: Both Endoret-Gel monotherapy and the combined treatment with PRGF were shown to promote facial rejuvenation and to palliate the age-related cutaneous atrophy. The combined therapy may exert a synergistic effect that addresses both skin quality improvement and soft tissue restoration in a shorter period.

S. Koudounas, S. Abbas, D. Voegeli, **The Effect of Absorbent Pad Design on Skin Wetness, Skin/Pad Microclimate, and Skin Barrier Function: A Quasiexperimental Open Cohort Study**, J Wound Ostomy Continence Nurs, Sep/Oct 2020;47(5): p. 497-506

Purpose: The main aims of this study were to describe the effects of incontinence pad composition on skin wetness, the skin/pad microclimate, and skin barrier function. We also evaluated the potential utility of our methods for future clinical investigation of absorbent pad design. Design: Single-blind, quasi-experimental, open cohort design. Subjects and setting: Twenty healthy older volunteers (mean age = 72.8 years, SD = 5.8 years; 8 male and 12 female) tested 2 absorbent pad types, with acquisition layers of different compositions (A and B) applied to different sites on the volar aspect of the forearms. One type A pad served as control (A dry) versus 3 pad samples wetted with 3 volumes of saline (A 15 mL, A 35 mL, and B 15 mL). The study was conducted within the clinical laboratory of a university nursing research group in the United Kingdom. Methods: Skin barrier function was assessed by measuring transepidermal water loss (TEWL), stratum corneum (SC) hydration by corneometry, and skin surface pH using a standard skin pH electrode. Skin water loading (excess water penetration into the skin) was quantified by measuring TEWL and creating a desorption curve of the water vapor flux density. Calculating the area under the curve of the desorption curve to give skin surface water loss reflected excess water penetration into the skin. In a subgroup of the sample, the temperature and relative humidity (microclimate) at the interface between the skin and test pads were measured using a wafer-thin sensor placed between the skin and pad sample. Proinflammatory cytokine release from the SC was assessed using a noninvasive lipophilic film. The main outcome measures in this study were the differences in biophysical measurements of skin barrier function (TEWL, corneometer, and pH) before and after the application of the different pads. Results: Mean ± SD baseline TEWL across all test sites was 10.4 ± 4.4 g/h/m. This increased to 10.6 ± 3.8 g/h/m at the control site, 15.3 ± 6.3 g/h/m for the A 15-mL pad, 15.3 ± 3.9 g/h/m for the A 35-mL pad, and 15.6 ± 3.2 g/h/m for the B 15-mL pad. The mean baseline skin surface pH was 5.9 ± 0.04; cutaneous pH increased to a mean of 6.1 ± 0.06 following all pad applications (P = .16). Mean SC hydration remained unchanged at the control site (A dry). In contrast, SC hydration increased following the application of all wetted pads. Target cytokines were detected in all samples we analyzed. The IL-1RA/IL-1α ratio increased following pad application, except for the wettest pad. Conclusion: Study findings suggest that absorbent pad design and composition, particularly the acquisition layer, affect performance and may influence skin health. Based on our experience with this study, we believe the methods we used provide a simple and objective means to evaluate product performance that could be used to guide the future development of products and applied to clinical settings.

E. Tamura, H. Yasumori, T. Yamamoto, **The efficacy of a highly occlusive formulation for dry lips**, International Journal of Cosmetic Science, 2020, 42, p. 46–52

Objective: Since skin on the lips has a lower water content in the stratum corneum (SC) and a higher transepidermal water loss (TEWL) value than skin on the cheek, the lips are usually very dry and

rough areas. Therefore, a lip balm approach to increase occlusivity of the lips is generally used to reduce water loss. Although there have been reports of an improvement effect on lip roughness by specific care agents, differences in the effects due to the occlusivity of a formulation without a specific care agent have not been reported. The purpose of this study was to clarify the improvement effect on dryness and roughness of the lips by a highly occlusive formulation consisting of a combination of common oil and wax, not by a specific care agent. Methods: Twenty Japanese female subjects with normal skin (age range 20–39 years; mean 28.1) were enrolled in this study. A 4-week continuous use test was conducted using samples with low and high occlusivity. The degree of lip roughness and wrinkles was scored, the hollow index was assessed using ANTERA 3D images, and values of capacitance and TEWL were measured. RESULTS: The hollow index was significantly correlated with both the appearance roughness score and the wrinkle score. The sample with high occlusivity showed significant improvement in the appearance roughness score, wrinkle score, the hollow index and capacitance of the SC. In a comparison between the groups of samples with different occlusive properties, a significant improvement effect in rough appearance was seen in subjects using the highly occlusive formulation. CONCLUSION: The hollow index assessed by ANTERA 3D imaging allowed the objective evaluation of the improvement in appearance. In the case of continuous use of the highly occlusive formulation, an improvement of capacitance in the SC, which is most correlated with lip roughness, was obtained after 2 and 4 weeks. These results demonstrate for the first time that a highly occlusive formulation is effective in improving the roughness of the lips, and this effect is due to the difference in the occlusive property not by a specific care agent.

R.L. Evans , S. Bates, R.E. Marriott, D.S. Arnold, **The impact of different hair-removal behaviours on the biophysical and biochemical characteristics of female axillary skin**, International Journal of Cosmetic Science, 2020, 42, p. 436–443

Objective: The impact of hair removal on the biophysical and biochemical characteristics of human axillary skin is not fully understood. This study investigated the effect of different hair-removal techniques on biophysical parameters and the concentrations of key inflammatory biomarkers in the axillae of female Thai subjects. Axillary hair was removed by shaving, plucking or waxing. Methods: Following a 2-week washout phase without hair removal, subjects underwent visual assessment for erythema and skin dryness in one (randomized) axilla, then hair was removed from the axilla by shaving, plucking or waxing according to each subject's established habit. Erythema and dryness were assessed again 30 min after hair removal, and buffer scrubs collected from depilated and non-depilated axillae and analysed for inflammatory cytokines; after a further 48 h, erythema, dryness and post-inflammatory hyperpigmentation (PIHP) were assessed in the depilated axilla. Biophysical assessments (skin hydration, barrier integrity, elasticity and roughness) were made in depilated and non-depilated axillae. Results: All three hair-removal techniques induced an increase in axillary erythema and skin dryness. Shaving was associated with significantly less erythema ($P < 0.01$), but significantly greater skin dryness ($P < 0.05$) versus the other techniques 30 min after hair removal. There were no between-technique differences in PIHP or biophysical parameters. Interleukins IL-1a and IL-1RA concentrations increased, and IL-8 concentration decreased following hair removal by each technique. Conclusion: This is the first study to identify the principal cytokines associated with the inflammatory process triggered by axillary hair removal. A single hair-removal treatment did not appear to induce PIHP or further biophysical changes to the skin.

H.-J. Li, N.-L. Wu, C.-M. Pu, C.-Y. Hsiao, D.-C. Chang, C.-F. Hung, **Chrysin alleviates imiquimod-induced psoriasis-like skin infammation and reduces the release of CCL20 and antimicrobial peptides**, Scientific Reports (2020) 10:2932

Psoriasis is a common non-contagious chronic infammatory skin lesion, with frequent recurrence. It mainly occurs due to aberrant regulation of the immune system leading to abnormal proliferation of skin cells. However, the pathogenic mechanisms of psoriasis are not fully understood. Although most of the current therapies are mostly efcient, the side efects can result in therapy stop, which makes the efectiveness of treatment strategies limited. Therefore, it is urgent and necessary to develop novel therapeutics. Here, we investigated the efcacy of chrysin, a plant favonoid, which we previously reported to possess strong antioxidant and anti-infammatory efects, against psoriasis-like infammation. Our results revealed that chrysin signifcantly attenuated imiquimod-induced psoriasislike skin lesions in mice, and improved imiquimod-induced disruption of skin barrier. Moreover, the tnf-α, IL-17A, and IL-22-induced phosphorylation of MAPK and JAK-STAT pathways, and activation of the nf-κB pathway were also attenuated by chrysin pretreatment of epidermal keratinocytes. Most importantly, chrysin reduced tnf-α-, IL-17A-, and IL-22-induced CCL20 and antimicrobial peptide release from epidermal keratinocytes. Thus, our fndings indicate that chrysin may have therapeutic potential against infammatory skin diseases. Our study provides a basis for further investigating chrysin as a novel

pharmacologic agent and contributes to the academic advancement in the feld of Chinese herbal medicine.

J. H. Alfonso, A.K. Afanou, J.-0. Holm, E. Stylianou, **Skin bioengineering in the diagnosis of occupational protein contact dermatitis**, Occupational Medicine 2020;70:282-285

Protein contact dermatitis (PCD) often presents as chronic hand eczema (CHE) with an immediate hypersensitivity to protein proved by a positive skin prick test or by the presence of specific immunoglobulin E.This is frequently induced by occupational exposure to proteins in food workers, farmers, animal breeders, veterinarians and healthcare professionals.While skin barrier impairment is crucial in the pathogenesis of PCD, methods to assess skin barrier function such as trans-epidermal water loss and stratum corneum hydration are not widely used in clinical settings. We describe the diagnostic workup of occupational PCD due to Argentinean shrimps and discuss how the use of skin bioengineering methods including assessment of corneocytes morphology by Scanning Electron Microscopy provides with insightful information on skin barrier function. Diagnosis of PCD is timeconsuming and a multidisciplinary team contributes to early diagnosis and proper occupational rehabilitation.

M. Kepinska-Szyszkowska, A. Misiorek, M. Kapinska-Mrowiecka, J. Tabak, K. Malina, **Assessment of the Influence Systemic Cryotherapy Exerts on Chosen Skin Scores of Patients with Atopic Dermatitis: Pilot Study**, BioMed Research International Volume 2020

Background. One of the most important tasks in the treatment of atopic dermatitis (AD) is alleviation of racking skin dryness and persistent pruritus, because these factors exert a significant influence on worsening patients' quality of life. Cryotherapy being a new form of rehabilitation in AD may supplement and support a long-term process of AD treatment, because it has anti-inflammatory and antipruritic effects and exerts a positive influence on the nervous system. Methods. 14 adults (mean age 32 ± 10:8) with mild tomoderate AD were enrolled. WBC (15 treatments in total) took place in winter 2018/2019. Patient skin parameters (hydration of the epidermis, sebum level, and skin pH level) were measured with probes produced by Courage + Khazaka Electronic GmbH. Results. Changes were observed in the hydration level of the epidermis. The SCORAD index evaluating the AD intensity level also changed (decreased). Conclusion. Due to these properties, hypothesis has been put forward that WBC can be an effective, supporting method in the treatment of AD.

I. Konya, I. Shishido, Y.M. Ito, R. Yano, **Combination of minimum wiping pressure and number of wipings that can remove pseudo-skin dirt: A digital image color analysis**, Skin Research & Technology, Volume 26, Issue 5, September 2020, p. 639-647

Background: Excessive wiping friction in skin care may lead to skin damage. Bed baths are required to remove skin dirt without affecting the skin barrier function; the wiping pressure and number of wipings that satisfy these two requirements have not been clarified. This study aimed to determine the minimum wiping pressure and number of wipings that can remove skin dirt. Materials and Methods: In this quasi-experimental study, 50 healthy adults received an adhesion of pseudo-oily and aqueous dirt, randomly assigned to the left and right forearms. Each participant was wiped three times with wiping pressure classified into six randomly assigned categories. The dirt removal rate was calculated by coloranalyzing images captured before and after each wiping, and its dependence on the combination of wiping pressure and number of wipings was assessed using a linear mixed model. Results: The combinations achieving oily dirt removal rates of 80% or more were wiping once and pressure ≥50 mmHg, wiping twice and pressure ≥40 mmHg, and wiping thrice and pressure ≥10 mmHg. Aqueous dirt was removed almost completely by wiping once, even with pressure ≥5 mmHg. Conclusion: Wiping with at least 10 mmHg or more three times can sufficiently remove both oily and aqueous dirt. Dirt removal rates with weak pressure can be made about as effective as those achieved with strong pressure by increasing the number of wipings. This result can be applied to daily nursing, home care, and long-term care health facilities.

A. Chodkowska, A. Bieńkowska, Ż. Słyk, J. Giebułtowicz, M. Małecki, **Anticancer activity of topical ointments with histone deacetylase inhibitor, trichostatin A**, Adv Clin Exp Med. 2020;29(9): p. 1039–1049

Background. Trichostatin A (TSA), being a strong specifc histone deacetylase (HDAC) inhibitor, may lead to the inhibition of growth, differentiation and/or apoptosis of cells in a number of tumors. Semisolid drug formulations for topical release of anticancer agents may be an alternative strategy or a supplement of the systemic therapy. Objectives. To prepare semisolid formulations with TSA to be used directly on the skin and to assessthe anticancer effect in vivo on a mouse model with L1 neoplastic tumors.Material and methods. Twenty-four formulations were prepared in the form of semisolid systems

containing TSA as the active ingredient. Then, an in vitro study was performed concerning the release of the active substance from the prepared formulations. Four formulations were selected for in vivo studies: oil-in-water cream, hydrogel, w/o emulsion ointment on the absorptive hydrophobic medium, and o/w emulsion gel. The tumor size and mouse body weight were measured during the experiment. The tumors and healthy skin of the mice were assessed regarding the skin barrier function with the Corneometer and Tewameter probes. Results. The semisolid formulation with TSA applied on the skin reduced the growth of neoplastic tumors as compared with the control group. This is especially pronounced in the case of w/o emulsion ointment and o/w emulsion gel. The Corneometer shows that neoplastic tumor growth and formulations on the skin have no effect on the skin condition in comparison with the mouse skin without tumor. The measurement performed with the Tewameter has revealed impaired skin barrier function of neoplastic tumors. Conclusions. Semisolid formulations with TSA ft well in the mainstream of research into topical medicines applied directly on neoplastic tumors, which may support and supplement current oncological treatment.

J. Yang, Y. Tu, M.-Q. Man, Y.-J. Zhang, Y.i Cha, X. Fan, Z. Wang, Z. Zeng, L. He, **Seasonal variations of epidermal biophysical properties in Kunming, China: A self-controlled cohort study,** Skin Research & Technology, Volume 26, Issue 5, September 2020, p. 702-707

Background: Epidermal biophysical properties can be affected by many factors, including body site, age, gender, ethnicity, disease, temperature, humidity, and ultraviolet (UV) radiation. Information about variation of epidermal biophysical properties with seasons is still limited. In the present study, we determined seasonal variation of epidermal biophysical properties of women in Kunming, China. Materials and Methods: A total of 72 women, aged 22.96 ± 2.11 years, were enrolled in this study. Transepidermal water loss rates (TEWL), stratum corneum (SC) hydration, sebum content, melanin index (MI), erythema index (EI), and *L*a** values were measured on the right cheek and the right forearm, using a non-invasive skin physiological instrument in the spring, summer, autumn, and winter in Kunming, China. Results: On the cheek, TEWL, SC hydration, sebum, MI, and *L*a** values varied greatly with seasons ($P < .05$). SC hydration, sebum, MI, and *a**value peaked in the summer, but went lowest in winter. In contrast, TEWL and *L**value went lowest in summer but peaked in winter. Similarly, SC hydration, MI, and *L**value also varied with seasons on the forearm ($P < .05$). In addition, SC hydration, sebum, MI, EI, and *a**value of the cheek were higher than that of the forearm ($P < .001$), but *L**values of the cheek were lower than that of the forearm ($P < .001$). There were no correlations among TEWL and MI, EI, and *L*a**values in any season ($P > .05$). Conclusions: Both epidermal permeability barrier function, sebum, and skin pigment in healthy women vary seasons in Kunming, China.

L. Nakab, C.K. Hee, O. Guetta, **Improvements in Skin Quality Biological Markers in Skin Explants Using Hyaluronic Acid Filler VYC-12L**, Plast Reconstr Surg Glob Open 2020

Background: Hyaluronic acid (HA), both crosslinked and uncrosslinked, is usedclinically to treat fne lines and provides additional improvements in skin quality attributes. The purpose of this study was to assess potential early differences in the expression of biological markers of skin quality in living human skin explants injected with uncrosslinked and crosslinked HA gels. Methods: Living human skin explants injected with VYC-12L or noncrosslinkedHA with mannitol (HYD) and noninjected controls were assessed via microscopy, histology, and immunohistochemistry on days 3 and/or 8 for biological markers of elasticity (collagen density, elastin, fbrillin-1) and hydration [aquaporin-3, acidic glycosaminoglycans (GAGs), HA]. Hydration was also assessed via a corneometer probe on days 0, 1, 2, and 8. Results: On day 3 versus controls, VYC-12L moderately increased collagen density in the upper reticular dermis and clearly increased fbrillin-1 expression, with slight increases persisting on day 8. Increases with HYD were smaller and did not persist on day 8. Both VYC-12L and HYD increased aquaporin-3 expression and GAG content on days 3 and 8, but VYC-12L produced greater GAG increases in the reticular dermis. Day 8 instrument-assessed hydration increased by 49% and 22% for VYC-12L and HYD, respectively. Elastin expression in oxytalan and elaunin fbers was unchanged. Upper-dermal HA reductions suggested HA injectioninduced hyaluronidase expression. Conclusion: VYC-12L produced greater, more lasting improvements in biological markers of skin quality than HYD.

J. Yo, .J.Y. Choi, B.Y. Lee, C.H. Shin, J.-W. Shin, C.H. Huh, J.-I. Na, **Therapeutic Effects of Saline Groundwater Solution Baths on Atopic Dermatitis: A Pilot Study**, Evidence-Based Complementary and Alternative Medicine, Volume 2020

Background: Saline groundwater, collected from the east coast of Korea, has been shown to have protective effects against 2,4- dinitrochlorobenzene- (DNCB-) induced atopic dermatitis-like skin lesions in the murine model. Objectives: To determine the effects of saline groundwater solution baths as a treatment of mild-to-moderate atopic dermatitis. Methods: Twenty-four subjects with mild-to-moderate atopic dermatitis were instructed to take a bath in saline groundwater solution for 20 minutes

per day for two weeks. Evaluations were performed at baseline and week 2, including SCORing Atopic Dermatitis (SCORAD) index, corneometry, transepidermal water loss, visual analogue scale for pruritus, and collection of adverse events. Results: Subjects showed significant improvement with respect to the SCORAD index, skin hydration, transepidermal water loss, and pruritus at week 2 when compared with the baseline. Conclusion: Baths in saline groundwater solution may be an alternative therapeutic strategy for treating atopic dermatitis.

E. Sofrona, L.-A. Tziveleka, M. Harizani, P. Koroli, I. Sfiniadakis, V. Roussis, M. Rallis, E. Ioannou, **In Vivo Evaluation of the Wound Healing Activity of Extracts and Bioactive Constituents of the Marine Isopod Ceratothoa oestroides**, Mar. Drugs 2020, 18, 219

Wound healing is a fundamental response to tissue injury and a number of natural products has been found to accelerate the healing process. Herein, we report the preparation of a series of different polarity (organic and aqueous) extracts of the marine isopod Ceratothoa oestroides and the in vivo evaluation of their wound healing activity after topical administration of ointments incorporating the various extracts on wounds inflicted on SKH-hr1 hairless mice. The most active extract was fractionated for enrichment in the bioactive constituents and the fractions were further evaluated for their wound healing activity, while their chemical profiles were analyzed. Wound healing was evaluated by clinical assessment, photo-documentation, histopathological analysis and measurement of biophysical skin parameters, such as transepidermal water loss (TEWL), hydration, elasticity, and skin thickness. The highest levels of activity were exerted by treatment of the wounds with a fraction rich in eicosapentaenoic acid (EPA), as well as myristic and palmitoleic acids. Topical application of the bioactive fraction on the wounds of mice resulted in complete wound closure with a skin of almost normal architecture without any inflammatory elements.

D. Maggioni, A. Cimicata, A. Praticò, R. Villa, F.M. Bianchi, S. Busoli Badiale, C. Angelinetta, **A Preliminary Clinical Evaluation of a Topical Product for Reducing Slight Rosacea Imperfections**, Clinical, Cosmetic and Investigational Dermatology 2020:13, p. 299–308

Introduction: Rosacea is a chronic multifactorial skin disorder mainly affecting facial skin with an estimated prevalence of about 5% worldwide. Its main symptoms, occurring early during pathology development, are skin dehydration, redness, erythema, and telangiectasia. Given the lack of a resolutive cure, therapeutic approaches able to relieve the main symptoms are needed. Purpose: The aim of this research article is to evaluate the beneficial effect of a topical product (Serum BK46) on rosacea symptoms. Patients and Methods: A monocentric single-arm, non-blinded study was performed to assess the clinical effect of Serum BK46 in relieving the main symptoms of rosacea: skin dryness, increased transepidermal water loss (TEWL), redness, and abnormal vascularization. Twenty patients with mild to moderate rosacea were enrolled in the study and asked to apply the product twice per day for 56 days. Skin moisturization, TEWL, and erythema index were instrumentally assessed at baseline and following 24 h and 14, 28 and 56 days of treatment. Clinical parameters, including redness and telangiectasia imperfection visibility, were evaluated on a 5-point scale by a specialized dermatologist at baseline and after 14, 28, and 56 days of treatment. Finally, the visibility of vessel diameter was evaluated at baseline and after 28 and 56 days of treatment. Results: Serum BK46 application restored skin hydration and prevented the loss of water by the skin. Long-term treatment with Serum BK46 significantly reduced skin redness, erythema index, and the visibility of telangiectasia imperfections and superficial vessels. The investigated product's clinical effect was demonstrated by both instrumental and clinical evaluation. Furthermore, Serum BK46 was completely tolerated and no adverse effects were recorded. Conclusion: The moisturizing and skin barrier restoring action of Serum BK46 has been clearly proven in patients displaying mild to moderate rosacea; thus, this product is a good candidate for rosacea treatment.

M.G. Suh, G. Y. Bae, K. Jo, J.M. Kim, K.-B. Hong, H.J. Suh, **Photoprotective Effect of Dietary Galacto-Oligosaccharide (GOS) in Hairless Mice via Regulation of the MAPK Signaling Pathway**, Molecules 2020, 25, 1679

This study investigated the suppression of photoaging by galacto-oligosaccharide (GOS) ingestion following exposure to ultraviolet (UV) radiation. To investigate its photoprotective effects, GOS along with collagen tripeptide (CTP) as a positive control was orally administered to hairless mice under UVB exposure for 8 weeks. The water holding capacity, transepidermal water loss (TEWL), and wrinkle parameters were measured. Additionally, quantitative reverse-transcription polymerase chain reaction and Western blotting were used to determine mRNA expression and protein levels, respectively. The GOS or CTP orally-administered group showed a decreased water holding capacity and increased TEWL compared to those of the control group, which was exposed to UVB (CON) only. In addition, the wrinkle area and mean wrinkle length in the GOS and CTP groups significantly decreased. Skin aging-

related genes, matrix metalloproteinase, had significantly different expression levels in the CTP and GOS groups. Additionally, the tissue inhibitor of metalloproteinases and collagen type I gene expression in the CTP and GOS groups significantly increased. Oral administration of GOS and CTP significantly lowered the tissue cytokine (interleukin-6 and -12, and tumor necrosis factor-□) levels. There was a significant difference in UVB-induced phosphorylation of JNK, p38, and ERK between the GOS group and the CON group. Our findings indicate that GOS intake can suppress skin damage caused by UV light and has a UV photoprotective effect.

H.J. Choi, B.R. Song, J.E. Kim, S.J. Bae, Y.J. Choi, S.J. Lee, J.E. Gong, H.S. Lee, C.Y. Lee, B.-H. Kim, D.Y. Hwang, **Therapeutic Effects of Cold-Pressed Perilla Oil Mainly Consisting of Linolenic acid, Oleic Acid and Linoleic Acid on UV-Induced Photoaging in NHDF Cells and SKH-1 Hairless Mice**, Molecules 2020, 25, 989

Positive physiological benefits of several plant oils on the UV-induced photoaging have been reported in some cell lines and model mice, but perilla oil collected from the seeds of *Perilla frutescens* L. has not been investigated in this context. To study the therapeutic effects of cold-pressed perilla oil (CPO) on UV-induced photoaging in vitro and in vivo, UV-induced cellular damage and cutaneous photoaging were assessed in normal human dermal fibroblasts (NHDFs) and HR-1 hairless mice. CPO contained five major fatty acids including linolenic acid (64.11%), oleic acid (16.34%), linoleic acid (11.87%), palmitic acid (5.06%), and stearic acid (2.48%). UV-induced reductions in NHDF cell viability, ROS production, SOD activity, and G2/M cell cycle arrest were remarkably improved in UV + CPO treated NHDF cells as compared with UV + Vehicle treated controls. Also, UV-induced increases in MMP-1 protein and galactosidase levels were remarkably suppressed by CPO. In UV-radiated hairless mice, topical application of CPO inhibited an increase in wrinkle formation, transepidermal water loss (TEWL), erythema value, hydration and melanin index on dorsal skin of UVB-irradiated hairless mice. CPO was observed to similarly suppress UV-induced increases in epidermal thickness, mast cell numbers, and galactosidase and MMP-3 mRNA levels. These results suggest CPO has therapeutic potential in terms of protecting against skin photoaging by regulating skin morphology, histopathology and oxidative status.

H. van der Hoeven, H. Prade, **Analysing vitamin D and skin hydration**, Personal Care Global, August 2020

Over the past decade the world has gone through tremendous changes. The world's population increasingly follows stricter and more frequent personal hygiene practices. Significantly more consumers now use high SPF sun protective products than a few decades ago. Urbanisation has led to a significant increase in the number of people working and living indoors, often in a heated or air-conditioned, environment. The COVID-19 crisis has had an additional dramatic impact on the fact that people remain indoors.

V.S. Chat, S.K. Uppal, D.G. Kearns, J.J. Wu, **Colloidal Oatmeal in the Treatment of Atopic Dermatitis - Is this plant-based intervention an effective treatment alternative?** Practical Dermatolgy, August 2020

Colloidal oatmeal is a common ingredient in OTC skin products that has been shown to improve skin barrier integrity and reduce pruritus and skin inflammation. Colloidal oatmeal treatments offer symptomatic relief, reduce TCS use, and enhance quality of life in patients with AD.

N. Tangkijngamvong, P. Phaiyarin, S. Wanichwecharungruang, C. Kumtornrut, **The anti-sebum property of chitosan particles**, J Cosm Dermatol, August 2020

Background: Seborrhea is linked to several medical and mental conditions. Although it is common, effective agents and the standardized sebum level for seborrhea are not elucidated. Aims: To determine the efficacy of chitosan particles (CP) formulation on controlling sebum secretion, its extended effects on skin redness and texture after combining with proretinal nanoparticles (CP-PRN), and a correlation of the clinical grading with sebum levels that affect mental health. Patients/methods: A four-week clinical trial with forty subjects was conducted. Subjects applied either CP formulation or CP-PRN during nighttime. Objective measurements including sebum levels, transepidermal water loss (TEWL), skin corneometry, skin redness, and texture were analyzed. Subjects completed a self-assessment clinical grading of skin oiliness at every visit. Results: Both CP and CP-PRN significantly decreased sebum levels (P □ .01) at week 4 compared to baseline. CP also resulted in significant decreases in TEWL (P □ .05) and skin corneometry (P □ .05) throughout the study. A significant improvement in skin redness was observed with CP-PRN (P □ .01). A moderate correlation between the clinical grading and sebum levels was detected (coefficient of 0.5, P □ .001), with a sebum level of 106 □g cm indicating emotional discomfort. One subject experienced local irritation with the CP-PRN. Mild pruritic symptoms

were reported in both groups. Conclusions: Chitosan particles exhibited an interesting anti-sebum effect. It could be combined with PRN to extend benefits without losing the sebum controlling effect. The clinical grading may be useful in practice due to a modest correlation with sebum levels.

A. Kovács, D. Péter-Héderi, K. Perei, M. Budai-Szücs, A. Léber, A. Gácsi, E. Csányi, S. Berkó, **Effects of Formulation Excipients on Skin Barrier Function in Creams Used in Pediatric Care**, Pharmaceutics 2020, 12, 729

Semisolid dosage forms are recommended for the dermal care of babies and children. If we look at the ingredients of these preparations, there are still many cases in which there are substances (occlusive agents, preservatives) that no longer meet certain requirements of the modern age, so it is timely to replace them with other substances. The aim of this work was to formulate ascience-based formulation with new components that keep or improve its moisturizing properties, rheological parameters, and microbiological stability. Occlusive oils, like white petrolatum and liquid paraffin and the preservative parabens are traditional ingredients in oil in water creams, were replaced with white beeswax, sunflower oil, and phenoxyethanol, respectively. Cocoa butter, urea, and glycerol were added to improve long-lasting hydration and support the barrier function of the reformulated creams. The rheological properties of the formulations were determined. The effects of the preparations on skin hydration and on the barrier function of the skin were tested. Furthermore, microbiological stability was investigated. The result of the reformulation was an o/w cream that provided a good longer-lasting hydration effect; supported the barrier function of the baby skin without occlusion; and had adequate consistency, easy spreading, a pleasant skin feeling, proper pH, and good microbiological stability.

W. Hua, Y. Zuo, R. Wan, L. Xiong, J. Tnag, L. Zou, X. Shu, L. Li, **Short-term Skin Reactions Following Use of N95 Respirators and Medical Masks**, Contact Dermatitis, 2020 Aug;83(2): p. 115-121

Background: In the context of the COVID-19 pandemic, cases of adverse skin reactions related to masks have been observed. Objective: To analyze the short-term effects of N95 respirators and medical masks, respectively, on skin physiological properties and to report adverse skin reactions caused by the equipment. Methods: This study used a randomized crossover design with repeated measurements. Twenty healthy Chinese volunteers were recruited. Skin parameters were measured on areas covered by the respective mask and on uncovered skin 2 and 4 hours after donning, 0.5 and 1 hour after doffing, including skin hydration, transepidermal water loss (TEWL), erythema, pH and sebum secretion. Adverse reactions were clinically assessed, and perceived discomfort and incompliance measured. Results: Skin hydration, TEWL and pH increased significantly after donning. Erythema values increased from baseline. Sebum secretion increased both on the covered and uncovered skin with equipment-wearing. There was no significant difference between the physiological values between the two types of equipment. More adverse reactions were reported following N95 mask use that following use of medical mask, and a higher score of discomfort and incompliance. Conclusions: This study demonstrates that skin biophysical characters changes owing to mask and respirator wearing. N95 respirators were associated with more skin reactions than medical masks.

S.G. Danby, P.V. Andrew, K. Brown, J. Chittock, L.J. Kay, M.J. Cork, **An Investigation of the Skin Barrier Restoring Effects of a Cream and Lotion Containing Ceramides in a Multi-vesicular Emulsion in People with Dry, Eczema-Prone, Skin: The RESTORE Study Phase 1**, Dermatol Ther (Heidelb) (2020) 10: p. 1031–1041

Introduction: The replenishment of skin lipids depleted in the dry skin state is a desirable therapeutic target to restore skin moisturization; however, there is limited evidence demonstrating the success of this approach through the use of topical emollients. The purpose of this study was to provide evidence of the benefits of a cream and equivalent lotion containing skin lipids in a multi-vesicular emulsion for the management of dry skin. The hypothesis was that the test cream and test lotion could sustain skin moisturization for longer than raditional emollients by sustainably delivering skin lipids. Methods: A double-blind intra-subject vehiclecontrolled single open-application test on the lower legs in people with dry, atopic dermatitis (atopic eczema)-prone, skin was conducted.Tere were six treatment sites, three per lower leg in each participant, which were treated with the test cream, the test lotion, three reference creams commonly prescribed in the UK and no treatment as a control. After baseline measurements of skin hydration, 100 ll of the test/reference creams was applied to each of the relevant treatment sites (random site allocation). Following treatment, measurements of skin hydration and scoring of visual dryness was conducted at timed intervals (3, 6, 12 and 24 h post-product application). Results: The test cream and lotion both significantly increased skin hydration and reduced skin dryness for at least 24 h following a single application compared to a no treatment control site. Compared to three reference emollient creams the test cream and test lotion were the only products capable of sustaining clinically meaningful improvements in skin moisturization for 24 h. Conclusion: The sustained

moisturization imparted by the test products reduces the need for frequent emollient application, often requiring 3–4 applications per day for traditional emollients, and should reduce the high burden of managing dry skin conditions like atopic dermatitis.

K. Zdu□ska-P□ciak, H. Rotsztejn, **The effectiveness of ferulic acid and microneedling in reducing signs of photoaging: a split-face comparative study**, Dermatol Ther, Jul 2020

Background: Photoaging is closely related to UV-induced oxidative stress. Ferulic acid is a plant-based antioxidant with anti-aging activity. Combining ferulic acid peel with microneedling enhances it's transdermal penetration. This study was designed to evaluate the efficacy of 14% ferulic acid peel combined with microneedling for facial photoaging. Materials and methods: 16 women aged 45-60 with Fitzpatrick skin type II and III, were enrolled in this trial. All patients received 8 treatment sessions with a full face application of chemical peeling based on 14% ferulic acid in 1-week intervals. During each session, on the right half of patient's face, peeling application was followed by microneedling. Efficacy was measured using MPA (Courage+Khazaka electronic). The measurement of hydration, elasticity, melanin index and erythema index were taken before treatments, after 8th session and 1 month after the last application. Results: The objective evaluation showed statistically significant improvement in all measured skin parameters ($p<0,05$), after ferulic acid peel application, as well as ferulic acid peel followed by microneedling. Combined therapy showed significantly greater improvement especially in skin elasticity, comparing to peeling administered alone. Conclusion: Ferulic acid has a significant bleaching, anti-redness, smoothing and moisturizing activity. When combined with microneedling, the efficiency is increased, in particular regarding skin elasticity.

F. Elban, E. Hahnel, U. Blume-Peytavi, J. Kottner, **Reliability and agreement of skin barrier measurements in a geriatric care setting**, Journal of Tissue Viability online, July 2020

Background: The non-invasive skin barrier measurements transepidermal water loss, stratum corneum hydration and the skin surface pH are widely used in clinical skin research. Relative and absolute measurement errors of these measurements are unknown in geriatric care settings. Material and methods: Transepidermal water loss, stratum corneum hydration, skin surface pH and temperature were measured on the volar forearm and lower leg twice by trained raters within a cross-sectional study in ten nursing homes. Intra-rater reliability was calculated using the ICC (1,1). Intra-rater agreement was analyzed using Bland Altman Plots with limits of agreement. Results: Two hundred twenty-three residents were included and mean age was 84.2 years. The highest ICC was found for transepidermal water loss and skin surface temperature of the leg with 0.95 (95% CI 0.93 to 0.96). The ICC of the stratum corneum was 0.91 (95% CI 0.88 to 0.93) for both investigated skin areas. The measurement of the pH at the lower leg had the lowest ICC with 0.73 (95% CI 0.66 to 0.78). Highest limits of agreement of approximately 8 a.u. were calculated for stratum corneum hydration and lowest limits of agreement of approximately 1 □C were calculated for skin surface pH. Conclusion: Relative measurement errors of transepidermal water loss and stratum corneum hydration were very low indicating that single measurements provide reliable estimates in this population and setting. However, the absolute measurement errors were high for both of these parameters. To increase reliability of skin surface pH we recommend at least two repeated measurements.

A. Mandeau, P. Daigle, E. Loing, M. Shortt, **Hydration Regulation – Hybiscus Sabdariffa Osmolyte for Barrier Moisture Control**, Cosmetics & Toiletries, Vol. 135, No. 7, July/August 2020

Hibiscus sabdariffa L., also know as wild rosella (w. rosella) in Australia, is an annual crop grown in temperate and tropic climate.

Moderne Hautanalyse - Die ungeschminkte Wahrheit, Fit for Fun, Juli 2020

Ein geschultes Auge sieht der Haut auf Anhieb das Wichtigste an – aber nicht alles. Präzise Informationen über den Hautzustand liefern diese fünf technischen Geräte.

T.V.A. Westermann, V. Rodrigues Viana, C. Berto Junior, C. Britto Detoni da Silva, E.L. Santana Carvalho, C.G. Pupe, **Measurement of skin hydration with a portable device (SkinUp Beauty Device) and comparison with the Corneometer**, Skin Research & Technology, 2020 Jul;26(4): p. 571-576

Background: Epidermis hydration measurement is an important tool to assess its health. SkinUp is a portable device that measures moisture and oil levels of skin through impedance method, it is cheap and has small dimensions, but this equipment has not yet been cited in the scientific literature. Thus, the objective of this work was to validate SkinUp equipment by comparing its results with Corneometer CM 825. Materials and methods: Twenty subjects had skin hydration measurement on forearm, cheeks, and forehead. Measurements obtained with the two instruments were correlated by calculating the

Pearson correlation coefficient and the P-value significance. The sensitivity of the equipment to different regions and treatments and their accuracy were also evaluated. Results: Positive correlations between equipment were found for skin hydration, with P ◘ .001. Bothinstruments presented high sensitivity to the different treatments (P < .001). When sensitivity to different regions was evaluated, both showed greater hydration in the cheek and forehead when compared to the forearm (P < .005). The measurements between the cheek and forehead showed no significant difference when compared to each other. In addition, the two devices have good repeatability in the measurements. Conclusion: These results indicate that SkinUp can be used in the future for skin analysis in in vivo assays.

S. Laneri, R. di Lorenzo, A. Bernardi, A. Sacchi, I. Dini, ***Aloe barbadensis*: A Plant of Nutricosmetic Interest**, Natural Product Communications Volume 15(7): 1–6

Aloe barbadensis Miller (Aloe Vera Linne) products have long been employed in health foods and for medical purposes. It has antiinflammatory, antifungal, antioxidant properties, which indicates excellent potential in antiaging cosmetic and skin protection products. The objective of this study is to evaluate the antiaging efficacy of dermocosmetic formulations containing *A. barbadensis* extract on young and mature skin using biophysical and skin imaging techniques. Twenty healthy adult volunteers participated in the study, aged between 20 and 65. The cream formulation, with 10% (w/w) of *A. barbadensis* extract, and placebo, were applied to the face of the volunteers. The effects were evaluated in terms of skin hydration and barrier effect by the measurement of transepidermal water loss (TEWL), derma firmness, and elasticity. The formulation containing *A. barbadensis* extract significantly improves water contained in the stratum corneum, firmness, elasticity of the skin, and decreased TEWL.

M. Lukic, I. Pantelic, S. Savic, **A comparison of Myribase and Doublebase gel: Does qualitative similarity of emollient products imply their direct interchangeability in everyday practice?** Dermatologic Therapy. 2020;33:e14020.

Emollients are acknowledged as a part of standard care in therapeutic and prevention protocols as well as a part of everyday skin care routine. When it comes to making a final decision between two emollient products, the ingredient list, that is, the formulation composition could be the determining factor. In such cases the consumer, and some healthcare providers, believe that products with the same qualitative composition (ingredient list) must have the same efficacy. In this study, we have investigated the skin hydration performance of two emollient preparations (DBG and MBG), which appear to contain the same ingredients, and hence, could be considered interchangeable in everyday practice. Our studies showed that the effects of DBG were overall superior to the ones attributed to MBG at each investigated time point (1, 2, 4, and 24 h post application) when tested on normal and dry skin. Consequently, it is shown that two apparently qualitatively identical products do not necessarily provide matching efficacy.

S.Y. Choi, E.J. Ko, K.H. Yoo, H.S. Han, B.J. Kim, **Effects of hyaluronic acid injected using the mesogun injector with stamp-type microneedle on skin hydration**, Dermatologic Therapy, July 2020

Introduction: The elasticity of the skin and its capacity to hold water decrease with aging because of the loss of hyaluronic acid (HA) in the skin. Therefore, there is an increasing interest in the use of HA fillers in skinrejuvenation beyond its conventional use which is supplementing decreased dermis volume and filling deep wrinkles. Objective: We investigated the efficacy and safety of a novel device (Dermashine® balance™) that injects HA into the dermis using a stamp-type microneedle for maintenance of hydration and elasticity of the skin. Methods: A single-center randomized double-blinded parallel-group clinical study was conducted, and 60 participants enrolled in this study. The subjects were randomized to receive HA injections or a placebo 3 times across the face using an automatic intradermal injector. At 4, 8, and 12 weeks after the treatment, skin hydration was measured using a corneometer. Results: The patients who received HA showed significantly greater skin hydration than those who received the placebo. However, a significant difference was not noted in skin elasticity between the groups. No severe adverse event were reported. Conclusion: Intradermal supplementation of HA using mesogun multi-needle injector may be a safe and effective treatment for improving skin hydration.

H. Sekine, Y. Kijima, M. Kobayashi, J. Itami, K. Takahashi, H. Igaki, Y. Nakai, H. Mizutani, Y. Nomoto, K. Kikuchi,·H. Matsushita, K. Nozawa, **Non-invasive quantitative measures of qualitative grading efectiveness as the indices of acute radiation dermatitis in breast cancer patients**, Breast Cancer 2020

Background: Recent improvement of machinery evaluation for the skin changes in various therapies enabled us to evaluate fine changes quantitatively. In this study, we performed evaluation of the changes in radiation dermatitis (RD) using quantitative and qualitative methods, and verified the validity of the conventional qualitative assessment for clinical use. Methods: Forty-three breast cancer

patients received conventional fractionated radiotherapy to whole breast after breast conserving surgery. Erythema, pigmentation and skin dryness were evaluated qualitatively, and biophysical parameters of RD were measured using a Multi-Display Device MDD4 with a Corneometer for capacitance, a Tewameter for transepidermal water loss (TEWL), a Mexameter for erythema index and melanin index. Measurements were performed periodically until 1 year. Results: The quantitative manifestations developed serially from skin erythema followed by dryness and pigmentation. Quantitative measurements detected the effects of irradiation earlier than that of qualitative indices. However, the grades of the domains in RD by qualitative and quantitative assessment showed similar time courses and peak periods. However, no significant correlation was observed between the skin dryness grade and skin barrier function. In contrast to serial increase in pigmentation grades, melanin index showed initial decrease followed by marked increase with significant correlation with pigmentation grades. Conclusion: Subjectively and objectively measured results of RD were almost similar course and peak points through the study. Therefore, validity of the conventional qualitative scoring for RD is confirmed by the present quantitative assessments. Instrumental evaluations revealed the presence of modest inflammatory changes before radiotherapy and long-lasting skin dryness, suggesting indication of intervention for RD.

L. Téot, T.A. Mustoe, E. Middelkoop, G.G. Gauglitz (Editors): **Textbook on Scar-Management - State of the Art Management and Emerging Technologies** (ebook), Springer 2020

The interest in wound healing goes back to the beginning of history and has not diminished throughout the centuries also because practical implications of wound healing studies have remained very relevant for public health. During the last century, much progress has been made in the understanding of basic mechanisms of skin wound healing, and it has been realized that healing processes evolve similarly in various organs. It has been established that fbrotic diseases are regulated by analogous mechanisms, albeit less controlled, compared to those regulating wound healing. Moreover, many advances, such as the use of antiseptics and, later, of antibiotics, as well as the introduction of skin transplants have facilitated the treatment of wounds. It has been shown that wound healing evolution depends on several factors including the type of injury causing the damage, the tissue and/or organ affected, and the genetic or epigenetic background of the patient. This Compendium has the merit of discussing a broad spectrum of topics, including the general biology of wound healing, modern diagnostic approaches, and therapeutic tools, applied to many different clinical situations. It should be of interest to teachers, students, and clinicians working in different aspects of wound healing biology and pathology. I am sure that it will rapidly become an important reference book in these fields.

A. Piotrowska, O. Czerwińska-Ledwig, P. Kotarba, **Wybrane Cechy Skóry Dłoni Diagnostów Laboratoryjnych** - **Selected Hand Skin Characteristics of Laboratory Diagnosticians**, Medycyna Pracy 2020;71(6): p. 725–734 (Article in Polish)

Wstęp: Długotrwała ekspozycja skóry na mokre środowisko pracy i środki dezynfekcyjne powoduje uszkodzenie bariery naskórkowej, co zaburza jej funkcje ochronne oraz sprzyja rozwojowi dermatoz. Czynniki te występują w pracy diagnosty laboratoryjnego. Celem niniejszej pracy była analiza wybranych cech skóry i zmian skórnych rąk u diagnostów laboratoryjnych. Materiał i metody: W badaniu wzięło udział 50 diagnostów zatrudnionych w jednym z krakowskich laboratoriów. Z badanymi przeprowadzono wywiad oraz oceniono pH ich skóry i jej nawilżenie. Pomiary wykonano na stronie grzbietowej ręki dominującej za pomocą urządzeń SKIN-ph-Meter® PH 905 i Corneometer® CM 825. Wyniki: Uzyskane wartości nawilżenia skóry odpowiadały skórze suchej lubbardzo suchej, a odczyny pH skóry mieściły się w granicach normy. Nie udało się wskazać korelacji między pH skóry a ocenianymi cechami (stażem pracy, liczbą godzin spędzanych w rękawiczkach ochronnych w ciągu doby, liczbą epizodów mycia rąk w ciągu dnia). Wydaje się, że stan nawilżenia skóry dodatnio koreluje z czasem noszenia rękawiczek. Stosowanie preparatów nawilżających dłonie po każdym umyciu wiązało się z nawilżeniem skóry. Wnioski: W dobie pandemii COVID-19 ta grupa zawodowa została poddana ogromnym wyzwaniom, a stresory psychiczne i fzyczne (w tym mokre środowisko pracy) będą źródłem przyszłych chorób zawodowych w badanej grupie.

Background: Chronic skin exposure to a wet work environment, as well as disinfectants are factors contributing to epidermal barrier damage. Tis disturbs its protective functions and promotes the development of dermatoses. All these factors occur in the work environment of a laboratory diagnostician. Te aim of the paper was to analyze selected skin parameters and skin lesions in the hands of laboratory diagnosticians. Material and Methods: Overall, 50 laboratory diagnosticians employed in a laboratory in Kraków, Poland, took part in the study. Afer the interview, the skin pH and moisture content were examined. Measurements were performed on the dorsal side of the dominant hand using the Skin-ph-Meter Results: Te obtained moisture level values were qualifed as dry or very

dry skin, and the skin pH was within the reference range. ®PH 905 and Corneometer® CM 825 devices. No correlation between the skin pH value and the features examined (professional experience, the number of hours spent in protective gloves during the day, the number of hand washing episodes during the day) was not indicated. Te level of skin moisture content seems to positively correlate with the time of wearing gloves. Te use of hand moisturizers afer each hand washing episode correlated with the level of skin moisture content. Conclusions: During the COVID-19 pandemic, this professional group has been facing huge challenges, and mental and physical stressors (including wet work environment) will be the source of future occupational diseases.

C. Hülpüsch, K. Tremmel, G. Hammel, M. Bhattacharyya, A. de Tomassi, T. Nussbaumer, A.U. Neumann, M. Reiger, C. Traidl-Hoffmann, **Skin pH–dependent Staphylococcus aureus abundance as predictor for increasing atopic dermatitis severity**, Allergy. 2020;75: p. 2888–2898

Background: Atopic eczema (atopic dermatitis, AD) is characterized by disrupted skin barrier associated with elevated skin pH and skin microbiome dysbiosis, due to high Staphylococcus aureus loads, especially during flares. Since S aureus shows optimal growth at neutral pH, we investigated the longitudinal interplay between these factors and AD severity in a pilot study. Method: Emollient (with either basic pH 8.5 or pH 5.5) was applied double-blinded twice daily to 6 AD patients and 6 healthy (HE) controls for 8 weeks. Weekly, skin swabs for microbiome analysis (deep sequencing) were taken, AD severity was assessed, and skin physiology (pH, hydration, transepidermal water loss) was measured. Results: Physiological, microbiome, and clinical results were not robustly related to the pH of applied emollient. In contrast to longitudinally stable microbiome in HE, S aureus frequency significantly increased in AD over 8 weeks. High S aureus abundance was associated with skin pH 5.7-6.2. High baseline S aureus frequency predicted both increase in S aureus and in AD severity (EASI and local SCORAD) after 8 weeks. Conclusion: Skin pH is tightly regulated by intrinsic factors and limits the abundance of S aureus. High baseline S aureus abundance in turn predicts an increase in AD severity over the study period. This underlines the importance and potential of sustained intervention regarding the skin pH and urges for larger studies linking skin pH and skin S aureus abundance to understand driving factors of disease progression.

L. Vaillant, G. Georgescou, C. Rivollier, A. Delarue, **Combined effects of glycerol and petrolatum in an emollient cream: A randomized, double-blind, crossover study in healthy volunteers with dry skin**, J Cosm Dermatol, June 2020

Background: The stratum corneum plays an important protective physiological role in providing a barrier to preventing skin desiccation and penetration of external agents. Emollients are used commonly to improve barrier function and skin hydration. Aims: The primary objective of this study was to evaluate the effect of an emollient, V0034CR cream, and its active ingredients, to restore the cutaneous barrier. Secondary objectives included assessment of the moisturizing activity of each product and tolerance. The study was not designed to evaluate therapeutic benefit. Methods: In this randomized, double-blind, 4-arm crossover, clinical pharmacology study, the full emollient V0034CR, its vehicle formulation alone, or with glycerol, or petrolatum, was applied to the forearms of healthy volunteers (n = 51) with dry skin (Kligman score of 2 or 3). Cutaneous permeability by Trans Epidermal Water Loss (TEWL) and skin moisture content by corneometry were serially measured for 12 hours following application. An analysis of variance with repeated measures was performed on the evolution of TEWL and corneometry. Results: V0034CR emollient significantly reduced mean TEWL compared to vehicle (P = .0018) and vehicle + glycerol (P = .0001) and significantly increased mean corneometry scores compared to vehicle (P < .0001) and vehicle + petrolatum (P < .0001). Conclusions: The emollient V0034CR presented combined effects, with the petrolatum component improving skin barrier function, with a reduction in TEWL, and the glycerol component improving skin hydration.

G. Sadowski, J. Sadowski, **Safety and Efficacy of a Novel Antiaging Skin Care Regimen Containing Neutraceuticals and Growth Factors on the Facial Skin of Women: A 12-Week Open-label Study**, JCAD Journal of Clinical and Aesthetic Dermatology, June 2020, Volume 13, Number 6

Background: Due to both intrinsic and extrinsic damage, the skin is where easily noticable signs of aging manifest. OBJECTIVE: We sought to assess the effects of two complex novel topical formulations, L'Unique Miracular Facial Serum (LMFS) and L'Unique Skin Essence (LSE) (Nourishing Biologicals LLC, St. Augustine, Florida) on hydration, frmness, elasticity, wrinkling, and pore size of facial skin after initial application and then after four, eight, and 12 weeks of use. Methods: An open-label study was conducted on subjects (N=32) between the ages of 45 and 65 years (mean: 57 years). Subjects were treated with a twice-daily application of LMFS and LSE for a total of 12 weeks following a one-week washout period. The test products were gently applied in a circular motion to the face each morning and evening. Measurements of skin hydration, transepidermal water loss (TEWL), and skin

elasticity and frmness and three-dimensional skin surface evaluations were performed at each visit. Skin lift and pore size assessments were also completed using clinical photography. Subjective outcomes were assessed by a posttreatment product efciency survey at the end of each visit. Results: Objective instrumental measurements showed statistically signifcant improvements in skin hydration (20.19%), TEWL (25.96% at 15 minutes), frmness (24.77%), skin elasticity (11.40%), and skin lift (5.41%) with product use. Improvements in pore size and wrinkle depth were not statistically signifcant. Conclusion: Use of the test products produced significant improvements in skin hydration, TEWL, frmness, and skin elasticity with associated improvements in facial skin appearance.

E. Tamaru, M. Watanabe, Y. Nomura, **Dietary immature Citrus unshiu alleviates UVB- induced photoaging by suppressing degradation of basement membrane in hairless mice**, Heliyon 6 (2020)

Ultraviolet (UV) irradiation induces physiological and morphological skin damage, resulting in skin dryness, wrinkle formation, and loss of elasticity. The basement membrane (BM) has been shown to play crucial roles in binding epidermis to dermis tightly, regulating cell differentiation and proliferation, and signaling protein production. Dietary flavonoids have been revealed to improve the damage caused by UV exposure. Immature Citrus unshiu is known to contain high concentrations of flavonoids such as hesperidin and narirutin. In this study, the effects of immature Citrus unshiu powder (ICP) on photoaged skin were demonstrated using UVB irradiated hairless mice. Oral administration of ICP improved loss of skin hydration and increase of transepidermal water loss. The histological analyses of hairless mice dorsal skin revealed that oral administration of ICP improved UVBinduced overgrowth of epidermal cell, suppressed epidermal cell mortality and BM destruction. Therefore, the administration of ICP could improve photoaging by protecting the tissues around BM.

A. Charpentier, **Clinically supporting 'antiage' and 'pro-age' claims**, Personal Care Europe, June 2020

Claims of personal care evolve following trends and various innovations in the field of the active ingredient development, the finished product formulation and the way both are evaluated, demonstrating their performances. Since 2014, the cosmetics industry is gradually leaving the era of anti-ageing behind. Today, most consumers are more in the mood for a well ageing, slow ageing or pro ageing approach. The philosophy of the 'pro-ageing' movement has sought to remove all 'anti' claims because, according to this concept, women over 50 are not interested in looking younger; they want to look healthy and be honest about their age. Some brands have used the idea of "improves the appearance of skin quality", and "restore the skin comfort", for example. A new vocabulary of renewal, regeneration, plumpness and "glow" now dominates the language of the beauty industry.

C. Uhl, D. Khazaka, **Measuring skin's "true age"**, PERSONAL CARE June 2020, p. 66-68

The human desire to look young is as old as mankind and our skin plays central role in this craving. Even in ancient civilizations, people developed formulations for creams, tonics and bath additives to keep skin young and beautiful. The physiological process of skin ageing involves structural, biochemical and functional changes. Starting at approximately age 25, the content of collagen and other components of the connective tissue, such as elastin or hyaluronic acid, in the skin continuously decreases. This gradually results in a loss of bound water, leading to a deterioration of the water-protein interaction and an alteration of the overall protein stability.

A.A. Hebert, F. Rippke, T.M. Weber, N. Heer Nicol, **Efficacy of Nonprescription Moisturizers for Atopic Dermatitis: An Updated Review of Clinical Evidence**, American Journal of Clinical Dermatology, June 2020

Twice-daily moisturization is recommended by international guidelines as the bedrock of the management of atopic dermatitis (AD). Moisturizers should be selected based on proven clinical effectiveness in improving the skin barrier and improving the symptoms of AD. We searched the PubMed database for clinical trials assessing daily moisturization for the treatment of AD published between 2006 and 2019. Studies had to assess the efficacy of commercially available moisturizers using objective measures of corneometry, transepidermal water loss, or incidence of flare as endpoints, and treatments had to be currently available to patients. Clinical studies showed that moisturization (typically twice daily) significantly improved the skin barrier in adults and children with AD. Longer-term flare studies showed that daily moisturization reduced the incidence of flares and extended the time between flares. Proactive moisturization of infants at high risk of developing AD may reduce its manifestation. Therapeutic moisturizers for AD are specifically formulated with ingredients that target symptoms of AD, such as itch, inflammation, or compromised skin barrier. The US FDA requires that any moisturizer available in the USA and claiming to treat AD must contain colloidal oatmeal. Healthcare providers can

maximize compliance and outcomes by educating patients on the benefits of liberally applying a therapeutic moisturizer twice daily to support the skin barrier and help reduce the incidence of flares. Specific recommendations should be for clinically tested moisturizers evaluated using objective, validated skin assessments.

N. Hazwani Mohd Ariffin, R. Hasham, **Assessment of non-invasive techniques and herbal-based products on dermatological physiology and intercellular lipid properties**, Heliyon 6 (2020)

Skin is the largest external organ of the human body. It acts as a barrier to protect the human body from environmental pollution, mechanical stress, and excessive water loss. The defensive function resides primarily on top of the epidermis layer commonly known as stratum corneum (SC). Human SC consists of three major lipids, namely ceramide, free fatty acid, and cholesterol that comprise approximately 50%, 25%, and 25% of the total lipid mass, respectively. The optimal composition of SC lipids is the vital epidermal barrier function of the skin. On the other hand, skin barrier serves to limit passive water loss from the body, reduces chemical absorption from the environment, and prevents microbial infection. In contrast, epidermal lipids are important to maintain the cell structure, growth and differentiation, cohesion and desquamation as well as formation of a permeability barrier. Multiple non-invasive in vivo approaches were implemented on a regular basis to monitor skin physiological and intercellular lipid properties. The measurement of different parameters such as transepidermal water loss (TEWL), hydration level, skin elasticity, collagen intensity, melanin content, sebum, pH, and tape stripping is essential to evaluate the epidermal barrier function. Novel non-invasive techniques such as tape stripping, ultrasound imaging, and laser confocal microscopy offer higher possibility of accurate and detailed characterisation of skin barrier. To date, these techniques have also been widely used to determine the effects of herbal plants in dermatology. Herbal plants have been traditionally used for ages to treat a variety of skin diseases, as reported by the World Health Organisation (WHO). Their availability, lower cost, and minimal or no side effects have created awareness among society, thus increase the demand for natural sources as the remedy to treat various skin diseases. This paper reviews several non-invasive techniques and evaluations of herbal-based product in dermatology.

J.-W. Guo, Y.-P. Cheng, C.-Y. Liu, H.-Y. Thong, C.-J. Huang, Y. Lo, C.-Y. Wu, S.-H. Jee, **Salvianolic Acid B in Microemulsion Formulation Provided Sufficient Hydration for Dry Skin and Ameliorated the Severity of Imiquimod-induced Psoriasis-like Dermatitis in Mice**, Pharmaceutics 2020, 12, 457

Psoriasis is a chronic inflammatory skin disorder with a pathogenesis involving the interleukin-23/interleukin-17 axis. Salvianolic acid B exerts several pharmacological effects, such as antioxidation, anti-inflammation, and antitumor effects. The anti-psoriatic effects of salvianolic acid B have not been reported. In this study, we aimed to determine the optimum vehicle for salvianolic acid B, investigate its therapeutic effect on psoriatic-like skin conditions, and explore its underlying mechanisms of action. BALB/c mice were administered topical imiquimod to induce psoriasis-like skin and were then randomly assigned to control, vehicle control, salvianolic acid B in vehicles, and 0.25% desoximetasone ointment treatment groups. Barrier function, cytokine expression, histology assessment, and disease severity were evaluated. The results showed that salvianolic acid B-containing microemulsion alleviated disease severity, reduced acanthosis, and inhibited interleukin-23/interleukin-17 (IL-23/IL-17) cytokines, epidermal proliferation, and increased skin hydration. Our study suggests that salvianolic acid B represents a possible new therapeutic drug for the treatment of psoriasis. In addition, such formulation could obtain high therapeutic efficacy in addition to providing sufficient hydration for dry skin.

D.-B. Myung, J.-H. Lee, H.-S. Han, K.-Y. Lee, H.S. Ahn, Y.-K. Shin, E. Song, B.-H. Kim, K.H. Lee, S.H. Lee, K.-T. Lee, **Oral Intake of *Hydrangea serrata* (Thunb.) Ser. Leaves Extract Improves Wrinkles, Hydration, Elasticity, Texture, and Roughness in Human Skin: A Randomized, Double-Blind, Placebo-Controlled Study**, Nutrients 2020, 12, 1588

Previously, we reported that the hot water extract of Hydrangea serrata leaves (WHS) and its active component, hydrangenol, possess in vitro and in vivo effects on skin wrinkles andmoisturization. We conducted a randomized, double-blind, placebo-controlled trial to clinicallyevaluate the effect of WHS on human skin. Participants (n = 151) were randomly assigned to receive either WHS 300 mg, WHS 600 mg, or placebo, once daily for 12 weeks. Skin wrinkle, hydration, elasticity, texture, and roughness parameters were assessed at baseline and after 4, 8, and 12 weeks. Compared to the placebo, skin wrinkles were significantly reduced in both WHS groups after 8 and 12 weeks. In both WHS groups, five parameters (R1–R5) of skin wrinkles significantly improved and skin hydration was significantly enhanced when compared to the placebo group after 12 weeks. Compared with the placebo, three parameters of skin elasticity, including overall elasticity (R2), net elasticity (R5), and ratio of elastic recovery to total deformation (R7), improved after 12 weeks of oral WHS (600 mg) administration. Changes in skin texture and roughness were significantly reduced in both WHS groups.

No WHS-related adverse reactions were reported. Hence, WHS could be used as a health supplement for skin anti-aging.

A. Ayatollahi, A. Firooz, A. Samadi, **Evaluation of safety and efficacy of booster injections of hyaluronic acid in improving the facial skin quality**, Journal of Cosmetic Dermatology, May 2020

Background: Skin boosting with small particles of hyaluronic acid (HA) is a new method of skin rejuvenation. Aim: Here we aim to evaluate the efficacy and safety of booster injections of non-cross-linked HA in improving the facial skin quality. Methods: 20 men and women age 40.15 ±6.63 years were treated with 3 injections of noncross-linked HA (1-2 ml) with intervals of 3 weeks. Skin hydration and elasticity parameters were evaluated before intervention and one week and 4 months later. Facial skin improvement also evaluated using Physician's Global Assessment score (PGA). Results: skin hydration increased one week and 4 months after last treatment, ($p > 0.05$). Skin firmness (R0) reduced significantly at week 1 and month 4 (p-value = 0.01 and 0.00). Skin tiring effect /Fatigue (R3) showed significant decrease at week 1 and month 4 (p-value=0.01 and 0.00 respectively). Four months after last treatment skin gross elasticity (R2) and net elasticity (R5) also increased significantly (p-value=0.00) PGA one week and four months after last treatment were 2.33 ±0.76 and 1.35± 0.49 out of 4, respectively. Adverse effects were mostly transient and mild in severity. Conclusion: Booster therapy with HA is a safe and well tolerated procedure and results in improvement in skin elasticity and relative increase in skin hydration.

C. Kaminaka, Y. Yamamoto, M. Sakata, C. Hamamoto, E. Misawa, K. Nabeshima, M. Saito, M. Tanaka, F. Abe, M. Jinnin, **Effects of low-dose Aloe sterol supplementation on skin moisture, collagen score and objective or subjective symptoms: 12-week, double-blind, randomized controlled trial**, Journal of Dermatology 2020; 47: p. 998–1006

Daily oral intake of 40 lg Aloe sterol was shown in a double-blind clinical trial to significantly increase skin barrier function, moisture and elasticity. Ultrasonographic results also suggested that the intake of Aloe sterol increases collagen content in the dermis. Here, we evaluate the effects of a much smaller dose of Aloe sterol, approximately half that used previously, on skin functions in more detail. This is a monocentric, double-blind, randomized, placebo-controlled, supplementation study of the effects of low-dose Aloe sterol on skin transepidermal water loss, hydration, collagen score, evaluation of objective or subjective symptoms, and safety after 12 weeks of daily intake. We randomly administrated either Aloe sterol or placebo to 122 healthy volunteers. Transepidermal water loss was significantly reduced and collagen score was increased in the Aloe sterol group compared with the placebo group at week 12. In the Aloe sterol group, there was significant improvement of objective skin condition (face erythema and pruritus of inner and outer arms) at week 12 compared with week 0, but not in the placebo group. Subjectively, there was significant improvement of visual analog scale of skin acne, fingernail brittleness and constipation in the Aloe sterol group. According to subgroup analysis, although not planned before the study initiation, subjects with dry skin in the Aloe sterol group had significantly increased skin hydration values at week 12 compared with the placebo group. Our results confirmed that even low-dose Aloe sterol ingestion improves skin moisture by promoting skin barrier function and dermal collagen production, which contributes to maintenance of healthy skin.

S. Yoo, M.-R. Kim, T.-Y. Kim, S.J. Hwang, J.-M. Lim, S.G. Park, **Relationship of transcutaneous oxygen tension with age and skin elasticity in Korean women**, Skin Research & Technology, Volume 26, Issue 3, May 2020, p. 325-328

Background: Oxygen has several positive effects on the skin, including improving collagen synthesis and accelerating wound healing. However, only a few studies have investigated the relationship between skin oxygenation and skin aging parameters. Therefore, this study aimed to assess the correlation between skin oxygenation and skin aging parameters-elasticity, hydration, sebum, color (lightness, redness), and blood perfusion— in Korean women. Materials and Methods: We evaluated the transcutaneous partial pressure of oxygen, also known as transcutaneous oxygen tension ($TcP0_2$), and skin aging parameters, including elasticity, hydration, sebum, color (lightness or redness), and blood perfusion, in the cheek of 34 healthy women (aged 20-69 years) and assessed the correlation between $TcP0_2$ and other skin aging parameters using IBM SPSS Statistics 25 software (SPSS Inc). Results: Facial $TcP0_2$ was negatively correlated with age ($P < .05$). There were positive correlations between facial $TcP0_2$ and elasticity parameters ($P < .01$). We noted no correlation between facial $TcP0_2$ and skin lightness; however, skin lightness tended to slightly improve with increasing $TcP0_2$. Skin aging parameters, including hydration, sebum, skin redness, and blood perfusion, showed no correlations with $TcP0_2$. Conclusion: In Korean women, facial TcP02 tends to decrease with increasing age and is positively correlated with gross, net, and biological skin elasticity. Therefore, this study demonstrated that oxygen tension of facial skin can be a major causative factor of skin aging.

F. Murina, C. Caimi, R. Felice, S. di Francesco, I. Cetin, **Characterization of female intimate hygiene practices and vulvar health: A randomized double-blind controlled trial,** Journal of Cosmetic Dermatology, Apr 2020

Background: Inappropriate feminine hygiene practices are related to vulvar unpleasant symptoms (such as skin changes, lesions, burning, pruritus, fissures, and dyspareunia). Aims: We assessed the daily use effects of intimate cleansers on vulvar skin by comparing two specific products for intimate care: Saugella Hydraserum (SIS), based on natural extracts, and a standard product based on lactic acid, such as Lactacyd Feminine Hygiene (LTC). Forty healthy women were enrolled in this double-blind controlled study. Methods: After randomization, the cleansers were used twice daily for 30 days. The hydration level was determined using the Corneometer® CM 825, the pH using the Skin-pH-Meter PH 905® and the sebum level using the Sebumeter SM815®. Measurements were performed at baseline and on day 30 on the labia majora and labia minora. Results: Both cleansers showed a reduction in the hydration level, but this was much less evident in the SIS group (−6.3% SIS vs −23.7% LTC). The pH values of the SIS group were lower than those of the LTC group, especially on the labia minora (5.27 ± 0.08 and 5.6 ± 0.1, respectively, $P = .025$). The sebum increased in both groups, but in the LTC group, it was higher on the labia majora (+96.2% vs +46.8%, respectively, $P = .003$), while on the labia minora, it was higher in the SIS group (+24.7% vs +17.1%, respectively P = NS). Conclusions: Both cleansers tested showed high performance for safety and tolerability on vulvar skin, but SIS showed better efficacy than LTC on some parameters.

*S. Hettwer, E. Besic Gyenge, B. Obermayer***, Influence of cosmetic formulations on the skin's circadian clock**, International Journal of Cosmetic Science, 2020, 42, p. 313–319

Objetive: The circadian rhythm was set into focus by awarding the Nobel Price of Physiology/Medicine to Jeffrey Hall, Michael Rosbash and Michael Young in late 2017. Numerous publications elucidated the molecular mechanisms driving the circadian biorhythms of our body, peripheral organs and each single cell. However, there is minor knowledge on the circadian rhythm of the skin, which has its own peripheral circadian clock in contact with cosmetic formulations. The skin's epidermal clock is excessively influenced by environmental factors like UV radiation or modern lifestyle, which may induce epidermal jetlag. Here, we give an overview on the current knowledge about the epidermal circadian clock and provide a cosmetic solution to protect and preserve the biorhythm of the skin. Methods: Quantitative RT-PCR to analyse the gene expression of circadian clock genes and the downstream DNA repair gene OGG1 in keratinocytes irradiated with UV-B. In vivo study to determine skin parameters dependent on the circadian cycle and interference of cosmetic formulations to them by assessment of morning and evening values at each measurement day after 28, 56 and 84 days of the study. Results: UV-B irradiation leads to a pronounced delay in circadian clock and downstream gene expression which interferes in the proper function of epidermal stem cells and as thus skin function. The use of a cosmetic active ingredient prevents cyclobutene pyrimidine dimer formation, protects epidermal stem cells and resets the circadian gene expression. It preserves the circadian changes in skin hydration, reduces daily fluctuations of skin redness and strengthens the skin barrier. Conclusion: The skin has its own circadian biorhythm to gain full functionality. Interruption of this oscillation will lead to functional impairments. Here we show a cosmetic solution to protect and preserve the skin's circadian rhythm. DNA protection, ROS elimination and stimulation of circadian gene expression seem to be crucial to keep the skin in balance.

*T. Jörger***, Hautphysiologische Untersuchungen an dermatologischen Patienten vor, während und nach Therapie in Abhängigkeit körperspezifischer Einflussgrößen, Dissertation** der Medizinischen Fakultät der Ludwig-Maximilians-Universität zu München, April 2020

Die Haut ist nicht nur das größte und schwerste Organ des Menschen, sondern sicherlich auch eines der wichtigsten. Begegnen wir einem Mitmenschen, ist sie eines der ersten Dinge, die wir an ihm wahrnehmen. Nach ihrem Aussehen beurteilen wir, ob er gesund erscheint oder eher blass und kränklich. Ist die Haut glatt und straff, oder schlaff und faltig? Allein dadurch ist es oftmals möglich, das Alter eines Mitmenschen zu schätzen. Ist die Haut stark gebräunt, folgt oft unweigerlich eine Frage wie: „Warst du im Urlaub?". Wirkt die Haut gepflegt oder unrein und fettig? Hat unser Gegenüber einen Ausschlag im Gesicht und wenn ja, ist er vielleicht ansteckend? Sollten wir uns lieber von ihm fernhalten? Solche, teils unbewusste Gedanken und noch viele mehr können bereits ein festes Bild von einem Mitmenschen in uns festlegen, bevor wir überhaupt ein Wort mit ihm gewechselt oder ihm die Hand geschüttelt haben.

D. Duscher, Z.N. Maan, M.S. Hu, D. Thor, **A single-center blinded randomized clinical trial to evaluate the antiaging effects of a novel HSF™-based skin care formulation**, J Cosmet Dermatol, 2020 Apr

Background: Similar to chronic wounds, skin aging is characterized by dysfunction of key cellular regulatory pathways. The hypoxia-inducible factor-1 alpha (HIF-1¤) pathway was linked to both conditions. Recent evidence suggests that modulating this pathway can rejuvenate aged fibroblasts and improve skin regeneration. Here, we describe the application of a novel HIF stimulating factor (HSF™)-based formulation for skin rejuvenation. Methods: Over a period of 6 weeks using a split-face study design, the effects on skin surface profile, skin moisture, and transepidermal water loss were determined in 32 female subjects (mean age 54, range 32-67 years) by Fast Optical in vivo Topometry of Human Skin (FOITS), Corneometer, and Tewameter measurements. In addition, a photo documentation was performed for assessment by an expert panel and a survey regarding subject satisfaction was conducted. Results: No negative skin reactions of dermatological relevance were documented for the test product. A significant reduction in skin roughness could be demonstrated. The clinical evaluation of the images using a validated method confirmed significant improvement of wrinkles, in particular of fine wrinkles, lip wrinkles, and crow's feet. A significant skin moisturizing effect was detected while skin barrier function was preserved. The HSF™-based skin care formulation resulted in a self-reported 94% satisfaction rate. Conclusion: With no negative skin reactions and highly significant effects on skin roughness, wrinkles, and moisturization, the HSF™-based skin care formulation achieved very satisfying outcomes in this clinical trial. Given the favorable results, this approach represents a promising innovation in aesthetic and regenerative medicine.

S. Nagase, K. Ogai, T. Urai, K. Shibata, E. Matsubara, K. Mukai, M. Matsue, Y. Mori, M. Aoki, D. Arisandi, J. Sugama, S. Okamoto, **Distinct Skin Microbiome and Skin Physiological Functions Between Bedridden Older Patients and Healthy People: A Single-Center Study in Japan**, Frontiers in Medicine, April 2020, Volume 7, Article 101

With the increase in the older populations, the number of bedridden older patients is becoming a matter of concern. Skin microbiome and skin physiological functions are known to change according to lifestyle and community; however, such changes in case of movement- and cleaning-restricted bedridden older patients have not yet been revealed. To address this issue, we analyzed skin microbiome and skin physiological functions, including pH, hydration, sebum level, and transepidermal water loss (TEWL), of bedridden older patients, compared with those of ambulatory older and young individuals. For this analysis, we enrolled 19 healthy young and 18 ambulatory older individuals from the community and 31 bedridden older patients from a single, long-term care hospital in Japan. The area of interest was set to the sacral (lower back) skin, where pressure injuries (PIs) and subsequent infection frequently occurs in bedridden older patients. We observed a higher number of gut-related bacteria, fewer commensals, higher skin pH, and lower TEWL on the sacral skin of bedridden older patients than on that of young or ambulatory older individuals. In addition, we observed that 4 of the 31 bedridden older patients developed PIs during the research period; a higher abundance of pathogenic skin bacteria were also observed inside the PI wounds. These findings imply distinct skin microbiome and skin physiological functions in bedridden older patients in comparison with healthy individuals and may suggest the need for more stringent cleaning of the skin of bedridden older patients in light of the closeness of skin and wound microbiome.

Z. Chaoshuai, W. Xin, M.Yaqi, X. Ziqian, S. Yue, M. Xingyu, S. Weimin, **Variation of biophysical parameters of the skin with age, gender, and lifestyles,** J Cosmet Dermatol., April 2020

Background: Sweet, spicy or greasy food, staying up late, and using electronic products for a long time are common bad habits nowadays. Their role in skin diseases has been paid much attention. Objective: The aim of this study was to investigate whether unhealthy lifestyles would affect the skin sebum content, SC hydration, and pH and how do they affect. Methods: A total of 300 volunteers were enrolled, and a multifunctional skin physiology monitor measured the three skin biophysical properties on the forehead and dorsal hand. Lifestyle factors were evaluated by a self-administered questionnaire. Results: Eating oily, sweet, spicy food, and staying up late increased the sebum content of the forehead significantly. Dorsal hand SC hydration was higher in people eating more sweet food and oily food, and forehead SC hydration was higher in people eating more sweet food and go to bed earlier. Eating sweet food could increase pH in both forehead and dorsal hand. The forehead pH decreased in using electronic products over 6 hours a day or staying up late. There are significant differences in sebum, hydration, and pH value among different age groups. In males, the pH was lower than females, but the sebum was higher. Conclusion: Sebum content, SC hydration, and pH are affected by unhealthy lifestyles, age, and gender.

K.H. Kelekci, R. İnci, A. Karakuzu, Ş. Karaca, **Biophysical properties of skin in pregnancy: A**

controlled study, Annals of Clinical and Analytical Medicine, April 2020

Aim: It is well-known that there are some physiologic changes in the skin during pregnancy. In this study, we aimed to compare the biophysical changes in the skin of pregnant women with healthy non-pregnant women's skin. Material and Methods: A total of 60 pregnant women in the third trimester and 30 age-matched healthy volunteers as a control group were included in our study. Stratum corneum hydration, erythema, melanin of forearm and sebum content of forehead of skin were measured with noninvasive cutometer and compared between groups with the use of IBM's SPSS sofware (SPSS version 17.0 for Windows). Results: We found a moderate but signifcant disturbance of melanin and erythema on the forearm between pregnant women and healthy volunteer women. There was no signifcant correlation between baby gender and skin parameters of pregnant women. Discussion: We conclude that even the clinically normal- appearing skin of pregnant women compared with healthy volunteers have increased melanin secretion and erythema properties.

K. Yonezawa, M.i Haruna, R. Kojima, **Validity of Infant Face Skin Assessment by Parents at Home**, Asian/Pacific Island Nursing Journal Volume 4(4): p. 159-164, 2020

Parents had better to assess their infant's skin daily to prevent the development of any skin problems. However, there are no standard methods for assessing infant skin at home. This study aimed to validate the assessment of infant face skin conditions by parents as compared to using skin barrier function clinical tests. In addition, we evaluated the degree of agreement between parents and physicians/midwives when assessing an infant's skin. A cross-sectional study involving 184 infants aged 3 months was conducted. To evaluate the parents' infant skin assessment, we used the Neonatal Skin Condition Score (NSCS). On the same day, we evaluated the skin barrier function on the infant's forehead and cheek, including transepidermal water loss (TEWL), stratum corneum hydration, skin pH, and sebum secretion. Skin barrier function values were correlated with infant skin condition assessed by parents, especially in cases of TEWL of the cheek, for which a moderate positive correlation was found between parental assessment score (¤ = 0.448). In addition, infant with skin problems based on parental assessment had a significantly higher TEWL, lower SCH, and higher skin pH. However, there was weak agreement between parental and physician/midwife assessment. Thus, there was a relationship between parental assessment and skin barrier function; thus, parents can use at-home assessment to assist with infant skin care. In the future, research focused on developing methods of examining infant skin conditions should consider incorporate parental daily skin assessment.

C. Karamani, I.T. Antoniadou, A. Dimou, E. Andreou, G. Kostakis, A. Sideri, A. Vitsos, A. Gkavanozi, I. Sfiniadaki, H. Skaltsa, G.T. Papaioannou, H. Maibach, M. Rallis, **Optimization of psoriasis–like mouse models: A comparative study**, bioRxiv, March 2020

Psoriasis, a common chronic, autoimmune, inflammatory, relapsing disease should benefit from reliable and human relevant animal models in order to pre-clinically test drugs and approach their mechanism of action. Due to ease of use, convenience and low cost, imiquimod (IMQ) induced psoriasis-like model is widely utilized; however, are all mouse strains equivalent, is the hairless mouse utilizable and can the imiquimod model be further optimized? Under similar experimental conditions, common mouse strains (BALB/c, C57BL/6J, ApoE) and a new hairless strain (ApoE/SKH-hr2) as well as several inducers (IMQ, IMQ + Acetic Acid (AcOH) topical and IMQ +AcOH systemic) were compared by clinical, histopathological, biophysical and locomotor activity assessment. Results showed that BALB/c mice yielded optimal psoriasislike phenotype with IMQ+AcOH topical treatment, C57BL/6J moderate, ApoE mild, while the ApoE/SKH-hr2 mice due to Munro abscess absence in histopathology analysis left doubts about the psoriasis-like acquisition. The locomotor activity of BALB/c mice treated with IMQ, IMQ+AcOH topically and IMQ+AcOH systemically, showed with all treatments, a decreased covered distance and rearing and an increased immobility. In conclusion, BALB/c appears an optimal psoriasis-like model when utilizing IMQ+AcOH topical application.

G. Bifulco, F. Rastrelli, G. Rastrelli, G. Tosti, **Postbiotics in Anti-Ageing Care**, COSSMA 3, 2020, p. 16-19

Recently, the use of living probiotics- tyndallized bacteria and lysates- and prebiotics has been blooming. However, the production of stable, reproducible and safe formulations containing most of these ingredients remains a topic of discussion. Big effort is currently devoted in elucidating the interactions between beneficial microbes and skin.

K. Thadanipon, J. Kitsongsermthon, **Comparative study into facial sebum level, pore size, and skin hydration between oily-skinned and dry-skinned Thai women**, Skin Res Technol., March 2020, Volume 26, Issue 2, p. 163-168

Background: Subjective facial skin type is most frequently determined by the amount of sebum, which showed trends across subjective skin types in most previous studies while not in some. This study was conducted to evaluate the associations among subjective skin type, amount of sebum, stratum corneum hydration, and pore size in Thai women. Methods: Sixty-two healthy women with either self-described subjective oily or dry skin type were included and casual sebum level (CSL), sebum excretion rate (SER), clinical pore size score, mean pore area, and stratum corneum hydration were measured at several facial sites. Correlation coefficients between amount of sebum and other parameters were estimated. Results: Casual sebum level and sebum excretion rate were significantly higher in oily-skinned than dry-skinned group by 1.6-2.1 times. Mean pore area and clinical pore size score were not different between the 2 groups, nor did they correlate with CSL or SER. Corneometry was shown to be significantly higher in dry-skinned than oily-skinned group. Significant, negative correlations between corneometry and CSL were also found. Conclusion: The subjective facial skin types were consistent with the amount of sebum,but not pore size or corneometry, among Thai women.

S.I. Jang, My. Lee, J. Han, J. Kim, A.R. Kim, J.S. An, J.O. Park, B.J. Kim, E. Kim, **A study of skin characteristics with long-term sleep restriction in Korean women in their 40s**, Skin Res Technol., March 2020, Volume 26, Issue 2, p. 193-199

Background: Previous studies have demonstrated increased pore size and darkening skin color with total sleep deprivation. There are many studies of skin characteristics with short-term sleep restriction, but there are few studies on skin characteristics when sleep is restricted more than three consecutive days. This study evaluated skin changes with sleep limited to 4 hours per night for six nights. Materials and Methods: The study included 32 Korean women in their 40s. Skin hydration, desquamation, barrier recovery, texture, gloss, transparency, elasticity, crow's feet, frown lines, and color were measured. Individual sleep time was monitored by smartwatches. Subjects slept 8 hours per night for six nights in week one and 4 hours per night for six nights in week two. Results: Skin hydration was significantly reduced after 1 day of sleep deprivation, and it continued to decrease. Skin gloss, desquamation, transparency, elasticity, and wrinkles were significantly aggravated after 1day of sleep deprivation. Skin texture was significantly aggravated on the fourth day of sleep restriction. Elasticity was most affected by reduced sleep, with a standardized coefficient of -.320, indicating a significant decrease over time as compared to other characteristics. Conclusion: Skin hydration was gradually decreased with sleep restriction. Skin texture did not change after only1day of sleep restriction. It is a new finding that elasticity decreases more than other skin characteristics with prolonged sleep restriction.

M. Ijaz, N. Akhtar, **Fatty acids based ◘-Tocopherol loaded nanostructured lipid carrier gel: In vitro and in vivo evaluation for moisturizing and anti-aging effects**, J Cosm Dermatol, March 2020

Background: ◘-Tocopherol is a potent antioxidant present in the skin. Its concentration decreases with age, synthetically available ◘-tocopherol is viscous, irritating to skin and unstable toward oxidation and ultraviolet, (UV) light. Aims: To develop fatty acids based nanostructured lipid carrier (NLC) gel loaded with ◘-tocopherol and to evaluate its moisturizing and anti-aging properties. Methods: Lauric acid, oleic acid, and Tween-80 were used as solid lipid, liquid lipid, and surfactant, respectively. Seven formulations (F0-F6) were developed by using different concentration of ingredients. Most optimized formulation (F2) was selected for further study on the basis of characterization. Dialysis tube method was used for release study. F2 was incorporated in gel, and then, in vitro and noninvasive in vivo study regarding skin moisture content by corneometer and skin mechanical properties by cutometer for 12 weeks on human volunteers (n = 13) was conducted. Results: Size, polydispersibility index (PDI), zeta potential, and %entrapment efficiency (%EE) of optimized formulation (F2) were found 82 nm, 0.261, -28.6, and 94.88 ± 1.16, respectively. Particles were spherical in shape. The release profile showed initial burst and then sustained release, and release data were best fitted to weibull model. ◘-tocopherol loaded NLC gel (NLCG) appeared physically stable for 12 weeks at room temperature and showed significant results in terms of skin capacitance and mechanical properties. Rheological assessment showed non-Newtonian behavior. Conclusion: Fatty acids based NLC proved to be a promising carrier of photochemically unstable lipophilic vitamin E with enhanced moisturizing and anti-aging properties.

S.J. Nisbet, P. Dykes, J. Snatchfold, **Single application of lamellar moisturizers provides significantly increased hydration of the stratum corneum for up to 24 hours in a randomized trial**, J Cosm Dermatol, March 2020

Background: Some moisturizing formulations can help restore and maintain the barrier function of the skin. Objectives: This study was designed to assess the hydration potential of three lamellar moisturizers relative to a control (nonlamellar) moisturizer. Methods: Healthy adults aged 18 to 65 years

with self-reported sensitive skin, dry or very dry skin and Corneometry values of ◘40 a.u. on the lower legs, entered this randomized, evaluator-blind study. Products A and B together with a control product (Control X) were applied to one leg, while Product C and Control Y were applied to the other leg; with an untreated control site in both cases. The primary efficacy variable was the change from baseline in Corneometer assessments at 24 hours (Products A and B) or 12 hours (Product C) postapplication. Results: At all timepoints (n = 30), Products A and B showed higher mean Corneometer readings compared to baseline and changes from baseline were statistically significant when compared to untreated sites. Higher mean readings relative to baseline were seen at sites treated with Control X (smaller magnitude than Product A and B) and with Product C. These changes were significant compared to the untreated site at 30 minutes and 2 hours (Control X), and at 30 minutes and 12 hours (Product C). Additionally, Control Y increased significantly at 12 hours. Conclusion: A single application of a lamellar moisturizer significantly increased hydration of the stratum corneum for up to 24 hours (Products A and B) or 12 hours (Product C).

V.Z. Lim, A.A. Yong, W.P.M. Tan, X. Zhao, M. Vitale, C.L. Goh, **Efficacy and Safety of a New Cosmeceutical Regimen Based on the Combination of Snail Secretion Filtrate and Snail Egg Extract to Improve Signs of Skin Aging**, Journal of Clinical and Aestetic Dermatology, March 2020, Volume 13, Number 3

Background: Two extracts derived from the gastropod Cryptomphalus aspersa have been shown to have dermal regeneration properties: SCA® (secretion fltrate) with fbroblast growth factor-like activity and IFC®-CAF (cellular activating factor), a snail egg extract with skin stem cell activation activity. Objective: The objectives of this study were to evaluate the synergic antiaging activity and tolerability of SCA and IFC-CAF in a combined regimen compared to vehicle as a placebo control. Methods: A three-month, single-center, double-blinded, randomized, vehicle-controlled trial assessed the effects of a daily skincare routine divided into two treatment phases, as follows: intensive (1 month) and maintenance (2 months). Fifty women, aged 45–65 years, with signs of photoaging were randomized to receive either the active ingredients (n=30) or vehicle (n=20). Clinical evaluations included objective measurements of barrier function and skin hydration, elasticity, and color/brightness. Subjective assessments were conducted according to the Rao-Goldman and Glogau scales for wrinkles, the Patient Global Assessment (PGA) scale and Investigator Global Assessment (IGA) scale. Results: Subjects in the active treatment group experienced reductions in transepidermal water loss and significant improvements in skin roughness, frmness, and elasticity. Both groups showed significant improvements in fne lines and wrinkles. PGA and IGA assessments indicated greater improvement in the active treatment group. Conclusion: The active snail extract treatment appears to be effective in improving signs of skin aging in women 45 to 65 years old. Larger randomized, controlled studies are needed to confrm our results.

E. Bruning, Y. Chen, K.A. McCue, J.R. Rubino, J.E. Wilkinson, A.D.G. Brown, **A 28 Day Clinical Assessment of a LacticAcid-containing Antimicrobial Intimate Gel Wash Formulation on Skin Tolerance and Impact on the Vulvar Microbiome**, Antibiotics 2020, 9, 55

While intimate feminine hygiene products are widely used as part of daily cleansing routines, little is known about how these products impact the vulvovaginal area and its microbiome stability. This 4 week clinical study assessed tolerance of a novel gel wash containing lactic acid (pH 4.2) for external daily use when used on the external genital area and its effects on skin moisturization, vulvar skin pH, and the vulvar microbiome. After a 7 day pre-study conditioning period, 36 healthy females in three balanced age groups (18–29, 30–44, and 45–55 years) used the gel wash to cleanse their external genital area (mons pubis and vulva) and entire body at least once per day for 28 days. Skin tolerance of the gel wash was assessed by the gynecologist. Effects of the gel wash on vulvar skin microbiota were studied by performing bacterial 16S rRNA and fungal internal transcribed spacer (ITS) microbial richness and diversity analysis. Based on gynecologic assessment after 28 days of use, the gel wash showed acceptable tolerance, with no signs of increased dryness, redness, edema, itching, stinging, or burning. Use of the gel wash was associated with a significant increase in both short-term (single application) and longer-term (daily use for 28 days) skin moisturization. There was no significant change in vulvar skin pH over time with daily product use, and the gel wash did not significantly affect the natural vulvar microbiome species richness or diversity for bacteria or fungi. Results showed that this gel wash is a mild, moisturizing cleanser that maintains the natural pH and microbial diversity of vulvar skin. To our knowledge, this was the first study to assess the effect of an antimicrobial feminine gel wash on the natural pH and vulvar microbiome habitat of the skin using bacterial 16S rRNA and fungal ITS genetic sequencing techniques.

M. Denzinger, S. Krauss, M. Held, L. Joss, J. Kolbenschlag, A. Daigeler, J. Rothenberger, **A quantitative study of hydration level of the skin surface and erythema on conventional and microclimate management capable mattresses and hospital beds**, J Tissue Viability, 2020 Feb;29(1): p. 2-6

Background: In addition to pressure itself, microclimate factors are gaining more attention in the understanding of the development of pressure ulcers. While there are already various products to reduce pressure on sore-prone areas to prevent pressure ulcers, there are only a few mattresses/hospital beds that actively influence skin microclimate. In this study, we investigated if microclimate management capable mattresses/hospital beds can influence skin hydration and skin redness/erythema. Methods: We included 25 healthy subjects in our study. Measurements were made using Courage & Khazaka Multi Probe Adapter MPA with Corneometer CM825 and Mexameter MX18 to determine skin hydration of the stratum corneum and skin redness/erythema before and after the subjects were lying in conventional (Viskolastic® Plus, Wulff Med Tec GmbH, Fedderingen, Germany and Duo™ 2 mattress, Hill-Rom GmbH Essen, Germany) or microclimate management capable mattresses/hospital beds (ClinActiv + MCM™ and PEARLS AFT, Hill-Rom GmbH Essen, Germany). Results: While there was no difference in skin redness/erythema on the different mattresses/hospital beds, skin hydration of the stratum corneum decreased significantly in an air fluidized bed compared to baseline values and values measured on standard mattress/Viskolastic® Plus.

N. Muizzuddin, R. Benjamin, **Beauty from within: Oral administration of a sulfur-containing supplement methylsulfonylmethane improves signs of skin ageing**, International Journal for Vitamin and Nutrition Research, February 2020

Abstract: Background: Methylsulfonylmethane (MSM) is an organosulfur compound with known benefits for joint health, sports nutrition, immune function, and anti-aging formulations and is gaining popularity as a nutritional supplement for the support of hair, skin and nails. Methods: The study was conducted in two steps; in Part I (pilot study) a panel of 20 participants ingested either 3 g a day of MSM or placebo capsules for 16 weeks. Visual and subject self assessment of wrinkles and skin texture as the predominant sign of ageing was observed. In Part II (dose-response study), 63 participants ingested either 1 g or 3 g per day of MSM for 16 weeks. Expert clinical grading, instrumental measurements and consumer perception was used to evaluate skin conditions like lines and wrinkles. Additionally, instrumentational analysis was conducted using corneometer and cutometer for investigation of skin hydration, firmness and elasticity. Results: Part I of the study clearly indicates that oral ingestion of MSM (3 g/d) reduces signs of ageing like facial wrinkles ($p < 0.05$) and skin roughness ($p < 0.05$) as compared to placebo. Detailed analysis in Part II instrumentation assessments showed a significant ($p < 0.05$) improvement from baseline in the severity of facial wrinkles, as well as improved skin firmness, elasticity and hydration with MSM. Some of these parameters exhibited a good dose response indicating that the higher (3 g/d) of the supplement was more effective than the lower dose of 1 g/d, but generally the lower dose of 1 g/d appeared to be sufficiently effective in reducing the facial signs of ageing. Conclusion: This study indicated that MSM is effective in reducing visual signs of skin ageing even at a low dose of 1 g/d.

B. Vogelsang, **Dermocosmetic Strategies to Rebalance the Skin's Ecosystem**, EURO COSMETICS 1-2/20, p. 12-15

Consumers of skin care products are concerned by the potential damage that external factors (antibacterial agents, pollution, UV exposure etc) can cause to their skin health for the long-term. They increasingly prefer products that not only address cosmetic concerns like fine line reduction or moisturization, but that also preserve or improve skin health. From birth, the skin surface is colonized by the microbiota: a microflora composed of bacteria, yeasts, fungi and viruses. This invisible, but abundant microbiota can reach up to one million microorganisms per cm2. Its composition continues to evolve throughout life, depending on the skin conditions (water, pH, lipids, proteins) or depending on the skin environment (temperature, sun exposure). Moreover, among all countries, regardless of socio-clemographic index level, instances of skin and subcutaneous diseases correlated with microbiota imbalance, such as psoriasis, dermatitis, acne vulgaris and fungal diseases are increasing1. Consequently, consumers are shifting their interests and purchases towards using skin care products which incorporate prebiotics, probiotics and/or biome-friendly components. These products address the root cause of microbiome imbalance. In the never-ending search for appealing new products, the cosmetic industry is being empowered to acquire new data and knowledge on the ecosystem of the skin microbiota in order to shift the direction of their research towards the development of new products. At present, probiotics and the microbiome are the biggest drivers in the growth of science-based skin care products. It is likely that this growth will persist in the coming years

D. Schmid, F. Wandrey, F. Zülli, **Treating large pores -Chios mastic to improve oily skin, large pores and acne**, Household and Personal Core Today - Vol. 15(1) January/February 2020

Mastic is the resin harvested from the Pistacia lentiscus trees from the Greek island of Chios. It has been used as a precious natural remedy against various ailments since ancient times. The water-insoluble oleoresin was made available for skin care application by using special extraction techniques. In this form, mastic inhibits the sebum production enhancing enzyme 5a-reductase type I and blocked IL- 1a effects in vitro. In clinical studies with volunteers suffering from oily skin, enlarged pores and acne signs it was shown that mastic visibly reduces pore size, shininess and the number of blemishes, which makes mastic an ideal active to treat impure skin.

C. O'Connor, C. Messaraa, E.M. Kearney, N. Robertson, L.P. Doyle, M. Walsh, A. Mavon, **Clinical Confirmation: Multi-step Routines Deliver Better Benefits to Skin**, Cosmetics & Toiletries, Vol. 135, January 2020, p. 38-43

Several factors internal and external contribute to the aging of skin, and recognizing these factors and their causes allows us to care for it. Intrinsic aging affects not only skin, but all the organs of the body and is in large part pre-determined by our genetics. However, to delay the manifestation of wrinkles, we can concentrate on the role of extrinsic aging and develop approaches to protect skin. As is well-known, the skin plays an important role physiologically through protection, regulation and sensation, and has an important impact on the psychological health of an individual.2 3 Thus, it is not only important to defend our skin from aggressors, but also to maintain our appearance for overall health and well-being. Proper skin care helps to protect our epidermis, maintaining skin's overall hydration and supporting a healthy barrier. Keeping skin functioning and healthy is critical to our own health, and protecting, cleansing and moisturizing are the key components of an effective skin care routine to maintain the skin's quality and integrity. In recent times, the use of a full skin care routine is frequently recommended by brands to ensure best results and maximize the likelihood of realizing the claimed benefits. While one might expect an advanced routine to deliver stronger skin benefits, no apparent clinical investigations have been carried out to support this theory scientifically.

M.G. Almeida Leite, P.M.B.G. Maia Campos, **Correlations between sebaceous glands activity and porphyrins in the oily skin and hair and immediate effects of dermocosmetic formulations**, J Cosmet Dermatol. 2020;00: p. 1–7

Background: Oily skin and hair not only contain a large amount of sebum, but also exhibit other changes that compromise their physiology. The immediate effects of dermocosmetics are very important for adhesion to treatment. Aim: The aim of the present study was to characterize oily skin and scalp, to evaluate the correlation of sebum production with porphyrin counts and the immediate effects of topical formulations for sebum control. Patients/Methods: A total of 100 women aged 18-49 years were recruited. Sebaceous gland activity, sebum amount, stratum corneum water content (SCWC) transepidermal water loss (TEWL), skin gloss, amount of porphyrins and pores were determined in the face and SCWC, sebum amount, porphyrin count, and TEWL were also determined in the scalp. The immediate effects of formulations containing a guarana extract were determined after 2 hours of application. Results: A correlation between sebaceous gland activity and presence of porphyrins in the frontal region of the face was detected. Low gloss values and large amounts of pores in the malar region were related to lower skin uniformity. High sebum values and low SCWC and porphyrin count were also observed in the vertex region. The studied formulations reduced the sebum content of face and scalp after 2 hours of application. Conclusion: Oily skin and hair showed high sebum values, which were correlated with porphyrin count and with the activity of sebaceous glands. Finally, the studied formulations had immediate reducing effects on sebum amounts on the skin and scalp.

N. Tangkijngamvong, P. Phaiyarin, S. Wanichwecharungruang, C. Kumtornrut, **The anti-sebum property of chitosan particles**, J Cosmet Dermatol., 2020 January

Background: Seborrhea is linked to several medical and mental conditions. Although it is common, effective agents and the standardized sebum level for seborrhea are not elucidated. Aims: To determine the efficacy of chitosan particles (CP) formulation on controlling sebum secretion, its extended effects on skin redness and texture after combining with proretinal nanoparticles (CP-PRN), and a correlation of the clinical grading with sebum levels that affect mental health. Patients/Methods: A four-week clinical trial with forty subjects was conducted. Subjects applied either CP formulation or CP-PRN during nighttime. Objective measurements including sebum levels, transepidermal water loss (TEWL), skin corneometry, skin redness, and texture were analyzed. Subjects completed a self-assessment clinical grading of skin oiliness at every visit. Results: Both CP and CP-PRN significantly decreased sebum levels (P□.01) at week 4 compared to baseline. CP also resulted in significant decreases in TEWL (P□.05) and skin corneometry (P□05) throughout the study. A significant improvement in skin redness

was observed with CP-PRN (*P*□.01). A moderate correlation between the clinical grading and sebum levels was detected (coefficient of 0.5, *P*□.001), with a sebum level of 106□g/cm^{-2} indicating emotional discomfort. One subject experienced local irritation with the CP-PRN. Mild pruritic symptoms were reported in both groups. Conclusions: Chitosan particles exhibited an interesting anti-sebum effect. It could be combined with PRN to extend benefits without losing the sebum controlling effect. The clinical grading may be useful in practice due to a modest correlation with sebum levels.

P. Rattanawiwatpong, R. Wanitphakdeedecha, A. Bumrungpert, M. Maiprasert, **Anti-aging and brightening effects of a topical treatment containing vitamin C, vitamin E, and raspberry leaf cell culture extract: A split-face, randomized controlled trial**, J Cosmet Dermatol. 2020 Jan

Background: Skin aging has many manifestations such as wrinkles, uneven skin tone, and dryness. Both intrinsic and extrinsic factors, especially ultraviolet light-induced oxidative radicals, contribute to the etiology of aging. Human skin requires both water- and lipid-soluble nutrient components, including hydrophilic and lipophilic antioxidants. Vitamins C and E have important protective effects in the aging process and require exogenous supply. Raspberry leaf extracts contain botanical actives that have the potential to hydrating and moisturizing skin. Topical products with these ingredients may therefore combine to provide improved anti-aging effects over single ingredients. Objectives: To evaluate the anti-aging and brightening effects of an encapsulated serum containing vitamin C (20% w/w), vitamin E, and European raspberry (Rubus idaeus) leaf cell culture extract. Methods: Fifty female volunteers aged 30-65 years were allocated one capsule of serum for topical application on one side of the face for 2 months, in addition to self-use of facial skin products. Both test (treated) and contralateral (untreated) sides were dermatologically assessed after 4 and 8 weeks. Skin color (melanin index), elasticity, radiance, moisture, and water evaporation were measured by Mexameter MX18®, Cutometer®, Glossymeter GL200®, Corneometer CM825®, and Tewameter TM300® instruments, respectively (Courage + Khazaka Electronic GmbH). Skin microtopography parameters, smoothness (SEsm), roughness (SEr), scaliness (SEsc), and wrinkles (SEw), were measured by Visioscan® VC98 USB (Courage + Khazaka Electronic GmbH), and gross lifting effects were measured by VECTRA® H1 (Canfield Scientific), and adverse reactions and satisfaction were also assessed. Results: Skin color, elasticity, and radiance were significantly improved. The smoothness, scaliness, and wrinkles were also revealed significant improvement. Mild adverse reactions were tingling and tightness. Conclusions: The vitamin C, vitamin E, and raspberry leaf cell culture extract serum has anti-aging and brightening effects of skin.

S.-Y. Lee, N.-J. Park, J. Jegal, B.-G. Jo, S. Choi, S.W. Lee, S. Uddin, S.-N. Kim, M.H. Yang, **Suppression of DNCB-Induced Atopic Skin Lesions in Mice by *Wikstroemia indica* Extract**, Nutrients 2020, 12, 173

Wikstroemia indica (L.) C.A. Mey. is used in traditional Chinese medicine to treat inflammatory diseases such as arthritis and bronchitis. In this study, we aimed to investigate the effects of an ethanolic extract of *W. indica* on cutaneous inflammation in mice with 2,4-dinitrochlorobenzene (DNCB)-induced atopic dermatitis (AD). Dermal administration of *W. indica* ethanolic extract toDNCB-sensitized hairless mice with dermatitis, for two weeks, reduced erythema, scaling, and edema.Skin hydration was improved and transepidermal water loss was reduced at a *W. indica* concentrationof 1%. Furthermore, *W. indica* also significantly reduced serum IgE and IL-4 concentrations in our mouse model. These results suggest that *W. indica* has potential as a topical treatment for AD and as an adjunctive agent to control AD.

K. Yonezawa, M.i Haruna, R. Kojima, **Validity of Infant Face Skin Assessment by Parents at Home**, Asian/Pacific Island Nursing Journal Volume 4(4): p. 159-164, 2020

Parents had better to assess their infant's skin daily to prevent the development of any skin problems. However, there are no standard methods for assessing infant skin at home. This study aimed to validate the assessment of infant face skin conditions by parents as compared to using skin barrier function clinical tests. In addition, we evaluated the degree of agreement between parents and physicians/midwives when assessing an infant's skin. A cross-sectional study involving 184 infants aged 3 months was conducted. To evaluate the parents' infant skin assessment, we used the Neonatal Skin Condition Score (NSCS). On the same day, we evaluated the skin barrier function on the infant's forehead and cheek, including transepidermal water loss (TEWL), stratum corneum hydration, skin pH, and sebum secretion. Skin barrier function values were correlated with infant skin condition assessed by parents, especially in cases of TEWL of the cheek, for which a moderate positive correlation was found between parental assessment score (□ = 0.448). In addition, infant with skin problems based on parental assessment had a significantly higher TEWL, lower SCH, and higher skin pH. However, there was weak agreement between parental and physician/midwife assessment. Thus, there was a

relationship between parental assessment and skin barrier function; thus, parents can use at-home assessment to assist with infant skin care. In the future, research focused on developing methods of examining infant skin conditions should consider incorporate parental daily skin assessment.

I. Lacatusua, D. Istratia, N. Bordeib, M. Popescub, A.M. Seciuc, L.M. Pantelid, N. Badea, **Synergism of plant extract and vegetable oils-based lipid nanocarriers: Emerging trends in development of advanced cosmetic prototype products**, Materials Science & Engineering C 108 (2020) 110412

Phytochemicals are priceless sources of bioactive compounds with multiple health benefices. The main objective of the current investigation was to develop nanostructured herbal formulations conditioned as appropriate hydrogel (HG) conferring an enhanced transdermal absorption of bioactive compounds from selective extracts and vegetable oils. The direct impact of research is represented by the identification of prototype products which manifest an improved therapeutic response, by means of cumulative antioxidant, anti-inflammatory and antiacne actions, without causing any side health effects. The combinatorial effect of Carrot Extract (CE) and Marigold Extract (ME) – Nanostructured Lipid Carriers (NLC) based on rosehip oil or black cumin oils was accompanied by a high biocompatibility and a significant ability to capture both short- and long-life free radicals. HG-NLC-ME-CE has been shown to be an efficient carrier with a differentiated potential for in vitro release of the two active principles, e.g. it delayed the release of carotenoids while the hydrophilic active (azelaic acid, AA) was faster released. The HG-NLC efficacy in skin inflammation treatment (demonstrated by in vitro and in vivo tests) revealed a reduced expression of inflammatory cytokines (IL-1β and TNF-α), more pronounced in the case of TNF-α. Moreover, a superior in vivo anti-inflammatory effect of HG-based NLC-CE/ME-AA as compared to that obtained for a commercial product was detected, i.e. after 3 h of HG-NLC treatment, a significant reduction of rat paw edema was quantified. In pre-clinical studies, the quantification of the hydration and elasticity effects in the viable epidermis provided the evidence of the high potential of developed prototypes, suitable for implementation in the market area. The degree of skin hydration and skin elasticity were remarkable enhanced after topical application of developed prototypes, a hydration effect up to 74% being determined and a skin elasticity reaching 90%. The knowledge acquired from this investigation could be utilized by the cosmetic industry to design novel topical products with improved quality and health benefices, endowed with antioxidant, anti-inflammatory and anti-acne actions and with desired hydration and elasticity profiles, in order to achieve better therapeutic efficacy and no drug toxicity.

J.M. Carroll, S. Hanna, L.C. Guenther, N. Boucher, **Comparison of topical antiaging creams in the management of lateral canthal lines**, J Cosmet Dermatol. 2020;19: p. 694–704.

Objective: This study compared an antiaging treatment with two currently marketed cosmetic antiaging products for the treatment of lateral canthal lines ("crow's feet"). Methods: Healthy female volunteers (72) aged of 54.6 years (mean) having fine-tomoderate wrinkles in the lateral canthal areas were randomized to one of three treatments applied daily over 28 days: Group A (Purgenesis™ Day Cream, Purgenesis™ Eye Cream, and Purgenesis™ Night Cream); Group B (Prevage® Eye Lotion, Prevage® Day Cream, and Prevage® Night Cream); or Group C (La Mer®Eye Balm, Crème de La Mer®, and La Mer® Night Cream). The effects on anti-wrinkle properties and for sensory attributes and general performance were evaluated on Days 1, 7, and 28. Results: Skin hydration improved significantly at all time points in Groups A and B, and at Day 28 in Group C. Group A patients experienced significant improvements in measured skin elasticity parameters at Day 28; extensibility and maximum amplitude were significantly better at Day 28 in Groups B and C. Benefits were also seen in profilometric parameters with statistical significance only in Group A Volunteer tolerance was good with all three treatments, although moderate and high levels of adverse events were numerically higher in Group B than in Groups A or C, and levels of slight discomfort were significantly more prevalent in Group B. Conclusion: The Purgenesis™ antiaging treatment significantly improved skin hydration, elasticity, and profilometry parameters during a 28-day study. This therapy was found to be well tolerated and effective in countering the cutaneous signs of aging.

P. Perugini, M. Bleve, R. Redondi, F. Cortinovis, A. Colpani, **In vivo evaluation of the effectiveness of biocellulose facial masks as active delivery systems to skin**, J Cosmet Dermatol. 2020;19: p. 725–735

Background: In recent years, bacterial cellulose (BC), or biocellulose, a natural polymer synthesized by certain bacteria, has attracted great interest in dermatology and cosmetic applications. Several bioactive ingredients are currently loaded into BC masks. However, only a few studies have reported the effectiveness of such delivery systems. Aim: The aim of this study was to evaluate the effect on skin parameters of three biocellulose masks formulated to have different cosmetic effects (anti-aging, lifting, and cell renewal). In particular, skin moisturizing, skin color, skin viscoelastic properties,

skin surface smoothness, wrinkle reduction, dermal homogeneity, and stratum corneum renewal were evaluated. Materials and methods: The study involved 69 healthy Caucasian female volunteers between 25 and 64 years, who were divided into three different studies. Biocellulose facial masks were applied using the split-face method three times a week for 4-8 weeks depending on the study. Results: The results obtained from this work highlight that biocellulose masks are very well tolerated. A significant decrease in skin roughness and wrinkle breadth, and an improvement in dermal homogeneity and firmness, was observed after 2 months of treatment with “anti-aging” masks. A significant improvement in skin firmness and elasticity was observed after 1 month of treatment with “lifting” masks. Furthermore, a 1-month treatment with “cell renewal” masks promoted the production of new skin cells through a mild exfoliating action. Conclusions: This study highlights that biocellulose masks are effective delivery sys tems to successfully release into the skin several types of active compounds exerting many beneficial effects.

A. Tsochataridou, **Hautfunktionsmessung bei Patienten mit atopischer Dermatitis und Psoriasis vulgaris – Gibt es Unterschiede?**, Dissertation Hautklinik und Poliklinik der Universitätsmedizin der Johannes Gutenberg-Universität Mainz, Germany, 2020

Die atopische Dermatitis (aD), welche synonym auch als Neurodermitis, atopisches oder endogenes Ekzem bezeichnet wird, ist eine chronische oder chronischrezidivierende, entzündliche Hauterkrankung, die typischerweise mit ausgeprägtem Juckreiz einhergeht. Das morphologische Bild der in Schüben verlaufenden aD variiert je nach Schweregrad der Erkrankung und Manifestationsalter, sodass leichte, mittelschwere und auch schwere Erscheinungsbilder möglich sind. Schwere Ausprägungen der aD gehen mitunter mit Komplikationen, wie viralen, bakteriellen und mykotischen Superinfektionen der vorgeschädigten Haut einher. Die direkten Auswirkungen der aD, allen voran der Juckreiz, sowie die genannten Komplikationen, können zu einer erheblichen Einschränkung der Lebensqualität und umfangreichen Einschränkungen im Alltag der Betroffenen führen. Ein gezieltes Management ist daher sehr wichtig. Ungefähr 10-20% der Kinder in Europa erkranken an einer aD, bei circa 60% manifestieren sich die ersten Symptome sogar vor Vollendung des 1. Lebensjahres. Epidemiologischen Untersuchungen zufolge ergibt sich immerhin eine ungefähre 1-Jahres-Prävalenz von circa 3% bei Erwachsenen. Die aD ist eine multifaktoriell bedingte Erkrankung, für deren Erstmanifestation sowohl eine genetische Prädisposition als auch verschiedene individuelle Auslösefaktoren von Bedeutung sind. Differentialdiagnostisch sind andere Hauterkrankungen, das allergische, irritative oder toxische Kontaktekzemen, Pyodermien, Mykosen und sehr selten auch sogenannte transiente Formen der Psoriasis vulgaris (Pv) gerade im Kindesalter abzugrenzen. In der Literatur wird der hohe transepidermale Wasserverlust als klinisch messbares Korrelat der komplexen Barrierestörung der aD als für die Erkrankung kennzeichnend hervorgehoben. Die komplexePathophysiologie der aD ist Gegenstand aktueller Forschung. Während genetische Polymorphismen und eine loss-of-function-Mutation des Fillagrin-Gens als fundamentale Ursache der Hautbarrierestörung bei vielen Patienten mit aD bekannt sind, werden pathologische Veränderungen in der Fillagrin-Expression in den letzten Jahren zunehmend auch bei der Pv diskutiert. Trotz den unterschiedlichen klinischen Krankheitsbildern scheinen Überlappungen in der Pathogenese zu bestehen, die zum besseren Verständnis der Erkrankungen zurzeit weiter untersucht werden.

D. Hertz-Kleptow, A. Hanschmann, M. Hofmann, T. Reuther, M. Kerscher, **Facial skin revitalization with CPM®-HA20G: an effective and safe early intervention treatment**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 563–572

Background: Hyaluronic acid (HA) fillers are popular for the treatment of signs of facial skin aging. Objective: The objective of this study was to confirm the performance and safety of a new cohesive polydensified matrix HA filler ([CPM®-HA20G, Belotero Revive®, lidocaine-free], Merz Pharmaceuticals GmbH, Frankfurt, Germany) for the treatment of early signs of facial skin aging by use of biophysical measurements as well as subject and investigator satisfaction. Methods: Twenty-five healthy female subjects with signs of facial skin aging were enrolled in this open-label, rater-blinded, observational post-market clinical follow-up study, and received 20 micropuncture treatments of 50 µL CPM®-HA20G each into the lower cheek area at three injection visits 4 weeks apart. Objective biophysical assessments were conducted to demonstrate effects on viscoelastic properties of the skin, surface roughness, tone and radiance, and hydration, at baseline and at all follow-up visits up to 36 weeks. Results: CPM®-HA20G significantly increased gross elasticity of the skin (at weeks 9 and 12), skin firmness (up to week 24), skin tone and radiance and skin hydration (all up to 36 weeks). Significant reduction of skin fatigue (up to 9 weeks), skin roughness (up to 28 weeks), and redness (up to 36 weeks) was also observed. Subjects and blinded investigator were highly satisfied with the treatment outcomes. The treating investigator reported a high level of satisfaction with the ease of injection and the clinical performance of the device. Moreover, data demonstrated a good safety profile of the device. Conclusion:

CPM®-HA20G is considered to be an effective and safe HA injectable for skin revitalization in patients suffering from signs of skin aging and loss of skin elasticity. It seems to be a perfect early intervention approach in patients that do not need volumizing treatment and a combination approach in older patients with more pronounced aging.

F. Alvim Sant'anna Addor, **Topical effects of SCA® (*Cryptomphalus aspersa* secretion) associated with regenerative and antioxidant ingredients on aged skin: evaluation by confocal and clinical microscopy**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 133–140

Purpose: This was an open-label, single-center clinical study to evaluate a topical association of SCA® (*Cryptomphalus aspersa* secretion) with regenerative and antioxidant ingredients, according to the type and area of the face, on the improvement of signs of skin aging. Patients and methods: One hundred and twenty female participants aged between 40 and 65 years, with facial aging complaints (presence of static, dynamics wrinkles, loss of elasticity, and skin frmness) were randomized into two groups according to the type of skin: normal–oily and normal–dry, and 40 participants were randomized for evaluation of the periocular area (with the presence of wrinkles, expression lines, and dark circles) with both types of skin. The groups received serum for normal–oily skin, a cream for normal–dry skin, and a cream for periocular and eyelid skin (eye area). All the participants were evaluated by a dermatologist and submitted to hydration evaluation by corneometry, elasticity and frmness measures complementarily, and images were collected in confocal reflectance microscopy. Results: Topical skin treatment with the association of SCA with antioxidant ingredients (green coffee oil, olive oil, ectoine, hyaluronic acid, and peptides) was able to promote signifcant clinical and subjective improvement of all signs of skin aging. This improvement was presented at the epidermal level, with improved hydration levels measured by corneometry and epidermal thickness, and at the dermal level, with improvement of the frmness and elasticity parameters, measured by cutometry, from 45 days of use. Conclusion: All the evaluated topical formulations seemed to be an effective alternative for the progressive treatment of signs of skin aging, since they demonstrate a real improvement of dermal–epidermal structure and function with high safety margin for long-term use.

C. Ahnhudt-Franke, **Perfekt gepflegt – wie viel Feuchtigkeit braucht die Haut?**, medical skincare, 2019/20

Im Laufe unseres lebens schützt uns unsere haut vor Umwelteinflüssen wie trockener Luft, Wasser, Sonne und Austrocknung. Als größtes Organ des Körpers ist sie zwar fein, aber unglaublich robust. Mit hauttypgerechter Pflege können wir unsere Haut dauerhaft gesund halten Doch welche Rolle spielen dabei die Feuchthaltefaktoren?

C. Schrammek-Drusio, **Anamnese & Hautanalyse**, medical skincare, 2019/20

Eine professionelle Hautanalyse ist die Grundlage jeder zielführenden Anti-Aging Behandlung. Denn jeder Hauttyp und –zustand hat verschiedene Anforderungen. Die Kosmetikerin benötigt dafür fundiertes Detailwissen und natürlich Erfahrung. Zur exakten Analyse ist darüber hinaus auch eine auch eine apparative Grundausstattung unverzichtbar.

E. Kotroni, E. Simirioti, S. Kikionis, I. Sfiniadakis, A. Siamidi, V. Karalis, A. Vitsos, M. Vlachou, E. Ioannou, V. Roussis, M. Rallis, **In Vivo Evaluation of the Anti-Inflammatory Activity of Electrospun Micro/Nanofibrous Patches Loaded with *Pinus halepensis* Bark Extract on Hairless Mice Skin**, Materials 2019, 12

Abstract: Skin inflammation is the most common symptom in dermatological diseases. It is usually treated by topically applied products, such as creams, gels and lotions. Skin dressings offer a promising alternative as they are endowed with more controlled administration conditions. In this study, the anti-inflammatory activity of electrospun alginate micro/nanofibrous dressings loaded with the aqueous extract of *Pinus halepensis* bark (PHBE) was evaluated in vivo in mice. The upper back skin of SKH-1 female hairless mice was exposed to a single dose of ultraviolet radiation (3 MEDs) and the inflamed area was treated daily by the direct application of a nanofibrous patch. The condition of the skin was evaluated primarily on the basis of clinical observation, photo-documentation and histopathological assessment, while measurements of the erythema, hydration, transepidermal water loss (TEWL) and sebum production were also taken into account. The results showed that the topical application of alginate micro/nanofibrous dressings loaded with PHBE on UV-inflamed skin significantly attenuated inflammation damage, reducing the healing period. Increase of the loading dose of PHBE resulted in a proportional reduction of the extent, the density and the depth of skin inflammation. With the steadily increasing interest of the skin dressing industry towards nanofibrous matrices, electrospun nonwovens could serve as ideal candidates for the development ofmultifunctional anti-inflammatory care systems.

S.A. Nasrollahi, M.S. Nematzadeh, A. Samadi, A. Ayatollahi, S. Yadangi, C. Abels, A. Firooz, **Evaluation of the safety and efficacy of a triple combination cream (hydroquinone, tretinoin, and fluocinolone) for treatment of melasma in Middle Eastern skin**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 437–444

Background: Melasma is the most common pigmentary skin disorder, especially in females and those with darker complexion. The current study evaluated the safety and efficacy of a triple combination cream containing hydroquinone 4%+tretinoin 0.05%+fluocinolone acetonide 0.01% (Januluma® cream produced by Janus Pharmaceutical Co, Tehran, Iran) in the treatment of melasma. Patients and methods: Twenty-two female volunteers (mean±standard deviation of age: 39.20±4.16 years) who fulfilled the eligibility criteria participated in this study after signing the informed consent. They were requested to apply the Januluma® cream every night for 8 weeks. Modified melasma area and severity index (mMASI), skin lightness (L value), and severity of pigmentation (E value) by Visio Face, and skin biophysical parameters including pH, melanin index, erythema index, sebum, hydration, trans epidermal water loss, thickness and density of epidermis, and dermis (using 22 MHz ultrasonography) were measured before and 4 and 8 weeks after treatment. Also patients' satisfaction was assessed 4 and 8 weeks after treatment using visual analog score. Results: mMASI decreased significantly from 3.37 to 2.60 at week 4, and to 2.40 at week 8 (P-values=0.00 and 0.01, respectively). Also, E and L values improved significantly after 8 weeks of treatment (P=0.01 and 0.00, respectively). Skin melanin index decreased from 237.49 AU to 196.30 AU at week 8 (P=0.01). Also echo density of dermis increased significantly after 8 weeks of treatment (P=0.029). Almost all participants experienced some degrees of pruritus, scaling, and erythema, esspecially during the first month of application, which were generally mild and tolerable. The mean satisfaction of patients with the treatment was 6.77. Conclusion: The triple combination formula was reasonably safe and effective for treatment of melasma in Middle Eastern patients.

R. Lubart, I. Yariv, D. Fixler, A. Lipovsky, **Topical Hyaluronic Acid Facial Cream with New Micronized Molecule Technology Effectively Penetrates and Improves Facial Skin Quality: Results from In-vitro, Exvivo, and In-vivo (Open-label) Studies**, J Clin Aesthet Dermatol. 2019;12(10): p. 39–44

Background: Topical hyaluronic acid (HA) has shown e□ectiveness in maintaining skin hydration. Topical creams containing HA are widely available, but their efficacy is limited by their lack of penetration into the skin due to the large molecule size of HA, the result of being formulated into a cream base. Objective: In this three-part study (in vitro, ex vivo, and in vivo), molecule sizes, penetration levels, and antiaging qualities of a topical HA facial cream that was formulated using a new technology that micronizes HA molecules (m-HA) were assessed. Methods and Results: Particle sizes of m-HA were evaluated using electron microscopy, which showed varying sizes, the smallest of which was 100nm in diameter. The antioxidation capabilities of m-HA were measured using electron spin resonance and were found to be higher than original HA. Skin penetration of the m-HA formulation was evaluated via immunohistochemical staining of porcine skin samples, which demonstrated penetration of the formulation into the stratum corneum and the deep epidermal layers toward the dermis. Antiaging qualities of the m-HA formulation were assessed in an open-label clinical study that included 36 healthy adult women. Skin parameters were measured objectively (e.g., Corneometer, Cutometer) and subjectively via patient questionnaire, results of which indicated significant improvements in facial skin hydration, elasticity, and wrinkle depth. Conclusion: The topical HA facial cream with m-HA technology demonstrated penetration into the epidermal skin layer, and, to our knowledge, our formulation is the first HA facial cream to achieve this. Clinical application of the facial cream demonstrated objective and subjective improvements in facial skin quality of healthy adult female subjects. Our results support the use of this new HA facial cream with m-HA technology as an e□ective antiaging topical therapy. Larger randomized, controlled studies are needed to confirm our findings.

F. Spada, A.H. Lui, T.M. Barnes, **Use of formulations for sensitive skin improves the visible signs of aging, including wrinkle size and elasticity**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 415–425

Background: Sensitive skin affects an increasingly large proportion of the population and is less tolerant to frequent and prolonged use of cosmetics. This study investigates the antiaging effects of a skin care system developed for use on sensitive skin. Methods: A total of 30 healthy Caucasian females, aged 32–72, were enrolled in this doubleblind randomized placebo-controlled split-face study. A routine consisting of twice daily topical applications of the test cleanser and test moisturizer or placebo or positive control products was followed for 28 days, with parameters measured at baseline and at 7-day intervals. Objective skin assessments for hydration, transepidermal water loss (TEWL), skin surface topography, elasticity and safety assessment were conducted. Results: Wrinkle surface, length and

depth significantly improved by 34.8±4.7% (P<0.001), 19.0±3.2% (P<0.05) and 24.3±3.5% (P<0.05), respectively, after 28 days of skin care treatment with the test cleanser and test moisturizer. R2 (gross elasticity), R5 (net elasticity) and R7 (biological elasticity) significantly increased by 32.8±6.5% (P<0.001), 47.3±8.6% (P<0.001) and 50.6±5.1% (P<0.001), respectively, while R6 (viscoelastic portion) significantly decreased by 33.4±4.6% (P<0.001) after 28 days. Skin hydration was also found to increase significantly after 28 days by 42.2±8.5% (P<0.01), but there was no change in TEWL. No adverse events were reported. Conclusions: A novel skin care routine developed for use on sensitive skin significantlyimproves the signs of aging including hydration, wrinkle size and elasticity without significant adverse effects.

C. Granger, S. Aladren, J. Delgado, A. Garre, C. Trullas, Y. Gilaberte, **Prospective Evaluation of the Efficacy of a Food Supplement in Increasing Photoprotection and Improving Selective Markers Related to Skin Photo-Ageing**, Dermatol Ther (Heidelb), December 2019

Introduction: Skin exposure to ultraviolet radiation (UVR) can cause oxidative stress, particularly in the absence of adequate protective measures or in individuals with a sensitive skin type. Most commonly, protection from UVR entails the use of topical sunscreens. Sunscreens, however, have various limitations. The objective of this study was to evaluate the efficacy and tolerability of an oral food supplement containing a combination of actives withmainly antioxidative properties (vitamins A, C, D3, E, selenium, lycopene, lutein, as well as green tea, polypodium and grape extracts) in the context of photoprotection. Methods: Photoprotective efficacy was assessed in a 12-week-long, open, prospective and monocentric clinical study with 30 subjects (27 women and 3 men) having a Fitzpatrick skin type I-III and manifesting clinical ageing signs. The study included several visits (14, 28, 56, and 84 days after starting supplement intake), in which photoprotection was evaluated by the measurement of the minimal erythema dose (MED), while the antioxidant capacity of the skin was assessed through ferric reducing antioxidant power (FRAP) and malondialdehyde (MDA) assays. Additionally, several skin parameters (including radiance, elasticity, and moisture) were evaluated. Product evaluation was performed throughout the length of the study by means of a self-assessment questionnaire, and safety was monitored through a self-recording of all observed adverse reactions. Results: The MED levels increased significantly compared to baseline throughout the study visits, reaching an increase of + 8.1% at T84, p\ 0.001. FRAP results also indicated a significant increase in the antioxidant capacity of the skin compared to baseline (+ 22.7% at T84, p\ 0.001), while the MDA assay showed a significant decrease in MDA concentration compared to baseline (- 6.4% at T84, p\ 0.001) which, in line with the FRAP results, indicated enhanced antioxidative protection of the skin. All assessed skin parameters, including radiance (+ 36.1% at T84, p\ 0.001), gross elasticity (+ 13.2% at T84, p\ 0.001), net elasticity (+ 28.0% at T84, p\ 0.001), and moisture (+ 13.8% at T84, p\ 0.001) were also significantly improved. The product was well tolerated as no adverse events were attributed by the investigators to the use of the product. Additionally, the global score obtained from the selfassessment questionnaires provided overwhelmingly positive feedback from the study subjects. Conclusions: The food supplement evaluated in this study was effective and well-tolerated by the subjects, demonstrating a beneficial effect in terms of photoprotection, enhancing the antioxidative status of the skin and improving general skin condition.

M. Mei-Hsia Chan, L. Siyun Tan, Y.-H. Leow, A. Teik-Jin Goon, C.L. Goh, **Comparison of Irritancy Potential of Sodium Lauryl Sulfate-free Aqueous Cream to Other Moisturizers: An Intraindividual Skin Occlusive Study**, *J Clin Aesthet Dermatol.,* 2019;12(7): p. 52–58

Objective: We compared the irritancy potential of sodium lauryl sulfate (SLS)-free aqueous cream to SLS-containing aqueous cream and other moisturizers. Design: This was a double-blind, intraindividual occlusive study. SLS-containing aqueous cream; SLS-free aqueous cream; white soft para n; urea cream; Physiogel® (Stiefel Laboratories, Brentford, United Kingdom); QV cream (Ego Pharmaceuticals Pty. Ltd., Braeside, Australia); Cetaphil RestoraDerm® (Galderma Laboratories, Fort Worth, Texas); Ceradan® (Hyphens Pharma International Ltd., Singapore); normal saline; and SLS 1% aqueous were applied with Finn chamber occlusion to different sites on each participant's back for 72 hours. Skin assessments were carried out on Day 0 preapplication and Day 3 and Day 7 postapplication. Participants: Twelve healthy adult volunteers were included in this study. Measurements: Study subjects were clinically evaluated by an experienced dermatologist using a four-point severity scale to assess the severity of erythema, dryness, desquamation, stinging or burning, and pruritus. Corneometer® and transepidermal water loss (TEWL) readings were taken to assess skin hydration and skin barrier integrity, respectively. All measurements were performed on Days 0, 3, and 7. Results: Application of the SLS-free aqueous cream resulted in no signi- cant changes in TEWL or Corneometer® readings throughout the study period. The SLS-containing aqueous cream resulted in a signi- cant increase in TEWL from Day 0 to Days 3 and 7. All test moisturizer creams showed no signi- cant changes in their clinical assessment scores. Conclusion: The results of our study indicate that SLS-free aqueous cream

has a lower irritancy potential than SLS-containing aqueous cream, with the same level of maintenance of skin barrier integrity and hydration. SLS-free aqueous cream also appears to be less irritating to the skin than other non-SLS generic and commercial moisturizers tested.

M.O. de Melo, P.M.B.G. Maia Campos, **Application of biophysical and skin imaging techniques to evaluate the film-forming effect of cosmetic formulations**, Int J Cosmet Sci. 2019 Dec;41(6): p. 579-584

Objective: Products with film-forming effect, or 'second skin', which guarantees an immediate protective effect after application, is a highlight, especially when composed of natural ingredients. Thus, the objective of this study was to evaluate the immediate film-forming effect on skin of a gel and emulsion formulations added with Kappaphycus alvarezii and Caesalpinia spinosa extracts through biophysical and skin imaging techniques, especially with the Reflectance Confocal Microscopy (RCM). Methods: The measurements were done in the forearm region before (baseline) and 1 h after of application of the developed formulation and its control. The parameters related to the stratum corneum water content, transepidermal water loss (TEWL), cutaneous microrelief and morphological and structural characteristics of the epidermis were analysed through the following biophysical and skin imaging techniques: Corneometer® CM 825, Tewameter® TM 300, Visioscan® VC98 and Vivascope® 1500, respectively. A sensorial analysis was also performed to study how the formulations were perceived on the skin. Results: The obtained results showed that the active ingredient under study allows the film formation on the skin surface, leading to a reduction of TEWL and skin desquamation. The obtained images from RCM showed a reduction of furrows on the skin surface and a film formation after a single application of the formulations. However, these effects were more pronounced in the emulsion formulation, which suggests a synergistic effect of the active ingredient under study with the emollients of formulation composition. This result was also observed in the sensorial analysis, as both formulations added with the active substance were well evaluated. Conclusion: The presence of Kappaphycus alvarezii and Caesalpinia spinosa extracts in the studied cosmetic formulations, enabled a film formation on a skin surface, bringing benefits as a reduction of transepidermal water loss and skin desquamation, as well as a furrows reduction and an improvement of stratum corneum after 1h of application. Finally, the skin imaging techniques can be suggested as an excellent tool to evaluate a film-forming effect of cosmetic formulations.

S. Boisnic, M. Keophiphath, A.L. Serandour, M.C. Branchet, S. Le Breton, I. Lamour, E. Gaillard, **Polar lipids from wheat extract oil improve skin damages induced by aging: Evidence from a randomized, placebo-controlled clinical trial in women and an ex vivo study on human skin explant**, J Cosmet Dermatol., 2019 Dec;18(6): p. 2027-2036

Background: Polar lipids from wheat (Triticum vulgare/aestivum) extract oil (WEO) are known to improve skin hydration. Aims: These studies aimed to assess WEO benefits on the skin appearance of middle-aged women. Methods: A double-blind, randomized, placebo-controlled clinical study was carried out on 64 healthy women, aged from 45 to 60 years, to investigate antiaging effects and benefits for the skin. The study lasted 20 weeks including 12 weeks of oral supplementation with WEO or placebo and 8 weeks of follow-up. Wrinkles in the "crow's-feet" area were evaluated by the Lemperle score. Skin hydration was measured using a *corneometer*, while roughness and radiance were determined by clinical scoring. Collagen content was quantified in human skin explants exposed to ultraviolet (UV) irradiations and treated with WEO or vehicle control. Results: Compared to the placebo group, the Lemperle score was significantly reduced in the WEO group between W0 and W8 to reach a clinically significant 1 grade at W12. Facial hydration was significantly improved in the WEO group from W0 to W12, whereas leg hydration was significantly increased after 4 weeks and lasted throughout the supplementation period. Skin roughness and radiance were also significantly improved from W0 to W8 in the WEO group compared to placebo group. A higher collagen content was measured in the UV-irradiated skin explants treated with WEO compared to the untreated ones. Conclusion: These results confirmed the moisturizing effect of WEO and, for the first time, revealed its potential antiaging properties.

Y. Duan, L. Ma, C. Galzote, F.-Q. Kong, C.-P. Shen, **A Randomized Pilot Clinical Assessment Of Three Skincare Regimens On Skin Conditions In Infants**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 895–909

Introduction: Few data are available on the comparison between the effects on infant skin of skin care products and those of water alone. Patients and methods: In this single-center, evaluator-blind, parallel-group pilot study, healthy infants were randomized to near-daily washing for 12 weeks (starting in the summer and finishing in the winter months) with a mild liquid baby wash followed by use of baby lotion (wash+lotion), water followed by baby lotion (water+lotion), or water alone. Clinical and

instrumental assessments of skin moisturization and barrier function were made. Results: As expected the skin condition in all groups was affected by the change of the season. The skin of infants in all groups was mildly deteriorated (clinical grading) and with reduced moisture levels and increased barrier function. Instrumental measurements indicated that skin moisture and barrier function were better maintained in the wash+lotion and water +lotion groups than in the water-only group at week 12. Clinical assessment scores increased slightly over 12 weeks in all groups ($P<0.05$). At week 12, the wash+lotion group (n = 44) had significantly less change from baseline in overall skin condition and softness (lower scores) than did the water+lotion (n = 43) or water-only (n = 43) groups. The wash+lotion regimen maintained stable erythema and rash scores with lower mean values over time than in the other groups. Conclusion: A regimen of a liquid baby wash and a baby skin lotion for 12 weeks resulted in less detrimental changes in instrumental and clinical measures of skin than using water and lotion or water alone.

N. Braun, S. Binder, H. Grosch, C. Theek, J. Ulker, H. Tronnier, U. Heinrich, **Current Data on Effects of Long-Term Missions on the International Space Station on Skin Physiological Parameters**, Skin Pharmacol Physiol 2019; 32: p. 43-51

Background: Skin reaction to spaceflight has not really been studied yet, although the skin has a very important barrier function to protect the body and can contribute to a more general understanding of physiology. It is proposed here to make a more thorough investigation of the skin during longterm spaceflight, using noninvasive techniques. Aims: The aim of the present Skin-B study is to investigate the kinetics and range of possible skin modifications during long-duration spaceflights and their recovery. Methods: In order to investigate the effect on skin physiological parameters during spaceflight, measurements were carried out on 6 astronauts with respect to skin hydration, transepidermal water loss/barrier function, and surface evaluation of the living skin in orbit. Additional measured parameters on the ground were skin elasticity, skin density and thickness, as well as microcirculation. Results: Data from the Skin-B subjects (n = 6) contradict the results obtained in the previous pilot study SkinCare (n = 1 subject).In the present study, no deterioration of the skin was found but rather an improvement in skin hydra tion and skin barrier function, and no changes or improvement in the appearance of the skin surface. Furthermore, the skin density and skin thickness as well as skin elasticity values were unchanged from pre-flight values. Conclusion: In conclusion, we found that spaceflight under present conditions has no negative impact on skin physiological parameters.

N. Braun, S. Thomas, H. Tronnier, U. Heinrich, **Self-Reported Skin Changes by a Selected Number of Astronauts after Long-Duration Mission on ISS as Part of the Skin B Project**, Skin Pharmacol Physiol 2019; 32: p. 52-57

Background: One of the most challenging and important factors of manned space missions is to keep astronauts healthy on orbit. In a study on 46 ISS crew members who were on 6-month (average) missions, skin rashes were the most self-reported event. Furthermore, among notable events, 40% were classified as skin rashes/hypersensitivities. Thus, especially skin conditions during space travel are of major clinical interest and require further research. Aims: The aim of the study was to determine skin conditions in space flight among US and European astronauts, especially taking into account the terrestrial skin conditions as well as on-orbit skin care habits. Methods: A preflight questionnaire was given to the astronauts asking about their terrestrial skin care habits and skin conditions/atopy before launch. In addition, they were asked to fill out a postflight questionnaire asking about their on-orbit skin care routine and whether any special observations regarding the skin were made during flight.Results: A total of 23 skin symptoms were recorded by 8 nonatopic astronauts (mean age: 41 years) during the mission. The symptoms were peeling (21.74%), rash (17.39%), dryness (13.04%), severe dryness (8.70%), reddening (8.70%), itchiness (8.70%), bruising (4.35%), skin sensitivity (4.34%), bumps (4.35%), acne (4.35%) and slow healing of contusions and lacerations (4.35%). Especially the hands and feet were affected by skin problems. As a result of this examination, it was shown that the skin symptoms correlate with poor hygiene on orbit, whereas the factor "environment" on the ISS plays a minor role. Surprisingly, 2 astronauts even experienced positive effects on their skin. Conclusion: Based on these prelim ary data, it is important to pay more attention to skin hygiene and maintenance in Space.

L. Bolke, G. Schlippe, J. Gerß, W. Voss, **A Collagen Supplement Improves Skin Hydration, Elasticity, Roughness, and Density: Results of a Randomized, Placebo-Controlled, Blind Study**, Nutrients 2019, 11, 2494

The purpose of this randomized, placebo-controlled, blind study was to investigate the effects of the drinkable nutraceutical ELASTENfi (QUIRIS Healthcare, Gütersloh, Germany) on skin aging and skin health. Drinking ampoules provides a blend of 2.5 g of collagen peptides, acerola fruit extract, vitamin C, zinc, biotin, and a native vitamin E complex. This controlled interventional trial was performed

on 72 healthy women aged 35 years or older. They received either the food supplement (n = 36) or a placebo (n = 36) for twelve weeks. A skin assessment was carried out and based on objective validated methods, including corneometry (skin hydration), cutometry (elasticity), the use of silicon skin replicas with optical 3D phase-shift rapid in-vivo measurements (PRIMOS) (roughness), and skin sonography (density). The verum group was followed for an additional four weeks (without intake of the test product) to evaluate the sustainability of the changes induced by the intake of the test product. The test product significantly improved skin hydration, elasticity, roughness, and density. The differences between the verum group and the placebo group were statistically significant for all test parameters. These positive effects were substantially retained during the follow-up. The measured effects were fully consistent with the subjective assessments of the study participants. The nutraceutical was well tolerated.

S. Favrel, E. Mielewczyk, A. Liberek, E. Paw, I. Chabowska, A. Sirvent, V. Ribet, A. Delarue, **A high-emollient liquid cleanser for very dry and atopic-prone skin: Results of an in-use tolerance and efficacy study conducted under dermatological, pediatric, and ophthalmological supervision**, J Cosmet Dermatol. 2019 Nov

Background: Emollients play a key role in the treatment of eczematous lesions and xerosis such as in atopic dermatitis. However, studies that show the actual benefits of cleansers are few and far between. Aims: This study aims to evaluate the tolerance and efficacy of a high-emollient liquid cleanser (HELC) designed for very dry and atopic-prone skin, in the absence of any additional skin care. The product is a soap-free and fragrance-free liquid cleanser, containing mild surfactants and a ternary system of selected emollients: glycerin, vaseline, and paraffin. Methods: In-use study was conducted under dermatological, pediatric, and ophthalmological supervision in 50 subjects (infants, children, and adults) with "dry to very dry and atopic-prone" skin. The primary objective of this monocentric, open, and intra-individual study was to assess the dermatological and ophthalmological tolerance of HELC after 21 days of using it at least once a day on the face and body. The secondary objectives were to evaluate its efficacy based on a clinical score (SCORAD), assess its short- and long-term moisturizing effect by measuring hydration rates (*Corneometer®*), and ascertain its cosmetic acceptability through a subjective evaluation questionnaire. Results: The study validates the good dermatological and ophthalmological tolerance of HELC. Its efficacy was demonstrated by improvements in the SCORAD and moisturizing scores. Furthermore, the product was very well accepted by the subjects. Conclusion: The fragrance-free HELC tested in this study for 21 days on "dry to very dry and atopic-prone skin" improves skin dryness and pruritus while ensuring good tolerance.

M. Kubiak, P. Mucha, H. Rotsztejn, **Comparative study of 15% trichloroacetic acid peel combined with 70% glycolic acid and 35% trichloroacetic acid peel for the treatment of photodamaged facial skin in aging women,** J Cosmet Dermatol., 2019 Oct

Background: Photoaging (extrinsic aging) is caused by environmental exposure to ultraviolet radiation. Superficial and medium-depth chemical peels with trichloroacetic acid (TCA) are performed to reduce wrinkles, hyperpigmentation, dryness, and erythema caused by photoaging process. Aim: The aim of this study was to compare the efficacy and tolerability of 15% TCA peel against the combined 70% glycolic acid and 35% TCA for the treatment of photodamaged facial skin. Patients/methods: Forty female patients with types II and III of Glogau photoaging scale were divided into two groups of twenty subjects (GA/TCA and 35% TCA). The GA/TCA group was treated with combination peeling of 70% GA and 15% TCA, whereas the 35% TCA group was treated with monopeeling of 35% trichloroacetic acid. Each patient was submitted to five sessions of these peels, with an interval of 14 days between each session. The following skin aging parameters were examined before treatments, before each session, and 3 months after the last application: hydration, elasticity, melanin index, and erythema index (MPA-5; Courage-Khazaka, Germany); and depth and volume of wrinkles (PRIMOS; GFMesstechnik GmbH, Germany). Results: Both peel methods achieved significant improvement in all skin parameters: elasticity, hydration, melanin index, and erythema index. Significant differences between the GA/TCA and 35% TCA groups were found only for hydration and melanin index. GA/TCA was characterized by significantly higher values of the hydration parameter and lower values of melanin index compared with 35% TCA. Combination peel GA/TCA did not cause dryness, edema, or intensive lysis of the epidermis, and the frequency of peel-induced erythema did not increase with the addition of glycolic acid, but with higher concentration of the TCA solution. However, subject-perceived improvements of the 35% TCA peel did not differ significantly from subject-perceived improvements of combination peel treatment. Adverse events requiring intervention or discontinuing treatment were not observed in either group. Conclusion: The addition of glycolic acid before 15% TCA chemical peel application significantly enhanced TCA-induced improvement in photoaging parameters (increase in skin elasticity and hydration; reduction in melanin index and erythema index), and subject-perceived improvements. However, 35% TCA peel is more effective in reducing wrinkles, despite a lower tolerability. Both

medium-depth chemical peels including 15% TCA in combination with 70% GA and 35% TCA alone proved to be useful for the removal of epidermal or superficial lesions and to improve the texture of photodamaged facial skin (grade II-III Glogau photoaged skin).

P. Rerknimitr, K. Kantikosum, N. Chottawornsak, N. Tangkijngamvong, S.J. Kerr, P. Prueksapanich, P. Sithisarankul, C. Kumtornrut, P. Asawanonda, S. Sutheparuk, R. Panchaprateep, **Chronic occupational exposure to lead leads to significant mucocutaneous changes in lead factory workers**, Journal of the European Academy of Dermatology and Venereology, Volume 33, Issue 10, October 2019

Background: Chronic lead toxicity is a worldwide public health problem. Lead possesses deleterious effects on many organ systems. However, little is known regarding its clinical and biophysical effects on the skin. Objective: To investigate mucocutaneous signs and biophysical property changes in skin after chronic lead toxicity. Methods: One hundred and eighty-seven patients who were car battery workers participated in the study. Complete history and physical examination were performed. Blood was collected for laboratory analyses. Thorough skin examination by dermatologists was carried out in 134 subjects. Additionally, 96 patients with blood lead levels (BLL) >70 □g/dL were further evaluated for skin elasticity, sebum content, transepidermal water loss (TEWL), hydration, pH and pigmentation. An equal number of age-, sex- and skin-type-matched subjects were recruited as controls. Results: The mean BLL of all subjects was 74.15 ± 11.58 □g/dL. The most frequently observed signs were gingival brown pigmentation in 112 (83.6%), gingivitis in 111 (82.8%) and lead line in 66 (49.3%) patients. The lead line was found in subjects with significantly higher BLLs (adjusted mean difference 6.45, 95% CI 2.30–10.60 □g/dL, $P = 0.003$) and in association with gingivitis (adjusted OR 7.32, 95% CI 2.08–25.74, $P = 0.002$). Mean BLL of the patients who underwent biophysical assessment was 82.77 ± 9.80 □g/dL. Patients exhibited a statistically significant lower skin hydration observed by corneometer as well as elasticity. The adjusted ORs of having dry skin and lower elasticity were 15.32 (95% CI 4.41–53.24), $P < 0.001$) and 1.96 (95% CI 1.06–3.60), $P = 0.031$), respectively. These differences were not significant for sebum content, TEWL, pH and pigmentation. Conclusion: Importantly, even in normal-appearing skin, level of hydration and elasticity decreased in lead-intoxicated patients. These results suggest that lead might possess harmful effects on the skin at measurable levels.

A.P. Eijkenboom, **Nichtinvasive Untersuchung hautphysiologischer Parameter bei Ekzempatienten im Langzeitverlauf - Eine explorative Analyse**, Dissertation an der Medizinischen Fakultät der Ludwig-Maximilians-Universität zu München, Oktober 2019

Das atopische Ekzem (AE) ist eine verbreitete, chronisch entzündliche Hauterkrankung die in westlichen Ländern gehäuft vorkommt. Nur teilweise verstandene Wechselbeziehungen zwischen genetischen und Umweltfaktoren sind an der Entstehung der Erkrankung beteiligt. Die Erkrankung zeichnet sich durch einen variablen klinischen Phänotyp mit einer heterogenen Pathophysiologie aus. Das atopische Ekzem ist häufig mit Asthma, allergischer Rhinoconjunctivitis und durch Nahrungsmittelallergien ausgelösten, erhöhten Immunoglobulin E (IgE)-Spiegeln assoziiert [1]. Die Prävalenz des AE wird bei Erwachsenen auf 2 – 10 % und bei Kindern auf 15 - 20 % geschätzt [2, 3]. Der Schweregrad ist bei Patienten, welche einen Arzt konsultieren, in 70 % der Fälle mild, in 20 % der Fälle moderat und in 2 % der Fälle schwer [4]. Davon treten 85 % der Fälle vor dem 5. Lebensjahr auf, wobei bis zu 70 % der Fälle bis zum Erwachsenenalter remittieren. Ein AE, das sich erst im Erwachsenenalter manifestiert, lässt sich oft schwer therapieren [5].

J.V. Gruber, V. Stojkoska, **NLRP inflammasomes and induced skin inflammation, barrier recovery and extended skin hydration**, International Journal of Cosmetic Science, October 2019

Objective: *In vitro* assays were designed to examine the release of active Caspase-1 (ACasp-1) from NLRP inflammasome-activated Normal Human Epidermal Keratinocytes (NHEK) employing a bioluminescent assay specific for measuring inflammasome-induced ACasp-1 expression. Methods: Four anticipated exogenous activators of the NLRP inflammasome including: UVB, ATP, Nigericin and Urban Dust were examined. Follow-up studies examined the influence of extracellular application of three different natural blends of known anti-inflammatories, one a polysaccharide blend and the other two antioxidant blends, one oil-soluble the other water-soluble, to examine ACasp-1 inhibition. Clinical work using the same blend of polysaccharides employed at 3% in a moisturizing formulation was examined for skin barrier recovery, measured with TEWL over a 60-h time frame after tape stripping on 10 individuals, and extended moisturization, measured using corneometer conductance after a single product application out through a 48-h regression on 10 individuals. Results: *In vitro* results indicated that two exogenous activators, 60 mJ cm^{-2} UVB and 5 mM ATP, worked to upregulate expression of ACasp-1 within a 20-h timeframe. Additional studies were conducted to examine the influence of three extracellularly applied active ingredient blends. A blend of polysaccharides demonstrated potential to

inhibit ACasp-1 expression in both UVB- and ATP-activated skin cells. Oil-soluble and water-soluble antioxidant blends inhibited ACasp-1 expression in UVB-activated keratinocytes but not ATP-activated keratinocytes. Barrier disruption studies indicated that 3% of the polysaccharide blend accelerated barrier recovery in a 60-h time frame as measured by TEWL. Skin hydration studies showed an ability for the polysaccharide blend to show significant improvements in skin hydration out to 48 h after a single application vs. a moisturizing placebo. Conclusions: The role of the skin's innate immune response, controlled by NLRP inflammasomes, is beginning to be linked to numerous skin conditions including inflammaging. In this work, it was found that: (i) an *in vitro* assay could activate NHEKs to express NLRP inflammasome-induced ACasp-1 expression, (ii) Ingredient blends inhibited UVB and ATP-induced NLRP inflammasome-induced ACasp-1 expression, and (iii) skin barrier disruption improvements and extended skin hydration could be achieved with 3% of the polysaccharide blend.

S. Cambos**, Positive impact of performance emulsifiers on end-users skin benefits**, presentation at the 25th IFSCC Conference Milan, October 2019

The primary function of an emulsifier is to stabilize an emulsion. But actually, excipients such as emulsifiers can contribute to skin benefits. The most universal skin need is hydration. Hydration intensity depends on its mechanism: film forming effect, interaction with the stratum corneum lipids, etc. The aim of our study is to measure the impact of stable basic emulsions on end-user performance by varying only the emulsifier nature, and, in a second step, to understand the mechanism of action.

S. Lueangarun, B. Soktepy, T. Tempark, **Efficacy of anti-inflammatory moisturizer vs hydrophilic cream in elderly patients with moderate to severe xerosis: A split site, triple-blinded, randomized, controlled trial,** J Cosmet Dermatol., 2019 Oct

Background: Xerosis is a common problem among the elderly, characterized by dry-scaling erythema, fissuring, or pruritus, which could be treated by anti-inflammatory moisturizers without side effects of steroids. Aims: We aimed to investigate the efficacy of anti-inflammatory moisturizer (MAS062D lotion) vs hydrophilic cream for the improvement of dry and barrier function skin in xerosis patients. Methods: A split site, triple-blinded, randomized, controlled trial was conducted in the elderly with moderate to severe xerosis, who received the 28-day twice daily application of MAS062D lotion and hydrophilic cream on the assigned shins. The evaluations on day 0, 14, and 28 were performed using clinical assessment, skin hydration by corneometer, transepidermal water loss (TEWL), and biometric assessment. Results: There were 24 Thai elderly patients, of whom 87.5% were female (mean age = 58.04 years and mean xerosis severity scale (XSS) = 4.83). Both treatments revealed similar statistically significant improvement in XSS ($P < .001$). Interestingly, MAS062D lotion-treated side remarkably showed improvement of skin hydration compared with hydrophilic-treated side for 26.86 ± 7.94 vs 25.84 ± 5.1, 41.24 ± 6.92 vs 20.96 ± 6.8, 50.49 ± 8.2 vs 21.75 ± 8.29 at baseline, day 14, and 28, respectively (P-value < .001). Moreover, MAS062D lotion significantly yielded greater decrease in TEWL measurement and more erythema improvement than hydrophilic cream (P-value < .001). No serious adverse effects were observed with either treatment. Conclusion: The MAS062D lotion could potentially be an efficacious treatment for improvement of xerosis in the elderly, which is also safe and refrains from steroid side effects.

I. Faccini, A. Arnese, C. Gambardella, S. Bettinelli, G. Depta, **Prebiotic make-up: self-preserving natural foundation that boosts the skin microbiota**, presentation at the 25th IFSCC Conference Milan, October 2019

Human skin is a unique and variable ecosystem that is inhabited by a wide range of microorganisms such as bacteria, fungi and viruses. This microbial community, called microbiota, is based on a delicate symbiotic balance between the properties of the microorganisms and the human host. The majority of these bacteria are commensal and create a dense coating that occupies the environmental and nutritional niches avoiding the colonisation of pathogens. Moreover, the commensal microbial population plays an important role in terms of antimicrobial compound synthesis and immunity. Different studies have demonstrated that a disrupted balance in the skin ecosystem could be associated to numerous skin diseases, such as atopic dermatitis, acne vulgaris, psoriasis and chronic wounds. Based on this evidence, maintaining the health of good skin microbes is vital for a healthy skin. A simple way to turn skin into a welcoming and nurturing environment for skin bacteria is the use of prebiotics. Prebiotics are fermented ingredients that act as nutrient sources; they selectively stimulate the growth and activity of beneficial 'normal' skin microbiota [4], at the expense of pathogens. Over the last few years, skincare brands have paid close attention to prebiotic science and severalformulations have been launched on the market, claiming benefit and nourishment for good bacteria on skin. Therefore, the consumer's attention regarding skin's health has increased, and interest is starting to spread also into the make-up field. The lack of make-up products with proven efficacy and scientific support encouraged

us to analyze the effect of a coloured cosmetic on the skin microbiota. The challenge of this study was to formulate a natural high performing foundation in which convey a blend of prebiotic ingredients, and to explore with an *in-vitro* and *in-vivo* tests its every-day use in safeguarding the skin microbiota of 20 women with dry and sensitive skin.

M. Napoli, S. Gervason, J.-Y. Berthon, E. Filaire, **Psycholobiological approach for a positive skin ageing: target senescence cells to boost emotion**, presentation at the 25th IFSCC Conference Milan, October 2019

The world's population isgetting older. According to Euromonitor, as of 2019, 1.7 billion people globally, or 23% of the global population, is aged 50 or above. Life expectancy is rising around the globe. The average global life expectancy is 72.3 years with some countries exceeding this average, such as Japan at 84.1 years, the United Kingdom at 81.3 years and the United States at 79 years. Thus, population ageing has become a global phenomenon in recent decades. Even if people are living longer, they have a growing desire to be healthier. Healthy living is no longer a sub-culture; it is a prominent part of mainstream culture globally across all industries, ranging from sleep devices to supplements, healthy snacks and beverages... The pursuit of healthier lifestyles is driven by a desire for two things: the ability to live a quality life in the present and the ability to live a long life in the future. It is the distinction between prolonging life and prolonging quality of life, which differentiates the topics of health and ageing. Thus, the desire to be healthier is changing the narrative of ageing, moving away from fighting the signs of ageing to focusing on "looking and feeling good at any age". This shift is most evident in the beauty industry. Terms such as 'successful ageing', 'active ageing' and 'positive ageing' are now part of the discourse with regards to growing older. From this trend, a new dermo-cosmetic concept emerged, well ageing, which focuses on wellness in order to maintain health capital. This concept is linked to the psychophysiological approach.

J.A. Boras. A. Grau-Campistany, S. Pastor, P. Carulla, E. Bisceglia, **Modulation of cell-to-cell communication in skin by a novel peptide increases skin brightness**, presentation at the 25th IFSCC Conference Milan, October 2019

Hyperpigmentation is one of the most common concerns of cosmetic consumers. With the increasing awareness of the role of exposure to ultraviolet radiation in the development of photoaging, there is an urgent need for new active ingredients that act on this undesired pigmentation, which are highly active, safe, stable and compatible with sun exposure, some of the drawbacks of the current lightening agents in the market. However, skin coloration is a result of many complex processes and years of investigation in pigmentation have been able to establish that there are multiple factors that regulate skin pigmentation.

V.R. Morares, P.M.B.G. Maia Campos, **Characterization of Nondiabetic and Diabetic Type 2 Skin in the Aging Process Using Biophysical and Skin Imaging Techniques**, presentation at the 25th IFSCC Conference Milan, October 2019

The aging process is a biological, multifactorial and complex phenomenon that includes intrinsic and extrinsic factors. The intrinsic factors are correlated with genetic and metabolism and the extrinsic factors are caused by sun exposition, pollution and other. Both processes results in skin aging, where signs as wrinkles, expression lines, changes in dermal thickness can be observed. Advanced glycation end products – AGEs, are originated from no enzymatic reactions which involves the reduction of sugars and amino groups of proteins and aminoacids. Collagens are essential proteins since they are responsible for the extracellular matrix structure. The AGEs cause modifications on the matrix, once the skin collagen deteriorates by crosslinking process. People with Diabetes have more AGEs in the tissue due to the high glucose concentration, which can cause skin damages. Thus, diabetic patients are more predisposed to signs of early aging than healthy people. In this context, it is very important the better comprehension of the diabetic skin in comparison to the no diabetic one. Thus, the aim of this study was to evaluate the clinical changes in the diabetic type 2 skin by biophysical skin imaging techniques.

F. Carlomagno, **Effectiveness of a Biotechnological Active Ingredient for Cosmetics Targeting Skin Microbiota Protection,** presentation at the 25th IFSCC Conference Milan, October 2019

The skin is the largest organ of the human body in surface, mainly serving as a physical barrier which protects the body from external aggression. An adult's skin hosts an average population of 1,000 billion microorganisms among fungi, viruses and bacteria. This fauna lives and moves on the skin surface as well as in the superficial layers of the epidermis to down to the hair follicles and glands. Microorganisms form a complex ecosystem collectively referred to as skin microbiota. This tiny, but important micro-world is essential for the skin to main it healthy and to work as a perfect barrier. A distinctive combination of microorganisms all over our body is peculiar for all of us, although scientists

point out that skin microbiome varies a lot during our lives. This variation is linked to age, changes of lifestyle and to the external stressors we are submitted to (4). Different body sites can also have completely different skin microbiota configurations, both inter- and intra-personally, linked to the peculiar characteristics of that precise micro-environment. For example, just focusing on the face, studies show that there are great differences between forehead and cheek skin microbiota, due to the existence of moist, dry and sebaceous skin sites (5). Despite continuous changes in its composition, when the body is healthy, skin microbiota seems to be an equilibrium between protective and pathogens microorganisms. These live together in a complex community and have a number of different symbiotic interactions. If we consider bacteria, the most important and frequent phyla living on human skin are Actinobacteria, Firmicutes, Proteobacteria and Bacteroidetes, without huge differences among ethnicities. Further, looking more deeply into specific taxonomic classification, as class or genus or species, we can find differences among peoples' microbiomes even by looking at subjects with very similar age, lifestyle, and from the same ethnicities. The general truth for everyone's healthy condition seems to be the homeostasis of skin microbiota with its singular peculiarities.

L. Xiao, B. Che, H. Lu, J. Li, G. Zhou, Y. E, **Evaluation of a Scalp Essence on Human Scalp Health and Subclinical Conditions Based on Multiple Dimensions Physiological and Biological Approaches,** presentation at the 25th IFSCC Conference Milan, October 2019

Varieties of methods have long been considered to evaluate cosmetic efficacies and health benefits on hair care and scalp care products. In general, scalp health and its conditions are normally determined at the following dimensions including scalp hydration level, scalp oil level, dandruff scale, scalp micro organism conditions, and scalp sensations such as itching, stinging, burning, pain, numb, and other related scalp sensational issues. It is believed that scalp health conditions are influenced by hair cleansing habits, scalp microorganism environment, inflammatory lesions such as psoriasis, and hair follicle health status. On the other hand, scalp health and its conditions are also well documented and determined by Traditional Chinese Medicine (TCM) theories and clinical diagnosis. This is because TCM practitioners consider most of the symptoms such as scalp conditions through a integral grading system as Qi-Blood, of which represents functions of vital energy and nutritional supporting mass respectively, range from balance to stagnation and to deficiency including the deficiency of vital energy, stagnation of the circulation of vital energy, weakness of vital energy, deficiency of blood, stasis of Blood, cold in Blood, heat in Blood, to stagnation of vital energy and Blood stasis, and both Qi-Blood deficiency, etc. Here, we considered to measure hair follicle hydrocortisone level one of the TCM Qi-Blood markers. This presented study focused on evaluation of a commercial scalp essence with an integrated quantification methods on human subject scalp moisture, dandruff, redness, acidity, sensations, hair quality, as well as Qi-Blood based on TCM categorized as Blood balance, stagnation and deficiency.

E. Lee, J.Y. Lee, S. Woo, Y. Noh, J. Shin, P. Ruan, J. Ha, **Variation of Biophysical Parameter with Skin Aging from Distinct Geographic Locations in South Korean and Chinese women**, presentation at the 25th IFSCC Conference Milan, October 2019

There are the differences of skin properties with aging in various ethnic groups. Within the same ethnic group, it is also important to understand that the change of skin with aging as well as skin characteristics be influenced by external environment, such as climatic condition, UV radiation and environmental pollution. The purpose of this study was to investigate the alteration of biophysical parameter with aging in different locations.

C. Klose, J. Fröbel, F. Lauffer, N. Garzorz-Stark, **Skin profiling reveals lipidomic pattern in functional skin parameters for cosmetics**, presentation at the 25th IFSCC Conference Milan, October 2019

Heat, physical activity, abrasive clothes, humidity and disease: external and internal factors stress the *stratum corneum*, the upmost layer of the skin, and affect functional skin parameters such as skin hydration and trans-epidermal water loss. In this study, we align skin lipidome data with functional skin parameters. Using high-resolution shotgun lipidomics analysis applying mass spectrometry (MS) and MSMS, we have discovered lipid profiles mirroring the effects of external and internal factors on functional skin parameters, such as skin hydration or trans-epidermal water loss.

V.T. Ferreira, P.M.B.G. Maia Campos, **Design and development of sunscreen formulations: correlation of physicalmechanical properties and skin biophysical measurements**, presentation at the 25th IFSCC Conference Milan, October 2019

Although UVA radiation accounts for only 9.5% of the solar radiation, it can lead to impairment of dermis and epidermis, even in the case of non-extreme exposures. Long UVA rays are the most significant part of the UVA spectrum as it penetrates the skin most deeply and play a decisive role in

many aspects as photoaging, DNA damaging through the production of free radicals, immune system responses and various photodermatoses. Avobenzone is a consolidated UVA filter, yet its low photo stability is related to undesirable photochemical reactions which may compromise physical and chemical properties of formulations, mostly when associated with inorganic UV filters, which may further increase research and development challenges. Considerable effort is necessary developing photoprotective products with satisfactory UVB/UVA protection ratio, that are visually and sensorially pleasing and match safety and efficacy by forming a stable and homogeneous film over skin surface, both avoiding adverse effects and ensuring the photoprotective activity. Herein, definition of the appropriate vehicle is fundamental where emulsifying agents not only influence efficacy of fatty components but also model surface tension and the cutaneous film formation, compatibility, physical-mechanical properties and distribution on the skin, greatly influencing sunscreens efficacy. In this context, this study aims to systematic develop formulations of satisfactory UVB/UVA protection ratio, with ability to form a stable and homogeneous film on the skin surface, and to evaluate the effect of waxes concentration in the formulations over the rheological behaviour as well their clinical effects by skin biophysical techniques.

A. Gimenez, O. Laporta, E. Canadas, E. Gonzalez, R. Delgado, **The eyes: a reflection of genderless beauty,** PERSONAL CARE NORTH AMERICA, October 2019, p. 18-20

Given the expansion of masculine products for facial skin care on the shelves around the world, eye contour ranges are in the spotlight as they can help reduce unwanted bags, dark circles and fatigue signs, offering excellent improvements in facial appearance. The skin surrounding the eyes is one of the most delicate of the body, which is why it can experience more accentuated aging changes that easily worsen the appearance of such important area. Eyeseryl® peptide acts son the mechanisms of glycation, vascular permeability and lipid accumulation, to minimize the presence of eyebags and dark circles and reduce skin damage in the fragile eye contour. As the clinical studies show, the ingredient is a good candidate to introduce in skin care formulations to improve the overall eye contour region of both men and women.

A.M. Motta, **A new natural and biomimetic detergent concept,** PERSONAL CARE NORTH AMERICA, October 2019, p. 27-30

It is widely recognized that a toned and well moisturized skin can be maintained only if the superficial layers of the epidermis are able to fully accomplish their barrier function, protecting the deepest and delicate areas of the derma from sensitizing agents and controlling permeability and transpiration of the physiological water present in the intercellular spaces. The skin barrier function is continuously exposed to aggressions. The daily use of soaps and potentially aggressive detergents can alter the hydrolipidic skin film and skin barrier integrity, reducing its impermeabilizing action and favoring skin dehydration. Trans Epidermal Water Loss (TEWL) constitutes one of the main indicator to evaluate skin barrier integrity. The ideal detergent must be able to effectively remove dirt, greasiness and pollutants, meanwhile respecting the lipidic and protein fractions of the horny layer and the superficial hydrolipidic film.

Experience incomparable skin comfort with ALPAFLOR® SCUTELLARIA AO, customer information, H&PC Today, Vol. 14(5) September/October 2019

DSM's ALPAFLOR® SCUTELLARIA AO offers relief for sensitive skin and improves skin comfort by soothing and softening. This sustainable, organic bioactive targets multiple steps in the inflammation process. It is a strong antioxidant and stimulates key neuromediators in the epidermis that preserve the skin barrier, reducing burning sensations, irritation and pain. By addressing feelings of irritation in the skin it can also lift negative mood associated with skin sensitivity

S. Hettwer, E. Besic Gyenge, B. Suter, S. Breitenbach, B. Obermayer, **Natural Shin Barrier Supplement to Resist Artificial Radiation,** söfw journal, 145, 10/19

Artificial radiation is all around us. This refers not only to high energy visible light emitted by all kinds of screens but also WiFi radiation of smart devices. As we cannot escape from it and the consequences for our skin are still poorly investigated, protective measures can be taken in advance. Here we describe the use of an alga extract enriched in carotenoids capable of keeping the radiation threats away from our skin. The extract reduces WiFi and blue light-induced ROS generation and preventsoverly carotenoid loss of the skin barrier leading to significant reduction in ageing parameters.

Y. Tzabari Kelman, S. Asraf, N. Ozana, N. Shabairou, Z. Zalevsky, **Optical tissue probing: human skin hydration detection by speckle patterns analysis**, Biomedical Optics Express, Vol. 10, No. 9/1 Sep 2019

An optical approach to determine the hydration level in human skin is presented. The approach is based on temporal tracking of back-reflected secondary speckle patterns generated while illuminating the tested area with a laser and applying periodic vibrations to the surface via a controlled vibration source (CVS). This approach has already been tested successfully for other biomedical parameters such as sensing vital signs, hematology and hemodynamic processes in the body. In this paper we examine and adjust this optical technique with the aim of measuring human skin moisture. We compare the suitability and accuracy of our optical method to the commercially available device for skin moisture measurements, the Corneometer CM 825 (by Courage + Khazaka, Cologne, Germany). Preliminary experiments showing the method's suitability for hydration measurements are presented, may lead to more accurate results that may upgrade the control of the cosmetic industry as well as identifying symptoms of moisture-related skin diseases.

D. Khazaka, C. Uhl, **In-house tests complement CRO final product testing,** PERSONAL CARE EUROPE, September 2019

Before a cosmetic product is offered on the market, final tests are obligatory for the manufacturer to prove its safety and to substantiate the various claims on the products, e.g. reduces wrinkles up to 20%, increases skin hydration for 24 h. There are no limits to modern claims. All over the world, contract research organisations (CROs) varying from small laboratories to vast multinational institutes offer their services to the cosmetic manufacturers to perform all kind of tests and compile the final necessary product documentation.

E. Metral, **Using autophagy to prevent and reduce skin ageing,** PERSONAL CARE EUROPE, September 2019

Autophagy is a cellular mechanism which preserves cell health by recycling long-lived proteins and damaged organelles. With the discovery of its mechanisms by Professor Yoshinori Ohsumi (Nobel Prize in Physiology and Medicine 2016), autophagy has been the subject of intense research interest that revealed its role in various physiological and pathological conditions. This catabolic pathway consists of multiple sequential steps, promoted through two well-characterised signalling cascades known as mTOR (mammalian Target Of Rapamycin)-dependent and mTOR independent pathways.

X. Zeng, X. Li, X. Wang, X. Wen, X. Jiang, **The effect of Zanthoxylum bungeanum maxim extract on crow's feet: A double-blind, split-face trial,** Dermatologic Therapy 32(6), September 2019

Introduction: As one of the most obvious signs of aging, wrinkles have long been the concern of many people and continue to be a major topic in dermal-cosmetic industry. Accordingly, there is a need to develop products with good efficacy and safety profile. The Zanthoxylum bungeanum Maxim (ZBM) extract is a natural food which may possess the property of a toxin-like botulinum. Objective: To evaluate the efficacy and safety of a formulation that contains 2% ZBM pericarp extract in the treatment of wrinkles. Methods: 20 females aged 35 to 60 years old were enrolled in this randomized, vehicle-controlled, double-blind and split-face trial. The trial lasted for 30 days, when participants randomly used formulations containing 2% ZBM extract on one side of the temporal canthus and vehicle formulation on the other side. Skin roughness, skin hydration and skin elasticity were evaluated by Primospico, Corneometer® CM825 and Cutometer® MPA580, respectively. Results: The formulation containing 2% ZBM extract has a significant short-term anti-crow's feet effect compared with vehicle. No adverse effect was shown during the study. Conclusion: Topical application of 2% ZBM extract is tolerable and can be used as an effective cosmetic agent for short-term wrinkle treatment.

V. Mazzarello, G. Piu, M. Ferrari, G. Piga, **Efficacy of a Topical Formulation of Sodium Bicarbonate in Mild to Moderate Stable Plaque Psoriasis: a Randomized, Blinded, Intrapatient, Controlled Study**, Dermatol Ther (Heidelb) (2019) 9: p. 497–503

Introduction: Psoriasis is a chronic inflammatory disease characterized by the presence of erythematosquamous lesions. A wide variety of topical treatments for therapy of this pathology are available, including sodium bicarbonate (SB). A few papers reported in literature focus on use of SB baths for treatment of psoriasis, but none assess evidence concerning the efficacy of SB topical preparations. This study aimed to determine the effectiveness of a galenic SB in lanette vax formulation compared with lanette vax base in mild to moderate stable plaque psoriasis. Methods: A randomized, double-blind, intrapatient, controlled study was performed in 28 days. Thirty patients of both genders were selected for testing. A blinded investigator evaluated the patients' psoriasis using a modified Psoriasis Area and Severity Index (PASI), body surface area (BSA), and objective parameters using sensors (Multiprobe Adapter MPA5; Courage & Khazaka Electronic GmbH, Cologne, Germany). Results: Data analysis of objective parameters highlighted that use of the SB topical preparation led to no improvement in skin hydration, no reduction in transepidermal water loss, and no decrease of

erythema. The modified PASI and BSA did not change from baseline. Conclusions: The results obtained show that use of the studied product did not improve psoriatic lesions.

F. Santoro, N. Lachmann, **An Open-Label, Intra-Individual Study to Evaluate a Regimen of Three Cosmetic Products Combined with Medical Treatment of Rosacea: Cutaneous Tolerability and Effect on Hydration**, Dermatol Ther (Heidelb) (2019) 9: p. 775–784

Introduction: Although rosacea management includes general skincare, previous studies have not evaluated comprehensive skincare regimens as adjuvants to other treatments. Methods: The primary objective of this openlabel, intra-individual study of subjects with rosacea was to evaluate the cutaneous tolerability of a regimen consisting of Cetaphil PRO Redness Control Day Moisturizing Cream (once daily in the morning), Cetaphil PRO Redness Control Night Repair Cream (once daily in the evening) and Cetaphil PRO Redness Control Facial Wash (foam once in the morning and once in the evening). Secondary objectives were to evaluate the effect on transepidermal water loss (TEWL) and cutaneous hydration and to determine the subjects' evaluation of efficacy, tolerability and future use. A dermatologist examined subjects and measured TEWL and cutaneous hydration on day (D) 0, D7 and D21, when subjects ranked symptoms. Subjects completed a questionnaire on D21. Results: The per-protocol population consisted of 42 subjects receiving treatment for rosacea. Eleven subjects developed adverse events, none of which were considered to be related to the skincare products. Five subjects showed signs or symptoms that were potentially associated with the skincare products that might suggest poor cutaneous tolerability; these were generally mild. TEWL decreased significantly by a mean of 17% on D7 and a mean of 28% on D21 compared with baseline (both P \ 0.001). Skinhydration increased significantly by a mean of 5% on D7 (P = 0.008) and a mean of 10% on D21 (P \ 0.001) compared with baseline. Subjects reported that the regimen was pleasant (98%) and effective (95%) and that it offered various benefits; 90% of subjects reported that they would like to continue to use the regimen and would buy the products. Conclusion: The skincare regimen improved skin hydration and skin barrier function in subjects receiving medical treatment for rosacea and was well tolerated.

P. Gonry, **The skin microbiota: all about food,** PERSONAL CARE ASIA PACIFIC, September 2019

The skin microbiota is a collection of bacteria, fungi, viruses and microscopic animals that we collected during our lifetime. These microorganisms have become an essential part of the epidermis. They protect us against pathogenic invasions. Just like the human society, the microbiota is meticulously organised. Although most aspects of this ingenious microbial organisation remain hidden to us through a veil of mystery, one aspect is partially revealed: the members of the skin microbiota need food to survive and to thrive. Microorganisms are endlessly resourceful because they possess 15 million genes. However, they are powerless without the appropriate food supply. No food means no gene expression. With DNA sequencing the disturbance of preservatives and mild natural surfactants on the skin microbial community has been clearly mapped. The supporting effect of a specific molecular weight Inulin on the ingenious microbial food supply has been revealed *in vivo.* Through this mechanism Inulin is a necessary asset for the skin and the skin microbiota to perform all their essential tasks. Inulin is an essential skin careingredient to keep the skin healthy.

T.-Y. Kim, N.-J. Park, J. Jegal, S. Choi, S.W. Lee, J. Hang, S.-N. Kim, M.H. Yang, **Chamaejasmine Isolated from *Wikstroemia dolichantha* Diels Suppresses 2,4-Dinitrofluoro-benzene-Induced Atopic Dermatitis in SKH-1 Hairless Mice**, Biomolecules 2019, 9, 697

Plants of the genus *Wikstroemia* have long been used as traditional medicines to treat diseases like pneumonia, rheumatism, and bronchitis. This study was designed to determine the effect of chamaejasmine, a biflavonoid present in *W. dolichantha*, on atopic dermatitis (AD)-like skin lesions in a 2,4-dinitrochlorobenzene (DNCB)-induced murine model of AD. Initially, we examined the anti-allergic activities of ten flavonoids from *W. dolichantha* by measuring ◘-hexosaminidase release from RBL-2H3 cells. Subsequently, an SKH-1 hairless mouse model of AD was developed based on the topical application of DNCB. Chamaejasmine (0.5%) or pimecrolimus (1%, positive control) were applied to dorsal skins of DNCB-sensitized AD mice for two weeks. Serum IL-4 and IgE levels were determined using enzyme-linked immunosorbent assay kits and transepidermal water loss (TEWL) and skin hydration were measured using a Tewameter TM210 and a SKIN-O-MAT, respectively. Of the ten flavonoids isolated from *W. dolichantha*, chamaejasmine most potently inhibited DNP-specific IgE-induced degranulation in RBL-2H3 cells. Topical administration of chamaejasmine attenuated the clinical symptoms of DNCB-induced dermatitis (i.e., itching, dryness, erythema, and edema). Histological analyses demonstrated that dermal thickness and mast cell infiltration in dermis were significantly reduced by chamaejasmine. In addition, 0.5% chamaejasmine inhibited DNCB-induced increases in total IL-4 and IgE levels in serum, improved skin barrier function, and increased epidermis

moisture. Our findings suggest chamaejasmine might be an effective therapeutic agent for the treatment of atopic diseases.

A. Stork, A. Mehling, P. Schulte, **Gentle Care for Delicate Skin**, SOFW Journal 09/19, Volume 145, Germany, September 11, 2019

When babies set out to explore the world around them, they do not yet have the protection adults count on. Baby skin is thinner and more sensitive, calling for tailored care to defend it from moisture loss, sun and environmental aggressors. *Anja Stork*, *Annette Mehling* and *Petra Schulte* explain how BASF's baby care concept delivers essential and safe care.

M.S. Sommers, Y. Regueira, D.A. Tiller, J.S. Everett, K. Brown, E. Brignone, J.D. Fargo, **Understanding Rates of Genital Injury: Role of Skin Color and Skin Biomechanics**, J Forensic Leg Med. 2019 August ;66: p. 120–128

Purpose. A series of studies suggest that non-Hispanic White women have significantly more injuries than non-Hispanic Black women after sexual assault and consensual sexual intercourse. One explanation for this difference is that the degree of skin protection may vary as skin mechanics and skin pigmentation vary. The aim of the study was to determine the association among genital-anal injury, skin color, skin viscoelasticity and skin hydration in women following consensual sexual intercourse when controlling for age, smoking history, body mass index (BMI), sun exposure, and health status. Procedures: We employed a prospective cohort study design to enroll women 21 years of age or older at two study sites. They underwent two data collection sessions, baseline and follow-up after consensual sexual intercourse. Baseline genital-anal injury identification occurred with a standard forensic examination (direct visualization, nuclear staining with toluidine blue contrast, and colposcopy examination) and measurements of other variables (skin color, skin viscoelasticity, skin hydration, age, smoking history, body mass index [BMI], sun exposure, and health status). Participants were then asked to have consensual sexual intercourse with a male partner of their choice and to return for a second forensic examination for injury detection. Genital-anal injury was regressed on skin color, skin viscoelasticity, skin hydration, age, smoking history, BMI, sun exposure, and health status. Findings: We enrolled 341 participants, 88 non-Hispanic White (25.8%), 54 non-Hispanic Black (15.8%), 190 Hispanic/Latina (55.7), and 9 Other Identities (2.6%). At baseline the genital-anal injury prevalence was 57.77% and at follow-up after consensual sexual intercourse, injury prevalence was 72.73%. External genital injury prevalence was associated with increased L* (lightness) values (Adjusted Odds Ratio [AOR] = 1.98, 95% Confidence Interval [CI] = 1.03, 4.04) and decreased skin elasticity (AOR = 0.96, 95% CI = 0.93, 0.99) at baseline. Increased skin hydration was associated with a significantly higher frequency of external, internal, anal, and total genital-anal injuries (Adjusted Rate Ratio [ARR] > 1.27) at follow-up. Also at the follow-up examination, Hispanic/Latina participants had significantly lower external genital and total genital-anal injury prevalence and frequency as compared to non-Hispanic White participants (AOR < 0.40). Conclusions: Our findings provide qualified support for the importance of skin color during the forensic examination. Women with lighter skin tones may have skin that is more easily injured than women with darker tones. In contrast, external genital injuries may be more easily identified in women with light as compared to dark skin, a situation that is important in both the health care and criminal justice systems. Additionally, women with decreased viscoelasticity and increased hydration may be more easily injured. These findings support the need to develop forensic procedures that are effective in people across the range of skin colors and to interpret forensic findings considering the innate properties of the skin.

A. Koł odziejczak, A. Wieczorek, H. Rotsztejn, **The assessment of the effects of the combination of microdermabrasion and cavitation peeling in the therapy of seborrhoeic skin with visible symptoms of acne punctate**, J Cosmet Laser Ther. 2019 Aug;21(5): p. 286-290

Objective: The aim of this study was to assess objectively the effects of the combination of corundum microdermabrasion and cavitation peeling in the therapy of seborrheic skin with visible symptoms of acne punctata. Material and methods: The study involved a group of nine women. A series of six treatments with the combination of microdermabrasion and cavitation peeling were performed within facial skin at 10–14 days intervals. Corneometric measurements examining skin hydration level and sebumetric measurements analyzing skin sebum level were made before the series of treatments and after second, fourth and sixth procedure in five facial areas. Clinical assessment of the efficacy of the therapy was performed on the basis of photographic documentation (Fotomedicus). Anonymous questionnaires were used in order to evaluate patients' satisfaction rate. Results: Statistically significant improvement in skin sebum level was observed in all examined areas (forehead p = 0.002; nose p = 0.001, chin p = 0.01, left cheek p = 0.009, right cheek p = 0.007). In case of skin hydration, significant improvement was found only in the area of chin (p = 0.03). 78% of participants estimated that the

improvement was in the range of 55–70%, while 22% of participants of 75–100%. The reduction in the amount and visibility of comedones and pimples were demonstrated on the basis of questionnaire and photographic documentation. Conclusions: Combined microdermabrasion and cavitation peeling treatments improve the condition of seborrheic skin.

E.E. Grinich, A.V. Shah, E.L. Simpson, **Validation of a novel smartphone application-enabled, patient-operated skin barrier device**, Skin Research & Technology, 2019 Sep;25(5): p. 612-617

Background: Transepidermal water loss (TEWL) and surface capacitance measure skin barrier permeability and stratum corneum (SC) hydration, respectively, and are frequently utilized in atopic dermatitis clinical trials. Many barrier devices are costly and often used only in the academic setting. GPSkin is a low-cost, patient-operated device that measures both TEWL and SC hydration. This study aimed to test the reliability of GPSkin and assess its correlation with current industry standards. Materials and methods: GPSkin was compared to the Biox AquaFlux (TEWL) and Courage-Khazaka Corneometer (SC hydration). Participants with healthy skin (n = 50) collected measurements with GPSkin in Trial 1 without any device education and in Trial 2 with additional instruction. In Trial 2, the investigator also performed measurements with GPSkin. Spearman's coefficients (r) were performed to assess device correlation. Intraclass correlation coefficients (ICC) were calculated to determine reliability. Results: Overall, GPSkin was moderately correlated with current industry device measurements for TEWL (Trial 1 r :0.48; Trial 2 r :0.40 participant, 0.34 investigator) and SC hydration (Trial 1 r :0.63; Trial 2 r :0.45). GPSkin demonstrated "good" test-retest reliability for both TEWL (ICC: 0.89) and SC hydration (ICC: 0.85) measurements when participants were provided with some device education. There was no difference in reliability between participants provided with device education and investigators. Conclusion: Based on these findings, we concluded that GPSkin provides reasonably precise and reliable measurements of SC hydration and TEWL as compared to current devices.

P. Tarka , K. Gutkowska, A. Nitsch-Osuch, **Assessment of tolerability and acceptability of an alcohol-based hand rub according to a WHO protocol and using apparatus tests**, Antimicrobial Resistance and Infection Control (2019), 8:191

Background: The effectiveness of alcohol-based hand rubs (ABHRs) depends substantially on their acceptability and tolerability. In this study, we assessed the acceptability and tolerability of a new ABHR (product EU 100.2018.02). Methods: Among physicians, nurses, and cosmetologists who used the ABHR for 30 days, we assessed the product's acceptability and tolerability according to a WHO protocol. Additionally, we used instrumental skin tests. Participants assessed the product's color, smell, texture, irritation, drying effect, ease of use, speed of drying, and application, and they gave an overall evaluation. Moreover, they rated the tolerability, i.e. their skin condition, on the following dimensions: intactness, moisture content, sensation, and integrity of the skin. The tolerability was also assessed by an observer as follows: redness, scaliness, fissures, and overall score for the skin condition. Instrumental skin tests included transepidermal water loss, skin hydration, sebum secretion, and percentage of skin affected by discolorations. All assessments were made at baseline (visit 1), and 3–5 days (visit 2) and 30 days (visit 3) later. Results: We enrolled 126 participants (110 [87%] women) with a mean age of 34.3 ± 11.65 years. Sixty-five participants (52%) were healthcare professionals (physicians, nurses), and 61 (48%) were cosmetologists. During visit 2 and visit 3, about 90% of participants gave responses complying with the WHO's benchmark for acceptability and tolerability. Similarly, the ABHR met the WHO criteria for observer-assessed tolerability: on all visits, in more than 95% of participants, the observer gave scores complying with the WHO benchmark. Transepidermal water loss decreased from baseline to visit 3 ($p < 0.001$), whereas skin hydration, sebum secretion, and the percentage of skin affected by discolorations did not change significantly during the study (p ◘ 130). Conclusions: The EU 100.2018.02 had both high acceptability and tolerability, meeting the WHO criteria. The WHO protocol proved useful in the analysis of acceptability and tolerability of ABHRs.

J.-P. Santos-Caetano, C.F. Gfeller, H. Mahalingam, M. Thompson, D.J. Moore, R. Vila, R. Doi, M.R. Cargill, **Cosmetic benefits of a novel biomimetic lamellar formulation containing niacinamide in healthy females with oily, blemish-prone skin in a randomised proof-of-concept study**, Int J Cosmet Sci., 2019 Aug

Objective: A randomized study was designed to evaluate the potential cosmetic benefit of a biomimetic, niacinamide-containing moisturizing cream in oily, blemish-prone skin. Methods: Healthy adult women with oily, blemish-prone skin were randomized to one of three treatment groups: test, control, or positive control. In the test group, subjects used the test product (containing 4% niacinamide), plus the standard cleanser (Simple® Kind to Skin Moisturizing Facial Wash). In the control group, subjects received no moisturizer but used the standard cleanser. In the positive control group, subjects used Vivatinell Acnecinamide® Gel Cream (containing 4% niacinamide) as a moisturizer and Neutrogena

Visibly Clear® Spot Clearing Facial Wash (containing 2% salicylic acid) as a cleanser. The positive control regimen was included to provide a comparison for estimates of effect size. The primary objective was to evaluate skin moisturization as a change from baseline in corneometer values at 8 h for the test regimen vs. the control regimen. Analysis of covariance was applied for the primary efficacy analysis. Results: A total of 132 subjects were randomized with 44 included in each treatment group. A significant difference was observed in the primary endpoint for the test regimen compared with the control regimen (least-squares mean difference [95% CI]: 3.12 [0.68, 5.56], $P = 0.0128$). A trend was observed in favour of the positive control regimen compared with the control regimen. Secondary measurements of moisturization supported the primary efficacy outcome. Assessment of blemishes showed a significant difference between the test regimen vs. the control regimen for change from baseline in mean total blemish count at Week 8 (least-squares mean difference [95% CI]: −1.80 [−3.41, −0.19], $P = 0.0290$). No statistical comparisons between the positive control group and the test group were performed. Conclusion: This study provides proof-of-concept evidence that a novel lamellar lipid moisturizer containing niacinamide, in combination with a standard cleanser, can help moisturize the skin and provide an overall improvement in the complexion appearance of people with blemish-prone skin.

I. Meyer, M. Pesaro, D. Stuhlmann, L. Garbe, G. Schmaus, **Practical Probiotics: Live Microbial Skin Benefits without Limits**, Cosmetics & Toiletries, Vol. 134, No. 8, p. DM14-22

Driven by modem S lifestyle and the eclectic evolution of new technologies, consumers are aware *r* of the potential skin damage environmental stressors can induce. As such, consumers increasingly seek topical products that improve skins endogenous firstline defense mechanisms. In relation, the concept of probiotics to improve gut health is well-established in both the scientific literature and consumer perception.1 In fact, 79% of consumers already believe the use of probiotics is beneficial for skin health and 63% of consumers think probiotics fit well into the beauty care category. Regardless, the benefits of microorganisms applied topically are not widely described.

S. Laneri, R. di Lorenzo, A. Sacchi, I. Dini, **Dosage of Bioactive Molecules in the Nutricosmeceutical *Helix aspersa* Muller Mucus and Formulation of New Cosmetic Cream with Moisturizing Effect**, Natural Product Communications August 2019: p. 1–7

The present study was carried out to provide the allantoin and glycolic acid contents in the *Helix aspersa* Muller mucus of common Campania land (Italy) by using chromatographic method. The study continued with the formulation of a snail mucus cosmetic cream, whose ability to hydrate the skin was evaluated comparing the skin hydration and trans-epidermal water loss (TEWL) effects of a stable cosmetic preparation. The skin TEWL and skin hydration effects were measured by Tewameter and Corneometer probe, respectively, at the beginning, after 1 hour, and 24 hours.

B. Hughes-Formella, O. Wunderlich, R. Williams, J. Fernández, Y.Z. Kim, W. Wigger-Alberti, S. Pecquet, A. Moodycliffe, **Comparison of Skin Structural and Functional Parameters in Well-Nourished and Moderately Undernourished Infants**, Skin Pharmacol Physiol. 2019 Jul; 32(4): p. 212–223

Background: Little is known about the impact of nutrition on the development of skin structure and function in infants. Methods: We investigated epidermal, dermal, and subcutis parameters of aged-matched well-nourished and moderately undernourished infants in this single-center, cross-sectional, noninterventional study using noninvasive methods (skin caliper, 20-MHz sonography, transepidermal water loss, skin pH, and corneometry). Plasma fatty acids were determined as an indicator of nutritional differences. 310 infants from different age groups, i.e., 1 week, 4 weeks, and 6, 9, 12, 24, and 36 months were included. Approximately half of each age group was well-nourished (WHO reference values weight-for-height/length Zscore: $-0.75 \leq Z \leq 0.75$) and the other half was moderately undernourished ($-3 \leq Z < -2$). Results: Structural maturational differences in the deeper dermis and subcutis regions of the skin and subtle functional changes in the epidermis were observed in moderately undernourished infants without notable clinical symptoms. Reduced skin barrier function or skin hydration were not observed in the undernourished infants, and skin pH shifted to more acidic values in this group. Conclusion: These indings reveal a greater impact of moderate undernutrition on the development of the dermis and subcutis and suggest that critical epidermal functions such as skin barrier and pH are mostly maintained.

C. Uhl, **Claim support for Microbiome Skin Care**, happi, July 2019

Since the dawn of mankind, humans have struggled to understand why they were struck by disease. Many theories have been established, most of them discarded now. In the first century BC, Roman medical author Cornelius Aulus Celsus mentioned the term"virus,"the Latin term for"poison."He used it to describe the phlegm that transmits rabies. Until the 17th Century, this term was used for all infectious diseases.

J. Kim, B. Kim, S. Kim, Y.I. Lee, J. Kim, J.H. Lee, **The effect of human umbilical cord blood-derived mesenchymal stem cell media containing serum on recovery after laser treatment: A double-blinded, randomized, split-face controlled study**, J Cosmet Dermatol., 2019 Jul

Background: Ablative CO2 fractional laser (AFL) is a common cosmetic procedure to improve skin laxity. However, due to prolonged downtime and the risk of postinflammatory hyperpigmentation, laser-assisted delivery of active ingredients as post-laser treatment has gained interest in past years. Among various active ingredients, human umbilical cord blood-derived mesenchymal stem cells (hUCBMSCs) can be a promising agent promoting skin regeneration. Aims: We evaluated the efficacy and safety of a human cord blood cell-conditioned media containing serum and cream on patients who underwent AFL treatment. A randomized, investigator-blinded, prospective, split-face comparison study was conducted. Materials and Methods: Twenty-three patients who underwent AFL on both cheeks applied a human umbilical cord blood-derived mesenchymal stem cell (hUCBMSC)-conditioned media containing cream with or without stem cell containing serum application. As a primary outcome measure, we evaluated the total area of microcrusts and post-treatment erythema using digital photographs. Additionally, skin biophysical parameters (corneometer, TEWL) and global improvement scores for skin texture were assessed. Results: The area of total microcrusts was reduced in the study group which applied both serum and cream. The global improvement score of the post-treatment erythema was significantly reduced. Investigator-assessed global improvement scores were higher in the combination treatment group. Additionally, there was no adverse event, which was associated with the use of either hUCBMSCs containing serum or cream. Conclusion: The application of human cord blood cell containing serum and cream resulted in accelerated wound healing and reduced post-treatment erythema, which effectively reduced recovery time after ablative laser treatment.

J. Piskorz, G. Wójcik, W. Bulikowski, D. Kozak-Putowska, **Assessment of changes of skin moisture in patients subject to general anesthesia with neurological diseases in an interview**, Wiad Lek. 2019;72(7): p. 1288-1294

Objective: Introduction: General anaesthesia is carried out using anaesthetic agents that among others depress the circulatory system and CNS. Central and peripheral thermoregulation occurs, which is due to mild hypothermia as well as changes in skin moisture. An important element of therapy in the perioperative period is adequate intravenous fluid therapy, which affects the final effects of treatment. The aim: Evaluation of skin moisture as a result of changes in central and peripheral thermoregulation during general anaesthesia and evaluation of the hydration status of patients. Patients and Methods: Material and methods: The study included 180 patients undergoing general anaesthesia for elective surgery, aged 20-85 years of age. Before general anaesthesia, patients were evaluated for ASA-related risk of anaesthesia (ASA 1 - healthy patients, ASA 2 and 3 - patients with neurological and circulatory disorders). Patients were divided into 2 groups, the study group (90 people) were patients who were given no intravenous fluids before the surgery and the control group (90 patients) were those receiving doses of 500 ml crystalline intravenously one hour before anaesthesia. The research was carried out at the Operational Block of the Provincial Hospital in Tarnobrzeg, from November 2013 to November 2014. Skin moisture was measured using a CM 825 *Corneometer*: before general anaesthesia, after induction for anaesthesia, 15 min after surgical incision of the skin and after awakening the patient. Results: Results: Both in the test and control groups, statistically significant differences were found in subsequent skin moisture measurements. Pairwise comparisons indicate statistically significant differences between each pair of measurements. In both groups of patients, there is a clear decrease in skin moisture after induction of anaesthesia compared to the measurement performed before general anaesthesia. The skin moisture values are reduced in subsequent measurements, however the difference is much lower. Conclusion: 1 Measurement of skin moisture can be used as one of the parameters to assess perioperative stress and changes in body temperature during general anaesthesia, which indirectly determines the functioning of the hypothalamus. 2 By measuring the skin moisture it is possible to indirectly assess the hydration status of patients as well as the decrease of the metabolism during general anaesthesia. 3 The decrease in skin moisture during general anaesthesia is the effect of changes in central and peripheral thermoregulation.

M.P. Szczepanik, P.M. Wilkoł ek, Ł.R. Adamek, G. Kalisz, M. Goł y□ski, W. Sitkowski, I. Taszkun, **Transepidermal water loss and skin hydration in healthy cats and cats with non-flea non-food hypersensitivity dermatitis (NFNFHD)**, Pol J Vet Sci. 2019 Jun; 22(2): p. 237-242

Allergic skin diseases in cats are amongst the most prevalent dermatological conditions in this species. The objectives of this study were to evaluate different types of skin barrier measurements in healthy cats and cats with non-flea non-food hypersensitivity dermatitis (NFNFHD). 24 clinically healthy and 19 NFNFHD cats were included in this clinical trial. In each animal, the transepidermal water loss

(TEWL) and skin hydration (SH) were assessed on six clipped body sites by VapoMeter SWL 4605 and Corneometer® CM 825, respectively. Results of TEWL measurement were, significantly higher in one of the six examined body sites, namely on the lumbar area (p=0.0049). Furthermore, a statistically significant difference was found between the average TEWL values (p=0.019). Statistically notable differences were measured at least in one certain body site for SH: in the groin (p=0.02), where the values in the affected cats were lower than in the healthy individuals. These results may suggest that in NFNFHD cats transepidermal water loss is higher than in healthy cats. Skin hydration is, at least, in certain body sites, lower in atopic feline patients than in healthy individuals.

S.E. Eskandari, A. Firooz, M. Nassiri-Kashani, M.R. Jaafari, A. Javadi, A. Miramin Mohammadi, A. Khamesipour, **Safety Evaluation of Topical Application of Nano-Liposomal Form of Amphotericin B (SinaAmpholeish) on Healthy Volunteers: Phase I Clinical Trial**, Iran J Parasitol: Vol. 14, No. 2, Apr-Jun 2019, p.197-203

Background: We aimed to evaluate the safety of SinaAmpholeish in a doubleblind, randomized, phase 1 clinical trial in healthy human volunteers. Methods: The study was carried out in DermaLab of Center for Research and Training in Skin Diseases and Leprosy, Tehran University of Medical Sciences, Tehran, Iran in 2012. A topical Nano-liposomal formulation of 0.4% Amphotericin B was developed against Leishmania under trade name of SinaAmpholeish. In this randomized, double-blind, right-left, comparative, phase I clinical trial, in 2 steps; 7 and 20 healthy volunteers were recruited and applied SinaAmpholeish on the right and its vehicle on the left volar side of forearm, twice a day for one week or 3 times a day for two weeks. Seven biophysical skin parameters were measured in standard conditions before and 2 wk after application. Results: There was no adverse effect when SinaAmpholeish and its vehicle were used twice a day for seven days. However, when were used 3 times a day for two weeks, both SinaAmpholeish and its vehicle induced severe local skin reactions in 2 volunteers leading to discontinuation of application. Mild and temporary local reactions were observed in about half of the application sides and there was no significant difference between SinaAmpholeish and its vehicle. Conclusion: The new formulation is safe and worth to be tested in further phase 2 clinical trial and since there was no adverse effect with twice a day application it was decided to use SinaAmpholeish twice a day in phase 2 clinical trial.

M. Qassem, P. Kyriacou, **Review of Modern Techniques for the Assessment of Skin Hydration**, Cosmetics 2019, 6, 19

Skin hydration is a complex process that influences the physical and mechanical properties of skin. Various technologies have emerged over the years to assess this parameter, with the current standard being electrical probe-based instruments. Nevertheless, their inability to provide detailed information has prompted the use of sophisticated spectroscopic and imaging methodologies, which are capable of in-depth skin analysis that includes structural and composition details. Modern imaging and spectroscopic techniques have transformed skin research in the dermatological and cosmetics disciplines, and are now commonly employed in conjunction with traditional methods for comprehensive assessment of both healthy and pathological skin. This article reviews current techniques employed in measuring skin hydration, and gives an account on their principle of operation and applications in skin-related research.

A. Gimenez, O. Laporta, E. Canadas, M. Vincendet, R. Delgado, **Beautiful skin for a busy day,** Euro Cosmetics, 6-2019, p. 28-31

Leading an active lifestyle, being involved on many activities around the clock and having too little rest at night has a negative impact on the appearance of the skin, resulting in dullness, puffiness and dehydration as well as early appearance of aging signs. DAWNERGY™ peptide is an energizing and anti-aging active ingredient developed to help the skin awaken in the morning. It targets the protein JARID1a, a histone-modifying element that plays a role in the activation of the cell's biological clock and the regulation of circadian rhythms. As a result, the active ingredient can turn ahead the clock machinery to wake up skin cells in the early morning. It also acts on the mitochondria of skin cells, boosting energy production and with anti-aging effects.

M.P. Szczepanik, P.M. Wilkoł ek, Ł.R. Adamek, G. Kalisz, M. Goł y□ski, W. Sitkowski, I. Taszkun, **Transepidermal water loss and skin hydration in healthy cats and cats with non-flea non-food hypersensitivity dermatitis (NFNFHD)**, Pol J Vet Sci. 2019 Jun;22(2): p. 237-242

Allergic skin diseases in cats are amongst the most prevalent dermatological conditions in this species. The objectives of this study were to evaluate different types of skin barrier measurements in healthy cats and cats with non-flea non-food hypersensitivity dermatitis (NFNFHD). 24 clinically healthy and 19 NFNFHD cats were included in this clinical trial. In each animal, the transepidermal water loss

(TEWL) and skin hydration (SH) were assessed on six clipped body sites by VapoMeter SWL 4605 and Corneometer® CM 825, respectively. Results of TEWL measurement were , significantly higher in one of the six examined body sites, namely on the lumbar area (p=0.0049). Furthermore, a statistically significant difference was found between the average TEWL values (p=0.019). Statistically notable differences were measured at least in one certain body site for SH: in the groin (p=0.02), where the values in the affected cats were lower than in the healthy individuals. These results may suggest that in NFNFHD cats transepidermal water loss is higher than in healthy cats. Skin hydration is, at least, in certain body sites, lower in atopic feline patients than in healthy individuals.

I. Meyer, D. Stuhlmann, L. Garbe, G. Schmaus, **How to mimic probiotics circumventing hurdles of handling alive microorganisms?** Euro Cosmetics, 6-2019, p. 24-36

The concept of probiotics to improve gut health is well established in scientific literature and consumer's perception 1. However, benefits of microorganisms applied topically are much less described. According to Symrise's Consumer Market Insight research already 79% of consumers believe that the use of probiotics is beneficial for the skin health 2. 63% of consumers think that probiotics fits well to beauty care products.

F. Carlomagno, S. Zanzottera, **Empowering the Micro-World of the Skin Microbiota: Appraoches to Maintain Nature's Ideal Homeostasis for Betterment of Cosmetic Products,** Euro Cosmetics, 6-2019, p. 18-22

Skin is a complex environment where billions of microorganisms live providing a unique environment for each host, collectively referred to as the skin micriobiota. Skin microbiota is, therefore, the result of an equilibrium between protective and pathogens species of those microorganisms. However, this balance can be disrupted by stressors. The alteration of skin microbiota, known as dysbiosis, has been associated with skin disorders. This article is designed to demonstrate different approaches to the prevention of skin microbiota dysbiosis.

M. Kanlayavattanakul, N. Lourith, P. Chaikul, **Youth in Yields - Jasmine Rice Extract Whitens, Protects and Smooths Skin,** Cosmetics & Toiletries, Vol. 134, No, 5, May 2019, p. 26-33

The demand from consumers for natural products including cosmetics continues to inrease. Eco-friendly, organic and sustainable options are in the mainstream of this trend. Moreover, active phenolics derived from natural sources are playing an important role in the safety and efficacy of cosmetics. In relation, rice, or Oryza sativacv. Indica (Oryzeae), is well-known as the major staple in Asian cuisine. It has long been used in traditional Asian medicines as well as Italian remedies, including for aesthetic benefits for skin.

M. Nawaz, H.M. Shoaib Khan, N. Akhtar, T. Jamshed, R. Qaiser, H. Shoukat, M. Farooq, **Photodamage and Photoprotection: An *In vivo* Approach Using Noninvasive Probes**, Photochemistry and Photobiology 95(5), May 2019

Solar radiations trigger the physiological alteration in skin which progress toward photoaging. Sunscreens are known to be effective against the photodamaging effects of sunlight. The purpose of this study was to evaluate the extent to which aging signs caused by real-life sunlight exposure could be avoided by comparing various parameters between sun-exposed and sun-protected skin using noninvasive probes. Female volunteers (n = 11) after getting their consent were provided with marketed sunscreen product to apply onto their skin for 6 months. Measurements were scheduled every 15 days from the baseline reading for 6 months. Cutometer, Mexameter and Corneometer were used for evaluation of facial skin parameters. Clinical evaluations showed the effects of sunlight exposure on different skin parameters by comparing sun-protected and unprotected skin, where Gross elasticity (R2), Net elasticity (R5), Viscoelasticity (R6) and Biological elasticity (R7) showed insignificant results, while Hydration, Melanin and Erythema showed significant results. Sun-exposed skin presented 0.72%, 0.66%, 0.77%, 1.39%, 1.99%, 2.01% and 3.15% changes in R2, R5, R6 and R7, melanin, erythema and hydration, respectively, which were potentially prevented by sunscreen application. Premature aging is inhibited by following photoprotective regimen on routine basis, emphasizing the potential benefit of sunscreen against early aging signs.

H. Azaryan, **Comparative Aanalysis of the Effiencency of the Skin Functional Statement Correction Methodas in Women with 3rd Degree of Photo Aging**, Georgian Med News, 2019 May;(290): p. 100-107

The purpose of this study was to conduct a comparative analysis of the effectiveness of isolated and combined use of intradermal injections of bioreparant (hyaluronic acid modified with vitamin C, glutathione and cysteine) and platelet-rich autologous plasma on functional indicators of the face skin

of women with signs of 3-rd degree of photoaging. In this study, 120 women with 3-rd degree of photoaging were examined (mean age 34.5±1.54) and divided into 3 groups in accordance with the applied therapy method (isolated and combined use of plasma therapy and bio reparation). The study of the functional parameters of the skin, including corneometry (determination of the degree of epidermal hydration), sebometry (assessment of the sebum regulating function of the epidermis), cutometry (determination of the deformation and elastic properties of the skin), TEWL (determination of the transepidermal water loss level), mexametry (assessment of skin pigmentation) and pH-metry (assessment of the skin acid-base balance) was performed in all examined patients. The obtained results testify to various shifts in functional parameters, caused by the use of various therapeutic approaches. A comparative analysis of the data obtained has provided a basis for concluding that efficacy of the autologous plasma and modified hyaluronic acid combined implementation is significantly higher compared to the isolated application of these methods.

B. Mosna, J. Emond, K. Trudeau, M.-E. Leclaire, P. Simard, G. Nault, M.-H. Dufresne, K. Theberge, **Direct Connect – Dry mask vectors drive active delivery,** Cosmetics & Toiletries, Vol. 134, No, 5, May 2019, p. 48-57

Dry mask product forms are based on three fundamental technologies that have revolutionized the cosmetic industry in the past 10 to 15 years: cosmeto-textiles, active ingredient delivery systems and sheet masks. Combining and optimizing these innovations allows forsynergized benefits, and has emerged as a new way to apply skin care products for enhanced efficacy (see Figure 1a-b). This article considers what these technologies can lend to dry mask innovation and how to optimize them; the resulting dry masks were then put to the test in vitro and clinically.

M.M.F. Shirata, P.M.B.G.M Campos, **Eficácia clínica de formulações cométicas contendo tetraisopalmitato de ascorbila e peptídeos de arroz na pele jovem com fotoenvelhecimento,** Congresso Colamiqc, São Paulo, May 21-23, 2019

Considerando que a intensidade do fotoenvelhecimento está diretamente relacionada ao grau de exposição a radiação solar, a pele de pessoas ainda jovens pode apresentar alterações decorrentes do mesmo, como hiperpigmentações e redução da elasticidade da pele. Nesse contexto, o desenvolvimento de formulações fotoprotetoras e de formulações cosméticas contendo substâncias ativas com propriedades antioxidantes, hidratantes e com potencial para atuar na derme é fundamental para a prevenção e atenuação de tais alterações cutâneas. Para a comprovação dos beneficios dessas formulações na pele fotoenvelhecida, a avaliação da eficácia clinica por técnicas de biofisica e análise de imagem permite a análise objetiva de várias caracteristicas da pele além da correlação dos resultados obtidos por meio de diterentes parâmetros, o que possibilita a obtenção de resultados mais conclusivos.

M.E. Maldonador, D.B. Cobos Yanez, **Estudio in vivo de la capacidad hidratante de la pulpa de chirimoya (Annona chirimola) en un forma cosmética,** Congresso Colamiqc, São Paulo, May 21-23, 2019

La cosmética natural utiliza sustancias provenientes de especies vegetales en la formación de productos.

P. Geraldini, S.A. Monteiro e Silva, **Avaliação do potential hidratante de bases Corretivas facias por técnica de electroscopia de infravermelho de refectância total e conductância elétrica,** Congresso Colamiqc, São Paulo, May 21-23, 2019

Inúmeros resurcos tecnológicos de formação são propotos como estratégias de involção para atender um mercado cada vez mais exigente e critico.

T. Yazdanparast, K. Yazdani, P. Humbert, A. Khatami, S.A. Nasrollahi, H. Zartab, L. Izadi Firouzabadi, A. Firooz, **Biophysical and ultrasonographic changes in lichen planus compared with uninvolved skin**, International Journal of Women's Dermatology 5 (2019), p. 100–104

Background: Lichen planus (LP) is a chronic inflammatory disease of the skin. Currently, noninvasive techniques are used to evaluate biophysical properties of the skin in vivo. Objective: In this study, we aimed to evaluate skin biophysical properties in patients with LP and make a comparison between involved and uninvolved skin to provide a better understanding of the pathogenesis of LP. Methods: The stratum corneum hydration, transepidermal water loss, pH, erythema, melanin, sebum, friction, temperature, elasticity parameters (R0, R2, R5), and thickness and echo-density of the epidermis, dermis, and subepidermal low echogenic band were measured on lesions of classic LP in 21 patients and compared with the average of perilesional and symmetrical uninvolved skin (as control) with a paired t test. Results: Stratum corneum hydration (p = .002), sebum (p = .04), R0 (p = .005), and

echo-density of the dermis (p = .005) were significantly lower, but pH (p = .007), melanin content (p b .001), erythema (p b .001), temperature (p = .01), thickness of dermis (p = .02), and subepidermal low echogenic band (p b .001) were significantly higher in LP lesions. Conclusion: An evaluation of its biophysical, biomechanical, and ultrasonographic characteristics showed that the skin is an objective, noninvasive, and quantitative measuring tool that can be used to provide valuable information about skin changes in classic LP.

H. Zhong, C. Hong, Z. Han, S.J. Hwang, B. Kim, Z. Xu, J. Lee, K.H. Kim, M.H. Jin , C. Zou, **Erjingwan Extracts Exert Antiaging Effects of Skin through Activating Nrf2 and Inhibiting NF-κB**, Hindawi Evidence-Based Complementary and Alternative Medicine Volume 2019

In oriental medicine, mixtures of medical plants are always used as prescriptions for diseases. Natural products extracted from herbs have great potential antiaging effects. Previous studies and clinical trials have shown several critical functions of Erjingwan (EJW), such as nourishing Yin, kidney tonifying and aging-resistance. We assumed that EJW extracts exerted the antiaging effects through nourishing Yin. We examined the antiaging effects of EJW extracts on healthy human skin by noninvasive measurements. Ten we estimated the cell proliferation and DPPH radical scavenging rate. Western blotting analysis was used to determine the expressions of matrix metalloproteinase-1 (MMP-1), type I collagen (COL1A2), p-NF-κB, NF-κB, p-IκBκ, IκBκ, p-Nrf2, and HO-1. EJW extracts did not affect moisture content, TEWL and skin chroma, while it significantly improved skin glossiness and skin elasticity. Moreover, EJW extracts could downregulate the MMP1 expression and upregulate the COL1A2 expression. In addition, it promoted the Nrf2 pathway while it inhibited the NF-κB pathway. With the application of cream containing EJW extracts, the skin aging state was significantly improved. Furthermore, in vitro studies showed that EJW extracts contributed to the repair of skin after injury. Taken together, the antiaging effects of EJW extracts were related to its antioxidant and anti-inflammatory abilities.

H. Kim, M. Lee, S.Y. Park, Y.M. Kim, J. Han, E. Kim, **Age-related changes in lip morphological and physiological characteristics in Korean women,** Skin Res Technol. 2019; 25: p. 277-282

Objective: Age-related changes in lip morphological and physiological characteristics are key indices for estimating age based on facial features, as reported in many studies. Yet, a majority of studies have focused on Caucasian individuals, with few studies characterizing these changes in Asian female populations. Therefore, the aim of this study was to investigate lip morphological and physiological characteristics in a cohort of Korean women. Methods: A total of 114 volunteers participated in the study. Linear distances (length of philtrum, length of lip, width of lip, and lengths of lower and upper oral commissures), angle of the upper lip, 3D lip heights, and wrinkles were calculated and averaged for each age-group. We also measured lip color, hydration, trans-epidermal water loss (TEWL), and blood flow. Statistical analyses were performed using SPSS version 20.0 (significance level $P < 0.05$). Results: Length of the philtrum and lip width significantly increased with age while upper and lower lip lengths and length of the lower oral commissure significantly decreased with age. The angle of the upper lip tended to decrease with age, but this finding was no significance. Three-dimensional height of the upper lip, wrinkles, and TEWL also decreased with age while hydration increased with age. Finally, redness of the upper and lower lips as well as blood flow significantly decreased with age. Conclusion: Lips tended to shorten in length and widen with age, resulting in a thinner and longer appearance. With regard to physiological parameters, there were important age-related changes in hydration and lip color.

C. Cho, E. Cho, N. Kim, J. Shin, S. Woo, J. Lee, J. Lee, E. Lee, J. Ha, **Biophysical properties of striae rubra and striae alba in human skin: Comparison with normal skin,** Skin Res Technol. 2019; 25: p. 283-288

Background: Striae distensae are common dermal lesions that progress through two different stages: the striae rubra, which appears to be erythematous, and striae alba, which is characterized by a hypopigmented feature. The clinical characteristics between striae distensae stages and normal skin remain unknown. Objectives: We aimed to investigate the clinical characteristics according to stages of striae distensae in terms of their biophysical properties, using objective noninvasive measurements in comparison with adjacent normal skin. Methods: Sixty-one healthy female subjects with striae distensae were included as follows: 30 with striae rubra and 31 with striae alba on the abdomen and thighs. Hydration of the epidermis and dermis, skin color brightness, and Erythema index were measured. Skin elasticity, roughness, and dermal echo-density of the skin with striae distensae and adjacent normal skin were also measured. Results: Hydration of the epidermis and dermis showed no significant difference between the skin with striae distensae and normal skin. Brightness of skin with striae alba and normal skin was significantly higher than that of skin with striae rubra. Erythema index of skin with

striae rubra was significantly higher than that of skin with striae alba and normal skin. Skin with striae rubra and striae alba had a rougher surface than normal skin. Elasticity and dermal echo-density were significantly lower in striae distensae skin. Conclusions: Striae rubra and striae alba had similar biophysical properties in terms of skin hydration, elasticity, roughness, and dermal density. Moreover, striae distensae have less elasticity, more roughness, and lower dermal density than normal skin.

Y. Song, Y. Pan, H. Wang, Q. Liu, H. Zhao, **Mapping the face of young population in China: Influence of anatomical sites and gender on biophysical properties of facial skin,** Skin Res Technol. 2019; 25: p. 333-338

Background: Facial skin exhibits unique biophysical properties, which are influenced by anatomical regions and genders. The aim of this study was to comprehensively assess the regional and gender differences in facial skin biophysical parameters among Chinese population. Materials and Methods: The 12 skin biophysical parameters at four distinct facial skin sites (forehead, cheek, canthus and chin) were measured in a normal population (n = 212) with 42 males and 141 females aged 18-29 years living in Beijing. These parameters consisted of skin hydration, transepidermal water loss, sebum content, erythema/melanin indices, L*a*b* color, skin gloss and elasticity, all quantifying with non-invasive instruments. Results: The results demonstrated that the characteristics of the facial skin were significantly different between the regions and genders. The forehead had weaker skin barrier function but secreted the most sebum content, while the cheek was the driest and brightest region on the face. The canthus was the most hydrated area and the chin displayed higher sebum secretion, darker skin color and less elastic. The females showed more hydrated, less oil, lighter and more elastic facial skin compared with males. Conclusion: This study indicates that the young Chinese facial skin significantly varies with face anatomical regions and differs between genders.

H. Cortes, J.J. Magana, O.D. Reyes-Hernandez, N. Zacaula-Juarez, M. Gonzalez-Torres, W. Diaz-Beltran, M.C. Leon-Trejo, L. Carino-Calvo, G. Leyva-Gomez, M. Gonzalez-Del Carmen, **Non-invasive analysis of skin mechanical properties in patients with lamellar ichthyosis,** Skin Res Technol. 2019;25: p. 375-381

Background: Reliable methods for the quantitative evaluation of skin of patients with ichthyosis are critically needed. Our purpose was to evaluate the biomechanical parameters of skin in a cohort of patients with clinically diagnosed lamellar ichthyosis. Materialsand methods: Twenty-two patients diagnosed with lamellar ichthyosis were studied. Ichthyosis plaques located in upper distal limbs were assayed, and a nearby anatomical region without plaques from the same patient was employed as control.Skin biomechanical properties were studied through a non-invasive device (Cutometer ' ' MPA 580). Results: Ichthyosis plaques had higher values for the Uf-Ua parameter and lower values for the Ua/Uf, Ur/Ue, and Ur/Uf parameters. Adults and children showed similar statistical differences.There wereno significant differencesin data from men, whereas in women differences for all of the parameters were found. There was a significant decrease in the hydration and an increase in melanin index in the ichthyosis plaques. Conclusion: Our results suggest that analysis of parameters Uf-Ua, Ua/Uf, Ur/Ue, Ur/Uf, hydration, and melanin index could be employed for quantitative monitoring of skin. Therefore, the non-invasive method applied may be suitable for evaluation of skin of patients with ichthyosis in response to medical treatments.

S. Jung, J. Schleusener, F. Knorr, M. Kraft, G. Thiede, H. Richter, M.E. Darvin, S. Schanzer, S. Gallinger, U. Wegener, J. Lademann, **Influence of polyester spacer fabric, cotton, chloroprene rubber, and silicone on microclimatic and morphologic physiologic skin parameters in vivo,** Skin Res Technol. 2019;25: p. 389-398

Background: Skin diseases can develop upon disadvantageous microclimate in relation to skin contact with textiles of supporting devices.Increased temperature, moisture, mechanical fracture, pressure, and inflammatory processes often occur mutually and enhance each other in their adverse effects. Therefore, the early prevention of skin irritations by improvement of microclimatic properties of skin in contact with supporting devices is important. Materials and Methods: In this study, the microclimate under occlusion with polyester, cotton, chloroprene rubber, and silicone textiles, used for supporting devices, was analyzed by determining several characteristic physiologic skin parameters in vivo, including temperature, moisture, and transepidermal water loss (TEWL). This is achieved by comparing a miniaturized in vivo detection device with several established optical and sensory methods in vivo. Results: A highly significant TEWL decrease was found after polyester, chloroprene rubber, and silicone application. The application of all materials showed highly significant decrease in skin surface temperature, with chloroprene rubber showing the lowest. Similarly, all materials showed highly significant increase in relative moisture, where the highest increase was found for chloroprene rubber and silicone and the lowest increase for cotton. The cutaneous carotenoid concentration of chloroprene

rubber, silicone, and polyester decreased. A manipulation of the surface structure of the stratum corneum was recognized for all materials except for cotton by laser scanning microscopy. Conclusion: The skin parameters temperature, relative moisture, antioxidant status, and TEWL can effectively characterize the microclimatic environment during occlusion with medical supporting materials. These parameters could potentially be used to develop standardized testing procedures for material evaluation.

S.-I. Jang, J. Han, M.I. Lee, J. Seo, B.-J. Kim, E. Kim, **A study of skin characteristics according to humidity during sleep**, Skin Res Technol. 2019; 25: p. 456-460

Introduction: During sleep, the skin is exposed to various environments for example low or high humidity and temperature. And the average of 7-8 hours of sleeping in those situations can affect skin condition. Therefore, the objective of this study was to determine skin characteristics according to humidity during sleep. Method: Eleven healthy women in their ages of 20s and 30s were controlled. They slept more than 7 hours at lower than 30% relative humidity (RH) environment on the first day and at higher than 70% on the second day. The room temperature was controlled to 22 ± 5°C. Three measurement points were (a) before for sleep (after wash), (b) after 7 hours sleep (morning), and (c) after wash. Skin hydration, sebum secretion, and trans-epidermal water loss (TEWL) were measured. The statistical significance was determined at $P < 0.05$. Result: After 7 hours of sleep in 30% RH condition, skin hydration decreased by 24.23% significantly, but there was no significant difference after sleeping in 70% RH. The sebum level was increased after sleep at 30% RH. The TEWL did not show differences according to the humidity during sleep but significantly increased after facial cleansing in 30% RH sleeping condition. Discussion: In this study, we confirmed that the changes in skin characteristics may be affected by humidity during sleep. When sleeping in dry environment, skin hydration decreases but the amount of sebum increases to compensate for skin dryness. Therefore, this study might suggest how to care the skin before sleep depending on the room humidity.

C. Cho, E. Cho, N. Kim, J. Shin, S. Woo, E. Lee, J. Hwang, J. Ha, **Age-related biophysical changes of the epidermal and dermal skin in Korean women,** Skin Res Technol. 2019; 25: p. 504-511

Introduction: The clinical characteristics of skin were investigated to study the interrelationship and changes in the biophysical properties of the epidermal and dermal layers associated with aging using noninvasive methods. Methods: Our study included 100 healthy women aged between the early 20s and late 60s. Biophysical characteristics of skin such as color (brightness and spots), transparency, wrinkle on crow's feet, elasticity, hydration, sebum content, glossiness, and transepidermal water loss measured under controlled conditions. Results: This study performed in a Korean population demonstrated that aging significantly affects human skin in terms of parameters such as wrinkles, skin color, elasticity, and epidermal hydration. Age-related changes in skin hydration showed varying patterns between the epidermis and dermis. Skin color showed heterogeneous characteristics between the upper and lower epidermal layers associated with aging. Skin elasticity and wrinkles were observed to show and inversely proportional relationship in the early 40s. Conclusions: We confirmed the significant influence of aging on the biophysical properties of skin and determined the distinct age-related biophysical changes in the epidermal and dermal layers of skin using noninvasive method. This study indicates the need for further research to investigate the distinctive age-related changes in characteristics of the epidermal and dermal layers of human skin.

H. Cortés, N. Mendoza-Muñoz, F.A. Galván-Gil, J.J. Magaña, E. Lima, M. González-Torres, G. Leyva-Gómez, **Comprehensive mapping of human body skin hydration: A pilot study**, Skin Res Technol. 2019; 25: p. 187-193

Background: Previous studies analyzed a series of representative anatomical regions in the human body; however, there is a wide structural and cellular variability in the constitution of the skin. Our objective was to perform a comprehensive assessment of human skin hydration throughout the largest possible area. Materials and Methods: Hydration was registered by Corneometer® CM825 probe in 23 anatomical regions of five healthy men. Each zone was analyzed by 2-cm segments in the supine, prone, and lateral positions. A total of 7863 measurements were registered. Results: Differences in the degree of hydration among the prone, supine, and lateral regions were observed. The chest and back showed a pattern of increased hydration toward the neck area. Higher levels of hydration were evidenced in the proximal areas and in the regions near the elbow and knee. The regions of greater mechanical wear and with greater exposure to the sun exhibited a lower degree of hydration. Conclusion: The human skin exhibited hydration patterns influenced by anatomical function and the degree of sun exposure. Detailed information of the hydration patterns could serve as reference for the design of topical products, as an indicator of their effectiveness, and for the monitoring of skin pathologies.

H. Cortés, J.J. Magaña, O.D.Reyes-Hernández, N. Zacaula-Juárez, M. González-Torres, W. Diaz-Beltrán, M.C. León-Trejo, L. Cariño-Calvo, G. Leyva-Gómez, M. González-Del Carmen, **Non-invasive analysis of skin mechanical properties in patients with lamellar ichthyosis**, Skin Res Technol. 2019; 25: p. 375-381

Background: Reliable methods for the quantitative evaluation of skin of patients with ichthyosis are critically needed. Our purpose was to evaluate the biomechanical parameters of skin in a cohort of patients with clinically diagnosed lamellar ichthyosis. Materials and methods: Twenty-two patients diagnosed with lamellar ichthyosis were studied. Ichthyosis plaques located in upper distal limbs were assayed, and a nearby anatomical region without plaques from the same patient was employed as control. Skin biomechanical properties were studied through a non-invasive device (Cutometer® MPA 580). Results: Ichthyosis plaques had higher values for the Uf-Ua parameter and lower values for the Ua/Uf, Ur/Ue, and Ur/Uf parameters. Adults and children showed similar statistical differences. There were no significant differences in data from men, whereas in women differences for all of the parameters were found. There was a significant decrease in the hydration and an increase in melanin index in the ichthyosis plaques. Conclusion: Our results suggest that analysis of parameters Uf-Ua, Ua/Uf, Ur/Ue, Ur/Uf, hydration, and melanin index could be employed for quantitative monitoring of skin. Therefore, the non-invasive method applied may be suitable for evaluation of skin of patients with ichthyosis in response to medical treatments.

***H.-C. Lee, S.-Y. Park*, Preliminary Comparison of the Efficacy and Safety of Needle-Embedding Therapy with Acupuncture for Atopic Dermatitis Patients,** Evidence-Based Complementary and Alternative Medicine, Volume 2019

Objectives: Among Traditional Korean Medicine approaches, needle-embedding therapy is used in various fields and consistently studied; however, there have been no clinical studies of the treatment of adult atopic dermatitis (AD) with needle-embedding therapy. Tus, there is a need to investigate the effects of needle-embedding therapy for treatment of AD. Tis study was performed to identify possible effects of needle-embedding therapy at Quchi acupoint (LI11) on AD and to compare these effects with those of acupuncture therapy. Methods: A total of 14 participants were enrolled in this study. Participants received acupuncture or needle embedding treatments for 4 weeks and then were followed for an additional 2 weeks because of safety assessment. The participants were divided into 2 groups: the acupuncture group, receiving treatment at Quchi acupoint (LI11) 3 times per week, and the needleembedding group, receiving treatment at Quchi acupoint (LI11) once per week. Te groups were compared on the basis of the SCORing Atopic Dermatitis (SCORAD) index, Transepidermal Water Loss (TEWL), skin hydration, and Dermatology Life Quality Index (DLQI) at baseline and 1 week after treatment was completed (5th week). Results: The SCORAD index, TEWL, Skin hydration, and DLQI at 1 week after treatment were significantly improved in both groups ($p<0.05$). However, there were no significant differences between the acupuncture and needle-embedding groups in any of the main evaluation indices ($p>0.05$). The study participants received a total of 84 acupuncture treatments or 28 needle-embedding treatments. No adverse events occurred during the study period. Conclusions: Based on changes in the SCORAD index, TEWL, skin hydration, and DLQI value, we found that both needle-embedding and acupuncture treatments at the Quchi acupoint (LI11) were effective in decreasing the symptoms of AD and exhibited similar therapeutic effects, which suggests that needle-embedding treatment may be more clinically convenient than acupuncture, with longer effects and fewer treatments.

***T. Westphal, W. Konschake, H. Haase, M. Vollmer, M. Jünger, H. Riebe,* Medical compression stockings on the skin moisture in patients with chronic venous disease, Vasa** (2019), 48, p. 502–508

Background: Because of side effects like skin dryness and consecutive symptoms like itching the therapy of chronic venous insufficiency (CVI) with medical compression stockings (MCS) can lead to a diminished wear comfort and restricted compliance. Compression stockings with integrated skin care may have a positive influence on the skin hydration and moreover a positive effect on patients compliance. Patients and methods: In this monocentric, randomized prospective, controlled trial a below knee conventional MCS was compared to a medical compression stocking with integrated skin care (MCS-SC), interface pressure range 23–32 mmHg. Participants: 50 patients with CVI. Primary outcome: skin hydration. Secondary outcomes: transepidermal water loss, skin roughness, leg volume, interface pressure and questionnaires about quality of life and wear comfort. Results: In patients wearing MCS the skin moisture decreased ($p = 0.021$) and the skin roughness increased significantly ($p = 0.001$), whereas in patients wearing the MCS-SC skin moisture and skin roughness changed only slightly (n.s.). These protective effects of MCS-SC compared to MCS were most common in patients with CVI at stage 3 ($p = 0.046$), in male patients ($p = 0.013$) and patients with initial dry skin ($p = 0.034$). Both MCS reduced

lower leg volume, MCS by 80 ml ($p < 0.001$) and MCS-SC by 60 ml ($p < 0.001$), both MCS improved quality of life: leg complaints ($p = 0.0003$); functional status ($p = 0.010$), well-being and life satisfaction ($p = 0.030$). Wear comfort: In terms of tightness, constriction in bond area and strenuous donning the MCS-SC was assessed significantly more comfortable than MCS ($p < 0.001$). Conclusions: MCS-SC revealed to be superior to MCS with regard to skin moisture, particularly in patients with low skin humidity, in male patients and in patients with C3, varicose veins accompanied by edema.

A.-R. Im, I.W. Park, K.-Y. Ji, J.Y. Lee, K.M. Kim, M.K. Na, S.W. Chae, **Protective effects of Oxya chinensis sinuosa Mishchenko against ultraviolet B-induced photodamage in hairless mice**, BMC Complementary and Alternative Medicine (2019) 19:286

Background: Edible insects, including Oxya chinensis sinuosa Mishchenko (Oc), which is consumed as food in Asia, are considered as a human food shortage alternative, and also as a preventive measure against environmental destruction. Ultraviolet B (UVB) irradiation, which causes skin photodamage, is considered as an extrinsic skin aging factor. It reduces skin hydration, and increases wrinkle formation and reactive oxygen species (ROS) and inflammatory cytokine expression. Thus, the objective of this study was to investigate the anti-aging effects of an ethanol extract of Oc (Oc.Ex). Methods: A UVB-irradiated hairless mouse model was used to examine relevant changes in skin hydration, wrinkle formation, and skin epidermal thickness. Also, antioxidant markers such as superoxide dismutase (SOD) and catalase (CAT) were analyzed, and Oc. Ex skin protective effects against UVB irradiation-induced photoaging were examined by determining the levels of skin hydration factors. Results: Oc.Ex improved epidermal barrier dysfunctions such as increased transepidermal water loss (TEWL) and capacitance reduction in UVB-irradiated mice. It upregulated skin hydration-related markers, including hyaluronic acid (HA), transforming growth factor (TGF)-□, and pro-collagen, in UVB-irradiated mice, compared with the vehicle control group. It also reduced UVB-induced wrinkle formation, collagen degradation, and epidermal thickness. Additionally, it remarkably suppressed the increased expression of matrix metalloproteinases (MMPs), and restored the activity of SOD and CAT in UVB-irradiated mice, compared with the vehicle control group. Furthermore, Oc. Ex treatment downregulated the production of inflammatory cytokines and phosphorylation of the mitogen-activated protein kinases (MAPKs) signaling pathway activated by UVB irradiation. Conclusion: This study revealed that Oc. Ex reduced skin thickness and the degradation of collagen fibers by increasing hydration markers and collagen-regulating factors in the skin of UVB-irradiated mice. It also inhibited UVB-induced antioxidant enzyme activity and inflammatory cytokine expression via MAPK signaling downregulation, suggesting that it prevents UVB-induced skin damage and photoaging, and has potential for clinical development in skin disease treatment.

S.J. Kim, J. Bae, S.E. Lee, J.B. Lee, C.H. Park, D.H. Lim, M. S. Park, J. Ha, **A novel in vivo test method for evaluating the infrared radiation protection provided by sunscreen products,** Skin Res Technol., 2019 ;25, p. 890-895

Background: Infrared radiation (IR) exposure generates reactive oxygen species and induces matrix metalloproteinase-1expression in human skin. Moreover, while not as acute as ultraviolet radiation, repeated infrared irradiation can result in the photoaging of skin. Broad-spectrum sunscreens can protect skin from IR, but no human in vivo test methods for the evaluation of sunscreens' IR protection effect have been developed. We aimed to develop such a method. Materials and Methods: We included 155 Korean subjects in our three-part clinical study. The IR reflectance of subjects' skin was measured using a benchtop model of an IR light source and a reflectance measuring probe. We measured the IR reflectance in relation to skin color and hydration level to set up our experimental conditions. We then calculated the infrared protection factors (IPFs) of cosmetic emulsions as the IR reflectance ratio between cosmetic sunscreen-applied skin and non-sunscreen-applied skin and assessed the relationship between IPFs and the amount of sunscreen ingredients. Finally, this method was validated using several commercial sunscreen cosmfetics. Results: Skin color and hydration level did not influence the IR reflectance of subjects' skin. The IPFs of cosmetic sunscreens showed a positive correlation with the amount of inorganic sunscreen ingredients. Conclusion:In this study, we developed a simple, fast, and ethically acceptable human in vivo test method for evaluating the IPFs of cosmetic sunscreens.

H. Dobrev, **Value of non-invasive bioengineering investigations of the human skin in vivo,** Dissertation in Dermatology and Venerology at the University of Plodiv, 2019, Bulgaria

The skin is the largest organ of the human body. It has a surface area of about 2 m^2 and a weight of about 16% of the body weight. Skin is a great visual field. Most of the changes that occur in it are visible and accessible to dermatologists. For centuries, the dermatologist's eyes and fingers have been his main diagnostic tools. Old physicians are known to describe the rash elements with great love,

diligence and methodicality, especially with regard to morphological details. Today, this descriptive phase in the evolution of dermatology has lost its dominance. According to Prof. J. Serup, "*The dermatologist's eyes and hands are already becoming archaic diagnostic tools.*" With the introduction of modern skin bioengineering methods, there has been a transition from the "visible" to the "invisible". From the "visual" field, dermatology is increasingly becoming an "instrumental" field. The advantage of the new research methods created is that they enable the detection of invisible changes in skin functions, as well as their objective and quantitative measurement. This dissertation is devoted to the new methods of skin functional diagnostics. It illustrates the practical application of some of them in the field of dermatology and cosmetic science based on the experience of the sector of "Functional diagnostics of the skin" at the Department of Dermatology and Venereology, University Hospital "St. George", Plovdiv, Bulgaria. The literature review part provides an overview of current bioengineering methods for functional skin diagnostics. The apparatus used to carry out the present work is described in detail. Additionally, two little-known aspects of skin bioengineering research are presented - protocol and research ethics. Data on Bulgarian experience in the field of skin functional diagnostics have also been reported.

R. Voegeli, J. Gierschendorf, B. Summers, A.V. Rawlings, **Facial skin mapping: from single point bio-instrumental evaluation to continuous visualization of skin hydration, barrier function, skin surface pH, and sebum in different ethnic skin types**, International Journal of Cosmetic Science, 2019, p. 1–14

Dry skin is one of the most important concerns of consumers worldwide. Despite huge efforts over several decades, the personal care industry still does not offer a perfect solution to satisfy the unmet needs of consumers for moisturising treatments in different ethnic groups. The paucity of data for the underlying cellular and biochemical problems in, and the effects of moisturisers on photodamaged facial skin may partly explain this. Mainly, single point measurements are used to understand the effects of products on skin physiology even on surrogate skin sites such as the non-photodamaged volar forearm. Some groups have developed discontinuous facial maps of skin biophysical properties, however, in 2014 a continuous facial analysis of bio-instrumental evaluations was developed using a heat map approach. These maps enabled a continuous visualization of features that not only revealed an unexpected complexity of facial skin but also indicated that use of surrogate skin sites for facial skin is inappropriate. We have demonstrated that remarkable gradients of skin hydration, TEWL, skin surface pH and sebum exist within short distances across the face and the gradients are distinctive among different ethnic groups. In addition, these studies have demonstrated that darkly-pigmented individuals do not necessarily have a better skin barrier function than their less-pigmented counterparts and that Caucasians have a lower facial skin surface pH compared with more pigmented subjects. Overall, there are no correlations between capacitance, TEWL and skin surface pH including individual topology angle values. Novel 3D camera approaches have also been used to facilitate a more precise assignment of measurement sites and visualisation. The 3D facial colour mappings illustrated precisely the local moisturising effects of a moisturising cream. There were subtle ethnic differences in efficacy that may be related to underlying skin biochemistry and/ or ethnic differences in product application. A placebo-controlled study using conductance measurements in Chinese subjects is also reported. Finally, a new whole face statistical approach has been taken to prove differences in skin parameters but also of moisturiser treatment that adds further to our understanding of the ethnic differences in skin physiology and product application. This paper reviews the background of the development and application of this methodology.

E. Guaitolini, A. Cavezzi, S. Cocchi, R. Colucci, S.U. Urso, V. Quinzi, **Randomized, Placebo-controlled Study of a Nutraceutical Based on Hyaluronic Acid, L-carnosine, and Methylsulfonylmethane in Facial Skin Aesthetics and Well-being**, JCAD Journal of Clinical and Aesthetic Dermatology, April 2019, Volume 12, Number 4

Objective: The purpose of this study was to evaluate the e- cacy and safety of a multicomponent nutraceutical (MCN) on facial skin. Methods: A randomized, placebo-controlled, single-blind trial was conducted involving two groups of female subjects a ected by facial skin photoaging. For two months, volunteers took a daily dose of MCN containing 200mg of hyaluronic acid, 500mg of L-carnosine, and 400mg of methylsulfonylmethane, or a placebo. At Day 0 (T0) and Day 60 (T60), face skin hydration, elasticity, and sebometry were measured with an instrumental skin tester, and digital images of facial wrinkles were scored. A subject-based quali-quantitative assessment evaluating satisfaction/quality of life was performed at T60. Results: The MCN and placebo groups each included 25 volunteers (mean ages: 49.3 and 47.8 years, respectively). After 60 days of MCN intake, glabella skin hydration and elasticity improved by 15.2 percent and 22.6 percent, respectively (p=0.03; p=0.004), glabella sebaceous secretion decreased by 24.2 percent (p=0.01), skin hydration and elasticity of the periocular

area increased by 12.6 percent and 15.9 percent, respectively, and skin hydration and elasticity of the oral commissural area increased by 17.6 percent and 16 percent, respectively ($p<0.001$). No significant variation occurred in the placebo group. Wrinkle depth improved slightly in the MCN group ($p=0.043$ in the periocular area) but not in the placebo group. A slight improvement in joint pain and mucosae/hair appearance was reported in the questionnaire in the MCN group only. Conclusions: Our results suggest that MCN is safe and effective for facial skin aesthetics and well-being.

A. Charpentier, **Soothing effect dedicated to sensitive skin,** PERSONAL CARE EUROPE, April 2019, p. 76-77

The skin plays multiple roles of protection, perception, immunity, regulation of blood and lymphatic reservoir for the whole body. Thanks to several mechanical, chemical or biological (sebum, biofilm...) reactions, the skin ensures its integrity according to the various endogenous or exogenous environmental variations. Today, the increase in the fragile phenomena of skin is a major issue in the development of dermo-cosmetics.

S. Pain, F. Trombini, A. Courtois, V. André, **Efficiently fighting oily skin - Bixa orellana seed extract keeps sebum production at bay**, H&PC Today, Vol. 14(2) March/April 2019

Sebaceous glands in the skin help to presen/e healthy skin by producing sebum, an oil-like substance that, among other functions, waterproofs and lubricates the skin and hair. However, overproduction of sebum can cause seborrhea, better known as oily skin. 35% of the world population suffer from this phenomenon and its associated clinical signs: shininess, enlarged pores, comedones and blemishes. BASF's new active ingredient - an extract from *Bixa orellana* seeds- reduces sebum production by restricting the proliferation of sebocytes, without dehydrating the skin. In addition, it blocks the signal that induces hyperkeratinisation, helping to refine pores. Because it keeps microbiome virulence at bay, the agent also aids in reducing skin blemishes.

S. Brink, Y.U. Wang, B. Blum, M. Baccam, A. Varbanov, V. Boeh, Y. Wang, J. Christman, C.E. Cella, M.B. Johnson, M.A. Farage, **Clinical Skin Mildness Evaluations of Direct and Indirect Exposure to Two Commercial Laundry Detergents with Markedly Different pH Designed for Sensitive Skin Using a Hand-Laundering Model,** J Cosmet Sci., 2019 Mar/Apr; 70(2): p. 89-105

The skin mildness of two commercial laundry detergents designed for sensitive skin, Tide Free and Gentle® (TFG) versus All Free Clear® (AFC), was compared in clinical studies, and the role of marked product pH differences was assessed. Two double-blind randomized human studies were conducted. Study 1 was a 1-day repeat insult forearm test, in which four exposures to solutions of TFG or AFC were performed to mimic direct exposure to dilute detergent during hand-laundering. Corneometer, erythema and dryness grading, transepidermal water loss (TEWL), and skin surface pH evaluations were carried out. Study 2 was a 21-day arm patch test of fabrics washed with TFG or AFC to mimic indirect contact to skin of detergent residues, with erythema grading. Separately, pH and reserve alkalinity were determined for each detergent. In Study 1, TFG was significantly milder than AFC in all measures except TEWL (no significant difference). In Study 2, the detergents were approximately equivalent in erythema grading. Analysis showed AFC was substantially more alkaline (pH 10.8) than TFG (pH 7.9) with higher reserve alkalinity. TFG was significantly milder than AFC in Study 1, which may be due in part to the increased skin surface pH seen with direct exposure to AFC's high alkalinity.

L.-Y. Lin, S.-C. Chiou, S.-H. Wang, C.-C. Chi, **Effects of Facial Threading on Female Skin Texture: A Prospective Trial with Physiological Parameters and Sense Assessment**, Evidence-Based Complementary and Alternative Medicine, Volume 2019

Background: Facial threading is a common tradition in Taiwan, Southeast Asia (called "Bande Abru"), Middle East (called "Khite"), and Egypt (called "Fatlah"). In addition to the ability to remove facial vellus hairs, facial threading can make the skin fairer and shinier. However, there has been a lack of hard evidence regarding the effects of facial threading on the skin. Objective: To examine the effects of facial threading on skin physiology as well as visual and touch senses by using scientific instruments. Methods. A total of 80 participants were allocated to receive facial threading, application of powder only, exfoliation, and shaving. Prior to and following the assigned treatment, a noninvasive skin condition detection device was used to measure skin coarseness, hydration, melanin, and erythema index. Sense assessment and image analysis were also performed. Results: This study showed that facial threading was found to improve the facial skin roughness indices with significant decreases by 30.4%, 35.9%, and 16.7%, respectively, for the participants' forehead, cheek, and mouth corner skin. No significant adverse changes in moisture levels and skin pigment indices were detected. In addition, there was improvement in subjects' touch sense of their skin and feelings about skin color. Conclusions. Traditional facial

threading can remove facial vellus hairs and lower skin roughness levels, thereby improving the skin texture. However, pricking sensation appeared during the facial threading process, which might causeconcerns about irritation.

P. Suchonwanit, K. Triyangkulsri, M. Ploydaeng, K. Leerunyakul, **Assessing Biophysical and Physiological Profiles of Scalp Seborrheic Dermatitis in the Thai Population**, BioMed Research International, Volume 2019

Background: Scalp seborrheic dermatitis (SD) is a common and chronic inflammatory skin disease which tends to recur over time. By measuring biophysical properties of the stratum corneum, many studies report abnormal biophysical profiles and their association in various dermatologic diseases. The aim of the study is to analyze the biophysical properties and skin barrier defects of scalp SD compared to healthy controls. Materials and Methods: Tis study is a cross-sectional study assessing the correlation of various biophysical and physiological profiles in scalp SD. Forty-two Tai participants with scalp SD were enrolled in the study and 40 healthy participants were also enrolled as the control group. Both SD and control group were subjected to a one-time biophysical and physiological properties' measurement of transepidermal water loss (TEWL), stratum corneum hydration (SCH), skin surface pH, skin surface lipid, and skin roughness. Results: The mean TEWL of lesional skin of SD cases were significantly higher than those of control group ($P<0.05$). Relating to high mean TEWL, the mean SCH was found to be significantly lower in SD cases ($P<0.05$). Skin surface lipid was also found to be significantly higher in SD group ($P<0.05$). However, there were no differences in skin surface pH ($P=0.104$) and roughness ($P=0.308$) between the two groups. Pairwise comparison of each subgroup found that moderate and severe SD demonstrated significantly higher mean skin surface lipid than that of control group ($P<0.05$). Conclusion: Scalp SD may be associated with seborrhea in Tai population. Monitoring of SCH, TEWL, and skin surface lipid could be helpful in assessing severity and evaluating the treatment outcome in patients with scalp SD.

D.-M. Ding, Y. Tu, M.-Q. Man, W.-J. Wu, F.-Y. Lu, X. Li, Y. Li, J.-T. Yang, Y.-M. Jin, C.-Y. Yang, L. He, **Association between lactic acid sting test scores, self-assessed sensitive skin scores and biophysical properties in Chinese females**, International Journal of Cosmetic Science, 2019, 41, p. 398–404

Background: Lactic acid sting test (LAST) is a classical method to identify sensitive skin. However, some subjects with self-perceived sensitive skin are negative for LAST. Objective: To determine whether LAST scores are associated with specific phenotype of sensitive skin. METHODS: A total of 292 subjects with self-perceived sensitive skin were enrolled in this study. The Sensitive Scale was used to evaluate the severity of burning, stinging, itching, tautness, erythema and scaling based on 0–10 scale scores. In addition to the assessment of LAST scores, epidermal biophysical properties were measured using an MPA system. Results: The Sensitive Scale scores of stinging, itching, tautness and scaling were significantly different between the LAST-positive and -negative groups. However, burning and erythema scores did not differ between the LAST-positive and -negative groups. LAST scores were positively correlated with the Sensitive Scale scores for stinging, itching, tautness and scaling, but not for burning and erythema scores. Moreover, LAST scores negatively correlated with stratum corneum hydration, but positively with transepidermal water loss (TEWL) rates. CONCLUSIONS: Lactic acid sting test scores positively correlated with TEWL rates. LAST scores could be used to identify subjects with sensitive skin characterized mainly by stinging and itching, but not those mainly by burning and erythema.

F. Barone, S. Bashey, F.W. Woodin Jr., **Clinical Evidence of Dermal and Epidermal Restructuring from a Biologically Active Growth Factor Serum for Skin Rejuvenation,** J Drugs Dermatol. 2019 Mar 1;18(3): p. 290-295

Background: Topical skin care products use various technologies to promote skin repair. Growth factors of human, animal, and plant-derived origins have clinically demonstrated the ability to repair skin by promoting collagen, elastin, and glycosaminoglycan (GAG) production to reconstruct and reinforce skin's extracellular matrix (ECM). Human skin cells respond to instructions from highly specialized proteins or hormones referred to as growth factors. These growth factors initiate cellular communication that instigates cellular replication, production, or proliferation. The production of elastin and collagen dermal connective fibers slows, and, with age, the regenerative rates of GAGs become delayed. These biological issues can be exacerbated by extrinsic factors such as sun exposure, pollutants, and various other factors. Growth factor-based products have become important topical treatment modalities for addressing signs of skin aging such as fine lines, deep wrinkles, dryness, laxity, and textural irregularities. Objective: The aim of a 12-week clinical trial of a growth factor composition was to assess its effectiveness at restoring skin health through dermal and epidermal restructuring of aged skin.

Results: Data from expert grading, and from corneometer and cutometer evaluations, as well as 2D and 3D image analysis, reflected significant improvements in facial skin appearance, firmness, elasticity, and hydration. Elements that improved most dramatically in investigators' assessments included radiance, firmness, tactile elasticity, textural smoothness, overall appearance, and crow's feet. Ultrasound imaging showed continual increases in dermal and epidermal restructuring throughout the study duration. Subject assessments reflected positive product tolerability and positive perception across a broad range of efficacy attributes through 12 weeks of usage. Conclusion: The results verified the ability of a multi-modal plant and enzymatically derived growth factor-based product to achieve skin rejuvenation improvements by stimulating dermal ECM and fibrous tissue regeneration to reduce fine lines and coarse wrinkles, and improve skin firmness and elasticity, while restoring skin to a properly hydrated state.

A. Fahr, P. van Hoogevest, **Phospholipide als Trendsetter**, Dermokosmetik, April 2019

In Kosmetikprodukten sind Phospholipide als natürliche Inhaltssto\e und wegen ihrer multifunktionalen Eigenschaften beliebt. Sie können in Suspensionen, Emulsionen, Liposomen und Mischmizellen eingesetzt werden. Phospholipide sind aber nicht nur vorteilhafte Hilfsstoffe, die die Aufnahme von Wirkstoffen in die Haut verbessern, sondern haben sehr nützliche Eigene\ekte.

C. Uhl, **Efficacy testing of microbiome skin care**, PERSONAL CARE EUROPE, April 2019, p. 41-45; PERSONAL CARE ASIA, May 2019, p. 51-55, косметолог 2 [94] 2019 (in Ukranian), Cosmetics & Toiletries Brasil, Vol. 31, Mai-June, 2019, p. 22-27 (in Portuguese)

For years now, we have accepted the idea that we can nourish our intestinal tract with dedicated bacterial ingredients from food supplements and thereby improve our general health. Books written on this subject have become bestsellers. But why should we focus only on our intestinal tract? There are so many different microbial communities that can be found on and inside our body. Especially the colonization of the skin being our largest organ, tangible to the hands, visible to the eye, and in constant contact with the outside environment has moved to the front of cosmetic research. The idea of being a complex ecosystem is adding to the existing trend of personalised cosmetics, and will confirm the customer in their feeling of uniqueness.

В течение многих лет мы принимали идею о том, что можем обогащать наш кишечный тракт специальными бактериальными ингредиентами из пищевых добавок и тем самым улучшать общее состояние здоровья. Книги, написанные на эту тему, стали бестселлерами. Но можем ли мы сосредотачиваться только на нашем кишечном тракте?

O microbioma cutâneo é a população de microrganismos que habita a pele. Neste trabalho, o autor apresenta uma breve descrição da importância da atividade do microbioma e dos meios analíticos instrumentais para medir a eficácia de produtos cosméticos de interesse do microbioma cutâneo.

A. Kilic, C. Masur, H. Reich, U. Knie, D. Dähnhardt, S. Dähnhardt-Pfeiffer, C. Abels, **Skin acidification with a water-in-oil emulsion (pH 4) restores disrupted epidermal barrier and improves structure of lipid lamellae in the elderly**, Journal of Dermatology 2019; 46: p. 457–465

The pH of the skin surface increases with age and thus reduces epidermal barrier function. Aged skin needs appropriate skin care to counterbalance age-related pH increase and improve barrier function. This confirmatory randomized study investigated the efficacy of water-in-oil (w/o) emulsions with either pH 4 or pH 5.8 in 20 elderly subjects after 4 weeks of treatment. After the treatment, the skin was challenged with a sodium dodecyl sulphate (SDS) solution in order to analyze barrier protection properties of both formulations. The pH 4 w/o emulsion resulted in a significantly lower skin pH compared with the pH 5.8 w/o emulsion and an improved skin hydration after 4-week treatment. Further, the pH 4 emulsion led to more pronounced improvements in length of intercellular lipid lamellae, lamellar organization as well as lipid levels than the pH 5.8 emulsion. Following SDS-induced barrier damage to the skin, the pH of all test areas increased, but the area treated with the pH 4 emulsion showed the lowest increase compared with baseline. In addition, even after the SDS challenge the skin area treated with the pH 4 emulsion still maintained a significantly increased length of intercellular lipid lamellae compared with the beginning of the study. This study provides evidence that topical application of a w/o emulsion with pH 4 reacidifies the skin in elderly and has beneficial effects on skin moisturization, regeneration of lipid lamellae and lipid content. Application of a pH 4 emulsion can improve the epidermal barrier as well as the stratum corneum organization in aged skin.

S. Lim, J. Shin, Y. Cho, K.-P. Kim, **Dietary Patterns Associated with Sebum Content, Skin Hydration and pH, and Their Sex-Dependent Differences in Healthy Korean Adults**, Nutrients 2019, 11, 619

Sebum content, skin hydration and acidic skin pH are major factors in maintaining skin health. Various nutrients are reported to influence skin health, but the effect of dietary patterns (DPs) on skin health is unclear. In this study, we considered the DPs associated with these three skin health parameters in 84 healthy adults aged 19–37 years. Dietary intake was assessed using a food frequency questionnaire (FFQ) and skin health parameters were determined on the forehead of each subject. Among the four DPs extracted from the FFQ, DP2, characterized by a high intake of cereals, potatoes and starch, saccharides and fish and shellfish, was negatively associated with skin hydration. DP3, characterized by a high intake of potatoes and starch, seeds and nuts, fruits and eggs, was positively associated with acidic skin pH only before adjusting for potential confounders. On the other hand, DP4, characterized by a low intake of beans, and a high intake of meats, dairy products and beverages and alcohol, was negatively associated with acidic skin pH and positively associated with sebum content. The data stratified by sex revealed a negative association between skin hydration and DP2 in males and a negative association between sebum content and DP3 and a positive association between sebum content and DP4 in females. In conclusion, we demonstrated that specific DPs were associated with sebum content, skin hydration and pH in healthy Korean adults and that those associations were affected by sex.

J.C. Kardorff, M.I. Kardorff, B. Kardorff, **Notwendige Berücksichtigung der jahreszeitlichen Schwankungen im Hautfeuchtigkeitsgehalt bei der Therapie der Akne**, Kosmetische Medizin 2/19

Hintergrund: Auch die Haut von Akne-Patienten fühlt sich je nach Jahreszeit unterschiedlich an. Bislang existieren aber keine Empfehlungen zur jahreszeitlich adaptierten Therapie bei Akne. Daraus resultieren die Fragen: 1. Unterliegt der Feuchtigkeitsgehalt von zu Akne neigender Haut auch jahreszeitlichen Schwankungen? 2. Konnen daraus Empfehlungen für die Therapie der Akne abgeleitet werden? Methodik: Im Winter 2016, im Frühjahr und Sommer 2017 wurde an 12 und im Herbst 2017 an 24 Testpersonen der Feuchtigkeitsgehalt im Bereich der Stirnhaut mittels Corneometrie (SD27 RC&K) gemessen. Die Testpersonen befanden sich im bevorzugten Akne-Alter zwischen 16 und 25 Jahren, bei denen entweder eine leichte Acne comedonica Grad MI Oder eine Acne papulopustulosa Grad I bestand. Ergebnisse: Der durchschnittlich höchste Hautfeuchtigkeitsgehalt wurde mit einem Punktwert von 43,8 ±11,8 im Sommer gemessen, der niedrigste mit Punktwert 24,5 ±13,5 im Winter. Die Hautfeuchtigkeitsdifferenzen zeigten sich zwischen Sommer und Winter, Frühling und Sommer, Sommer und Herbst (jeweils $p < 0,001$) sowie zwischen Herbst und Winter ($p < 0,01$) als signifikant und zwischen Winter und Frühling als nicht signifikant. Schlussfolgerungen: Die Ergebnisse belegen einen unterschiedlichen Feuchtigkeitsgehalt der Gesichtshaut in den verschiedenen Jahreszeiten. Darauf muss sowohl bei der Therapie, der Hautpflege und Hautreinigung geachtet werden. Starker austrocknende Medikamente und Akne-Kosmetika sollten somit nur in den Sommermonaten, aber nicht im Winter angewendet werden.

J.S. Lee, J. Ha, K. Shin, H. Kim, S. Cho, **Different Cosmetic Habits Can Affect the Biophysical Profile of Facial Skin: A Study of Korean and Chinese Women**, Ann Dermatol 31(2), p. 175-185, 2019

Background: Previous studies on the age-, climate, and skin care habit-related changes of biophysical parameters have mainly focused on Caucasians, and studies on Asians are in paucity. Objective: This study was aimed to investigate the variations of cutaneous biophysical parameters in Chinese and Korean women (northeast Asians) and to assess the association between those parameters and age, climate, and cosmetic habits. Methods: A cross-sectional study included 361 healthy Chinese and Korean women between 18 and 49 years of age in 4 cities (Guangzhou, Nanjing, and Shijiazhuang in China, and Suwon in Korea). We measured skin surface temperature, hydration, transepidermal water loss (TEWL), sebum, elasticity, skin pore, wrinkle, and skin tone (brightness) using non-invasive instruments. Demographic profiles and cosmetic habits were assessed using a questionnaire. Results: Skin elasticity and tone decreased, and pore size and wrinkle increased with age. Subjects in Suwon (Korean) showed higher hydration level, lower TEWL and lower sebum, less severe wrinkle and brighter skin than those in the 3 cities in China. After adjusting for age and region, using sunscreen everyday, wearing base makeup daily, and using moisturizers improved hydration, TEWL, and elasticity significantly. Conclusion: Women in Suwon (Korea) were found to have a better profile of biophysical parameters than women in the 3 Chinese cities, which might be attributed to cosmetic habits, besides age and climatic factors. The fact that appropriate cosmetic habits are associated with favorable skin biophysical parameters underscores the importance of daily skin care routine in preserving skin functions.

H.-Y. Cheng, L.-F. Li, **Skin Biophysical Parameters and Patch Test Results in People Predisposing to Xiaotong Tiegao Induced Irritant Contact Dermatitis**, Hindawi Evidence-Based Complementary

and Alternative Medicine, Volume 2019

Background. Xiaotong Tiegao (XTT) is an ancient topical Tibetan medicine plaster which is widely used in China. Irritant contact dermatitis (ICD) caused by XTT is very common. It is still unclear why some people aremore prone to develop ICD.The aim of this study is to study the baseline skin biophysical parameters and patch test results in individuals predisposing to XTT induced ICD. Methods. During a four-month period, 149 healthy volunteers with ICD and 50 volunteers without ICD after applying XTT were recruited. The skin biophysical parameters were measured, and contact allergy to 20 common allergens was patch tested, at two weeks after the ICD was recovered. Results.There were no significant differences in age and sex between ICD and control groups. It was found that skin median melanin value (176.50 vs 189.50, $P < 0.05$, Mann-Whitney U-test) and erythema value (319.90 ± 70.49 vs 347.93 ± 84.55, $P < 0.05$, Independent-Samples T test) were much lower in ICD than control group. Overall patch test results were not different, but the positivity rate of nickel sulfate (15.44% vs 4.00%, $P < 0.05$, Fisher's exact test) was significantly higher in ICD group. Conclusions. In conclusion, people with nickel allergy, lower values of skin melanin, and erythema are predisposing to develop ICD.

J. Suñer-Carbó, A. Calpena-Campmany, L. Halbaut-Bellowa, B. Clares-Naveros, M.J. Rodriguez-Lagunas, E. Barbolini, J. Zamarbide-Losada, A. Boix-Montañés, **Biopharmaceutical Development of a Bifonazole Multiple Emulsion for Enhanced Epidermal Delivery**, Pharmaceutics 2019, 11, 66

Efficient topical delivery of imidazolic antifungals faces the challenge of overcoming its limited water solubility and its required long-lasting duration of treatments. In this paper, a hydrophilic multiple emulsion (ME) of Bifonazole (BFZ) is shown to maximize its skin retention, minimize its skin permeation, and maintain an acceptable level of being harmless in vivo. The formulations were pharmaceutically characterized and application properties were assessed based on viscosity measurements. Non-Newtonian pseudoplastic shear thinning with apparent thixotropy was observed, facilitating the formulation retention over the skin. The in vitro release profile with vertical diffusion cells showed a predominant square-root release kinetic suggesting an infinite dose depletion from the formulation. Ex vivo human skin permeation and penetration was additionally evaluated. Respective skin permeation was lower than values obtained with a commercial O/W formulation. The combination of amphoteric and non-ionic surfactants increased the bifonazole epidermal accumulation by a factor of twenty. This fact makes the possibility of increasing its current 24 h administration frequency more likely. Eventual alterations of skin integrity caused by the formulations were examined with epidermal histological analysis and in vivo preclinical measurements of skin elasticity and water retrograde permeation. Histological analysis demonstrated that the multiple emulsions were harmless. Additionally, modifications of in vivo skin integrity descriptors were considered as negligible.

J.I. Yablonski, D.R. Winne, **Beginner's Guide to Natural Organic – Product Safety, Claims Support and Preservation**, Cosmetics & Toiletries, Volume 134, No. 2, February 2019, p. 18-31

Browsing a cosmetic counter, searching online or tuning into home shopping networks, one cannot help but notice the ever-increasing number of cosmetic and personal care products purporting to be *green*, *natural* or *organic* that are obviously targeting the rapidly growing environmentally conscious consumer and spa markets. Entire sections of exhibitions and trade shows have been dedicated.

N. Lourith, M. Kanlayavattanakul, **Hello Hydration – Spinach Hydrogels Deliver Saturated Skin,** Cosmetics & Toiletries, Volume 134, No. 2, February 2019, p. 49-55

Moisturizing or hydrating polysaccharides are derived from several natural sources. These botanical and edible biopolysaccharides are largely used to meet consumer demand for natural and sustainable cosmetic products. Polysaccharides are composed of multiple saccharides that form a large branched or unbranched chain. These polymers are constructed with simple sugar building blocks that are hydrated in an aqueous environment and create gel structures referred to as *hydrogels* or *hydrocolloids.* Water is immobilized by insoluble polymers in this system, which can be used to moisturize skin. The moist gels are very compatible with biological tissues and are biodegradable, classifying them as biopolymers. They are inexpensive and vastly available from natural sources, which work to highlight their health benefits in cosmetic applications. Altogether, these factors strengthen consumer opinions of the safety and efficacy of biopolysaccharides.

T. Yazdanparast, H. Hassanzadeh, S.A. Nasrollah, S.M. Seyedmehdi, H. Jamaati, A. Naimian, M. Karimi, R. Roozbahani, A. Firooz, **Cigarettes Smoking and Skin: A Comparison Study of the Biophysical Properties of Skin in Smokers and Non-Smokers**, Tanaffos 2019; 18(2): 163-168

Background: Tobacco smoke is toxic for cells and could be a damaging factor to skin. The purpose of this study was to compare the biophysical properties of skin in smokers and non-smokers.

Materials and Methods: The study population consisted of 28 current smokers and 24 non-smokers. The hydration of the stratum corneum, trans epidermal water loss, pH, erythema, melanin content, sebum, friction and elasticity parameters (R0, R2, R5) of skin, epidermis and dermis thickness and echodensity were measured on middle forehead, right cheek and right inner arm of participants. Also volume, surface area and depth of right nasolabial folds were measured. The mean of these values in smokers were compared with nonsmokers by independent sample T- test. Results: Gross elasticity was significantly lower in smokers on forehead (p= 0.048). Thickness of epidermis was higher in smokers in all measured sites but the differences were not statistically significant. Thickness of dermis was higher in smokers in all measured sites too, but only the difference on cheek was statistically significant (p= 0.009). Density of epidermis was lower in smokers in all measured sites, but only the difference on forehead was statistically significant (p= 0.019). Density of dermis was lower in smokers in all measured sites, but only the difference on arm was statistically significant (p= 0.028). Volume and area of nasolabial folds were higher in smokers, but only the difference of area was statistically significant (p = 0.031). Conclusion: Tobacco smoking could affect the biophysical parameters of skin, especially thickness and density of dermis and epidermis and nasolabial folds.

V. Brancato, A. Ratti, K.Tudisco, **Ozosnail Extract® - Evaluation of the hydrating efficacy**, Cosmetic Technology, Jan/Feb 2019, 22 (1), (Article in Italian)

Hydration is a key factor for skin health. Our largest organ, the skin, is composed by two main layers: the dermis, the inner layer, and the epidermis, the inner layer. Epidermal water content has a gradient: 70% in the viable epidermis which decays to 15-30% at the skin surface. In order to prevent any change of skin moisture; skinaging and other kind of alterations, a daily hydrating routine is needed. Choosing the best product is not so simple, skin hydration is Q complex process and different molecules can regulate the water content in several ways. In the present study, we show the in vivo hydrating efficacy (instrumentally assessed) of three emulsions containing different concentration of snail slime against a blank formulation. This secretion contains several components: altantoin, collagene, elastin, mucopolysaccharides, and glycolic add among others, conferring to the slime hydrating, regenerating, nourishing and exfoliating effects when applied onto the skin.

C. Gfeller, G. Hardie, G. Shanga, H. Mahalingam, **Evaluating the Moisturizing Abilities and Sun Protection Factor of New Lip Balm Formulations**, J Cosmet Sci., 2019 Jan/Feb; 70(1): p. 1-15

This report explores dry-skin models to assess the potential of a new lip balm formulation to hydrate dry skin or lips, and presents sun protection factor (SPF) values for five new lip balm formulations. Evaporimeter [for transepidermal water loss (TEWL)], Skicon®, and Corneometer® were used to measure hydrating effects of lip balm formulations in a dry-skin leg model, and TEWL, DermaLab® Moisture Meter, Corneometer®, and visual assessments were used with a dry-lip model. SPF studies were conducted in accordance with either the U.S. Food and Drug Administration monograph final rule or international standard ISO 24444. Data from dry-skin leg model demonstrate that a new lip balm formulation significantly improves skin hydration compared with untreated leg skin and four comparator products. Data obtained from a dry-lip model proved unreliable. Five new lip balm formulations exhibited sunscreen capability; however, they did not meet the intended SPF. There were no product-related adverse events with the formulations. Although the new lip balm formulation improved hydration, data from a novel dry-lip model proved unreliable therefore further testing is required to confirm these benefits. Five new lip balm formulations provided sunscreen capability but did not meet the intended SPF, and will undergo reformulation and retesting.

S.A. Morris, N. McCardy, R. Thompson, T. Allen, A. Altemeier, K. Wehmeyer, R. Hinkle, M. Jones, R. Spruell, P. Stoffolano, M.A. Miller, P. Styczynski, R. Glenn, G.B. Kasting, **Comparing Surfactant Penetration into Human Skin and Resulting Skin Dryness Using *In Vivo* and *Ex Vivo* Methods,** J Cosmet Sci., 2019 Jan/Feb; 70(1): p. 33-45

Numerous tests have been developed to estimate a surfactant's mildness in rinse-off formulations. In this study, mixed surfactant systems were examined for their impact on surfactant penetration into the skin and skin hydration using *in vivo* and *ex vivo* methods. A forearm controlled application test (FCAT) was conducted, and skin hydration was evaluated using corneometry and visual dryness grading. Tape strip and cup scrub extractions were completed within the FCAT to examine the penetration of five individual surfactants into the skin *in vivo*. The ratio of surfactant mass extracted by five pooled tape strips to surfactant mass extracted by cup scrubs was found to be in the range of 40-59%. Furthermore, cup scrub collection and analysis was less time-consuming and less expensive to conduct than tape stripping. Thus, we recommend cup scrub extraction as a suitable substitute for tape stripping in future surfactant skin penetration analyses. *In vivo* results were compared with *ex vivo* ^{14}C-sodium dodecyl sulfate (^{14}C-SDS) penetration into human cadaver skin from the same surfactant

systems. *In vivo* measurements conducted in the FCAT, including corneometer reading, visual dryness score, and individual surfactant (sodium laureth (1) ether sulfate and cocamidopropyl betaine) extracted from the skin, were found to correlate well with ^{14}C-SDS penetration into the skin *ex vivo* for anion-based surfactant systems. Thus, ^{14}C-SDS skin penetration may be a useful preclinical test for skin dryness induced by rinse-off products containing anionic surfactants.

C. Messaraa, L. Doyle, A. Mansfield, C. O'Connor, A. Mavon, **Ageing profiles of Caucasian and Chinese cohorts – focus on hands skin**, International Journal of Cosmetic Science, Volume 41, Issue 1, 2019

Objective: In spite of hand care being a dynamic segment of skin care, hands skin physiology has been receiving little attention in comparison to facial skin. In the present study, we aimed at gathering a comprehensive set of skin data from the dorsal part of the hand to study age related-changes in two ethnic groups (Caucasian and Chinese). Methods: Skin topographic, skin colour/colour heterogeneities, skin chromophores and skin biophysical measurements of 116 Caucasian and Chinese female volunteers aged 30– 65 years old were collected in Ireland and in China as part of a cross-sectional study. Results: Topographic alterations happened at both micro and macro scales with a noticeable delay in the onset of 10 years for the Chinese cohort. Similar evolution of skin colour with ageing was observed between the two cohorts and strong dissimilarities were seen when it came to colour heterogeneities and melanin hyper concentration, with a 20-year delay in severity for the Chinese cohort. A similar sharp drop of skin hydration occurred when reaching the 60's regardless of the group and substantial di8erences were recorded for skin biomechanical properties of the skin. Conclusion: These results provide additional insights about hand skin physiology in relation to ageingand ethnic di8erences, especially when put into perspective with what is currently known about facial ageing. This research yield additional material for hand cream product rationale and strategies for mitigating the appearance of ageing hands.

M. Kerscher, A.T. Nurrisyanti, C. Eiben-Nielson, S. Hartmann, J. Lambert-Baumann, **Skin physiology and safety of microfocused ultrasound with visualization for improving skin laxity**, Dove Press, January 2019, Volume 2019:12, p. 71-79

Purpose: The efficacy of microfocused ultrasound with visualization (MFU-V; Ultherapy®) has been demonstrated in clinical studies and daily practice. However, data addressing skin physiology after MFU-V treatment are lacking. This observational evaluation was aimed to assess skin physiology before and after MFU-V treatment using noninvasive biophysical measurements. Patients and methods: Twenty-two female patients with moderate-to-severe skin sagging at the jawline and submental region on the Merz Aesthetics Scale obtained a single MFU-V treatment according to protocol. Skin function measurements focused on short-term effects up to 3 days and long-term effects up to 24 weeks after treatment. Skin temperature, transepidermal water loss, skin hydration, erythema, elasticity, and skin thickness and density were evaluated under standardized conditions. Pain was assessed using a validated numeric visual analog scale. Results: Skin temperature remained in a physiologic range and no significant increase was noted at day 3 after MFU-V treatment. Transepidermal water loss, hydration, and erythema values were fairly stable and showed no significant differences at short- and long-term measurements vs baseline. At week 4 after a single MFU-V treatment, gross and net elasticity values were significantly decreased (P=0.003 and P=0.0001, respectively), followed by significantly increased values at week 12 (P=0.015, P=0.046) and week 24 (P=0.001, P=0.049). Edema due to MFU-V treatment resolved without sequelae. For all patients, pain diminished shortly after treatment. No adverse events occurred during the 24-week follow-up period. Conclusions: MFU-V treatment is well tolerated and it does not alter the epidermal barrier function or physiology of skin. Significant increase in the elasticity of skin was observed at 12 and 24 weeks after a single treatment, which reflects improvement in dermal tissue function. These short- and long-term effects are congruous with the mode of action of MFU-V due to a proven intrinsic tissue remodeling process.

D. Cobiella, L. Archer, M. Bohannon, D. Santoro, **Pilot study using five methods to evaluate skin barrier function in healthy dogs and in dogs with atopic dermatitis**, Vet. Dermatology, January 2019

Background: Atopic dermatitis is associated with skin barrier defects. In people, noninvasive techniques are used to quantify the skin barrier functionality. In dogs, transepidermal water loss (TEWL), stratum corneum hydration and pH have been used to assess skin barrier function. However, few studies have determined their repeatability. Objective: To assess the repeatability of measurements of skin hydration, TEWL, pH, skin absorbance and erythema in healthy and atopic dogs. Animals: Fifteen healthy and 15 atopic privately owned dogs. Methods and materials: Three repeated measurements using Corneometer®, Skin-pH-Meter®, Colorimeter® and VapoMeter® were obtained from inguinal, axilla, pinna and interdigital space by three investigators. Intra- and interobserver variability (coefficient of

variation, correlation coefficients and intraclass correlation coefficients) and difference between the two groups (*t*-test or Mann–Whitney U-test) were determined. Results: High repeatability and low variation were observed both intra- and interobservers for all devices except the VapoMeter®. The most repeatable device was the Skin-pH-Meter®, whereas the VapoMeter® was the device with the highest intra- and interobserver variability. Atopic dogs had a significantly increased pH (inguinal $P = 0.03$; axilla $P = 0.02$) and erythema (inguinal $P = 0.01$; axilla $P = 0.02$) compared to healthy dogs. No differences between the two groups were detected using the Corneometer®, VapoMeter® or Colorimeter® (tartrazine absorption). Conclusion and clinical significance: The results of this pilot study support the use of Corneometer®, Skin-pH-Meter® and Colorimeter® in the assessment of skin barrier function in dogs; further investigations to optimize measurements and confirm these results are needed.

B. Algiert-Zielińska, P. Mucha, H. Rotsztejn, **Effects of lactobionic acid peel, aluminum oxide crystal microdermabrasion, and both procedures on skin hydration, elasticity, and transepidermal water loss**, J Cosmet Dermatol. January 2019

Background: Topical applications of alpha-hydroxy acids and poly hydroxy acids in the form of peels gained popularity. To enhance the effect of these substances, aluminum oxide crystal microdermabrasion can be used in one procedure. Aims: The assessment of skin hydration, elasticity, and TEWL after using lactobionic acid in the form of 20% peel and lactobionic acid in the form of 20% peel combined with aluminum oxide crystal microdermabrasion. Material and Methods: The study involved 20 Caucasian female subjects. Six treatments were performed at weekly intervals, using the Split face method-20% LA was used on the left side of the face and aluminum oxide crystal microdermabrasion followed by 20% LA application on the right side of the face. Results: Corneometric measurement showed statistically significant differences between the hydration level for sessions 1 and 3 and 1 and 6. A higher hydration level was found on the side with the combined procedure. Tewametric measurement showed that the TEWL values were different for sessions 1 and 3 and 1 and 6-they decreased. There were no statistically significant differences between the two procedures. The utometric measurement indicated statistically significant differences between skin elasticity for pairs in session 1 and 3 and 1 and 6. Conclusions: The results of the study indicate that the combination of LA peel with microdermabrasion increases its moisturizing effect and improves skin elasticity. The use of both procedures also contributed to the decrease in TEWL; however, greater exfoliation of the epidermis in combined procedures resulted in slightly higher TEWL values.

B.-G. Jo, N.-J. Park, S.-N. Kim, J. Jegal, S. Choi, S.W. Lee, L.W. Yi, S.R. Lee, K.H. Kim, M.H. Yang, **Isolation of maltol derivatives from *Stellera chamaejasme* and the anti-atopic properties of maltol on skin lesions in DNCB-stimulated mice**, RSC Adv., 2019, 9, 2125

The aim of this study was to isolate maltol derivatives from S. chamaejasme and to investigate the antiatopic dermatitis (anti-AD) effect of maltol in a 2,4-dinitrochlorobenzene (DNCB)-sensitized mouse model of AD. A novel compound, maltol 3-O-(40-O-cis-p-coumaroyl)-b-D-glucoside (named isosoyamaloside I), and two known maltol derivatives (maltol and soyamaloside I) were isolated from S. chamaejasme using chromatographic methods. Dermal application of maltol to DNCB-sensitized AD mice reduced erythema, pruritus, and lichenification scores. Histopathological examinations revealed significant decline in mast cell infiltration in maltol-treated AD mice. In addition, maltol accelerated skin barrier recovery by reducing TEWL and skin pH and increasing skin hydration. Maltol was also found tosuppress atopy-induced IL-4 and IgE elevations in serum, which are known to be essential for the development of atopy. The results of this study show that maltol is a potential therapeutic candidate for the treatment of AD-related skin diseases.

M. Kerscher, A.T. Nurrisyanti,. C. Eiben-Nielson, S. Hartmann, J. Lambert-Baumann, **Clinical and Biophysical Outcomes of Combining Microfocused Ultrasound with Visualization and Calcium Hydroxylapatite Filler for Facial Treatment**, Dermatol Ther (Heidelb) (2019) 9: p. 135–142

Introduction: Combined cosmetic treatments are becoming increasingly popular. The objective of this clinical evaluation was to assess the long-term safety and efficacy of combining microfocused ultrasound with visualization (MFU-V) treatment with a calcium hydroxylapatite (CaHA) dermal filler to tighten skin at the submental region and contour the jawline.Methods: Women with loss of contour and skin laxity in the lower face received MFU-V treatment. If subjects did not respond satisfactorily after 12 weeks, they received CaHA to the jawline. Evaluations—which were performed by blinded raters at baseline and after 12, 24, and 48 weeks—included live Global Aesthetic Improvement Scale (GAIS) ratings, Merz Aesthetic Scale (MAS) ratings, skin parameters, and tolerability. Results: Of the 22 subjects, 9 received combined treatments. GAIS scores showed that subjects were much and very much improved (50% each) at 48 weeks. The MAS score was decreased by at least one point in 89% of subjects. Skin thickness was significantly improved after 24 weeks (p \ 0.05) and remained above

baseline after 48 weeks. Skin firmness was significantly improved after 48 weeks (p \ 0.05). No unexpected adverse events were reported. Conclusion: Combined MFU-V and CaHA treatments for laxity in the lower face did not alter skin barrier function, improved appearance, and slowed visible skin aging processes for at least 48 weeks.

D. Leskur, J. Bukić, A. Petrić, L. Zekan, D. Rušić, A. Šešelja Perišin, I. Petrić, M. Stipić, N. Puizina-Ivić, D. Modun, **Anatomical Site Differences of Sodium Laurylsulphate Induced Irritation: randomised controlled trial,** Br J Dermatol. 2019 January

Background: Sodium laurylsulphate (SLS) induced contact dermatitis is a commonly used model for testing effects of different topical formulations. Volar forearms are preferred testing site by the guidelines, but other anatomical locations were used in previous research, especially upper back, as the clinically used site for testing different antigens. Objectives: Aim of the present study was to investigate existence of anatomical variations of skin response to irritation and its' effects on response to treatment. Methods: Irritation was induced with SLS on symmetrical sites on both forearms and sides of upper back with additional sites exposed to water as controls. Half of the sites were treated with emollient cream while the other half were left untreated. Irritation was assessed using bioengineering methods and clinical scoring. Results: Upper back skin showed higher reactivity to irritants with stronger barrier disruption (measured by Tewameter, 80·2±18·3 vs 48·0±24·2 gm^{-2} h^{-1}), more pronounced erythema (measured by Mexameter, 186·5±88·4 vs 92·1±58·2 AU) and dryness (measured by Corneometer, -28·6±14·5 vs 2·7±16·9 AU). Skin recovery rates were also influenced by anatomical location with the upper back showing faster recovery (316·7±223·1 vs 156·2±198·5). Treatment didn't lead to improvement in measured parameters, regardless of anatomical location. Conclusion: Skins' reaction to irritant and recovery were dependant on anatomical location. Location where testing was conducted should always be reported as treatments tested across different locations could not be directly compared to each other.

H. Stettler, P. Kurka, C. Wagner, K. Sznurkowska, O. Czernicka, A. Böhling, S. Bielfeldt, K.-P. Wilhelm, H. Lenz, **A new topical panthenol-containing emollient: skin-moisturizing effect following single and prolonged usage in healthy adults, and tolerability in healthy infants**, Journal of Dermatological Treatment, 28:3, p. 251-257

Purpose: Two studies were conducted with a new topical panthenol-containing emollient (NTP-CE) to investigate the skin-moisturizing effect in healthy adults and tolerability in healthy infants. Methods: In Study 1 (N ¼ 44), a single skin application of NTP-CE was performed followed by a 4-week twice-daily application. Skin hydration and stratum corneum (SC) water content change (using Raman spectroscopy) were measured. In the 4-week Study 2 (N ¼ 65, aged 3–25 months), NTP-CE tolerability was assessed using a 5-point scoring system; skin hydration was determined in a subset (N ¼ 21). Results: In Study 1, mean AUC0 24 h for skin capacitance change from baseline was 302.03 i.u. with NTPCE and 15.90 i.u. in control areas (p < .001). With NTP-CE (at 4 h), the water content within the upper SC part was reduced (45.10 vs. 13.39 g/cm^2, p ¼ .013) and the water gradient increased (0.51 vs. 0.11 g/cm4, p ¼ .036), indicating relocation of water into deeper layers. In Study 2, there was no statistically significant change from baseline in mean cutaneous tolerability scores. At days 7, 14, and 28, skin hydrationhad increased by 42%, 54%, and 49%, respectively (all p < .001). Conclusions: Single and prolonged NTP-CE usage is associated with sustained and deep skin moisturization. NTP-CE is well tolerated by healthy infants.

M. Augustin, D. Wilsmann-Theis, A. Körber, M. Kerscher, G. Itschert, M. Dippel, P. Staubach, **Positionspapier: Diagnostik und Therapie der Xerosis cutis**, Positionspapier JDD 2018

Hintergrund und Rationale: Die Xerosis cutis (Synonym: Xerodermie, trockene Haut, hydrolipidarme Haut) ist mit > 10 Millionen Betroffenen nicht nur eine der häufigsten dermatologischen Diagnosen in Deutschland, sondern auch Leitsymptom vieler dermatologischer, internistischer und neurologischer Erkrankungen. Trotz der medizinischen Relevanz der topischen Basistherapie für die Xerosis cutis gibt es in Deutschland für ihr Management bisher keinen wissenschaftlich belegten Diagnostikund Therapiealgorithmus. Ziel: Dieses Positionspapier vermittelt Ärzten fachübergreifend einen an individuellen Symptomen orientierten, praxisnahen Leitfaden für die Prävention, Diagnostik und Therapie der Xerosis cutis. Methodik: Im Rahmen eines strukturierten Entscheidungsprozesses wurden von erfahrenen dermatologischen Experten zunächst praxisrelevante Fragestellungen definiert und systematisch aufgearbeitet. Auf der Basis von Evidenz und Expertenkonsens wurden daraus diagnostische und therapeutische Algorithmen mit Empfehlungen für die Praxis entwickelt und konsentiert. Ergebnis: Die Xerosis cutis kann grundsätzlich klinisch diagnostiziert werden. Auslöser und/oder Grunderkrankungen müssen abgeklärt und vermieden bzw. spezifisch behandelt werden. Bei der Wahl der geeigneten Basistherapie ist es wichtig, dass nicht nur die Hauthydratation verbessert,

sondern auch die Barrierefunktion der Haut wiederhergestellt wird. Sie sollte daher aus einer Kombination von rückfeuchtenden und rückfettenden Inhaltsstoffen bestehen. Je trockener die Haut, desto lipidhaltiger sollte die Hautpflege sein (bevorzugt Wasser-in-Öl-Formulierungen). Die individuelle Auswahl der Inhaltsstoffe orientiert sich nach kausaler Prüfung an den Symptomen Schuppung (v.a. Urea), Fissuren/Rhagaden (v.a. Urea oder Dexpanthenol), Rötung (v.a. Licochalcone A) und Pruritus (v.a. Polidocanol), sowie an der Lokalisation und dem Alter der Patienten. Inhaltsstoffe bzw. Inhaltsstoffkombinationen mit guter Studienevidenz sind zu bevorzugen. Die mit Abstand beste Evidenz bei der Xerosis cutis weist Urea auf, dessen Wirksamkeit in Kombination mit anderen natürlichen Feuchthalte-Komponenten und Ceramiden noch gesteigert werden kann. Zur Arbeitserleichterung am Patienten und zum besseren Erlernen wurde das Xerosimeter entwickelt, das die praktische Umsetzung der Diagnostik und Verlaufskontrolle, eine Klassifikation der Inhaltsstoffe und einen strukturierten Therapiealgorithmus enthält. Schlussfolgerung: Das hier vorgeschlagene strukturierte symptom- und evidenzorientierte Vorgehen mit Diagnostik- und Behandlungspfad soll für die Prävention und frühzeitige Behandlung der Xerosis cutis sensibilisieren. Damit können die Lebensqualität verbessert und Folgeerkrankungen verhindert werden.

M. Ostermeier, M. Kerscher, **Der diurnale Rhythmus der Haut: Mythos oder Realität?: Evaluation mittels biopyhsikalischer Messmethoden,** Aktuelle Dermatologie 44(12): p. 539-546, Dezember 2018

Zusammenfassung Hintergrund Bisher weisen nur wenige Studien auf tageszeitabhängige Rhythmen des transepidermalen Wasserverlustes (TEWL), der Talgproduktion und des pH-Wertes hin. Detailliertere Beschreibungen des Hautbarriere-Rhythmus' könnten für die Wahl des richtigen Zeitpunktes der dermalen Applikation von pharmazeutischen und kosmetischen Wirkstoffen von großer Bedeutung sein. Es ist denkbar, dass eine Optimierung der Wirkung oder Verträglichkeit dermatologischer Behandlungen erreicht werden kann. Somit ist es Ziel dieser Studie, den diurnalen Rhythmus der Hautbarriereparameter Hautrötung, transepidermaler Wasserverlust (TEWL), Stratum corneum-Hydratation, mechanische Eigenschaften, pH-Wert und Sebum zu erfassen. Methoden Insgesamt 24 hautgesunde Probandinnen (21 – 39 Jahre) wurden innerhalb von 12 Stunden in einem 4-Stunden-Rhythmus an den Wangen und an der Stirn anhand biophysikalischer Messverfahren untersucht. Ergebnisse Die Tageszeit wirkt sich auf die Barrierefunktion der Haut aus. Der mittlere Erythem-Wert ist nachmittags signifikant höher als morgens. Anhand der Datenanalyse ist zu erkennen, dass der TEWL-Mittelwert sich abends statistisch sehr signifikant gegenüber dem Mittelwert morgens unterscheidet. Schlussfolgerung Die Erkenntnisse über die tageszeitliche Veränderung der Barrierefunktion können Aufschluss über ideale Zeitfenster verschiedener Kosmetikbehandlungen geben. Somit bietet z. B. ein erhöhter TEWL am Abend aufgrund der Permeabilität eine bessere Absorption von Wirkstoffen mit höherem Molekulargewicht.

Der Winter kann kommen – Handcremes im Test bei Stiftung Warentest, Stiftung Warentest Magazin, Dezember 2018

Handcremes: Die meisten Cremes pflegen trockene Winterhande gut. Aber nur wenige ziehen zudem schnell ein. Der Winter macht sich bei vielen an den Händen bemerkbar. Oft beginnt es an den Fingerknöcheln: Die Haut wird trocken, beginnt zu schuppen, im schlimmsten Fall reißt sie ein. Cremes sollen davor schützen, indem sie die Haut mit Fett und Feuchtigkeit versorgen und sie so geschmeidig halten. Aber welche Produkte helfen wirklich? Die Stiftung Warentest hat 17 Handcremes für trockene Haut geprüft.

D. Tulina, A. Beguin, H. Pong, M. Del Mar Cabarbas, D. Klokol, M.K.S. Cha, M.B.F. Wong, **Evaluation of the in vivo cosmetic efficacy of the MF3 blue cell serum gel. One- and two-month test results**, J Cosmet Dermatol. 2018;17:193–202

Introduction: Skin is changing over time showing signs of aging: dryness, increase in visual and tactile roughness, decrease in collagen content and stiffness, and eventually formation of deep and surface wrinkles, and fine lines. Methods: Eight-week open experimental study was conducted to test efficacy of MF3Blue Cell Serum Gel. Main criteria to determine product efficacy by following skin biophysical techniques were as follows: skin moisturization, firmness, epidermal and dermal density, skin surface properties and sebum level, reduction in fine lines and wrinkles. Secondary criteria were as follows: participant's opinion during study and product tolerance evaluation. Days 29 and 57 assessments included visual evaluation, skin biophysical techniques, and compliance check. The self-assessment questionnaires completed. Results: After week 8, obtained results showed very good hydration effect of test product, despite the fact being serum gel. Moisturizing increased continuously during study period. Important increases on skin firmness were observed which are in line with typicalanti-aging claims. Dermal density steady improvement noted especially after 4th week of study,

and effect on deep skin layers was due to increase in collagen content and stiffness. Sebum regulation process was evidenced. Further significant roughness reduction in skin surface showed decrease or disappearance of fine lines and wrinkles. Products were well tolerated with no adverse events. Most of participants noticed visible improvement and increase in facial radiance, skin smoothness, and overall skin improvement. Conclusion: Twice daily application of MF3 Blue Cell Serum Gel led to significant improvement in skin hydration, firmness, dermal density, sebum regulation, roughness reduction, decrease or disappearance of fine lines and wrinkles.

S. Osseran, J. dela Cruz, S. Jeong, H. Wang, C. Ftenakis, C.L. Evans, **Characterizing the stratum corneum structure, barrier function, and chemical content of human skin with coherent Raman scattering imaging**, Biomedical Optics Express 6425, Vol. 9, No. 12, Dec 2018

The most superficial layer of the epidermis, the stratum corneum, plays a crucial role in retaining hydration; if its structure or composition is compromised, dry skin may result as a consequence of poor water retention. Dry skin is typically treated with topical application of humectant agents that attract water into the skin. Corneometry, the industry standard for measuring skin hydration, works by assessing the bulk electrical properties of skin. However, this technique samples a large volume of tissue and thus does not resolve the biochemical changes that occur at the cellular level that may underlie mechanisms of dry skin. These limitations can be addressed using coherent Raman scattering (CRS) microscopy to probe the intrinsic vibrational modes of chemical groups such as lipids and water. In the present study, *ex vivo* human skin explants undergoing dehydration and humectant-induced rehydration were measured via CRS imaging and corneometry. Corneometry data and chemically specific images were obtained from the stratum corneum of each patient sample at each timepoint. The resulting data was statistically analyzed using linear mixed effect model regression analysis. The cellular imaging data revealed water loss in the stratum corneum during dehydration that was correlated with corneometer readings. Interestingly, the imaging data and corneometer readings show differences under the experimental rehydration conditions. The rehydration results suggest that hydration restored by the humectant agents may not be retained by the corneocytes in the *ex vivo* model system. Given the complementary nature of corneometry, a bulk assessment tool, and CRS microscopy, a modality with subcellular resolution implemented here in an en-face tissue imaging setup, these techniques can be used to measure uptake and efficacy of topical compounds in order to better understand their mode of action and improve therapeutic applications.

B. Algiert-Zieli□ska, P. Mucha, H. Rotsztejn, **Comparative evaluation of skin moisture after topical application of 10% and 30% lactobionic acid**, J Cosmet Dermatol. 2018 Dec; 17(6): p. 1096-1100

Background: Dry skin is characterized by symptoms such as itching, redness, excessive exfoliation. These symptoms cause discomfort and contribute to secondary bacterial infections. Dry skin treatments are based on topical applications of various formulations. Among many of them are polyhydroxy acids, which recently gained more attention. Aims: The aim of this study was a comparative assessment of hydration level (corneometric) after application of lactobionic acid (LA) in the form of peel at concentrations of 10% and 30%. Material and Methods: The study involved 10 Caucasian individuals aged 26-73 years. Eight treatments were performed at weekly intervals. The peels were applied using the "Split face" method-on the left side of the face 10% LA, and the right side 30% LA which consisted of specified concentration of LA, deionized water, xanthan gum, ethoxydiglycol. The test subjects received a 5% LA cream for overnight use. The cream consisted of deionized water, LA, isopropyl palmitate, ascorbyl palmitate, methylparaben. The products for this study were provided by Grehen Ltd. Celestynów, Poland. Prior to each procedure, the skin hydration level was measured using Corneometer CM 825 from Courage + Khazaka electronic GmbH. Results: There was a statistically significant improvement in hydration level after 8 treatments for all measuring points and both concentrations. The difference of the skin hydration level between 10% LA and 30% LA could not be determined. Conclusions: Lactobionic acid is a highly moisturizing agent. There was no significant difference in moisturizing effect between 10% LA concentration and 30% LA concentration.

M. Yiman, Y.-C. Lee, M. Hong, L. Brownell, Q. Jia, **A Randomized, Active Comparator-controlled Clinical Trial of a Topical Botanical Cream for Skin Hydration, Elasticity, Firmness, and Cellulite,** J Clin Aesthet Dermatol. 2018; 11(8): p. 51–57

Background: The skin is where initial visual signs of aging manifest, including increased skin dryness and decreased frmness and elasticity. Cellulite, a skin condition characterized by changes in the skin morphology due to excessive lipid deposition in subcutaneous adipose tissue, is another characteristic of skin aging. Objective: We sought to assess the e□ectiveness of a topical botanical cream on cellulite, skin hydration, frmness, and elasticity after two, four, and eight weeks of use compared to an active comparator. Design: The study was a single-blind, randomized, controlled study

conducted on subjects with mild-to-severe cellulite on the thighs. Subjects were treated with a topical botanical cream (UP1307) and an active comparator for eight weeks. A total of 44 women 18 to 59 years of age were enrolled. Test products were gently applied in a circular motion to the area identifed by subjects as the target cellulite area twice per day. Measurements: Measurements using Corneometer® (for skin hydration) and Cutometer® (for skin elasticity and frmness) were carried out at each visit in addition to expert clinical grader evaluations for cutaneous changes and cellulite. Outcomes were also assessed by patients using subject questionnaires. Results: Patients reported signifcant improvement in skin hydration, frmness, and elasticity over time. Findings were corroborated with objective instrumental measurements. At Week 8, 44.4- and 42.7-percent improvement in appearance of cellulite was also observed for the UP1307 cream and the active comparator group, respectively. Conclusion: Use of UP1307 cream produced signifcant improvements in skin hydration, frmness, and elasticity, with associated improvement in cellulite appearance. There was overall superiority of UP1307 between groups. Progressive subject perceptions of product e□ects are reported.

V. Mazzarello, M. Ferrari, P. Ena, **Werner syndrome: quantitative assessment of skin aging**, Clinical, Cosmetic and Investigational Dermatology 2018: 11, p. 397–402

Background: Werner syndrome (WS) is a rare autosomal recessive disorder characterized by premature aging in adults. Although not suffcient to diagnose WS, persistent short stature and alteration of the dentition are among the few early signs that appear at puberty and can lead to a suspected diagnosis. Objective: The study aimed at quantifying the signs of WS skin aging through biophysical parameters to fnd new parameters to be applied together with clinical observations in order to diagnose the disease early. Patients and methods: The skin disorders induced by the disease were studied using noninvasive techniques: Tewameter TM300, Corneometer CM825, Skin-pH-Meter PH900, Mexameter MX16, Visioscan VC98, and Cutometer MPA580. Twenty-four patients divided into young group, WS group, and elderly group were recruited for the study. Results: The WS skin is quite similar to aged skin, with some differences concerning the barrier function and skin elasticity; for instance, a WS patient of 30 years of age has the same skin roughness of a 50/60 years old subject with a more severe skin condition leading to higher dryness, high transepidermal water loss, and less distensibility correlating with skin indurations. Conclusion: In patients with WS, the biophysical parameters can quantify the damage induced on the skin by the disease. In order to stage the degree of the disease, biophysical parameters could be used in the future as a diagnostic procedure in the initial stages of the disease as they may reveal lesions not yet clinically perceptible or in advanced stages.

T. Yadzanparast, S.A. Nasrollah, L.I. Firouzbadi, A. Firooz, **A Phase II Trial to Assess the Safety and Efficacy of a Topical Repair Cream Containing Skin-identical Ceramide Complex in Patients with Contact Dermatitis**, J Clin Aesthet Dermatol. 2018; 11(11): p. 40–44

Background: Contact dermatitis is a common skin condition observed by dermatologists, presenting a burden on healthcare systems. Recently, there has been a trend in producing skin-identical topical preparations for the repair of skin. However, there is a limited number of experimental studies to assess the safety and efficacy of this products. Objective: This study assessed the clinical efficacy and safety of a skin-identical ceramide complex cream (Dermalex Repair Contact Eczema; Omega Pharma, Nazareth, Belgium) in the treatment of contact dermatitis. Design: This was a Phase II, before-after trial. Setting: This study was conducted at the Center for Research and Training in Skin Diseases and Leprosy (CRTSDL) at Tehran University of Medical Sciences in Tehran, Iran. Participants: Fifteen patients with contact dermatitis (8 men and 7 women) between the ages of 25 and 62 years (median age: 36.4 years) were enrolled in this study. Measurements: Changes were assessed using six skin biophysical parameters (transepidermal water loss [TEWL], stratum corneum [SC] hydration, melanin index, erythema index, skin pH, and skin friction), Physician Global Assessment (PGA) score, and Three-Item Severity (TIS) score at baseline, Week 2, and Week 4 of the study. Results: Skin hydration and TIS showed a statistically significant improvement after treatment with study cream (p=0.023 and p=0.007, respectively). Although the reduction in TEWL was not significant, a slight decrease was observed at Week 4. Conclusions: The skin-identical ceramide complex cream improved contact dermatitis with a decrease in TIS and an increase in skin hydration, implying a repair of the skin barrier.

F. Spada, T.M. Barnes, K.A Greive, **Skin hydration is signifcantly increased by a cream formulated to mimic the skin's own natural moisturizing systems**, Clinical, Cosmetic and Investigational Dermatology 2018:11, p. 491–497

Background: Moisturizers are topical products designed to improve and maintain the skin barrier function and to help prevent dry skin. Materials and methods: A new moisturizer (Ceramide cream) was formulated containing ingredients which mimic the skin's own natural moisturizing systems. Corneometry was performed at baseline, 2, 4, 6 and 24 hours following a single application of Ceramide

cream to healthy skin, and compared to three reference moisturizers available over-the-counter, and placebo. Transepidermal water loss (TEWL) was also measured following a single application of Ceramide cream compared to baseline, and its safety was assessed by repeat insult patch test, ophthalmologist and pediatric testing. Results: A single topical application of either the Ceramide cream or the three reference moisturizers resulted in a signifcant increase in skin hydration over time (P<0.001). The placebo cream did not signifcantly increase skin hydration at any time point. At 24 hours post-application, skin hydration measured for Ceramide cream was signifcantly greater (P<0.05) than that measured for all three of the reference moisturizers tested. Ceramide cream was also found to significantly decrease TEWL (P<0.001) over 24 hours, and was shown to be non-sensitizing to the skin of both adults and children and non-irritating to the skin, eyes and related eye area. Conclusion: Ceramide cream increases skin hydration and improves barrier function which may make it suitable for use on dry skin.

T. Yazdanparast, K. Yazdani, P. Humbert, A. Khatami, S.A. Nasrollah, H. Hassanzadeh, A.H. Ehsani, L. Izadi Firouzabadi, A. Firooz, **Comparison of biophysical, biomechanical and ultra-sonographic properties of skin in chronic dermatitis, psoriasis and lichen planus**, Med J Islam Repub Iran. 2018(5 Nov);32.108

Background: Skin biometrology is a useful method for evaluation of inflammatory skin disorders such as dermatitis, psoriasis, and lichen planus. The current study tries to compare the biophysical features of skin in dermatitis, psoriasis, and lichen planus. Methods: By a convenient sampling method, 22 mild to moderate chronic dermatitis, 26 psoriasis, and 21 lichen planus patients were recruited in the study. Stratum corneum (S.C.) hydration, Transepidermal water loss (TEWL), pH, erythema, melanin, sebum, friction, elasticity parameters (R0, R2, and R5), skin temperature, skin thickness, and echo-density of epidermis and dermis were measured on the lesional (selected active lesion), uninvolved perilesional, and uninvolved symmetrical skin. The average of perilesional and symmetrical uninvolved parameters was used as control, while the percentage change of each parameter [(lesion – control / control) ×100] was calculated, and compared among three diseases by ANOVA test using SPSS software version 18. The significance level was set at α=0.05. Results: Comparison of percentage changes showed that the changes in TEWL, friction index, sebum content, R2 (gross elasticity), R5 (net elasticity), skin temperature, dermal thickness, and epidermal density are not significantly different among three skin diseases. But there were significant differences in three diseases considering the decrease in S.C. hydration (p<0.001), R0 (opposed to firmness) (p<0.001), and dermal density (p<0.001) compared to control skin. Moreover, the increase in skin pH (p<0.001), melanin content (p=0.048), erythema (p=0.023), and epidermal thickness (p <0.001) significantly differed among these diseases. Conclusion: Dermatitis, psoriasis and lichen planus lesions had specific biophysical changes. It may be helpful in their differential diagnosis.

O. Qin, Y. Tan, W. Jiang, Q. Fu, Y. Xu, C. Jiang, **Non-invasive assessment of changes and repair dynamics post irritant intervention in skin barrier**, Int J Clin Exp Med 2018;11(5): p. 4490-4499

This study aimed to investigate the changes of skin conditions after interventions of sodium lauryl sulfate (SLS) and tape stripping (TAPE), and explore the correlation of parameters between different non-invasive tools. Twenty-three healthy volunteers were enrolled in this randomized, controlled study, and 4 evaluating skin surfaces on their left forearms were randomly divided into SLS, TAPE, flter, and control groups. Skin surfaces in SLS and TAPE groups were intervened by SLS and tape stripping respectively. Changes of skin conditions were recorded by noninvasive devices. SLS and TAPE both worsened the skin conditions according to the elevated ICD scores. Compared with control, the TAPE group showed increased transepidermal water loss (TEWL) values. Thicker epidermal thickness was observed in the TAPE group, while thinner cuticle thickness by RCM fnally recovered to normal level. Roughness by OCT in TAPE declined frst and then recovered, whereas reduced roughness was observed in VC98 detection. Blood flow volume detected by OCT was unchanged in TAPE, while flux by FLPI was raised. Compared to the flter group, SLS exhibited raised TEWL and decreased thickness data, while reduced epidermal thickness by OCT ultimately elevated. Roughness declined, while roughness by OCT fnally recovered. Flux by FLPI decreased, whereas blood flow volume by OCT presented an instant reduction followed by a recovery. This study displays the changes of skin conditions post irritation, and discloses a positive correlation of flux parameters between OCT and FLPI as well as a positive correlation of moisture parameters between CM825 and VC98.

F. Spada, T.M. Barnes, K.A. Greive, **Skin hydration is signifcantly increased by a cream formulated to mimic the skin's own natural moisturizing systems**, Clinical, Cosmetic and Investigational Dermatology 2018:11, p. 491–497

Background: Moisturizers are topical products designed to improve and maintain the skin barrier function and to help prevent dry skin. Materials and methods: A new moisturizer (Ceramide cream) was formulated containing ingredients which mimic the skin's own natural moisturizing systems. Corneometry was performed at baseline, 2, 4, 6 and 24 hours following a single application of Ceramide cream to healthy skin, and compared to three reference moisturizers available over-the-counter, and placebo. Transepidermal water loss (TEWL) was also measured following a single application of Ceramide cream compared to baseline, and its safety was assessed by repeat insult patch test, ophthalmologist and pediatric testing. Results: A single topical application of either the Ceramide cream or the three reference moisturizers resulted in a signifcant increase in skin hydration over time (P<0.001). The placebo cream did not signifcantly increase skin hydration at any time point. At 24 hours post-application, skin hydration measured for Ceramide cream was signifcantly greater (P<0.05) than that measured for all three of the reference moisturizers tested. Ceramide cream was also found to significantly decrease TEWL (P<0.001) over 24 hours, and was shown to be non-sensitizing to the skin of both adults and children and non-irritating to the skin, eyes and related eye area. Conclusion: Ceramide cream increases skin hydration and improves barrier function which may make it suitable for use on dry skin.

M.J. Lis Arias, L. Coderch, M. Martí, C. Alonso, O. García Carmona, C. García Carmona, F. Maesta, **Vehiculation of Active Principles as a Way to Create Smart and Biofunctional Textiles**, Materials 2018, 11, 2152

In some specific fields of application (e.g., cosmetics, pharmacy), textile substrates need to incorporate sensible molecules (active principles) that can be affected if they are sprayed freely on the surface of fabrics. The effect is not controlled and sometimes this application is consequently neglected. Microencapsulation and functionalization using biocompatible vehicles and polymers has recently been demonstrated as an interesting way to avoid these problems. The use of defined structures (polymers) that protect the active principle allows controlled drug delivery and regulation of the dosing in every specific case. Many authors have studied the use of three different methodologies to incorporate active principles into textile substrates, and assessed their quantitative behavior. Citronella oil, as a natural insect repellent, has been vehicularized with two different protective substances; cyclodextrine (CD), which forms complexes with it, and microcapsules of gelatin-arabic gum. The retention capability of the complexes and microcapsules has been assessed using an in vitro experiment. Structural characteristics have been evaluated using thermogravimetric methods and microscopy. The results show very interesting long-term capability of dosing and promising applications for home use and on clothes in environmental conditions with the need to fight against insects. Ethyl hexyl methoxycinnamate (EHMC) and gallic acid (GA) have both been vehicularized using two liposomic-based structures: Internal wool lipids (IWL) and phosphatidylcholine (PC). They were applied on polyamide and cotton substrates and the delivery assessed. The amount of active principle in the different layers of skin was determined in vitro using a Franz-cell diffusion chamber. The results show many new possibilities for application in skin therapeutics. Biofunctional devices with controlled functionality can be built using textile substrates and vehicles. As has been demonstrated, their behavior can be assessed using in vitro methods that make extrapolation to their final applications possible.

A. Garre, M. Narda, P. Valderas-Martinez, J. Piquero, C. Granger, **Antiaging effects of a novel facial serum containingl-ascorbic acid, proteoglycans, and proteoglycanstimulating tripeptide: ex vivo skin explant studies and in vivo clinical studies in women**, Clinical, Cosmetic and Investigational Dermatology 2018:11, p. 253–263

Background: With age, decreasing dermal levels of proteoglycans, collagen, and elastin lead to the appearance of aged skin. Oxidation, largely driven by environmental factors, plays a central role. Aim: The aim of this study was to assess the antiaging effcacy of a topical serum containing l-ascorbic acid, soluble proteoglycans, low molecular weight hyaluronic acid, and a tripeptide in ex vivo and in vivo clinical studies. Methods: Photoaging and photo-oxidative damage were induced in human skin explants by artifcial solar radiation. Markers of oxidative stress – reactive oxygen species (ROS), total glutathione (GSH), and cyclobutane pyrimidine dimers (CPDs) – were measured in serum-treated explants and untreated controls. Chronological aging was simulated using hydrocortisone. In both ex vivo studies, collagen, elastin, and proteoglycans were determined as measures of dermal matrix degradation. In women aged 21–67 years, hydration was measured up to 24 hours after a single application of serum, using Corneometer and hygrometer. Subjects' perceptions of effcacy and acceptability were assessed via questionnaire after once-daily serum application for 4 weeks. Studies were performed under the supervision of a dermatologist. Results: In the photoaging study, irradiation induced changes in ROS, CPD, GSH, collagen, and elastin levels; these changes were reversed by topical serum application. The serum alsoprotected against hydrocortisone-induced reduction in collagen, elastin, and proteoglycan

levels, which were signifcantly higher in the serum-treated group vs untreated hydrocortisonecontrol explants. In clinical studies, serum application signifcantly increased skin moisture for 6 hours. Healthy volunteers perceived the product as effcient in making the skin brighter, more hydrated, and decreasing wrinkles and wished to continue using it. The serum was well tolerated and noncomedogenic. Conclusion: The serum protected against oxidative damage and dermal protein loss caused by photo- and chronological aging in human skin explants. In-vivo, the serum hydrated skin for 6 hours, and users perceived increased skin brightness, hydration, and fewer wrinkles.

Y. Brenner, **Ein natürlicher Wirkstoff, der den aktuellen Erwartungen des deutschen Hautpflegemarktes entspricht**, SÖFW Journal 10/2018

Der Markt fur Kosmetik und Hautpflegeprodukte in Deutschland ist der Ort, an dem sich Tradition und Fortschritt treffen. Seit mehr als eineinhalb Jahrhunderten setzen Hautpflegepraparate - wie Cremes, Masken, Lotionen und Spezialbehandlungen - auf die Verwendung von Pflanzen, Wurzeln und Bluten. Kosmetikhersteller aus Bayern, Niedersachsen, dem Saarland und anderen Landern haben seit Jahrzehnten eine Wissensbasis aufgebaut, die die belebenden Krafte der in der Natur vorhandenen Inhaltsstoffe nutzt und sie in Verbraucherprodukten zur auBerlichen Hautpflege umsetzt.

J. Pierre, G. Francois, A.M. Benize, V. Rubert, J. Coutet, F. Flament, **Mapping, in vivo, the uniformity of two skin properties alongside the human face by a 3D virtual approach**, Int J Cosmet Sci. 2018 Oct; 40(5): p. 482-487

Objective: To determine the homogeneity in the distribution of two cutaneous functions (hydration and elasticity) along the entire human face. Material and Methods: The half faces (right or left, randomly chosen) of two groups of Caucasian women were measured on 24 different small sites (elasticity) and 41 others (hydration), by instruments of small-sized probes (Cutometer® and Corneometer®, respectively). Hydration of the face was recorded at different times (up to 24 h), post application of a highly hydrating product. The recorded values (left and right half faces) were further gathered and digitally positioned on a virtual feminine face and their intensity was illustrated through a colored white (lower values)-blue (higher values) scale. Results: The reconstitution of the mapping of the two measured parameters (from the left and right sides of different subjects), shows a perfect symmetry vis à vis the nose axis. However, both parameters present slightly variable but significant values along the human face. Sites from the temple are less elastic than chin or forehead. The upper and lower parts of the forehead show slight disparities in their elasticity values. Cheeks are significantly less prone at retaining their imparted hydration status (lost 2 h after application of a hydrating product) as compared to sub-ocular regions or chin that retain their hydration up to 24 h. Attempts to establish a mutual relationship between the two skin properties unsurprisingly failed. Conclusion: The two studied skin properties show a slight but highly symmetric disparity along the entire human face.

K.-H. Busch, A. Aliu, N. Walezko, M. Aust, **Medical Needling: Effect on Moisture and Transepidermal Water Loss of Mature Hypertrophic Burn Scars,** Cureus, 10(3) 2018

Background: Burn scars remain a serious psychological and physiological problem for affected people. Clinical studies and scientific research have already shown that medical needling improves the scar quality in terms of skin elasticity and erythema. At the same time, patients are confronted with a low-risk therapy and face comparatively less postoperative complications. Objective: The goal of our study was to examine the influence of medical needling on the skin moisture and transepidermal water loss (TEWL) of hypertrophic dry scars. Therefore, 20 patients, of an average age of 34.63 years, with deep second- and third-degree burn scars have been treated. Methods: Medical needling is performed using a roller covered with needles of 3-mm length. The needling device is rolled over the scar in three directions: vertically, horizontally, and diagonally in order to create as many puncture channels as possible. The puncturing leads to multiple micro-wounds and intradermal bleeding, which evokes the post-needling regeneration cascade. The patients were followed up for 12 months postoperatively. The results have been evaluated by means of objective as well as subjective measurement methods. Results: The objective measures show that medical needling influences epidermal thickness and improves the epidermal barrier function at a molecular level. Outcomes are marked by a measurable increase in skin moisture and a reduction in TEWL. Conclusion: Medical needling seems to be a promising approach for the treatment of mature hypertrophic burn scars with a focus on skin moisture and TEWL.

D. Martini, D. Angelino, C. Cortelazzi, I. Zavaroni, G. Bedogni, M. Musci, C. Pruneti, G.Passeri, M. Ventura, D. Galli, P. Mirandola, M. Vitale, A. Dei Cas, R.C. Bonadonna, S. Di Nuzzo, M.B. De Felici, D. Del Rio, **Claimed Effects, Outcome Variables and Methods of Measurement for Health Claims**

Proposed Under European Community Regulation 1924/2006 in the Framework of Maintenance of Skin Function, Nutrients 2018, 10, 7

Evidence suggests a protective role for several nutrients and foods in the maintenance of skin function. Nevertheless, all the requests for authorization to use health claims under Article 13(5) in the framework of maintenance of skin function presented to the European Food Safety Authority (EFSA) have received a negative opinion. Reasons for such failures are mainly due to an insufficient substantiation of the claimed effects, including the choice of inappropriate outcome variables (OVs) and methods of measurement (MMs). The present paper reports the results of an investigation aimed at collecting, collating and critically analyzing the information with relation to claimed effects (CEs), OVs and MMs related to skin health compliance with Regulation 1924/2006. CEs, OVs and MMs were collected from both the EFSA Guidance document and from the authorization requests of health claims under Article 13(5). The critical analysis of OVs and MMs was based on a literature review, and was aimed at defining their appropriateness (alone or in combination with others) in the context of a specific CE. The results highlight the importance of an adequate choice of OVs and MMs for an effective substantiation of the claims.

D.-U. Kim, H.-C. Chung, J. Choi, Y. Sakai, B.-Y. Lee, **Oral Intake of Low-Molecular-Weight Collagen Peptide Improves Hydration, Elasticity, and Wrinkling in Human Skin: A Randomized, Double-Blind, Placebo-Controlled Study**, Nutrients 2018, 10, 826

Collagen-peptide supplementation could be an effective remedy to improve hydration, elasticity, and wrinkling in human skin. The aim of this study was to conduct a double-blind, randomized, placebo-controlled trial to clinically evaluate the effect on human skin hydration, wrinkling, and elasticity of Low-molecular-weight Collagen peptide (LMWCP) with a tripetide (Gly-X-Y) content >15% including 3% Gly-Pro-Hyp. Individuals (n = 64) were randomly assigned to receive either placebo or 1000 mg of LMWCP once daily for 12 weeks. Parameters of skin hydration, wrinkling, and elasticity were assessed at baseline and after 6 weeks and 12 weeks. Compared with the placebo group, skin-hydration values were significantly higher in the LMWCP group after 6 weeks and 12 weeks. After 12 weeks in the LMWCP group, visual assessment score and three parameters of skin wrinkling were significantly improved compared with the placebo group. In case of skin elasticity, one parameter out of three was significantly improved in the LMWCP group from the baseline after 12 weeks, while, compared with the placebo group, two parameters out of three in the LMWCP group were higher with significance after 12 weeks. In terms of the safety of LMWCP, none of the subjects presented adverse symptoms related to the test material during the study period. These results suggest that LMWCP can be used as a health functional food ingredient to improve human skin hydration, elasticity, and wrinkling.

J. Pierre, G. Francois, A.M. Benize, V. Rubert, J. Coutet, F. Flament, **Mapping, in vivo, the uniformity of two skin properties alongside the human face by a 3D virtual approach**, Int J Cosmet Sci., 2018 Oct; 40(5): p. 482-487

Objective: To determine the homogeneity in the distribution of two cutaneous functions (hydration and elasticity) along the entire human face. Material and Methods: The half faces (right or left, randomly chosen) of two groups of Caucasian women were measured on 24 different small sites (elasticity) and 41 others (hydration), by instruments of small-sized probes (Cutometer and Corneometer, respectively). Hydration of the face was recorded at different times (up to 24 h), post application of a highly hydrating product. Results: The recorded values (left and right half faces) were further gathered and digitally positioned on a virtual feminine face and their intensity was illustrated through a colored white (lower values)-blue (higher values) scale. The reconstitution of the mapping of the two measured parameters (from the left and right sides of different subjects), shows a perfect symmetry vis à vis the nose axis. However, both parameters present slightly variable but significant values along the human face. Sites from the temple are less elastic than chin or forehead. The upper and lower parts of the forehead show slight disparities in their elasticity values. Cheeks are significantly less prone at retaining their imparted hydration status (lost 2 h after application of a hydrating product) as compared to sub-ocular regions or chin that retain their hydration up to 24 h. Attempts to establish a mutual relationship between the two skin properties unsurprisingly failed. Conclusion: The two studied skin properties show a slight but highly symmetric disparity along the entire human face

M. Portugal-Cohen, Z. Ma'or, M. Oron, **Full Scale Customization,** Cosmetics & Toiletries, Vol 133, No. 9, September 2018

The drive for personalized consumer products is no longer a passing fad. Personalization stems from deep motivations. The emotional wish to purchase products created "especially for me" comes across with an understanding of diversity between individuals and the prospects for more effective solutions to meet each individuals special needs. However, efforts to introduce personalized skin care—

i.e., for unique skin with distinctive characteristics — on an industrial scale means products formulated for generalized needs, which could not be as effective.

T. Quinn, **Natural emulsifier with texture and skin care benefits**, PERSONAL CARE ASIA PACIFIC, September 2018, p. 65 - 67

Emulsun [INCI: Hydrogenated Sunflower Seed Oil Polyglyceryl-3 Esters (and) Hydrogenated Sunflower Seed Oil Glyceryl Esters (and) Cetearyl Alcohol (and) Sodium Stearoyl Lactylate] is a sunflower-derived o/w emulsifier, in particle form, that can be utilized in skin and hair care applications. This versatile emulsifier helps create stable, aesthetically pleasing emulsions.

J. Gallagher, P. Rosher, O. Novac, **Skin hydration comparison of five prescribed emollients, JAAD,** September 2018, Volume 79, Issue 3, Supplement 1, p. AB263

Emollient therapy is the mainstay for treating dry skin conditions such as atopic eczema and psoriasis.

G. Bressier, F. Labarrade, C. Meyrignac, C. Capallere, C. Gondran, Y. Ferreira, G. Oberto, K. Cucumel, O. Dueva-Koganov, L. Zhang, A. Duev, P. Recht, S. Miccer, M. Koganov, **Exposure to Ultrafine Particles from Air Pollution Affects Skin Barrier, Keratinocyte Sternness Potential and Niche Microenvironment: Protective Effects of Giant Kelp Zeta Fraction,** IFSCC Congress, Munich, September 2018

There is an increasing focus on the health effects of exposure to environmental, particularly pollution associated with exposure to particulate matter (PM), which in terms of size is defined as coarse (2.5-10 pm) or fine (0.1-2.5 pm). Exposure to ultrafine particles (UFPs; <0.1 pm in size) was identified as more harmful toxic than exposure to larger ones, as they have a greater area to mass ratio, providing a greater surface for contact with toxic chemicals such as polycyclic aromatic hydrocarbons (PAHs), and metals to tissues. Pluman exposure to UFPs occurs every day, both outdoor, from sources such as vehicle emissions and air pollution, and indoor in home, office and commercial locations. Exposure of the skin to air pollutants has been associated with skin aging and the appearance of facial age spots, and the aggravation of some skin diseases. In the present study, we evaluated the protective effect against the exposure of UFP pollution and by skin application of a sustainably-created plant fraction of *Macrocystis pyrifera* (Giant Kelp Zeta Fraction), which was obtained by the application of Ashland's proprietary Zeta Fraction technology.

N. Portal, L. Blaizot, C. Boissard, M. Jullien, E. Segot-Chicq, A. Thakur, F. Bodin, **Addressing body skin discomfort with a cleansing rinse-off product adapted to dry, sensitive or atopic skins. Age-transversal *in vivo* studies, from babies to adults,** IFSCC Congress, Munich, September 2018

Background: Unlike the case of facial skin, a dry, sensitive and/or atopic body skin is a scarcely studied topic. These skin types, subjected to daily washes under warm conditions, share in common frequent feelings of discomfort. Objective: To create a tailor-made body wash able to soothe body skin discomforts felt by all concerned subjects. In short, to develop, from concept to in vitro and in vivo studies, a body wash that would fit all skin types from babies to adults. Methods: Subjects' expectations in term of key benefits were explored through a qualitative study on a representative group of 30 people. From thereby acquired knowledge, a product balancing both cleansing and caring properties was developed. The body wash performances have been demonstrated with a valorization program through six in vivo studies, involving 254 subjects, complaining of dry, sensitive body skin, atopic included, among which babies (3months-3y) and children (3-12y). Results: Results of a first clinical study on 43 subjects showed a significant reduction in skin dryness, graded by DermascoreÒ, immediately after the shower and up to 24 hours. A study on 25 subjects with extreme skin dryness showed that without applying any other cosmetic product onto the body, the use of the daily body wash for 2 weeks conveyed the atopic skin to reach healthy subjects pH value (close to 5). A new index of body skin discomfort was used in a study on 49 subjects with dry and uncomfortable body skin. After daily use of the body wash for 4 weeks, these subjects reached the level of comfort of normal skin. The body wash was submitted to a panel of 113 subjects with atopy prone skin and a sensitive body skin for evaluations of the cosmetic properties through questionnaires, after the first application and after 28 days of daily applications. In addition to the excellent acceptance of its cosmetic properties, the body wash clearly brought feeling of a restored skin comfort. Conclusion: More than a standard shower, this hybrid new texture cleans and cares in only one gesture with a high tolerance level. It efficiently addresses consumers' expectations with respect to very dry, sensitive and atopic skins. After a couple of weeks of daily use, the parameters of a normal skin are restored. It suits adults, children and babies.

C. Carrasco, G. Kimmel, L. Mallet, L. Le Mauff, P. Bellon, **How to create a technology to make a**

fragrance last longer showing improved skin moisture benefit?, IFSCC Congress, Munich, September 2018

The perfume market is highly competitive and is driven by technological innovations. Market research has shown that among perfume users, consumers are dissatisfied with the impact of perfume performance. In many cases, respondents complained that perfumes fade too quickly or change over time or dehydrate the skin. We believe it is important to develop a technology that can be added to the fragrance to provide functional benefits, such as hydration and durability. This research project raises several questions. What is the impact of skin hydration on the retention of fragrance molecules? Can we say that the addition of moisturizing raw material in a concentrate makes it possible to improve the lasting effect of the perfume on the skin? Can we create an alcoholic scent, both moisturizing and long-lasting? All these questions are part of the challenge of this project to find solutions to improve perfume performance.

S. Pain, L. Danoux, N. Berthelemy, S. Cadau, D. Herault, V. Andre, A.F. de Bengy, N. Forraz, C. McGuckin, **Highly efficient plant extract against oily skin determined by 2D and 3D sebaceous models,** IFSCC Congress, Munich, September 2018

People with oily skin often complain that their skin feels unclean and is shiny. Oily skin is not only an aesthetic concern, but can also contribute to acne development. The main origin of oily skin is the hyperactivity of sebocytes, which results in an excessive secretion of sebum from sebaceous glands. Sebaceous glands are mostly found on scalp, face, and trunk in association with hair follicles forming the pilosebaceous unit. The secretion of sebum is carried out through a holocrine breakdown of mature sebocytes characterized by a high density of cytoplasmic lipid droplets. Sebum is a unique complex mixture of lipids with triglycerides (30- 50%), free fatty acids (15-30%), wax esters (26-30%) and squalene (12-20%). However, sebum is beneficial as it helps to protect and moisturize the skin and hair, keeping them healthy. Therefore, managing or treating oily skin is always a challenge to retain an appropriate moisturization. Sebaceous glands also support the growth of facultative anaerobes such as *Propionibacterium acnes* (*P. acnes*), a common skin commensal bacterium. Encoding lipases of *P. acnes* degrade skin lipids of sebum, they especially hydrolyses the triglycerides present in sebum, releasing irritant free fatty acids onto the skin. Managing the lipase activity may contribute to decrease *P. acnes* virulence and related skin impact.

R. Voegeli, J.M. Monneuse, C. Klose, R. Schoop, B. Summers, T. Rudolph, A.V. Rawlings, **Phenotypic changes in the corneome and ceramidome of photodamaged dry facial stratum corneum from different ethnic groups,** IFSCC Congress, Munich, September 2018

Dry facial skin remains a major concern to consumers globally despite decades of moisturizer development [1]. This is probably a result of two issues: most stratum corneum (SC) understanding in this respect is on body skin rather than facial skin and the biochemical changes in such conditions have largely been conducted on an analyte by analyte basis rather than global changes in analyte composition. These approaches have been highly successful in helping us to determine the general composition of the SC but have their limitations. The use of mass spectrometry-based 'omic' approaches is on the increase for investigating skin biochemistry, especially proteomics and lipidomics. However, these approaches have not been used to study the corneome and ceramidome of facial SC. Compared with other body sites facial SC is thinner, has elevated serine protease activities, reduced levels of natural moisturising factor (NMF), impaired barrier function and a greater proportion of immature corneocyte envelopes (CEs), particularly on photoexposed sites [2-6]. Our aim was to utilize these mass spectrometry-based ceramidomics and proteomics to understand more precisely the effects of SC maturation (Figure 1) and its relation to facial photodamage, skinpigmentation and ethnicity and to explain some of these differences.

A. de Lago, E. Hernandez, T.Z. Reyes, J.R. Pinto, V.C. Albarici, G. Facchini, M.S. Silva, A. Pinheiro, A.S. Pinheiro, S. Eberlin, **Pre-clinical and Clinical evaluation of antiaging properties of a dermocosmetic formulation,** IFSCC Congress, Munich, September 2018

Studies has shown many factors, such skin inflammatory process and prolonged exposure to sunlight, could affect the skin barrier and extracellular matrix inducing a decrease in the synthesis of the major dermal proteins, collagen, elastin and hyaluronic acid, clinically characterized by wrinkles, rough skin, loss of water and skin tone. In this study, we evaluated *in vivo* effects of a dermocosmetic formulation in the increase of firmness, elasticity and hydration of the skin by instrumental techniques and perceived efficacy. Preclinical studies consisted on the production of collagen and hyaluronic acid using an *in vitro* model of human fibroblasts. Clinical evaluation was performed after 14, 30 and 60 days of treatment with the dermocosmetic product and consisted in the sensorial analysis of perceived efficacy through the application of a questionnaire answered by the participants of research. In addition,

the following instrumental analysis was performed: cutometry - to evaluate skin firmness and elasticity, corneometry for hydration and image analysis to evaluate wrinkles and expression lines. Human dermal fibroblasts were incubated with noncytotoxic concentrations of dermocosmetic formulation. Cell culture medium and treatment of cell cultures were replaced each 2 days. Culture supernatants were collected after 1, 14 and 30 days incubation. The levels of total collagen and hyaluronic acid were measured using commercially available kits. ANOVA test was used followed by Bonferroni post-test with a 5% significance level. The instrumental results obtained for firmness and elasticity parameters revealed progressive increases after 14, 30 and 60 days of cosmetic treatment on the face and neck. The analysis of cutaneous hydration, evaluated after 24 hours of application, revealed a 12% increase by corneometry technique. Imaging of the depth and size of wrinkles also revealed significant reductions. In the evaluation of the perceived efficacy, over 80% of the volunteers reported improvements in the attributes of nutrition, softness, luminosity, appearance of wrinkles and expression lines, after 14, 30 and 60 days of cosmetic treatment. *In vitro* results corroborated the clinical findings demonstrating an increase in the production of total collagen and hyaluronic acid in cultures of fibroblasts treated with the dermocosmetic formulation. According to the results obtained, we can conclude that then dermocosmetic formulation has the ability to stimulate the synthesis of total collagen and hyaluronic acid when compared to untreated group. This effect is directly related to the improvement in skin support, favoring tissue repair and regeneration. In addition, the stimulation in the production of extracellular matrix components contributes to the reduction in formation of expression lines and wrinkles, one of the most important changes in skin aging, conferring an anti-aging activity to the evaluated product.

G. Boyer, S. Brédif, G. Bellemère, C. De Belilovsky, C. Baudouin, **Investigation of Pediatric Sensitive Skin: Characterization by *in vivo* approach and development of an *in vitro* model**, IFSCC Congress, Munich, September 2018

Skin sensitivity is a self-reported syndrome which affects about 50% of adult population [1]. Recently, a group of expert defined sensitive skin as “A syndrome defined by the occurrence of unpleasant sensations (stinging, burning, pain, pruritus, and tingling sensations) in response to stimuli that normally should not provoke such sensations. These unpleasant sensations cannot be explained by lesions attributable to any skin disease. The skin can appear normal or be accompanied by erythema. Sensitive skin can affect all body locations, especially the face” [2]. There are therefore two kinds of signs that defined sensitive skin, objective signs characterized by erythema and subjective signs characterized by sensations like stinging, burning or tingling. Concerning children, previous work indicates a prevalence of sensitive skin over 30% under 6 years old [3]. The differences between a“normal” immature skin of infant and a “specific” sensitive skin remain unclear. A clinical study was performed to investigate the sensitive skin syndrome in a pediatric population. Based on clinical findings, an *in vitro* skin model mimicking the features of pediatric sensitive skin was developed.

J. Blaak, D. Dähnhardt, S. Bielfeldt, I. Simon, M. Schleißinger, K.-P. Wilhelm3, C. Wagner, S. Dähnhardt-Pfeiffer, P. Staib, **Aged epidermal barrier reveals decreased lipid lamellae density and shows alterations in lipid profile and ratio**, IFSCC Congress, Munich, September 2018

In aged skin, alterations of epidermal barrier function such as reduced stratum corneum (SC) integrity and recovery are described. More precisely, enhanced skin surface pH (ss-pH), impaired epidermal SC lipid synthesis as well as altered composition of the intercellular SC lipids are displayed amongthe elderly. These facts are dermatological challenges as functional and structural changes in SC are accompanied by age-specific clinical signs, such as dryness, roughness and irritation. Although aged skin has previously been examined by biophysical parameters and SC lipid analysis, no investigation has yet been performed regarding the SC lipid lamellae length accompanied by lipid ratio analysis in aged skin. To verify well-known changes in elderly and further to evaluate SC lipids and lamellae, the present work combines baseline data of two consecutive studies on aged epidermal barrier. Additionally, the SC lipid bilayer was evaluated by analyzing the normalized intercellular lipid lamellae length (nICLL) as well as SC lipid profile and ratio. The present study confirms age-related changes in SC and reveals modifications in SC lipid ratio and structure. The calculated nICLL of aged skin was for the first time shown to be decreased compared to published data of adult skin.

F.A Galván-Gil, G Vidal-Romero, M.L. Del Prado-Audelo, G. Leyva-Gómez, **Anatomical Study to Provide a Detailed Profile of Skin Hydration by Corneometer,** IFSCC Congress, Munich, September 2018

Background. The skin is the most extensive organ of our body. It provides security against the environment, against certain pathogens, and controls the loss of water loss, among others. Aim. We focused on determining the degree of hydration of the stratum corneum in five volunteers to detail reference parameters that could be implemented in persons who experienced burns in order to improve

their treatment and recovery. Method. Since there is, to our knowledge, no established data that can be applied to the diagnosis of improvements in anatomical regions damaged by burns, 23 anatomical regions, (the T zone of the face, chest, back, arms, legs, palms of the hands, and soles of the feet), were evaluated with Corneometer® CM 825 equipment, determining the degree of hydration on the stratum corneum. Corneometer measurements are based on the capacitance of a dielectric medium, and the analysis was performed every 2 centimeters in supine, prone, and laterals orientations. Males were selected as volunteers, with an age range between 20 and 35 years, with skin phototypes III and IV to avoid variations in the study, with a weight of 60-95 kg and a height of 1.50-1.90 meters, after at least 8 hours of personal hygiene and avoiding the application of cosmetics on the measuring and nearby areas, tending toward the skin being free of agents that could interfere with the study. Results. A total of 7,863 points were statistically represented with higher values of hydration in the T zone of the face, back, and chest, compared with the lower values in the palms of the hands and the soles of the feet. The behavior of the skin was observed based on hydration patterns obtained depending on the anatomical region, taking into account the flexibility of the region, the presence of water, and the continuous movement that individuals perform in their daily living activities. It was observed that the face is the anatomical region that presents the greatest amount of hydration, in comparison with the arms, palms, and soles of the feet, since these regions markedly decreased in degree of humectation. In the case of the arms, the supine position, which is that most exposed to the sun radiation, pollution, and natural agents of the environment, decreased significantly compared to the prone and lateral regions- In the flexion of the elbow, the values decreased in that this is a region of continuous flexibility. In terms of the case of the soles of the feet, hydration depends on the care that the person habitually uses. In persons who suffer from athlete's foot, the moisture values are higher, compared to a person without these conditions, in whom the moisture value decreases. For or the palms of the hands, the distal part decreases in hydration: because this is a region widely used to perform any activity, wear is greater and hydration decreases. In the same way, the production of sebum on the stratum corneum influences in the degree of hydration values. Thus, it is essential to keep our skin well moistened at all times to avoid certain pathologies generated by water loss on the stratum corneum. Conclusion. Since the amount of water varied depending on the anatomical region analyzed, taking these together, we achieved standardizing hydration values in a population represented by five volunteers, which will be applied to persons with burns to complement their recovery based on the treatments applied.

M. Mourelle-Mancini, **Upregulation of CXCL14 by Activys RedOut improves clinical signs of atopic skin,** IFSCC Congress, Munich, September 2018

Skin redness is a true concern: Visible signs in sensitive and sensitized skin Redness is an indication that there's inflammation in the skin and blood is rushing in to try to heal it. It is skin's default reaction to any number of conditions but the three most common are rosacea, allergies and skin sensitivity. Sensitized skin reacts in an instant. It's a hostile, toxic world where UV light, chemicals, allergens and pollution pose a daily threat to healthy skin.

M. Hisama, A. Kishita, N. Yamaguchi, C. Takeuchi, S. Matsuda, K. Yoshio, H. Kanayama, K. Masui, T. Miyazawa, R. Takimi, **Age Related Changes of Human Skin Investigated on Biophysical, Physiological and Histological Characteristics**, IFSCC Congress, Munich, September 2018

Japan's life expectancy has increased steadily over the past century, and currently stands as the highest in the world at almost eighty-four years. As life expectancy increases and with it the proportion of the aged in the population appropriate care of elderly skin becomes a medical concern of increasing importance. The skin is the largest multifunctional organ in the body. It functions as a protective physical barrier by absorbing UV radiation, preventing microorganism invasion and chemical penetration, and controlling the passage of water and electrolytes. The skin has a major role in thermoregulation of body, in addition to immunological, sensory, and autonomic functions. As skin ages, the intrinsic structural changes that are a natural consequence of passing time are inevitably followed by subsequent physiological changes that affect the skin's ability to function as the interface between internal and external environments. As numbers of the elderly increase, cosmetic dermatological interventions will be necessary to optimize the quality of life for this segment of the population. It is important to examine the associations between elderly skin condition and aging for development of anti-aging care products for elderly skin. Understanding the physiological, chemical, and biophysical characteristics of the skin helps us to arrange a proper approach to the management of skin diseases. However, it is critical to consider the influence of genetic and environmental factors on most of the skin characteristics. In this study, we investigated the comparison between the elderly skins in five different age groups on biophysical, physiological and histological characteristics by in *vivo* measurements in order to quantify aging processes on human skin.

N. Braun, S Binder, H Grosch, C Theek, J Ülker, H Tronnier, U. Heinrich, **Effect of microgravity on skin physiology: new findings,** IFSCC Congress, Munich, September 2018

The skin is the largest organ of the human body and has several functions, such as protection, thermal regulation, sensation and endocrine functions. Despite recorded skin problems in space and the fact that the skin is easily accessible and can be continuously examined by means of a large number of non-invasive test methods, investigations of the effects of space flight on skin are underrepresented so far. A first pilot study (SkinCare) was performed by Tronnier et al. on a single astronaut during a 6 month mission. Different skin compartments, namely the surface, epidermis and dermis were analyzed before, during and after the mission. Here, main skin physiological changes observed were a coarsening of the epidermis and a loss of skin elasticity confirmed by changes in the ultrasound picture on the skin. These changes appear to be reversible because after a year, the skin's condition returns to normal [1]. The aim of the present Skin B project was to validate these results on an increased number of astronauts with advanced devices and additional measurements. Therefore, measurements were carried out on 6 astronauts with respect to skin hydration, transepidermal water loss / barrier function and surface evaluation of the living skin in-orbit. Additional measured parameters on ground were skin elasticity, skin density and thickness as well as microcirculation. Thus, the Skin B experiment will complement the SkinCare experiment and aims to confirm the changes observed in the original experiment. However, the skin is not the only or primary focus of the project, but rather serves as a model for all organs covered with epithelial and connective tissue. This study will help the astronauts to prepare for a long stay in space and to set up space travels, e.g. planned exploration of the moon and deeper space.

Q. Peijin, C. Jianjie, J. Lili, D. Gan, W. Yue, **Composition and diversity of microbial community of Chinese female facial skin from different age and its association with skin characteristics,** IFSCC Congress, Munich, September 2018

Skin is the largest organ of the human body. As the interface between the body and the external environment, skin is the first line to protect the human body against the pathogen invasion. Meanwhile human skin harbors a variety of commensals, including bacteria, fungi and viruses. Each area of human body hosts its unique microbial community. Many factors contribute to the structure and function of skin microbiome, for example the host, their age, genetic variation, hygiene, life style and it shifts according to the characteristics of the micro-environments. The adverse shifts might cause a dysbiosis state and it has been reported to be associated with skin disease, such as atopic dermatitis, acne and dandruff. Therefore, exploration of skin microbiome not only helps us understand the correlation between microorganisms and the skin physiological status, but also provide a new perspective to pathogenic factors and new therapeutic targets. In previous study, skin microbiota was demonstrated that varies from different body sites and individuals. However, the reports mainly focused on the Western people and limited study on Chinese skin microbiome. In preliminary work, researchers paid more attention on skin microbiome associated with skin disorders, especially in AD patients, while the relationship between descriptive skin-related characteristics of individual (like wrinkles, hydration, *etc.*) and skin microbiota is ambiguous. In this work, 34 Chinese female volunteers living in Shanghai were recruited for facial skin microbial community study. Skin samples were collected and Miseq gene sequencing platform was operated. To achieve overall and details of skin appearances, the skin types and characteristics were clinically graded by dermatologist and measured by instruments. The goal of this study is to characterize the composition and variability of the skin microbiota in health people divided into age groups. Moreover, the aim of study is to evaluate the association of the skin microbial distribution with skin physical and physiological properties and the interaction of microorganisms themselves. In our study, it is suggested that *Proteobacterium* is prevalent in elder group together with wrinkles. Additionally, higher trans-epidermal water loss is correlated with *S. aureus* and this may in turn to design a product to recover the skin microbiome balance. In addition, gain more knowledge about microbes interaction with each other is critical to design the skin care products with probiotics and prebiotics. These findings expand our insights in health skin microbiome and will be useful in clinical treatment near the further.

J. Namkoong, D. Kern, M. Riggs, K.C. Holley, H.E. Knaggs, **Progressive Improvement of the Skin Following Use of a Novel Treatment Cleansing Technology,** IFSCC Congress, Munich, September 2018

With busy daily lives, people want to reduce their routines to save time. Cleansing is not a step people could remove from their daily routines. Thorough cleansing of the skin is an important step to remove accumulated impurities. We developed a novel treatment cleansing technology that cleanses the skin thoroughly while gently exfoliating to improve the skin surface texture. Improper cleansing and exfoliating could lead to irritation and barrier impairment, while proper cleansing and exfoliating leaves the skin invigorated and potentially helps with absorption of additional treatment products applied. In order to evaluate the progressive improvement of the skin after using this novel treatment cleansing

technology, we ran IRB-approved clinical studies in two different sites for 12 weeks. Both studies enrolled female subjects with normal healthy skin where they used a skin treatment/cleansing regimen consisting of a novel treatment/cleansing device and an associated treatment/cleansing topical, designed for normal to combination skin. In total, there were 40 subjects in the studies. High resolution photographs of the whole face, corneometer evaluation, dermatologist-investigator assessments and subject self-assessments were performed throughout the 12-week study period to evaluate skin improvements. Photographs of the whole face using automated subject positioning were taken with fixed camera background, distances, angles, settings, color bars, white balance and were standardized and digitally certified unretouched. The key attributes of this treatment cleansing technology are improvements in skin smoothness and softness. For example, statistically significant improvement immediately after one-time usage of the regimen for skin softness was demonstrated by clinical assessment, subject self-assessment as well as texture image analysis of a subject photography. This improvement had incremental further improvement over the 12-week period, without any tolerability issues. This novel technology demonstrated that skin features improved immediately and progressively saving time by treating the skin while thoroughly cleansing.

V. Cenizo, G. Lemaire, A. Dutilleul, M. Devincenzi, S. Grasset, S. Rivoire, V. Rouquet, C. Decombe, P. Portes, **Instant and Long-Term Skin Barrier Strengthening Help Reduce Skin Discomfort and Increase Skin Hydration**, IFSCC Congress, Munich, September 2018

Skin barrier is ensured at multiple levels including lipids, cornified envelope (CE) and tight junctions (TJ). It prevents water loss and protects skin against physical and chemical stress. The calcium gradient, required for skin barrier establishment, is disturbed during skin aging or barrier dysfunction diseases (atopic dermatitis, psoriasis). We sourced a mineral-rich natural water from the French Alps, Réotier water (RW), which has been used since ancient times to cure and soothe skin conditions. The analysis of its mineral composition revealed a particularly high calcium concentration (15 mM). Therefore, we investigated its potential benefits to barrier function and skin hydration. We first cultured human epidermal keratinocytes in a low-calcium medium and treated them with RW from 1% to 20% or calcium at equal concentrations (0.15 to 3 mM). After 7 days of differentiation, RW significantly and dose-dependently induced keratinocytes proliferation (MKI67) and differentiation genes expression (cytokeratin 10 (KRT10), involucrin (IVL) and filaggrin (FLG)). Surprisingly, while RW/calcium activities were similar from up to 10%/1.5 mM, RW at 20% induced higher genes expression than 3 mM calcium suggesting the benefit of other ions. In order to confirm this observation at the tissue level, RW was sprayed on a reconstructed human epidermis (RHE) during the second week of differentiation. RW improved barrier function, reflected by 19% less Lucifer Yellow penetration in treated RHE. Moreover, it increased the expression of transglutaminase 1 (TGM1), several CE proteins (IVL, FLG, LOR) and TJ protein claudin 1. Notably, IVL was 2.7-fold ($p<0.001$) more associated with cell membrane in treated RHE. As a TGM1 cofactor, calcium in RW could favour the crosslinking of IVL to the CE. Then, integrity of the permeability barrier constituted by TJ was evaluated with Trans-Epidermal Electrical Resistance (TEER). We sprayed RW every day on skin explants in culture (3 donors) and measured TEER at different time points for 7 days. After 5 hours, TEER already increased by 30% ($p<0.0001$) in treated vs control-RHE and stayed stable until day 7. The calcium-sensing receptor pathway has been shown to trigger TJ proteins relocation at the cell membrane 30 min after calcium addition. Our results suggest that RW could also have an instant action on TJ functionality. Two clinical tests were then conducted during winter when skin barrier is most affected. First, 33 women with dry skin sprayed RW twice a day on one of their forearms. After 28 days, hydration level (corneometry) of the control forearm decreased while it increased in the treated forearm resulting in a 17% hydration improvement ($P < 0.0001$). In a second study, 22 volunteers with sensitive skin (stinger positive) sprayed RW twice a day on their face. After 28 days, 68% of the volunteers had a decreased stinging sensation and 41% were stinger negative (score < 3). The stinging sensation decreased by 26% ($P = 0.0056$) among the panel. Taken together, these results suggest that Réotier water can decrease discomfort and increase skin hydration by both immediate and long-term barrier function improvement.

M. Kim, J. Ryu, Y. Chang, K.-E. Lee, K.-Y. Shim, S. Kang, M.S. Park, **Multi-moisturizer complex for satisfying all skin effects and solving problems of dry skin,** IFSCC Congress, Munich, September 2018

There are many kinds of moisturizers for satisfying dry skin problems. However, there are few materials that fulfill all skin effects *in vitro* and *in vivo* and most of them are chemicals. These days, many people want ecofriendly and safe cosmetics that have multi effects. Thus, the aim of this study was to investigate moisturizing materials for covering all skin problems by dryness. In this study, new materials for the prevention and treatment of skin dryness were producted by mixing two types of fermented beans and glyceryl glucoside. Also, this multimoisturizer complex (MMC) was compared with common

moisturizing materials *in vivo* and *in vitro*. Skin function deteriorates with aging, and the skin water content decreases. In prior study, we have analyzed the mechanism of aging-related skin dryness focusing on aquaporin3 (AQP3) and hyaluronan synthase 3 (HAS3) by using young and aged cells, respectively. In aged cells, AQP3 and HAS3 were significantly lower than that in young cells, showing skin dryness. The results showed that the expression level of AQP and HA in the skin decreased with aging, suggesting the possibility that this was one of the causes of skin dryness. In the present study, we evaluated skin enhancing effects of MMC *in vitro* and *in vivo*. First, we verified that old keratinocytes (50's) showed lower HAS3 and AQP3 gene expressions than young keratinocytes (20's), but dryness of old keratinocytes recovered in MMC treatment. In addition, using H&E staining and immunohistochemistry, we confirmed that skin structure and AQP3 expression were recovered by MMC treatment in 3D skin. In human dermal fibroblast, we verified regeneration effect of MMC by cell migration assay. In clinical results, changes of visual assessment showed differences between the test group and the control group at 4 weeks. Also, water content, skin texture, and degree of transparency were improved after MMC treatment. Especially, MMC was greater than common moisturizing materials such as glycerine and HA. In conclusion, MMC effectively satisfies skin needs by dryness, as showing skin effects in every aspect.

Y. Seo, H. Jeong, J. Koh, **Comparison of biophysical parameters of the skin aging in face and hand**, IFSCC Congress, Munich, September 2018

Background: In today's society, improving the quality of life makes people look younger than their chronological age, and therefore increases their interest in anti-aging. Most of the aging studies have been done on facial skin and only little known about the body aging. Among body parts, the hands are exposed like a face, making them a good part to assess aging externally. So far, the studies have led to hand wrinkles, volume of cavity assessment due to loss of fat and change in elasticity and skin texture. In this study, we aimed to aging patterns by comparing facial and hand skin aging parameters. Method: A preliminary test was carried out on 9 subjects (3 each in their 20s, 40s and 60s) and the main test is planned to be carried out after confirming the possibility. Those in their 20s, 40s and 60s were divided into three groups. Skin moisture, elasticity, roughness, wrinkle grading, skin tone evenness and skin volume of cavity were evaluated. Also, the level of the advancd glycation end products (AGEs) was measured as an aging protein. Result: As a result, skin hydration was no difference between age in face and hand, and skin elasticity, wrinkle grading, and AGEs level were difference with age in both face and hand. Skin roughness showed a tendency to increases with age in the face and hands for the 60s only, and the skin volume of cavity showed increases with age in the 60s in the case of the hands. Skin tone evenness tends to increase with age of the hands. Conclusion: This study has shown that the skin elasticity, wrinkle grading and AGEs levels are possible indicators of aging parameters in the face and hands. For further continuations of this study need a greater number of subjects to confirm correlation between aging parameters on the face and hands.

N. Zacaula Juárez, A. Galvan, Gerardo, L. Gómez, **Evaluation of the recovery of the biomechanical properties in hypertrophic burn scar: Looking for a suitable treatment and Care**, IFSCC Congress, Munich, September 2018

Background: The skin is the largest organ of the human body and serves as physical and chemical barrier to the environment. Burn injuries are one of the most common traumatic wounds, this represents a costly public health problem. Many of burned patients develops a hypertrophic scar that can cause an aesthetic and functional problems. The aim of this research was had a better understanding of the recovery of biomechanical properties in hypertrophic burn scar to find new therapeutic strategies to control adverse scarring. Method: Cutometer MPA 580 is a non-invasive an objective suction device to make measurements of scar components as melanin, erythema, hydration, sebum, elasticity and viscoelasticity. Nine patients on the upper extremities with hypertrophic burn scars were evaluated with Cutometer MPA 580 to determine the recovery of the biomechanical properties respect a counterpart without burn injury. The analysis of the different biomechanical parameter was performed with a 2 mm aperture probe and a negative pressure of 450 mbar with 2 seconds of suction and 2 seconds to relaxation in a series 10 suction/relaxation, by triplicate. Also were evaluated *stratum corneum* hydration values by Corneometer, the presence of melanin and erythema by Mexameter and sebum production by Sebumeter probe. Nine patients with an age range between 26-37 years, a skin phototype III, IV and V, a mean value 30.6% of the Total Body Surface Area (TBSA), second and third degree burns were treated with autograft. For this study, approval from the Ethics Committee of the Instituto Nacional de Rehabilitación in Mexico City was obtained (26/15) and Informed consent was obtained from all patients. Results: The results are presented as a percentage (%). In the melanin Index of hypertrophic scars, there is an increase of 13.8 % respect a counterpart without injury or hyperpigmentation in autograft. The results of the erythema index rise with 29.5% of scars, the hydration

value of *stratum corneum* decreased a 19 % and the sebum production decreased a 68 % on hypertrophic scar. The relative biomechanical parameters R0 (Maximal deformation), R5 (Net elasticity) and R6 (indicates a relative contribution of viscoelastic, viscous and elastic deformation ”viscoelasticity”). The maximal deformation (R0) in hypertrophic scar decreased by 49%, there is a reduction of 33% in net elasticity (R5) and was observed a increase of 5.6% in R6 “viscoelasticity”. The biomechanical properties (R0, R5 and R6) and hydration, sebum, melanin and erythema in hypertrophic burn scar was altered. Conclusion: This data can be useful for a better diagnosis and find new strategies suitable for the treatment of hypertrophic burn scars and contribute to outpatient burn care.

C. Kern, E. Hernandez, C. Gomber, S. Dumont, C. Garcia, **Effect of a newly developed skin protecting ingredient, acting on skin barrier function and microbiota equilibrium, thus favoring the balance and comfort of reactive skins,** IFSCC Congress, Munich, September 2018

Human skin is naturally covered with a population of microorganisms, specialized or opportunist, so called skin microbiota. Commensal microbiota contributes to skin defenses and is essential to maintain healthy skin. For example, *Staphylococcus epidermidis* is the most common bacteria of the cutaneous microbiota. Skin epidermis permits growth of *S. epidermidis,* which itself contributes to protection against pathogens. But this symbiosis is continuously threatened by physical/chemical aggressions, and this imbalance could be beneficial to opportunistic bacteria. *Staphylococcus aureus* is a leading human pathogen which can cause diseases ranging from minor skin infections to invasive and life-threatening diseases. Generally, dysbiosis between microbiota and skin leads to activation of immune defenses, inflammation and dysfunction of the skin barrier function, and thus to the development of skin disorders, such as dryness, inflammation or reactivity to external stress. *ArL* is a skin protecting ingredient developed from culture and extraction of *Great Burdock* (*Arctium lappa*) young roots using PAT Plant Advanced Technologies. Our aim was to investigate the effect of *ArL* on microbiota balance and skin barrierdefense, and thus its effect on skin protection and comfort of reactive skins.

T. Alkazaz, M. Danaher, J. Goodman, E. Segura, D. Scholz, **Natural Antimicrobials and the Microbial Population of the Skin Microbiome,** IFSCC Congress, Munich, September 2018

Just as every individual has a distinct fingerprint, each and every person has their own unique microbiome. The skin microbiome is an accumulation of the microbial communities that inhabit the skin and are key players in host defense. Commensal microflora on our skin is responsible for maintaining skin health through restoring immunity and communication with the lymphatic system. The action of indiscriminate microbial destruction, employed by preservatives, often unintentionally alters the thriving ecosystem of the skin microbiome. The current innovative study investigates variations in the population of microbial species after the application of antimicrobial peptides. Novel research analyzing activity of the histone deacetylase (HDAC) enzyme has concluded that some naturally derived antimicrobials are able to destroy pathogenic bacteria while maintaining commensal microflora on the skin – supporting the balance of the microbiome and promoting overall skin health.HDAC expression was used as an indicator to compare the effects of the skin’s microbiome with traditional biocides versus natural antimicrobials. The application of topical antimicrobials altered levels of HDAC expression and decreased the population of the microbiome. While this research suggested HDAC is channel of communication between microflora and the skin, the messenger of the microbial crosstalk has yet to be determined. In this study, a more conventional approach was taken to analyze the effects of the population of species in the skin microbiome. The effect of the microbial population present on the skin with the application of three antimicrobial peptides (Leuconostoc Radish Root Ferment Filtrate, Lactobacillus Ferment, and Lactobacillus & Cocos Nucifera (Coconut) Fruit Extract) was compared to a negative control (water) and a positive control (Triclosan). Microbiome population was determined by DANN extraction, 16S ribosomal RNA (rRNA) polymerase chain reaction (PCR) amplification and sequencing. A less conventional approach was taken in regards to panel size and evaluation during this study. Large subject panels allow for trend recognition between subjects. However, with the individuality of each person’s microbiome in mind, it would be difficult to establish trends within a group of subjects. Examining the nasolabial folds of each subject isolates of the geographic location of the microbiome, however the person-to-person variation of microflora is uncontrollable. Patterns in microbial change on each test subject were evaluated individually.

V.H. Pacagnelli Infante, J. Migliati, P.M.B.G. Maia Campos, **Why should I use sunscreen? The impact of lifestyleon the hydrolipidic, structural and morphological charecteristics of young men skin**, IFSCC Congress, Munich, September 2018

The consumption of cosmetics among men has grown in the last years. However there is some resistance to the use of these products due to the culture, sensory, perception and access for this

audience to consume cosmetic products. Considering that the use of sunscreens is a public health issue and directly affects the quality of life, the objective of this study is to show the skin differences between two groups, one that uses sunscreen regularly and one that does not use, using biophysics and skin imaging techniques. Sixty men between 18 and 28 years old, phototypes II, III and IV were randomly selected and questioned about their photoprotection habits. Hydration, integrity of the stratum corneum (TEWL, Corneometer and VisioScan), amount of sebum (Sebumeter) and activity of the sebaceous glands (Sebufix) were made. We analyzed the amount of pores (Visioface), formation of erythema (Mexameter), ultrasound of the dermis (DermaScan C) in the frontal and malar regions and we obtained reflectance confocal microscopy images (RCM) for analysis of the quality of the epidermis and papillary dermis at the cellular level in the frontal region. Of the 60 participants, 24 regularly uses sunscreens (group A) and 36 were not (group B). When questioned about the reasons for not using sunscreen, group B mentioned that did not obtain family incentive and /or sunscreens was sticky or oily. Changes in the integrity of the stratum corneum were observed, with thickening of this layer of the epidermis and impairment of the barrier function with increase of TEWL and decrease of the hydration for group B. The granular layer of the epidermis is also thicker for this group. There was an increase in microrelief roughness for the same group. Moreover, there is also a higher activity of the sebaceous glands, with consequent greater number of pores for group B. Also, a decrease in the echogenicity ratio of the group B were observed, evidenced by the decrease of the dermoepidermal junction layer (related to the depth of the papillae), increase in pore diameter and worst collagen quality. We observed a disruption of the honeycomb pattern of the epidermis and the presence of polycyclic papillae for group B. This same group showed dilatation in the veins in the basal layer of the epidermis and a significant increase in erythema, evidencing signs of possible inflammation. The presented damages evidences the necessity of UVB photoprotection (more related to the damages in the integrity of the barrier) and UVA, too (damages in the region of the papillary dermis). The lifestyle influences the choices and their consequences, showing that sun exposure can cause damage even early, especially in groups that present a certain cultural resistance to the use of cosmetics such as the male. Furthermore, we have shown that the damages of unprotected sun exposure happen in different layers of the skin, which increases the need to develop suitable sunscreens with UVA and UVB protection and with a good sensorial improving the adhesion of photoprotection among men.

I.I. Shuvo, K. Chakma, D. Toutant, **Prospect of 3D Warp Knitted Spacer Fabric and its Effect on Pressure Relieve for Reducing the Prevalence of Pressure Ulcers for Immobile Patients**, Journal of Textile Science & Engineering, Volume 8, Issue 1, 2018

Many hospitals use paper thin bed sheets with high friction coeffcients which are not ideal for patients with pressure ulcers and who are at risk of developing. These patients suffer a great deal of pain, which could have been prevented. Lying on a weak bed sheet with no regards to regulating micro-climate is a clear promoter of pressure ulcers. Another key factor of a hospital bed sheet is they are to be easily washed or disposed of because of all the unknown fluids that could seep onto the sheet. Therefore, the sheet must not only be to comfort those with pressure ulcers but to be easily washable and reusable. Again, in a hospital setting being able to easily wash the sheet and for it to hold its form is signifcant for reducing the cost of throwing away sheets less often. Therefore a theory has been proposed to design a 3D knit spacer bed sheet that will allow patients with pressure ulcers to be comfortable by ensuring a low friction coeffcient between their skin and the material. The friction coeffcient will be reduced by not only the structure but by the 70 percent polyester, 22 percent polypropylene and eight percent spandex blend. The friction coeffcient will stay low due to a high wicking and evaporation capability to ensure the skin stays dry as well as the material. The 3D knit spacer bed sheet also has a higher compressibility which distributes pressure more evenly as well as enabling a care giver to easily rotate an immobile person into a new position. The proposed bed sheet will be easily washable to ensure all bodily fluids such as vomit, blood, and others have been removed. This blanket will be slightly more expensive but is expected to last longer than a typical hospital bed sheet.

L. Skedung, C. El Rawadi, M. Arvidsson, C. Farcet, G.S. Luengo, L. Breton, .M.W. Rutland, **Mechanisms of tactile sensory deterioration amongst the elderly**, Scientific Reports 8, Article number: 5303 (2018)

It is known that roughness-smoothness, hardness-softness, stickiness-slipperiness and warm-cold are predominant perceptual dimensions in macro-, micro- and nano- texture perception. However, it is not clear to what extent active tactile texture discrimination remains intact with age. The general decrease in tactile ability induces physical and emotional dysfunction in elderly, and has increasing significance for an aging population. We report a method to quantify tactile acuity based on blinded active exploration of systematically varying micro-textured surfaces and a same-different paradigm. It reveals that elderly participants show significantly reduced fine texture discrimination ability. The elderly

group also displays statistically lower finger friction coefficient, moisture and elasticity, suggesting a link. However, a subpopulation of the elderly retains discrimination ability irrespective of cutaneous condition and this can be related to a higher density of somatosensory receptors on the finger pads. Skin tribology is thus not the primary reason for decline of tactile discrimination with age. The remediation of cutaneous properties through rehydration, however leads to a significantly improved tactile acuity. This indicates unambiguously that neurological tactile loss can be temporarily compensated by restoring the cutaneous contact mechanics. Such mechanical restoration of tactile ability has the potential to increase the quality of life in elderly.

P. Rouaud-Tinguely, R. Vyumvuhore, J. Corvo, D. Boudier, M. Le Guillou, B. Clos, **Quantifying Well Aging,** Cosmetics & Toiletries**,** Vol. 133, No. 8, September 2018

The age distribution of the world's population is dramatically shifting; longevity rises while fertility rates remain flat. According to demographic studies, 2020 will be a turning point, wherein individuals 60 years and older will outnumber children younger than five. Today, it is no longer a rarity to live 80 years or more in many parts of the world. This increasing longevity has led to new challenges in the medical field. Today's population expects to live longer and in good health — i.e., without facing the declines previously associated with aging. This status is referred to as healthy aging, aging gracefully or aging well; it was defined by Rowe and Kahn as freedom from disease, high cognitive and physical functioning, and a rich social life. An added element of aging well is one's perceived age. In elderly individuals, a perceived age lower than their chronological age is associated with high survival.4 Among consumers 50 years and older, there are two main outlooks on the signs of aging. The first is negative, where individuals do not accept their age and seek to erase the signs of time; e.g., the use of anti-aging products, in attempt to look younger. The second is positive, where individuals assume aging as part of their personal identity.

H.J. Lee, S.E. Jeong, S. Lee, S. Kim, H. Han, C.O. Jeon, **Effects of cosmetics on the skin microbiome of facial cheeks with different hydration levels,** Microbiology Open. 2018; 7

Basic cosmetics was used by volunteers belonging to high (HHG) and low (LHG) hydration groups for 4 weeks, and bacterial communities and biophysical parameters in facial skin were analyzed. Hydration level increases and transepidermal water loss and roughness decreases were observed in both groups after cosmetic use. Bacterial diversity was greater in LHG than HHG, and increased after cosmetic use in both groups. Bray–Curtis dissimilarities that were higher in LHG than HHG increased in HHG after cosmetic use, whereas they decreased in LHG. The phyla *Actinobacteria*, *Proteobacteria*, *Firmicutes*, and *Bacteroidetes* and the genera *Propionibacterium*, *Ralstonia*, *Burkholderia*, *Staphylococcus*, *Corynebacterium*, *Cupriavidus*, and *Pelomonas* were identified as common groups and they were not significantly different between LHG and HHG except for *Propionibacterium* that was more abundant in HHG. After cosmetic use, *Propionibacterium*, *Staphylococcus*, and *Corynebacterium* decreased, whereas *Ralstonia*, not a core genus, increased, as did KEGG categories of lipid metabolism and xenobiotics biodegradation and metabolism, suggesting that *Ralstonia* in skin may have the ability to metabolize cosmetics components. Bacterial communities after cosmetic use were different from those in both LHG and HHG before the cosmetic use, indicating that bacterial communities in LHG were not shifted to resemble those in HHG by cosmetics use.

M. Yamamoto, Y. Hayashi, Y. Otsuyama, **Comparison of stratum corneum hydration with temperature and air humidity**, J Nurs Care 2018, Volume 7

The purpose of this study was to clarify the changes in the stratum corneum hydration compared to temperature and air humidity.Te subjects of this research were 58 older adults. Te research was conducted in March and May of 2017. A self-administered questionnaire consisted of demographic data, frequency of taking bath, nutritional status (MNA®-SF) and condition of xerosis cutis. Te stratum corneum hydration was measured on the center forearm by Mobile Moisture HP10-N®. Data was analyzed for gender, age, frequency of taking bath and nutritional status to examine di□erences in stratum corneum hydration. Later, di□erences of the stratum corneum hydration data obtained in March and May were examined. Te results of this research displayed 32 female subjects (55.2%), 35 subjects under 75 years old (60.3%), 28 subjects who took a bath every day or almost every day (48.3%), 12 subjects at risk of malnutrition (20.7%) and eight subjects with rough skin (13.8%). Tere was no signifcant di□erence recognized in the stratum corneum hydration with respect to gender, age, frequency of taking a bath or nutritional status. At the time of the study in March and May, the temperature was 24.9±0.4℃ and 24.4±0.4℃ ($p>0.001$), respectively, and the air humidity was 29.8±1.3% and 47.3±3.6% ($p>0.001$), respectively. Te stratum corneum hydration in March and May was 41.6±8.5 (minimum value, 22.0; maximum value, 59.7) and 50.3±9.0 (minimum value, 34.0; maximum value, 72.0) ($p>0.001$) respectively. Te stratum corneum hydration was found to be signifcantly low in low humid environments.

D. Charnvanich, V. Panapisal, W. Suwakul, An. Tansirikongkol, **Effects of age, hydration level, and cosmetic treatment on skin mechanical properties of Thai**, Thai Journal of Pharmaceutical Sciences, 2018, 42 (3): p. 146-151

Purpose: Age and skin hydration influence skin mechanical properties. However, correlation between hydration improved by cosmetic and mechanical properties is uncertain. This study aimed to investigate the relationship between age, intrinsic skin hydrations, skin hydration after topical treatment, and skin mechanical parameters of different age ranges. Patients and Methods:Atotal of 123 healthy volunteers, aged 18–55, were divided into three age groups. Skin hydration and biomechanical properties were evaluated using Corneometer® and Cutometer®, respectively. Subsequently, 61 healthy women aged 30–55 were measured for skin hydration and biomechanical parameters after 8 weeks application of microemulsion or nanoemulsion. The changes in each parameter and their correlation were evaluated. Results: Skin capacitance correlated to some mechanical parameters only in young volunteers. Only gloss elasticity (R2) presented strong negative correlation with age in 30–40-year-old volunteers while all elasticity parameters (R2, R5, and R7) showed significant negative correlations with age in 41–55 years old volunteers. Microemulsion or nanoemulsion significantly improved skin hydration; however, it did not always affect elasticity parameters. Conclusion: Skin elasticity decreased with age and changes in R2 were firstly observed. Decrease in R2 parameter could, then, be the first sign of skin aging. Skin hydration and elasticity were not related in any age. Improvement in skin hydration and elasticity by topical treatment was independent and based on individual formulation.

R. Darlenski, E. Hristakieva, U. Aydin, D. Gancheva, T. Gancheva, A. Zheleva, V. Gadjeva, J.W. Fluhr, **Epidermal barrier and oxidative stress parameters improve during in 311□nm narrow band UVB phototherapy of plaque type psoriasis,** J Dermatol Sci, 2018 Jul;91(1): p. 28-34

Background: Psoriasis is a multi-systemic inflammatory disease that results from dysregulation between epidermal keratinocyte homeostasis and both innate and acquired immunity. Epidermal barrier defect has been described in psoriatic lesions. Furthermore an imbalance between pro-oxidative stress and antioxidant defense mechanisms are known in psoriasis patients. Aim: The aim of this study was to address the link between disease activity, epidermal barrier and systemic oxidative stress in the course of 311 nm narrow band ultraviolet B (NB-UVB) therapy of psoriasis. The dynamic of systemic oxidative stress parameters as well as local transepidermal water loss (TEWL) and stratum corneum hydration (SCH) was characterized before and after 311 nm NB-UVB therapy on the plaques of psoriasis vulgaris in comparison to untreated non-affected volar forearm sites of the same patients. Material and Methods: 22 patients with plaque type psoriasis vulgaris and 25 gender- and age-matched healthy controls were enrolled. We assessed the psoriasis area and severity index (PASI) and the dermatology life quality index (DLQI) for monitoring disease activity, severity and self-perceived DLQI impact as patient related outcome parameter. We measured non-invasively TEWL (Tewameter TM 300) and SCH (Corneometer CM 825) and the end product of lipid peroxidation - malondialdehyde (MDA), Reactive oxygen species (ROS), ascorbyl radicals (Asc) and detoxifying activity of catalase (CAT) were measured in the peripheral blood with spectrophotometric and EPR spectroscopy methods. Results: Disease activity improved in all patients compared to baseline witnessed by significant decrease in PASI; (from 14.1 to 10.4; $p < 0.0001$) and DLQI (from 11.7 to 8.1; $p < 0.0001$). At baseline TEWL-values were significantly ($p < 0.0001$) higher on psoriatic plaques (16.8 g/h/m^2) in comparison to uninvolved skin (5.3 g/h/m^2); with a decrease at both sites after NB-UVB phototherapy. SCH was significantly lower at psoriatic plaque s (4.7AU) compared to uninvolved sskin (42.4AU) and increased after treatment (8.6AU) ($p < 0.0001$). Interestingly, SCH decrease slightly during therapy at uninvolved skin (40.6AU). ROS and Asc declined during therapy in parallel to a decrease in MDA. A mild decrease in the antioxidative enzyme CAT activity which did not reach the significance was observed. Conclusion: The presented data is shows that a clinical improvement of psoriatic plaques under NB-UVB therapy, shown in with a decreased PASI and reflected by an increase in quality of life has beneficial effects on epidermal barrier function, SCH and improvement of systemic oxidative stress parameters (ROS, MDA and Asc). We assume that the general improvement in the oxidative stress parameters along with epidermal barrier parameters reflects mainly the improvement of disease activity which overwrites the possible negative pro-oxidative effects of the UV treatment.

K. Kimori, C. Konya, M. Matsumoto, **Venipuncture-Induced Hematomas Alter Skin Barrier Function in the Elderly Patients**, SAGE Open Nursing, June 2018

We aimed to compare the barrier function of the skin site with the color of hematoma induced by venipuncture and the area surrounding the skin site to help improve skin care for hospitalized elderly patients. There were 50 patients with a median age of 84 years who were included in the analysis. There was no significant difference between the hematoma site-induced venipuncture and the area

surrounding the hematoma site in terms of transepidermal water loss and skin sebum level. The status of stratum corneum hydration and skin elasticity on the hematoma sites was significantly lower than that on nonhematoma sites. The median skin pH was significantly higher on hematoma sites than that on nonhematoma sites. The study variables did not reveal any significant correlation with the intensity of skin erythema. These findings showed that hematoma formation in the subcutaneous tissue affected the skin barrier function and that these sites need moisturizing skin care regardless of the intensity of skin erythema.

A. Ezerskaia, N.E. Uzunbajakva, G.J. Puppels, J. de Sterke, P.J. Caspers, H.P. Urbach, B. Varghese, **Potential of short-wave infrared spectroscopy for quantitative depth profiling of stratum corneum lipids and water in dermatology**, Biomedical Optics Express 2436, May 2018, Vol. 9, No. 5

We demonstrate the feasibility of short wave infrared (SWIR) spectroscopy combined with tape stripping for depth profiling of lipids and water in the stratum corneum of human skin. The proposed spectroscopic technique relies on differential detection at three wavelengths of 1720, 1750, and 1770 nm, with varying ratio of the lipid-to-water absorption coefficient and an 'isosbestic point'. Comparison of the data acquired using SWIR spectroscopy with that obtained by a gold standard for non-invasive quantitative molecularspecific skin measurements, namely confocal Raman spectroscopy (CRS), revealed specificity of the proposed modality for water and lipid quantification. At the same time, we provide evidence showing aberrant sensitivity of Corneometer hydration read-outs to the presence of skin surface lipids, and a lack of sensitivity of the Sebumeter when attempting to measure the lipids of the cornified lipid envelope and intracellular lipid layers. We conclude that a spectroscopic SWIR-based spectroscopic method combined with tape stripping has the potential for depth profiling of the stratum corneum water and lipids, due to superior measurement sensitivity and specificity compared to the Corneometer and Sebumeter.

E. Berardesca, S. Mortillo, N. Cameli, M. Ardigo, M. Mariano, **Efficacy of a shower cream and a lotion with skin-identical lipids in healthy subjects with atopic dry skin**, Journal of Cosmetic Dermatology, May 2018

Background: Atopic dermatitis is a chronic, pruritic inflammatory skin disease that adversely affects quality of life. Aims: The current study evaluates the efficacy of a shower cream and a lotion, each with skin-identical lipids and emollients, in the treatment of atopic dry skin of subjects with a history of atopic condition. Methods: In all, 40 healthy females with clinically dry skin on the lower legs were enrolled in the study and underwent 4 weeks of daily use of the shower cream and 2 additional weeks of both the shower cream and the body lotion. Subjects were evaluated at day 0, week 4, and week 6. Skin barrier function was assessed by Tewameter®, skin hydration by Corneometer®, smoothness and desquamation by Visioscan®, and stratum corneum architecture by reflectance confocal microscopy (RCM). The investigator assessed the degree of dryness, roughness, redness, cracks, tingling and itch, and subjective self-assessment evaluated the perception of skin soothing, smoothness, and softness. Results: Skin barrier function and skin moisture maintenance were significantly improved using the shower cream. The lotion with physiological lipids, together with the shower cream, also improved skin barrier function and moisture. Both the shower cream and the body lotion reduced clinical dryness, roughness, redness, cracks, tingling and itch, according to the dermatologist, and increased soothing, smoothness, and softness, according to the subjects of the study. Conclusion: The combination of a shower cream and a lotion with physiological lipids efficiently restores skin barrier function and increases skin hydration, becoming an effective skin-care option for patients with atopic dry skin.

P. Mokrejš, J. Pavla□ková, D. Ján□ová, M. Hu□□a, **Hydration and Barrier Properties of Emulsions with the Addition of Keratin Hydrolysate**, Cosmetics 2018, 5, 64

Although keratin hydrolysates (KH) are added to skin care agents, detailed studies on the moisturising effects of KH are lacking. The aim of this study is to test whether adding KH into an ointment base (OB) heighten hydration of the skin and diminish transepidermal loss of water (TEWL). Formulations containing 2%, 4%, and 6% of KH (based on OB weight) were prepared. Hydration, TEWL and skin pH were measured; intervals of measurements were as follows: 1, 2, 3, 4, 24 and 48 h. Testing was carried out on 10 men. In terms of hydration, supplementing the OB with 2% KH is optimal, as an 11–19% increase occurs in hydration of stratum corneum (SC). All the formulations with added KH as tested caused TEWL to decline after application. Keratin hydrolysate makes for an excellent occlusive; adding it to OB results in a 30–50% reduction in TEWL after application. KH functions as a humectant as well, as it helps to bind water from the lower layers of the epidermis to the SC. Formulations with additions of 2–6% of KH were stable in structure and did not cause phase separation even after 6 months storage.

J.W. Fluhr, **Atopic Dermatitis and the Barrier**, ISBS Conference San Diego, May 2018

The epidermis is the interface of the human body to the potentially harmful environment with exogenous stressors like chemicals, UV radiation other physical impact. The epidermal barrier is recognized as a central key pathophysiologic element in inflammatory skin diseases such as atopic dermatitis (AD). Some bases of an impaired barrier have been elucidated on the molecular level e.g. mutation in genes encoding for filaggrin and lipid processing defects. Recently, alterations in the microbiome composition and its relation to altered barrier function were reported. Multiple non-invasive biophysical measurement instruments are used to assess skin physiology especially in inflammatory skin diseases associated with an altered epidermal barrier e.g. transepidermal water loss, stratum corneum hydration, surface pH, inflammatory signs and surface parameters. Clinical scores for AD disease activity are widely used but rely entirely on subjective criteria in assessing both the severity of lesions and the extent of involvement. Noninvasive biophysical instruments are available and introduced into clinical evaluation of chronic diseases and treatment effects. In AD objective scores including biophysical measurements have been published. Quantifying barrier function, stratum corneum hydration, erythema, scaling, and sub-epidermal edema as well as estimates of involved body surface areas are implemented in assessing the severity of AD. Sensitivity and reliability of these severity scores have been published involving computer assisted software and measurement devices. New models are now developed to use standardized approaches in AD in clinical studies. Recently, non- or minimalinvasive methods have been used in different AD research areas. These methods include multidimensional imaging, in vivo multiphoton spectroscopy, optical coherence tomography, atomic force microscopy, near-infrared spectroscopy (NIR), in vivo Raman micro-spectroscopy and in vivo reflectance Raman spectroscopy. The state of the art of established non-invasive novel methods and their value/limitations in in AD research will be discussed. The combintion of established approaches with cutting edge methods will allow to gain a deeper understanding of barrier related inflammatory skin diseases. Eventually biomarkers can be derived from these studies for diagnostic and preventive purposes as well as monitoring of disease activity during specific treatment regiments.

A. Rigal, R. Michael-Jubeli, A. Bigouret, A. Nkengne, A. Baillet-Guffroy1, A. Tfayli, **Lipides**: **Systèmes Analytiques et Biologiques**, ISBS Conference San Diego, May 2018

Introduction: Clinical manifestations of skin aging like xerosis, wrinkles and slackness are related to underlying complex molecular phenomena in the different layers of the skin. The combinations of classical biometric measurements with more complex and informative techniques like *in vivo* Raman spectroscopy can provide interesting information on the organization of lipids in the *Stratum Corneum (SC)*, their barrier function and on water content and mobility, in order to better characterize the skin aging. Methodology: Biometric information (TEWL, corneometry, sebumetry, skin pH, mechanical stress) and Raman spectra and in-depth profiles were collected from the forehead of twenty-two young womens (18- 24 years old) and eighteen elderly womens (70-75 years old). Results and Conclusions: Important modifications on biometric skin parameters, structure of the SC and water mobility can be observed for elderly. Our results show a good association between biometric parameters and *in vivo* Raman descriptors. Interestingly, higher compacity of lipids, higher total water content and lower unbound water content are observed for elderly.

V. Hourblin, S. Nouveau Stéphanie, J. Faugère, C. Gomes, I. Tardy, L. Aguilar, **Characterization and Statistical Modeling of Facial Skin Radiance in Senior Women**, ISBS Conference San Diego, May 2018

Introduction: Dull skin is a major concern for senior women but even though some parameters such as optical parameters seem to be involved in the perception of skin radiance, there is a lack of objective assessments, and it remains difficult to assess. A typological study was conducted in order to characterize the drivers of lack of facial skin radiance in senior women using a holistic and cartographic approach. Knowing this, the change level required for each key driver was determined to improve overall skin radiance then confirmed through a validation study. Methodology: In a first step, a typological study was carried out on 150 French women, phototype II or III, aged over 55 years, and distributed in two groups according to their lack of radiance as scored by a dermatologist (severe versus light to moderate). A large number of parameters including skin type and texture, skin aging signs, wrinkles, pigmentary disorders and dark circles were assessed by a dermatologist and by self-assessments. Instrumental measurements were also performed, skin color using the L*a*b* system (Spectrophotometer® CM-700d), skin shininess (Lightcam®), backscattered light (Translucymeter® TLS850), current level of sebum (Sebumeter® SM815), skin conductance (Corneometer® CM810), and skin density by ultrasounds (DUB®SkinScanner 75). Qualitative andquantitative Bayesian Belief Networks were designed to characterize the lack of radiance and to set a predictive model of radiance improvement for both women and dermatologist. In a second step, a 10 validation study was carried out

on 90 women with a similar profile, and presenting a lack of radiance according to the key features. The predictive model was used to define the expected change range of each feature; this prediction was validated with a combined cosmetic routine. Results and Conclusions: Bayesian statistical approach was effective for identifying and ranking the key drivers of facial skin radiance. The first striking result was that lack of radiance as assessed by the expert was driven by dark circles, skin shininess, pigmentary disorders, backscattered light and skin density, but usual aging signs such as wrinkles did not contribute to it. Interestingly, these key drivers were also perceived as such by the women enrolled in the study. According to the statistical model, improvement of facial skin radiance in senior women can be reached by decreasing dark circles and skin tone unevenness and by increasing the skin shininess. For each of the key features, we were able to define target values (clinical scores or instrumental measurements) in order to improve the overall radiance. These targets have been validated through the second study, by clinical and self-assessments of radiance after combined skin care and make up applications. These two clinical studies allow us to have now, a tool based on objective clinical targets, in order to get more radiant skin in senior population.

L. Li, K. Wei, S. Ching, K. Wehmeyer, Je. Christman, A. Altemeier, R. Spruell, G. Fadayel, R. Wickett, **Improving Stratum Corneum Barrier Function through High Lipid Deposition from Rinse-off Cleansers: Skin Biomarker Measures**, ISBS Conference San Diego, May 2018

Introduction: Dry skin is a common skin disorder that is reflected by reduced stratum corneum hydration, increased trans-epidermal water loss, and a loss of skin elasticity. The condition worsens during the dry winter season and upon repeated usage of regular non-emollient containing cleansing products. The purpose of this study is to develop a set of skin biomarkers as surrogate indicators of stratum corneum 15 barrier function and integrity, and to guide personal care formulation development to holistically improve skin conditions beyond conventional moisturization measures. Methodology: Standard Leg Controlled-Application Test (LCAT) methodology was used. Treatment was conducted over a 3-week period during the winter season; women with dry leg skin had their legs washed once daily with the randomly assigned body wash products and water alone treatment as control. Typical moisturization measures were taken, including expert dryness grading, corneometer and TEWL. Ten successive D-squame tapes were taken from virgin areas within each treatment site at baseline and at the end of each treatment week. The strips were then analyzed for biomarkers (IL-1α, IL-1ra, Keratin 1, 10, 11, involucrin, total proteins, and NMFs). Furthermore, the panelists returned during the summer season to determine baseline biomarker trends as skin conditions naturally improve. Results and Conclusions: Results indicate that the emollient-depositing body wash delivers significant improvements in standard moisturization measures (dryness grades, corneometer hydration, and TEWL). For the first time in the rinse-off context, the advanced body wash is shown to significantly improve related skin biomarkers that are good indicators of stratum cornenum barrier function and integrity. Importantly, the observed biomarker trends are all consistent with the seasonal effect as dry skin naturally improves. Conversely, regular body wash causes significant damages vs. water control as shown in both biomarker and traditional measures. Taken together, a set of skin biomarkers are developed to provide objective, non-invasive, and consistent measures of stratum corneum barrier function and health for guiding the development of superior personal care formulations.

M.O. Melo, L. Kakuda, P.M.B.G Maia Campos, **Clinical Efficacy of a Multifunctional Cosmetic Formulation for Mature Oily Skin**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: The skin may change due to factors as high temperatures, increasing sebum excretion and presenting oiliness and acne. These alterations can persist during the aging and provoke more changes that influence the use of cosmetics. The objective of this study was to evaluate the clinical efficacy of a cosmetic product developed for the mature oily skin. Methodology: The clinical efficacy was evaluated on 30 participants aged between 39 to 55 years old with oily skin. The analyzed parameters were: stratum corneum water content, TEWL, sebum content and percentage, microrelief and dermis echogenicity. The analyses were performed on different regions of the face. A placebo formulation was also tested. Results and Conclusions: The developed formulation improved the sebum content and percentage, skin microrelief in terms of skin roughness and desquamation and dermis echogenicity. The biophysical and skin imaging techniques utilized in this study were useful to test the clinical efficacy of an effective formulation for mature oily skin.

M. Mendes Fossa Shirata, P.M. Berardo Gonçalves Maia Campos, **Evaluation of Young Skin Photoaging Using Biophysical and Imaging Techniques**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: Photoaging is associated to an intense solar exposure, thus the photoaging signs can be observed also in the young skin, mainly in countries with high UV incidence, like Brazil. The aim

of this study was to evaluate the skin changes resulted from photoaging in Brazilian young skin in comparison to photoaged mature skin. Methodology: Thirty participants were divided in two groups: the first between 18 to 35 years old and the second, 40 to 60 years old. Analyzes were performed on the randomized facial malar region. TEWL, stratum corneum water content, sebum content, high resolution imaging, echogenicity and dermis thickness, skin color and elasticity parameters were analyzed. Results and Conclusions: The obtained results showed that sun exposure can cause changes even in the young skin, with the appearance of spots and the reduction of the echogenicity of the dermis, besides there were no significant differences between young skin and mature skin in most parameters. In conclusion, signs of photoaging may be frequent even in young skin.

P.M.B.G. Maia Campos, M.O. Melo, L.O. Guerra, **Application of Reflectance Confocal Microscopy in the Evaluation of Skin Hydration**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: The Reflectance Confocal Microscopy (RCM) is an important tool to evaluate skin hydration. However, there is a lack of studies in the literature. This study evaluated the hydrating effects of different active ingredients using RCM. Methodology: A carbomer gel added or not (vehicle) with Hyaluronic Acid (F1), Glycerin (F2), Hydrolyzed Rice Protein (F3) or *Kappaphycus alvarezii*&*Caesalpinia spinosa* Extracts (F4) was used. The anterior leg of 20 participants was utilized and a control was kept. Measures of TEWL, stratum corneum water content and interkeratinocyte reflectance, furrows size, morphology and skin surface irregularity were done before and after 2, 4 and 8 hours. Results and Conclusions: Improvement of TEWL and stratum corneum water content was noted with F2 and F4. Furrows size, morphology and skin surface irregularity improved with F2 and F3. F1 and F2 showed an increase of interkeratinocyte reflectance. RCM is an efficient technique to evaluate morphological changes of skin hydration, showing the modifications of skin structures by alterations reflectance and morphology.

M. Gabarra Almeida Leite, P.M. Berardo Gonçalves Maia Campos, **Evaluation of Oily Hair and Skin: Comparison between Self Perception and Clinical Analysis Using Biophysical and Imaging Techniques**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: Excess of oiliness can cause skin changes such as acne and compromise the cutaneous physiology, affecting of both skin and hair. Thus, the aim of this study was to evaluate skin and hair alterations due to excessive amount of sebum using biophysical and imaging techniques. Methodology: 100 participants (18 - 49 years), with oily skin and hair, were recruited. Skin was evaluated in terms of stratum corneum water content, TEWL, activity of the sebaceous glands, amount of porphyrins and pores. Scalp was evaluated in terms of sebum content. Results and Conclusions: Participants were divided 4 groups: 1- Oily skin and hair (45,23%), 2- Oily skin and normal hair (10,71%), 3- Normal skin and oily hair (34,52%) and 4- Normal skin and hair (9,52%). The participants with oily skin presented activity of the sebaceous glands of 9.1 ± 1.1 surface (%), high amount of pores and presence of porphyrins, and scalp amount of sebum of 330,6 ± 9,8 µg/cm². Although all the panelists considered their hair and skin oily, they were classified differently, showing that the tropical weather can influence the self-perception and lead to a wrong treatment without the correct evaluation.

L. Salomão Calixto, C. Picard, G. Savary, P.M. Berardo Gonçalves Maia Campos, **Application of Topical Formulations Containing Natural Origin Actives and UV-Filters in the Prevention of Photoaging in French and Brazilian Skin**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: The study of skin from different populations brings an essential knowledge to the development of skin treatments. The aim of this study was to evaluate the immediate effects of topical formulations using biophysical techniques and to compare the skin biology of the participants. Methodology: 36 subjects, 18 French and 18 Brazilians, were enrolled. Transepidermal water loss, stratum corneum water content, skin viscoelasticity and skin brightness were evaluated before and 60 minutes after formulations application. Results and Conclusions: Brazilian skin had a lower TEWL and less gloss on the skin surface when compared with French skin. There was no difference in hydration and viscoelastic profile. After 60 minutes, there was a significant increase in stratum corneum water content and skin brightness, a significant decrease in TEWL and no difference in skin viscoelasticity in both groups. In conclusion, biophysical differences were found on the groups and the formulations were effective in both populations.

M. Übner, V.-R. Tuulik, S. Saarik, V. Tuulik, T. Vare, E. Makienko, **The Effect of Local Thermoneutral Mud and Peat Application on the Skin Hydration Measured in the Forearms region Corneometer**, Balneo Research Journal, Vol.9, No.2, May 2018

Introduction: Mud and peat differ from each other in their chemical composition. The use of

warm peloids as the treatment of different skin diseases has been studied previously. The moisturizing effect of mud and peat is mainly related to humic substances. The aim of the current study was to analyze the effect of thermosneutral mud and peat applications on the skin hydration (SH). Materials and methods: An experimental study was performed with 50 persons in two groups. The SH measurement is based on capacitive method, and Multi Skin Test Center MC-1000 was used. Thermo-neutral natural sea mud and peat were applied on the left volar arm for 30 minutes on 10 following days and the SH level was measured before and after the last peloid application. The control data were measured on the right hand. Also, the content of humic substances was measured in both peloids. There was 2% of humic substances in mud dry matter, and 55% in peat dry matter.Results: There were subjects in both groups whose forearm SH increased or decreased after the local peloid application. There was positive dynamics in SH level in 11 subjects ($p<0.05$) in the mud group and in 7 subjects ($p<0.05$) in the peat group. The positive dynamics in SH was 9.5% higher in the peat group. The negative dynamics in SH level was in 15 subjects ($p<0.05$) in the mud group and in 17 subjects ($p<0.05$) in the peat group. The difference with control hand was the same in both groups. Conclusion: Mud and peat have very different content of humic substances but the differences in SH changes between the groups were not so big. Peat contains more humic substances and, therefore, the subjects in the peat group revealed higher positive dynamics in SH level.

C. Boutot, E. Ranouille, E. Bony, J.-Y. Berthon, E. Filaire, C. Leduc, P. Bedos, ***Schisandrachinensis* combats pollution-induced stress,** PERSONAL CARE ASIA, May 2018, p. 59-62

The human skin, and mainly the upper layer of the epidermis, plays the role of a barrier, but is also one of the first and major targets of air pollutants, pollutants contributing to wrinkle and dark sports occurrence through the redox imbalance. A possible approach to attack ROS-mediated disorders for both preventive and treatment means is based on the use of substances, which can be found in plants as secondary metabolites, lignans being a promise candidate. The present study was aimed to better understand the cellular mechanisms beyond the oxidative changes induced by urban pollution (Urban dust 1649b, NIST) and the effect of *Schisandra chinensis (S. chinensis)* extract in reconstructed human epidermis, by a transcriptomic approach and secondly through the evaluation of Nrf2, AhR, NF-kB, and DJ-1pathways using an *in vitro* model. Finally, we evaluated the effect of S. *chinensis* on skin hydration, homogeneity, radiance and luminosity in Chengdu (China). Urban dust (SOpg.mL 1) was able to activate the cytoplasmic expression of NF-kB and AhR when compared to control. *S.chinensis* extract attenuated the urban dust-induced oxidative stress, the protective mechanism being associated, at least in part, with the modulation of the Nrf2 and AhR pathways and the activation of DJ-1. S. *chinensis* extract, named Urbalys® protects from prolonged pollution aggression since it improves hydration, protects skin homogeneity, increases skin radiance and attenuates skin spot intensity after 21 days of pollution exposition.

A.K. Dabrowska, F. Spano, S. Derler, C. Adlhart, N.D. Spencer, R.M. Rossi, **The relationship between skin function, barrier properties, and body-dependent factors,** Skin Research & Technology 2018; 24: 165-174

Background: Skin is a multilayer interface between the body and the environment, responsible for many important functions, such as temperature regulation, watertransport, sensation, and protection from external triggers.Objectives: This paper provides an overview of principal factors that influence human skin and describes the diversity of skin characteristics, its causes and possible consequences. It also discusses limitations in the barrier function of the skin, describingmechanisms of absorption. Methods: There are a number of in vivo investigations focusing on the diversity of human skin characteristics with reference to barrier properties and body-dependent factors. Results: Skin properties vary among individuals of different age, gender, ethnicity, and skin types. In addition, skin characteristics differ depending on the body site and can be influenced by the body-mass index and lifestyle. Although one of the main functions of the skin is to act as a barrier, absorption of some substances remains possible. Conclusions: Various factors can alter human skin properties, which can be reflected in skin function and the quality of everyday life. Skin properties and function are strongly interlinked.

S. Iizaka, **Frailty and body mass index are associated with biophysical properties of the skin in community-dwelling older adults**, Journal of Tissue Viability (2018)

Aim of the study: This study aimed to investigate the association of frailty and body mass index (BMI) with biophysical properties of the skin in community-dwelling older people. Materials and methods: A cross-sectional study was conducted in a suburban Japanese city. Older adults aged >65 years and participating in a health checkup program were recruited (n = 128). Stratum corneum hydration, clinical manifestations of dry skin, skin elasticity and condition of the dermis (as measured by ultrasonography) were evaluated on the volar forearm. Frailty phenotype and BMI were also evaluated. Results: The

mean age of participants was 74.5 years, and 96.1% were women. Skin thickness was significantly decreased in frail participants compared with non-frail participants in an age-adjusted multivariate model (p = 0.009). Frail participants showed significantly lower skin elasticity values than non-frail participants in a univariate analysis (p = 0.024), but this was not significant in the multivariate model. In participants with BMI >25kg/m2, clinical manifestations of dry skin were significantly decreased compared with BMI <21.5kg/ m2 (p = 0.002). Participants with BMI >25kg/m2 and with 21.5 kg/m2 < BMI <25kg/in2 showed significantly higher skin elasticity values than participants with BMI < 21.5kg/m2 (p = 0.014 and p = 0.042, respectively). Conclusion: Frailty was associated with decreased skin thickness and decreased skin elasticity partially via the influence of chronological aging. Low body mass was associated with increased xerosis manifestations and decreased skin elasticity in community-dwelling older adults.

A. Markiewicz, M. Zasada, A. Erkiert-Polguj, M. Wieckowska-Szakiel, E . Budzisz, **An evaluation of the antiaging properties of strawberry hydrolysate treatment enriched with L-ascorbic acid applied with microneedle mesotherapy**, Journal of Cosmetic Dermatology, April 2018

Background: Mature skin is characterized by a loss of elasticity, hyperpigmentation, and dehydration. L-ascorbic acid stimulates the synthesis of collagen type I, inhibits melanogenesis, and helps to maintain correct skin hydration. Combining microneedle mesotherapy with the application of preparations rich in vitamin C results in better therapeutic effects due to the improved absorption of active substances. The study evaluates the effectiveness of the application of strawberry hydrolysate enriched with L-ascorbic acid using microneedle mesotherapy. Materials and Methods: Seventeen volunteers aged 45-70 years underwent a series of four microneedle mesotherapy treatments with vitamin C serum, performed every 10 days. The 20% L-ascorbic acid solution (pH = 3.5) was prepared immediately before application. After the treatment, the participants gave a subjective assessment of the effectiveness. Cutometer® was used to measure skin elasticity and firmness, Corneometer® to measure skin hydration, and Mexameter® skin tone. Results: The results of the survey showed improvements in skin hydration and elasticity. In vivo studies confirmed the effectiveness of serum and the impact of the active substance on skin firmness and elasticity, the degree of hydration and skin tone. Conclusion: Microneedling with vitamin C improves skin tone, hydratation and firmness, and decreases the visibility of hyperpigmentation.

G. Kang, T.N.T. Tu, S. Kim, H. Yang, M. Jang, D. Jo, J. Ryu, J. Baek, H. Jung, **Adenosine-loaded dissolving microneedle patches to improve skin wrinkles, dermal density, elasticity and hydration**, Int J Cosmet Sci. 2018 Apr; 40(2): p. 199-206

Objective: Although dissolving microneedle patches have been widely studied in the cosmetics field, no comparisons have been drawn with the topical applications available for routine use. In this study, two wrinkleimproving products, adenosine-loaded dissolving microneedle patches and an adenosine cream, were evaluated for efficacy, with respect to skin wrinkling, dermal density, elasticity, and hydration, and safety in a clinical test on the crow's feet area. Methods: Clinical efficacy and safety tests were performed for 10 weeks on 22 female subjects with wrinkles around their eyes. The adenosine-loaded dissolving microneedle patch was applied once every 3 days, in the evening, for 8 weeks to the designated crow's feet area. The adenosine cream was applied two times per day, in the morning and evening, for 8 weeks to the other crow's feet area. Skin wrinkling, dermal density, elasticity, and hydration were measured by using PRIMOS premium, Dermascan C, Cutometer MPA580, and Corneometer CM 825, respectively. In addition, subjective skin irritation was evaluated by self-observation, and objective skin irritation was assessed through expert interviews. Results: The adenosine-loaded dissolving microneedle patches had a similar or better efficacy than the adenosine cream. Both groups showed statistically significant efficacy for almost all parameters ($P < 0.05$). The dissolving microneedle patches had a long-lasting effect on the average wrinkle depth ($P < 0.05$), only showed efficacy in dermal density ($P < 0.05$), had an early improving effect on elasticity ($P < 0.05$), and demonstrated better hydration efficacy ($P < 0.001$). No adverse effects were observed in either group during the test period. In the clinical efficacy test of four skin-improvement parameters, adenosine-loaded dissolving microneedle patches showed the same or better effect than the adenosine cream, although the weekly adenosinedose was 140 times lower. Conclusion: The dissolving microneedle patches caused no adverse reactions. These adenosine-loaded dissolving microneedle patches are expected to be safe, effective, and novel cosmetics for skin improvement.

K. Yonezawa, M. Haruna, M. Matsuzaki, M. Shiraishi, R. Kojima, **Effects of moisturizing skincare on skin barrier function and the prevention of skin problems in 3-month-old infants: A randomized controlled trial,** Journal of Dermatology 2018; 45: p. 24–30

An effective newborn skincare protocol has not been established. We aimed to evaluate the effects of moisturizing skincare, including using lotion and reducing routine bathing. Our hypothesis was

that moisturizing skincare would improve skin barrier function. This randomized controlled trial included 227 healthy Asian newborns between 1 week and 3 months old. We compared moisturizing skincare (bathing every 2 days and using lotion daily; intervention, n = 113) to daily bathing without lotion (control, n = 114). We assessed the skin barrier function (transepidermal water loss [TEWL], stratum corneum hydration [SCH], skin pH and sebum secretion) as a primary outcome at 3 months old. We also assessed the incidence of skin problems according to parents' diary reports. Compared with the control, the intervention group had a lower face TEWL (mean standard deviation, 14.69 7.38 vs 17.08 8.26 g/m2 per h, P = 0.033), higher face SCH (60.38 13.66 vs 53.52 14.55, P = 0.001) and higher body SCH (58.89 12.96 vs 53.02 10.08, P < 0.001). Compared with the control, newborns in the intervention group had significantly lower rates of diaper dermatitis between birth and 1 month old (6.3% vs 15.9%, P = 0.022), and tended to have lower rates of body skin problems between 1 and 3 months (42.1% vs 55.2%, P = 0.064). Moisturizing skincare was effective for improving skin barrier function and preventing newborns' diaper dermatitis. The results of our study may help parents make informed decisions about newborn skincare.

J. Kitsongsermthon, J. Kreepoke, K. Duangweang, A. Tansirikongkol, **In vivo exfoliating efficacy of biodegradable beads and the correlation with user's satisfaction,** Skin Research & Technology, 2018, 24: p. 26-30

Background/purpose: By the end of 2017, non-biodegradable microbeads will be prohibited in USA, UK and Europe, due to their environmental issue. There are biodegradable beads available, but their effect on skin desquamation has not been evaluated yet. This study aimed to understand the skin renewal time, moisturizing effect and user's satisfaction of gel scrubs containing different exfoliating beads. Methods: Gel scrubs, containing polyethylene, mannan or wax beads, were used in this study. The stratum corneum turnover time (SCTT) and skin hydration were evaluated by dansyl chloride staining technique and Corneometer, respectively. The selfassessment was also performed after a 3-week home use trial. Results: The SCTTs of three different gel scrubs were not significantly different. A numerical increase in the skin hydration level was found in all groups. Satisfaction scores for the appearance and usability attributes were similar, but scores for improvement in the skin hydration and skin smoothness were higher in the gel scrubs with mannan or wax beads. Conclusion: All three gel scrubs provided a similar effect on the SCTT and skin hydration, but gel scrubs with mannan or wax beads were more favorable. Thus, these two biodegradable exfoliating beads may be good substitutes in scrubbing products.

I. Dolechova, J. Bystronova, M. Maresova, V. Hrobaf, P. Sedova, M. Cepa, 0. Zideh, Z. Dushova, M. Pravda, R.Buffa, **Crosslinked Hyaluronic Acid for Topical Cosmetic Applications,** sofw journal 1144, 04/18, p. 52-57

Crosslinked hyaluronic acid-based hydrogels (crossHA) have been widely used in the cosmetic industry as injectable dermalfillers. However, HA hydrogels also emerge as interesting raw materials for cosmetic topical products with various other potential benefits. In this work, we developed and characterized a new type of crossHA (crossHA-3; INCI Sodium Hyaluronate Crosspolymer-3) in a powder form dedicated for the topical cosmetic application and tested its properties *in vitro* and *in vivo* on human volunteers. CrossHA-3 powder is fully soluble in water creating a soft hydrogel microparticle suspension macroscopically resembling true solution. Large amount of water absorbed in the porous structure of crossHA-3 effectively moisturizes the skin *in vivo.* CrossHA-3 also creates a protective film on the skin surface and immediately and visibly reduces even deep mimic wrinkles. Because crossHA-3 is less susceptible to enzymatic degradation than HA, it stays longer on the skin surface and so its anti-wrinkle effect is prolonged. Beside water, crossHA-3 can absorb various cosmetic active ingredients in its pores and ensures their continuous, long-term delivery into the skin leading to their more effective utilization by the skin cells as we showed in another *in vivo* study using niacinamide (vitamin B3) as a model cosmetic active ingredient.

F. Wandrey, D. Schmid, B. Henes, F. Zulli, **Improved cell nucleus healthwith moss cell technology,** PERSONAL CARE EUROPE, April 2018, p. 131-133

Mosses were among the first plants that conquered the land and they used their extraordinary adaptation abilities to survive from the prehistoric age until the present day. To harvest the resilient properties of moss, an innovative moss cell technology was used to grow moss cells as a culture in the lab. Latest research has shown that the moss active contributes to 'cell nucleus health', a novel anti-ageing concept. The cell nucleus does not only contain the cell's DNA but is also involved in regulating important cellular processes. Efficient transport of molecules into and out of the cell nucleus is crucial for adapting to the ever-changing environment. *In vitro* studies have shown that the moss extract improves expression of cell nucleus health markers in aged cells and helps skin adapt to climatic

changes. In a placebo controlled clinical study with women that are exposed to daily temperature changes in the summer, the moss active significantly improved skin hydration, barrier and homogeneity after just two weeks for a more resilient skin.

B. Walzel, B. Senti, S. Banziger, U. Batz, **The natural solution to pollution,** PERSONAL CARE EUROPE, April 2018, p. 83-88

Exposure to air pollutants is one of the major threats to skin health. Contaminants attack the skin on several levels: they induce oxidative stress, they stimulate inflammatory pathways, and they accelerate the ageing process of skin. As a consequence, consumers demand functional cosmetics that prevent and repair pollution-induced skin damage. In this respect, the most promising approach is using the body's endogenous detoxification machinery, which is composed of a multitude of cell-protective and detoxifying mechanisms. These powerful systems are capable of neutralising thousands of toxic molecules per second, whereas the mere application of antioxidants is much less efficient, as one antioxidant molecule is capable of neutralising only one free radical. HerbaShield URB addresses these concerns. The COSMOS-approved multicomponent active ingredient targets three mechanisms to naturally reduce pollutioninduced skin damage: (1) It strengthens the skin's barrier through hydrogenated lecithin; (2) it protects from radical oxygen species through natural antioxidants; and (3) it enhances the endogenous detoxification machinery through natural activators of detoxifying enzymes. The presented anti-pollution ingredient is a perfect fit for anti-ageing cosmetics and to be formulated in skin care applications, such as face care, body care, and cleansing products.

A. Manière, A. Trunet, C. Olive, C. Bezivin, E. Loing, **Biomimetic emulsifier with cashmere touch**, PERSONAL CARE EUROPE, April 2018, p. 54-58

Most personal care products are emulsions which can be defined as stabilised fluid systems of liquids that do not normally like to mix, like oil and water. The peacekeeper in such systems is called an emulsifier. Emulsifiers combine a water-loving head holding to the water phase and a fat-loving tail that clings to the oil phase. Oil-in-water (o/w) emulsifiers keep oil drops packed in water, while water-in-oil (w/o) emulsifiers rather retain water drops in oils. Classic emulsifiers are typically synthetic petroleum and hydrocarbon derivatives such as PEG compounds, alkoxylated amides, silicone derivatives, and ethoxylated fatty alcohol.

P.E.J. van Erp, M. Peppelman, D. Falcone, **Noninvasive analysis and minimally invasive in vivo experimental challenges of the skin barrier**, Experimental Dermatology, 2018;27: p. 867–875

In this review, we aim to give a concise and selective overview of noninvasive biophysical analysis techniques for skin barrier analysis (transepidermal water loss, electrical methods, confocal Raman microspectroscopy, sebumeter, reflectance spectrophotometry, tristimulus colorimetry, diffuse reflectance spectroscopy and reflectance confocal microscopy), including advantages and limitations. Rather than giving an exhaustive description of the many techniques currently available, we show the usefulness of a representative selection of techniques in the functional and morphological evaluation of the skin barrier. Furthermore, we introduce human minimally invasive skin challenging models as a means to study the mechanisms regulating skin homoeostasis and disease and subsequently show how biophysical analysis techniques can be combined with these in vivo skin challenging models in the functional and morphological evaluation of the skin barrier in healthy human skin. We are convinced that the widespread application of biophysical analysis techniques in dermatological practice and in cosmetic sciences will prove invaluable in offering personalized and noninvasive skin treatment solutions. Furthermore, combining the human in vivo challenging models with these novel noninvasive techniques will provide valuable methodology and tools for detailed characterization of the skin barrier in health and disease.

J.M. Sumita, H.A. Miot, J.L.M. Soares, A.C.P. Raminelli, S.M. Pereira, M.M. Ogawa, F.R. Picosse, L.R.S. Guadanhim, M.M.S.S. Enokihara, G.R. Leonard, E. Bagatin, **Tretinoin (0.05% cream vs. 5% peel) for photoaging and field cancerization of the forearms: randomized, evaluator-blinded, clinical trial,** J Eur Acad Dermatol Venereol, 2018 April

Background: Topical tretinoin cream is the gold standard treatment for skin ageing, particularly photoaging. The purpose of tretinoin peel was to obtain similar results, but in a shorter time, however, there have been few controlled trials on its effectiveness. Objective: To compare efficacy and safety of tretinoin 0.05% cream and 5% as a peeling agent on photoaging and field cancerization of the forearms. Methods: Clinical trial with therapeutic intervention, prospective, randomized (computer-generated randomization list), parallel, comparative (intrasubject) and evaluator-blinded (except for histology and immunohistochemistry), including 24 women (48 forearms) aged over 60 years who have not undergone hormone replacement and categorized as Fitzpatrick skin phototype II or III. The forearms of the

participants were randomized for treatment with 0.05% tretinoin cream three nights a week, or 5% tretinoin peel every 2 weeks. The opinion of the participant, severity of photoaging, corneometry, profilometry, high-frequency ultrasound, histology (haematoxylin-eosin and Verhoeff stainings) and immunohistochemistry (p53, bcl-2, Ki67 and collagen I) were assessed. Results: One participant dropped out. The mean photoaging score reduced 20% and the mean actinic keratosis (AK) count reduced 60% with no difference between treatments. Three efficacy parameters showed opposite effects between the tretinoin treatments ($P < 0.05\%$): (i) thickness of the corneal layer decreased with 0.05% tretinoin and increased by 5%; (ii) dermis echogenicity increased by 0.05% and decreased by 5% and (iii) Ki67 expression increased by 0.05% and decreased by 5%. There was good tolerability for both regimens. Conclusion: Tretinoin as a cream 0.05% or peeling (5%) is safe and effective for the treatment of moderate photoaging and forearm field cancerization. The cream was superior in improving ultrasonographic parameters of ageing. Peeling was shown a superior performance in the stabilization of field cancerization.

S. Rahrovan, F. Fanian, P. Mehryan, P. Humbert, A. Firooz, **Male versus female skin: What dermatologists and cosmeticians should know**, International Journal of Women's Dermatology 4 (2018) p. 122–130

Introduction: The skin is important for the perception of health and beauty. Knowledge of the physiological, chemical, and biophysical differences between the skin of male and female patients helps dermatologistsdevelop a proper approach not only for the management of skin diseases but also to properly take care
of cosmetic issues. The influence of genetic and environmental factors on skin characteristics is also critical to consider. Methods: A literature search of PubMed and Google was conducted to compare the biophysical and biomechanical properties of the skin of male and female patients using the keywords "skin", "hydration", "water loss", "sebum", "circulation", "color", "thickness", "elasticity", "pH", "friction", "wrinkle", "sex", "male", and "female". Results: A total of 1070 titles were found. After removing duplications and non-English papers, the number was reduced to 632. Of the 632 titles, 57 were deemed suitable for inclusion in this review. The studies show that the skin parameters of hydration, transepidermal water loss, sebum, microcirculation, pigmentation, and thickness are generally higher in men but skin pH is higher in women. Conclusions: These parameters can be considered as age markers in some cases and are susceptible to change according to environment and life style. Biometrological studies of the skin provide useful information in the selection of active principles and other ingredients of formulations to develop a specific approach for cosmetic treatments.

A. Aguirre, E. Gil-Quintana, M. La Nuez, **Ovoderm® an effectve treatment to improve skin conditon in patents with altered skin barrier function,** J Skin March 2018;2(1): p. 11-14.

Alterations in the stratum corneum and therefore in the skinbarrier function are produced by diverse causes. The changes in the stratum corneum imply increases in water loss, reduction of the protective effect of the skin and also modifications in its mechanical functions. The aim of the present study was to evaluate the effectiveness of Ovoderm®, a dietary supplement consisting of eggshell membrane, to improve the skin condition of people with an altered barrier function. Sixteen volunteers with a decreased skin barrier function were randomized to daily intake 300mg of Ovoderm® or 300mg of placebo during 60 days. Transepidermal waterloss (Tewameter®), firmness (Cutometer® R0), elasticity (Cutometer® R6) and fatigue (Cutometer® R9) of the skin were measured. At the end of the study there was a significant 43% of decline in the transepidermal waterloss in the volunteers intaking Ovoderm® that was not observed in the placebo group. Participants started the study with normal-affected skin and finished it with healthy-very healthy skin values. A similar tendency was observed in the skin elasticity that was increased by 13% in Ovoderm® group while the control group showed a decrease of 11%. The skin firmness improved significantly by 66% and the fatigue declined by 36% in Ovoderm® group while no significant changes were measured in the placebo group. These results showed that oral supplementation with Ovoderm® restores the skin barrier function in people with cutaneous alterations. Ovoderm® re-establishes the transepidermal waterloss values to those observed in people with healthy skin and it increases the functionality of the skin as evidenced by the improvements in firmness and elasticity and by the decrease in fatigue. Ovoderm® is an effective treatment that could prevent and manage more effectively the alteration of the skin barrier function restoring the skins' health and its biomechanical properties.

L. Rocha Mota, L. Jansiski Motta, I. da Silva Duarte, A.C. Ratto Tempestini Horliana, D. de Fátima Teixeira da Silva, C. Pavani, **Effcacy of phototherapy to treat facial ageing when using a red versus an amber LED: a protocol for a randomized controlled trial**, BMJ Open 2018; 8

Introduction: The skin undergoes morphological and physiological changes with the advancing

age of an individual. These changes may be caused by intrinsic and extrinsic factors that contribute to cellular ageing and consequent skin ageing. The term photoageing is used to characterise the ageing of the skin caused by solar radiation. Clinically, the skin becomes more flaccid, thicker and hyperpigmented, while there is an early appearance of wrinkles and other skin changes, such as skin cancer. Nowadays, there are numerous treatments for ageing skin, and one of them is with the use of phototherapy, which uses light-emitting diodes (LEDs). The objective of this study will be to evaluate the percentages of reduction in the volume of periocular wrinkles when treated with red and amber LEDs. Methods and analysis: All of the participants will receive photobiomodulation to treat their periocular wrinkles. They will be using red and amber LEDs, with one colour being used on each hemiface. The facial side to be treated with each colour will be randomised. After an interval of 180 days, the participants will receive a cross-treatment. The primary variable of the study is the volume of periocular wrinkles (crow's feet), which will be measured by a VisioFace equipment. The secondary variables are elasticity (measured by Cutometer) and hydration (measured by Corneometer). Quality of life and self-assessment of the participants will be measured using the adapted Melasma Quality of Life scale – Brazilian Portuguese adaption (MelasQoL-BP) and Skindex-29 questionnaires. All of the variables will be measured before and after a group of 10 sessions.

O. Pelikh, P.-L. Stahra, J. Huanga, M. Gerstc, P. Scholzc, H. Dietrichl, N. Geiset, C.M. Keck, **Nanocrystals for improved dermal drug delivery**, European Journal of Pharmaceutics and Biopharmaceutics 128 (2018), p. 170-178

Nanocrystals are composed of 100% active and possess an increased aqueous solubility and dissolution velocity when compared to larger sized materials. Nanocrystals can be used to improve the bioavailability of poorly soluble actives not only for oral, but also for topical application. In this study nanocrystals of different sizes were produced and the influence of size on dermal penetration was investigated. The influence of different excipients and vehicles on the penetration efficacy upon dermal application was also investigated. Results confirm that dermal penetration of poorly soluble actives increases with decreasing size of the nanocrystals. Unexpectedly, it was observed that many classical penetration enhancers failed to promote the penetration of actives from nanocrystals. Also hydrogels were found to be non-suitable vehicles for the formulation of nanocrystals. As most suitable vehicles for nanocrystals oleogels and creams were identified.

E. Berardesca, M. Loden, J. Serup, P. Masson, L. Monteiro Rodrigues, **The revised EEMCO guidance for the in vivo measurement of water in the skin**, Skin Res Technol. 2018; 24: p. 351-358

Background: Noninvasive quantification of stratum corneum water content is widely used in skin research and topical product development.n Methods: The original EEMCO guidelines on measurements of skin hydration by electrical methods and transepidermal water loss (TEWL) by evaporimeter published in 1997 and 2001have been revisited and updated with the incorporation of recently available technologies. Results: Electrical methods and open-chamber evaporimeters for measurement of TEWL are still the preferred techniques to measure the water balance in the stratum corneum. The background technology and biophysics of these instruments remain relevant and valid. However, new methods that can image surface hydration and measure depth profiles of dermal water content now available. Open-chamber measurement of TEWL has been supplemented with semiopen and closed chamber probes, which are more robust to environmental influence and therefore convenient to use and more applicable to field studies. However, closed chamber methods interfere with the evaporation of water, and the methods cannot be used for continuous monitoring. Validation of methods with respect to intra- and inter-instrument variation remains challenging. No validation standard or test phantom is available. Results and Conclusions: The established methods for measurement of epidermal water content and TEWL have been supplemented with important new technologies including methods that allow imaging of epidermal water distribution and water depth profiles. A much more complete and sophisticated characterization of the various aspects of the dermal water barrier has been accomplished by means of today's noninvasive techniques; however, instrument standardization and validation remain a challenge.

M.O. deMelo, P.M.B.G. Maia Campos, **Characterization of oily mature skin by biophysical and skin imaging techniques,** Skin Res Technol. 2018; 24: p. 386-395

Background: The skin is a complex biological system and may suffer change according to the environmental factors, as higher temperatures can increase sebum excretion, presenting oiliness and acne. These alterations can persist during the aging and provoke more changes in aged skin. In this study we evaluated the mature oily skin characteristics using biophysical and skin imaging techniques. Material and methods: Sixty healthy female subjects, aged between 39 and 55 years old were recruited and separated into 2 groups according to their skin type: normal/ dry and oily skin. The skin was

evaluated in terms of stratum corneum water content, transepidermal water loss (TEWL) sebum content, dermis thickness and echogenicity, skin microrelief, and pores content. Results: The mature oily skin presented no significant differences when compared to the normal/dry skin on the stratum corneum water content and TEWL parameters. The sebum content was significantly higher on the oily skin group. The microrelief analysis showed an increase of skin roughness values in the oily skin and increase of scaliness in the normal/dry skin. The oily skin showed lower dermis echogenicity mainly in the frontal region and higher dermis thickness when compared to normal/ dry skin. Conclusion: The mature oily skin showed different characteristics from normal/dry skin in terms of sebum content, microrelief parameters, and dermis thickness. This way, the characterization of mature oily skin in an objective way is very important to development of dermocosmetic products for more effective treatments focused specially on this type of skin.

E. Tamura, J. Ishikawa, K. Sugata, K. Tsukahara, H. Yasumori, T. Yamamoto, **Age-related differences in the functional properties of lips compared with skin**, Skin Res Technol. 2018; 24: p. 472-478

Background/aims: Lips can easily become dry and rough and their biggest problems are drying and chapping. The cause of those problems is considered to be that the stratum corneum (SC) moisture is small and its barrier function is low.However, those problems decrease in subjects as they approach 40 years of age, after which problems due to their shape and color increase. The purpose of this study was to investigate relationships between SC properties of the lips during aging and to clarify the cause(s) of lip problems. Methods: One hundred and 38 Japanese female subjects with normal skin ranging in age from 16 to 78 years were enrolled in the study. The capacitance and transepidermal water loss (TEWL) values, viscoelasticity, and color of their lips were measured and compared with their cheeks. Results: The capacitance values for the lip and the cheek increased and TEWL values for both areas decreased with age. TEWL values for the lip decreased until ~30 years of age and this is considered to be related to the problem of drying. Although the maximum amplitude Uf of the lip increased with age, the Ur/Uf had no correlation with age. As for color, the *L** and *a** values decreased with age. Conclusion: Age-related changes with regard to SC functions, viscoelasticity and color of the lips have been clarified for the first time, and it is clear that these changes are related to problems of the lips. Compared with the cheeks, differences with the lips are more apparent.

H.-J. Kim, H. Kim, J.J. Kim, N.R. Myeong, T. Kim, T. Park, E. Kim, J.-Y. Choi, J. Lee, S. An, W.J. Sul, **Fragile skin microbiomes in megacities are assembled by a predominantly niche-based process**, Science Advanced 2018; 4

Given the higher incidence of skin diseases in more urbanized populations and its association with the skin microbiome, we questioned how the skin microbiome differed depending on the degree of urbanization. Skin microbiomes of 231 healthy subjects in five large cities in China varied mainly with environment and socioeconomic status of the cities in question. The differences among microbiomes could be explained by the predominantly niche-based assembly of microbial communities, which was supported by a dominance test, b-null deviation, and edge-length abundance distribution. Networks among microbes in larger cities were more fragile, which may contribute to the higher incidence of skin diseases in more urbanized environments. These results suggest that microbial ecological theory can provide a framework for understanding crucial health-associated features of the human microbiome.

J. Schleusener, C.K. Nowbary, M.E. Darvin, S.B. Lohan, J. Lademann, M.C. Meinke, **Influencing the Cutaneous Carotenoid Status and Skin-physiological Parameters by Ingesting Antioxidants in the Form of Curly-hale Containing Food Supplements**, söfw journal 1144 109/18

Antioxidants are important radical scavengers protecting the body from the consequences of oxidative stress. They have to be ingested by food rich in fruits and vegetables or by food supplements. The effects of the intake of curly-kale containing food supplements on the skin are described in this paper. For this purpose, verum and placebo groups had been investigated for several months noninvasively *in vivo* by determining their cutaneous antioxidative status, their collagen-to-elastin index of the dermis, and various age-related skin parameters. While in the verum groups the cutaneous antioxidative status and the skin moisture increased significantly, only small changes were found in the placebo groups. The collagen content in the skin of the verum group showed a tendency towards increasing. Besides a healthy nutrition, a selected supplementation consisting of low-dosed natural carotenoids at a physiological concentration can improve the antioxidative capacity of the skin, thus counteracting an age-related degradation of collagen I in the dermis.

A. Esplugas, E. Ferreira, J. A. Boras, S. Pastor, **Deep Arctic Marine Extract for Deep Extracellular Matrix Engineering and Digital Anti-Aging Efficacy**, söfw journal 1144 109/18

Little of the ocean and its intertwined ecosystems have been explored, although it is the most

untapped potential source for the discovery of novel cosmetic active ingredients. From an Arctic scientific expedition, a novel active ingredient was discovered (Arctalis: Pseudoalteromonas Ferment Extract) aimed at restructuring ECM key components with an excellent wrinkle smoothing and firming effect. Arctalis restores skin hydration and natural glow while also protecting skin from digital pollution or blue light.

L. Yi-na, Y. Ya-di, X. Zhi-yong, T. Jun, **Promoting Effect of a Gene Expression Related Moisturizer on Shin Hydration and Barrier Function**, söfw journal 1144 109/18

The moisturizing performance of Gmoist® Sea-Gel was evaluated based-upon 14 healthy volunteers. It was found that skin moisture content markedly increased and TEWL effectively decreased after Gmoist® Sea-Gel applied for 7d. Then using real-time fluorescence quantitative PCR technology, HaCaT cells were cultured with Gmoist® Sea-Gel to study six genes expression level related to skin hydration and barrier function. Results showed Gmoist® Sea-Gel significantly promoted the INV, TG-1, FLG and CASP-14 mRNA's expression after 24 hour's treatment. Gmoist® Sea-Gel can upregulate cornified cell envelope related genes expression, promote the degradation of filaggrin into natural moisturizing factors to strengthen skin hydration and barrier function.

A. Erlach, G. Springmann, M. Renner, K.-P. Wilhelm, **Compatibility Testing of Cosmetics and Toiletries for Babies and Children,** söfw journal 1144 109/18

All cosmetic products must be safe, especially those intended for babies and small children. Besides national guidelines and regulations, cosmetic products in the European Union are regulated by the EU Cosmetic Products Regulation. It pays particular attention to protecting the health of vulnerable population groups and recommends a specific assessment for cosmetic products intended for use on children under the age of three years. Nevertheless, standard procedures for the evaluation of the local tolerance are not given. Due to practical and ethical reasons clinical studies on adults should be a first step of compatibility testing. To consider physiological differences notably a not yet fully developed barrier function during the first years of life, barrier function of adult skin can be intentionally compromised by gentle experimental standardized procedures prior product application. As an alternative and depending on the objective target, only pre-screened sensitive subjects are included in the investigation. After extensive pre-examination and testing in adults, tolerance and performance of the final product can also be confirmed with non-incriminating observational studies under normal in-use conditions in children under physician control.

J.Y. Choi, E.J. Kim, S.I. Jang, A.R. Kim, T.J. Lee, H.K. Lee, **A new technique for evaluating heel xerosis grade and the effects of moisturizer on heel skin dryness,** Skin Res Technol. 2018; 24, p. 557-551

Background: Dryness-related heel skin problems are common; however, there are very few studies about heel skin dryness. The objective of this study was to develop new assessment methods for evaluating heel skin dryness, to clarify the characteristics associated with heal skin dryness, and assess the effectiveness of moisturizer use according to dryness severity. Materials and methods: We investigated the heel skin of 150 Korean women (aged 20-78 years). Heel skin images were taken using a D5LR camera and the distribution or severity of flakes, scaling, cracking, and fissures were visually assessed. Skin properties such as hydration, transepidermal water loss (TEWL), amount of dead skin cells, and efficacy of moisturizer were evaluated according to heel xerosis grade. Furthermore, as conventional evaluation methods for desquamation are not appropriate for heel skin, we developed new techniques using binarization of magnified images. Results: Skin hydration tended to decrease and TEWL tended to increase as heel dryness grade increased. The amount of dead skin cells increased with increasing dryness grade using the new technique. Subjects in the severe dryness group achieved similar hydration levels as normal subjects at baseline after 3 hours of moisturizer application. Conclusion: Our new methods of visually classifying heel dryness and quantifying dead skin cells using magnified images effectively evaluated heel skin properties. As heel skin is prone to dryness, daily repetitive application of moisturizer might be helpful for hydrating dry heel skin, and ultimately preventing complications

M. Fak, H. Rotsztejn, A. Erkiert-Polguj, **The early effect of microdermabrasion on hydration and sebum level,** Skin Res Technol. 2018; 24, p. 650-655

Background: Microdermabrasion is a popular form of mechanical peel, used for many aesthetic purposes. Because it removes the superficial epidermal layer, it has an impact on hydrolipid skin coat. Objective: The aim of the study was to examine the changes taking place in the hydrolipid coat of the skin after microdermabrasion measured by skin hydration and sebum level. Methods: Sixteen healthy women were included in the study, and the aluminium oxide crystal microdermabrasion device was used

over the entire face of each patient. Measurements of stratum corneum hydration and sebum level were taken at baseline, just after the treatment, and 30 and 60 minutes later. Results: A statistically significant difference in stratum corneum hydration was found on the cheeks 30 minutes after treatment and in the T-zone immediately after the procedure. Sebum reduction was observed immediately after the procedure irrespective of skin type and face area. In addition, sebum value was found to return to baseline1hour after the procedure. Conclusions: The observed changes in epidermal barrier function may be responsible for the clinical improvement following microdermabrasion.

U. Cizauskaite, J. Bernatoniene, **Innovative Natural Ingredients-Based Multiple Emulsions: The Effect on Human Skin Moisture, Sebum Content, Pore Size and Pigmentation,** Molecules 2018, 23, 1428

The increased interest in natural cosmetics has resulted in a higher market demand for preservative-free products based on herbal ingredients. An innovative W/O/W type emulsions containing herbal extracts were prepared directly; its cation form was induced by an ethanolic rosemary extract and stabilized using weak herbal gels. Due to the wide phytochemical composition of herbal extracts and the presence of alcohol in the emulsion system, which can cause skin irritation, sensitization or dryness when applied topically, the safety of the investigated drug delivery system is necessary. The aim of our study was to estimate the potential of W/O/W emulsions based on natural ingredients for skin irritation and phototoxicity using reconstructed 3D epidermis models in vitro and to evaluate in vivo its effect on human skin moisture, sebum content and pigmentation by biomedical examination using a dermatoscopic camera and corneometer. According to the results obtained after in vitro cell viability test the investigated emulsion was neither irritant nor phototoxic to human skin keratinocytes. W/O/W emulsion did not cause skin dryness in vivo, despite the fact that it contained ethanol. We can conclude that the emulsion is safe for use as a leave-on product due to the positive effect on human skin characteristics or as a semisolid pharmaceutical base where active compounds could be encapsulated.

L.-C. Borcan, Z. Dudas, A. Len, J. Fuzi, F. Borcan, M.C. Tomescu, **Synthesis and characterization of a polyurethane carrier used for a prolonged transmembrane transfer of a chili pepper extract**, International Journal of Nanomedicine 2018:13, p. 7155–7166

Purpose: Red chili peppers have been highly valued in gastronomy and traditional medicine since ancient times; it seems that it is not just an ingredient for food but also a good remedy for various medical conditions such as increased blood pressure and high levels of serum triglycerides and cholesterol, myocardial infarction, arthritis, and migraines. The objective of this study is the characterization of a new carrier used for encapsulated extract. Methods: Chili pepper extract was obtained and was physically entrapped inside polyurethane microparticles in order to diminish the irritative potential of this extract. The particles were evaluated by Zetasizer measurements, small-angle neutron scattering and thermal analysis, scanning electron microscopy (SEM), and Fourier transform infrared spectroscopy; the encapsulation effcacy and the drug release profle were assessed by UV-Vis spectroscopy. Bioevaluations on mice skin were performed to predict the irritative potential of the samples. Results: Two different types of samples were compared: hollow polyurethane microparticles vs polyurethane particles containing the natural extract. The sizes of the particles were very similar, butthe sample containing the extract presents three particle populations (the polydispersity index increases from 0.3 to 0.6 from one sample to another). The zeta-potential measurements and SEM images indicate a medium tendency to form clusters, while the UV-Vis study revealed an almost 70% encapsulation effcacy. Conclusion: The results suggest that encapsulation of a chili pepper extract inside polyurethane microparticles leads to a non-irritative product with a prolonged release: ~30% of encapsulated extract is released within the frst 8 days and a maximum 45% is reached in 2 weeks.

N. Braun, M. Herling, C. Theek, H. Tronnier, U. Heinrich, **Wirksamkeit und Verträglichkeit einer Fußcreme bei Typ-2-Diabetikern** (Article in German), Akt Dermatol 2018; 44: p. 144–151

In der vorliegenden Studie wurde eine Fußcreme hinsichtlich ihrer Eignung zur Fußpflege von Typ-2-Diabetikern untersucht. An der Wirksamkeitsstudie nahmen 23 Probanden über einen Zeitraum von 6 Wochen teil, welche die Fußcreme 2-mal täglich applizierten. Die Fußcreme zeichnete sich durch gute feuchtigkeitsspendende Eigenschaften aus und trug zu einer signifikanten Verbesserung der Hautbarriere bei. Gleichzeitig konnte die Durchblutung der Haut und damit die Versorgung der Haut mit Feuchtigkeit deutlich verbessert werden. Messungen der Hauttemperatur zeigten keine Temperaturerhöhung. Es wurde über ein angenehmes Hautgefühl berichtet. Die Keimbesiedlung wurde konstant gehalten. Zusätzlich wurden subjektive Bewertungen in Bezug auf Hautbild, Wirksamkeit und Verträglichkeit mittels Fragebogen erfasst. Hier spiegelte sich die gute Wirksamkeit und Verträglichkeit der Fußcreme durch hohe Akzeptanz bei den Probanden wider.

The present study examined a foot cream regarding its suitability as a foot care product for type

2 diabetes. 23 test subjects participated in the study. The duration of the study was 6 weeks and the foot cream was applied twice daily by the test subjects. The foot cream was characterized by good moisturizing properties and contributed to a significantly improved skin barrier function. At the same time, the blood circulation of the skin and thus the supply of the skin with moisture was significantly improved. Measurements of the skin temperature did not show any increase in temperature. The preparation was described as pleasant for the skin. The colonization of germs on the skin was kept constant. In addition, the skin appearance, the efficacy and skin compatibility was evaluated by the test subjects by means of a questionnaire. Here, the good efficacy and skin compatibility were mirrored in the high acceptance by the test subjects.

S. Bielfeldt, J. Blaak, S. Laing, M. SchleiBinger, C. Theiss, K.P. Wilhelm, P. Staib, **Deposition of plant lipids after single application of a lip care product determined by confocal raman spectroscopy, corneometry and transepidermal water loss**, International Journal of Cosmetic Science / Volume 41, Issue 3, 2018

Objective: Up treatment products often incorporate oils and waxes in their formulations, and a desired outcome of their use is to prevent lip dryness and roughness as well as help to repair this condition. The objective of this study was to combine confocal Raman spectroscopy with skin capacitance (corneometry) and transepidermal water loss (closed chamber Aquaflux system) measurements, in the evaluation of the degree of moisturization and lip skin penetration of a fruit wax *(Rhus verniculo* peel cera) and natural oil based *(Cocos nucifero* fruit oil and *Oleo europeo* oil) lip care product, following a single application. Methods: The study was conducted on a total of 15 healthy female volunteers. Instrumental measurements were performed before and 30 min, 2 h and 6 h after a single application of the product. Results: Lip skin barrier function as well as lip hydration were significantly improved and penetration of olive oil was maintained for at least 6 h post product application. The deposition of the three component lipids (berry fruit wax, coconut oil and olive oil) into the *stratum corneum* after a single application of the lip care product was maintained and data significant for 2-6 h post product application. Lipid deposition was regarded as a positive long lasting skin care (depot) effect combined with a profound hydrating effect for about 6 h. Conclusion: The tri method approach taken in this study is deemed relevant and valid for measuring lip hydration offering a complimentary assessment of the barrier function of lip skin and interactive effects of cosmetic ingredients.

J.P. Andrade, T.A.L. Wagemaker, D.G. Mercurio, P.M.B.G. Maia Campos, **Benefits of a dermocosmetic formulation with vitamins B3 and a B6 derivative combined with zinc-PCA for mild inflammatory acne and acne-prone skin**, Biomed Biopharm Res., 2018; (15) 2: p. 214-223

Acne is a chronic inflammatory disorder of the pilosebaceous follicles that affects 80% of the population. As topical agents for acneic skin treatment are often irritants, dermocosmetics, may improve therapy. Thus, we developed cosmetic formulations with nicotinamide (vitamin B3), pyridoxine tris-hexyldecanoate (a vitamin B6 derivative) and zinc- pyrrolidone carboxylic acid (PCA) in association, and evaluated their clinical efcacy, skin compatibility, and sensory properties. The formulation (vehicle) added with vitamin B3, the vitamin B6 derivative and zinc-PCA in combination was applied twice daily for six weeks on the forehead, malar and chin skin regions of sixteen subjects. Before (pre-treatment) and after treatment, these regions were evaluated using biophysical and skin imaging techniques. Inflammatory acne lesions were reduced by 60% after application of the complete formulation. Porphyrine reduction was shown in the majority of volunteers. The results shown an improvement of inflammatory acne lesions based on porphyrine reduction, lesion counts, skin compatibility and comedogenicity testing. The skin barrier function was not impaired by the experimental formulation, which demonstrates its efcacy in acne treatment without undesirable effects. The combination of Zn-PCA and vitamins B3 and B6 vehiculated in an adequate topical formulation can be considered as a safe and effective alternative treatment for mild inflammatory acneic skin.

H. Hill, **Welcome to the MASKerade**, SPC February 2018

Consumers are increasingly socially and highenvironmentally expectations. Whether savvy, with it's the *M* food they consume or the cosmetics they use, they are looking to reduce and refine their use of declining resources. The need for sustainable and traceable natural ingredients is imperative, as they make a stand for the social issues that are important to them. By using new technologies and clever formulations it is possible to move with the trends and create products that offer both functionality and green credentials, and which do not impact the environment.

M. Bimonte, A. Carola, A. Tito, A. Barbulova, A. De Lucia, F. Del Piaz, F. Apone, G. Colucci, **Cold Stress, Banished,** Cosmetics & Toiletries, January 2018

The human skin, as a physical barrier between the body and outside environment, is subjected to seasonal climate changes that significantly affect its protective functions. The hydrolipidic film that coats the epidermis has key roles in the maintenance of the skin barrier integrity - it lubricates and waterproofs the skin surface, thus preserving an appropriate level of hydration, and protects the inner skin layers from micro-lesions due to both dehydration and mechanical insults.

S. Nisbet, H. Mahalingam, C.F. Gfeller, E. Biggs, S. Lucas, M. Thompson, M.R. Cargill, D. Moore, S. Bielfeldt, **Cosmetic benefit of a biomimetic lamellar cream formulation on barrier function or the appearance of fine lines and wrinkles in randomized proof of concept clinical studies,** International Journal of Cosmetic Science / Volume 41, Issue 1, 2018

Objective: Two studies were designed to evaluate the potential cosmetic benefit of a biomimetic, niacinamide containing moisturizing cream for the first time in humans. Methods: In both studies, healthy women were randomized to use two treatments, one for the left side of the body and one for the right, from three options: the test cream, a positive control or no treatment (use of standard cleanser only). Treatments were applied twice daily for 4 weeks to the face and forearms (Study 1) or the face only (Study 2). Instrumental and clinical skin assessments were performed by trained technicians. Study 1 involved tape stripping and a 5 day no treatment ('regression') period at the end of the 4 weeks. Independent lay graders were asked to grade the skin texture of subjects in Study 2 from high resolution photographs. Results: In Study 1 *(n* = 66), the test cream significantly decreased the transepidermal water loss (TEWL) values on the forearm, and in the cheek area of the face, relative to baseline and compared to no treatment, and increased skin Corneometer values. The improvements were partially retained during a subsequent 5 day period of no treatment. Increases in TEWL values on skin subjected to tape stripping were significantly lower after 4 weeks of using the test cream compared to no treatment. In Study *2 (n = 72* subjects with visible signs of ageing), there was a favourable trend in the change from baseline of a skin roughness parameter, Ra, for the test cream compared to no treatment. There were statistically significant improvements in the Fitzpatrick wrinkle score compared to no treatment, decreases in TEWL and increased Corneometer values and Cutometer values (R5 elasticity parameter). Grading of high resolution images failed to detect the improvements in skin texture (defined as pores, smoothness and unevenness) for the test cream vs. no treatment. No treatment related serious or severe adverse events were reported. Conclusion: Twice daily application of the test cream over 4 weeks had beneficial effects on skin barrier function, ppp moisturization, wrinkle dimensions and elasticity compared to no treatment. These studies provide prc concept evidence and highlight the cosmetic benefit of the biomimetic lamellar cream formulation.

T.D. Dobbs, T.H. Jovic, Z.M. Jessop, A. Kyle, H.A. Hutchings, I.S. Whitaker, **Objective and Patient-reported Assessments of Skin Grafts and Keystone Flaps—A Pilot Retrospective Cohort Study**, Plast Reconstr Surg Glob Open 2018

Background: The keystone perforator island flap provides a versatile form of reconstruction. Perceived benefits include better donor-recipient color match, less contour defect, and fewer complications. To date, there has been no high-quality evidence comparing keystone flaps to split-thickness skin grafts (SSG) from both a qualitative and quantitative point of view. Methods: The Objective and Patient Reported Assessments of Skin grafts versus Keystone flap cohort study compares keystone flaps with SSGs for the reconstruction of skin cancer defects. Patient-reported outcome measures were collected using the EuroQol 5 dimension scale and Patient and Observer Scar Assessment Scale (POSAS) questionnaires. Objective assessments of skin quality were assessed with the Courage and Khazaka system. Cost analysis was also performed. Results: Thirty-eight patients were studied: 20 keystone flaps and 18 SSGs. The keystone group had higher EuroQol 5 dimension scale scores (keystone median = 1.0; SSG median = 0.832; P = 0.641) indicating better general quality of life and lower POSAS scores indicating better disease/condition specifc quality of life (keystone mean = 27.7; SSG mean = 35.7; P = 0.323). Observer POSAS scores were signifcantly lower in the keystone group compared with the SSG group (keystone mean = 10.889; SSG mean = 17.313; P < 0.001). Preservation of sensation was signifcantly better in keystone flaps (P = 0.006). There was an average £158/$207 (15%) saving when performing a keystone flap. Conclusion: This pilot study demonstrates a number of possible benefits of keystone flaps over SSGs. The results demonstrate the need for further research comparing these reconstructive options. We propose a prospective, controlled study using the methods developed in this pilot study.

J. István, V. Tünde, **Diagnosztikai lehetőségek és jelentőségük a sebkezelésben** (in Hungarian), XXI. évfolyam, 2018. 1. Szám

A sebkezelő legfontosabb feladata, hogy a sebgyógyulás komplex folyamata menedzselése során a lehető legoptimálisabb feltételeket biztosítsa, azaz a hatékony sebgyógyuláshoz szükséges

terápiás döntéseket folyamatosan meghozza. Ehhez megfelelő információra van szüksége, amely a sebkezelésben a diagnosztikus tevékenységünk fontosságára hívja fel a fgyelmet. A seb gyógyítása során akkor dolgozhatunk leghatékonyabban, vagy számíthatunk egyáltalán a seb záródására, ha az általános sebkezelési feladatok mellett megfelelő hangsúlyt fektetünk a változatos etiológiának megfelelő oki kezelésre. Súlyos hibát véthetünk - mely a kezelésünk eredményességét veszélyezteti, ha a sebkezelés diagnózis felállítása nélkül indul el, vagy ha nem megfelelő diagnózis születik.

*B. Algiert-Zieli*ń*ska, P. Mucha, H. Rotsztejn,* **Comparative evaluation of skin moisture after topical application of 10% and 30% lactobionic acid**, J Cosmet Dermatol, 2018 Jan

Dry skin is characterized by symptoms such as itching, redness, excessive exfoliation. These symptoms cause discomfort and contribute to secondary bacterial infections. Dry skin treatments are based on topical applications of various formulations. Among many of them are polyhydroxy acids, which recently gained more attention. AIMS: The aim of this study was a comparative assessment of hydration level (corneometric) after application of lactobionic acid (LA) in the form of peel at concentrations of 10% and 30%. Material and Methods: The study involved 10 Caucasian individuals aged 26-73 years. Eight treatments were performed at weekly intervals. The peels were applied using the "Split face" method- on the left side of the face 10% LA, and the right side 30% LA which consisted of specified concentration of LA, deionized water, xanthan gum, ethoxydiglycol. The test subjects received a 5% LA cream for overnight use. The cream consisted of deionized water, LA, isopropyl palmitate, ascorbyl palmitate, methylparaben. The products for this study were provided by Grehen Ltd. Celestynów, Poland. Prior to each procedure, the skin hydration level was measured using Corneometer CM 825 from Courage + Khazaka electronic GmbH. Results: There was a statistically significant improvement in hydration level after 8 treatments for all measuring points and both concentrations. The difference of the skin hydration level between 10% LA and 30% LA could not be determined. Conclusion: Lactobionic acid is a highly moisturizing agent. There was no significant difference in moisturizing effect between 10% LA concentration and 30% LA concentration.

A. Ibuki, S. Kuriyama, Y. Toyosaki, M. Aiba, M. Hidaka, Y. Horie, C. Fujimoto, F. Isami, E. Shibata, Y. Terauchi, T. Akase, **Aging-like physiological changes in the skin of Japanese obese diabetic patients**, SAGE Open Medicine, 2018, Volume 6: p. 1–6

Objective: Obesity-associated diabetes causes aging-like changes to skin physiology in animal models, but there have been no clinical studies focusing on human obese diabetic patients. The purpose of this study was to examine the hypothesis that obesity-associated diabetes accelerates aging-like skin changes in Japanese people. Methods: This cross-sectional study enrolled obese-diabetes patients (body mass index≥25kgm−2) and healthy volunteers (body mass index<25kgm−2) as controls. Skin physiology parameters relating to aging (stratum corneum hydration, transepidermal water loss, skin pH, advanced glycation end-products, and dermal collagen density) were evaluated in the two groups. Results: About 37 subjects participated (16 in a control group and 21 in an obese-diabetes group). Age was not significantly different between the groups. The stratum corneum hydration level was significantly lower in the obese-diabetes group. Transepidermal water loss and levels of advanced glycation end-products were significantly higher in this group. Skin pH was not significantly different between groups. Dermal collagen density decreased in the obese-diabetes group. Conclusion: We showed that obese-diabetes patients have decreased stratum corneum hydration, increased transepidermal water loss, higher skin advanced glycation end-products and decreased dermal collagen fiber density compared with normalweight subjects. These results indicate that the ordinary age-related physiological skin changes seen in the elderly can also occur in obese-diabetes patients aged in their 40s.

S. Wenger, R. Csapo, M. Hasler, B. Caven, T. Wright, T. Bechtold W. Nachbauer, **The effect of different water vapor permeable jackets on moisture management, subjective perceptions and physiological parameters during submaximal exercise in a cool environment**, Textile Research Journal 89(4), January 2018

The goal of this study was to investigate the effect of differences in water vapor permeability (WVP) of outdoor jackets on moisture management, subjective perceptions and physiological parameters under conditions typically encountered in outdoor sports. Four outdoor jackets differing only in their WVP were compared in a repeated measures study. A total of 19 subjects (nine females) were tested in a climatic chamber at 10°C and 40% relative humidity. The protocol consisted of 15 min of rest, 50 min of treadmill running at 60% of the individual maximal running velocity, and 15 min of passive recovery. We found that jackets featuring greater WVP helped to reduce relative humidity underneath the jacket, resulting in less sweat residue in the clothing system and drier skin during exercise and rest. Subjects were also able to perceive the differences in the microclimate and reported feeling more comfortable and drier in the more permeable jackets. However, WVP did not have a significant effect

on oxygen consumption, heart rate, tympanic temperature, overall loss of subjects' body mass or on perceived exertion. It can be concluded that outdoor jackets with higher WVP benefit moisture management during submaximal exercise in cool temperatures by reducing relative humidity in the clothing system mostly during rest periods. This effect leads to a drier skin which favors perceived comfort and might reduce the after-chill effect. However, WVP of outdoor jackets neither significantly affects physiological responses nor perceived exertion during submaximal exercise in a cool environment.

P. Likhitthummaguna, P. Koonngamb, A. Seeremaspun, **Anti-aging effect of oral very high proline complex collagen (DERMOFIX®) on skin properties: a randomized, double-blind, placebo-controlled clinical study**

Taking collagen supplement to rejuvenate skin is now finding public favor due to antiaging trend. Synthesizing collagen, the body needs a specific amino acid group –Proline, Hydroxyproline and Glycine called "Proline complex" to make a core structure of every type of collagen fiber in human body. DERMOFIX®, which is a new very high proline complex containing-collagen supplement, helps promoting collagen synthesis naturally leading to antiaging effects on skin properties as well as other collagen-containing organs. The objective is to study the anti-aging effects of the oral very high proline complex collagen (VHPCC) primarily on skin properties compared to placebo and commercially available collagen (CAV) in Thailand, and secondarily on knee joint. In this randomized, double blind, placebo-controlled clinical trial, 50 women aged 30-45 years old were randomized to receive the VHPCC 10 g, CAV 10 g or placebo 10 g once daily for 8 weeks. Six aging related skin properties, which are skin elasticity, hydration, melanin index, transepidermal water loss, smoothness and wrinkle were objectively measured at 0, 1, 2, 4, 8 weeks. Knee joint assessments, photo-shooting, blood tests for CBC, creatinine and *sirt1* gene expression level were evaluated before and after the study. Results: The VHPCC showed statistically significant improvement and gave faster effects than the CAV and placebo, in skin elasticity, hydration, melanin index, transepidermal water loss, smoothness and wrinkles. Most effects by VHPCC showed significant improvement since the first week while CAV showed improvement mostly at fourth or eighth week. Safety blood tests are normal in all groups. However, the Sirt1 gene expression did not increase in any groups. No adverse effect was reported throughout the study. Conclusion: The study demonstrated that the VHPCC (DERMOFIX®) supplement wasproved safe, gave much faster and more effective effects than CAV in anti-aging of skin properties, knee joints and collagen-containing organs.

M. Cao, Y. Li, Y.-P. Guo, L. Yao, Z. Pan, **Bodymapping - Le mappe del corpo umano ci garantiscono una temperatura ottimale,** Sport Design for All, n° 0, dicembre 2017

L'ergonomia é una scienza che attinge dall fisiolgia, dell'ingegneria e da studi di psicologia, oltre che dall'anatomia.

S. P. Cannavo, F. Guarneri, R. Giuffrida, E. Aragona, C. Guarneri, **Evaluation of cutaneous surface parameters in psoriatic patients,** Skin Research and Technology 2017; 23: 41-47

Purpose: The purpose of this study was to compare cutaneous surface parameters in lesional and non-lesional skin of psoriaticpatients and in corresponding areas of control subjects.

T. Fujimura, Y. Shimotoyodome, T. Nishijima, K. Sugata, H. Taguchi, S. Moriwaki, **Changes in hydration of the stratum corneum are the most suitable indicator to evaluate the irritation of surfactants on the skin,** Skin Research and Technology 2017; 23: 97-103

Background/Purpose: Irritancy levels of surfactants on human skin have not been clarified completely. The relationships between skin damage and changes of skin properties caused by various surfactants were investigated using noninvasive measurements.

V. Moner, E. Fernandez, A. del Pozo, G. Rodriguez, M. Cocera, A. de la Maza, O. Lopez, **Sorption-desorption test for functional assessment of skin treated with a lipid system that mimics epidermal lamellar bodies,** Contact Dermatitis, 2017

Background. Many skin diseases are associated with either increases or decreases in lamellar body secretion, or dysfunctional lamellar bodies. Consequently, diseased skin is characterized by reduced barrier function and altered lipid composition and organization. Human skin is commonly evaluated *in vivo* with non-invasive biophysical techniques. The dynamic functions of the skin are evaluated with repeat measurements such as the sorption-desorption test (SDT).

C.J. Borzdynski, W. McGuiness & C. Miller, **Comparing visual and objective skin assessment with pressure injury risk,** International Wound Journal ISSN 1742-4801

Contemporary approaches to pressure injury (PI) risk identifcation rely on the use of risk

assessment tools and visual skin assessment. Objective biophysical measures that assess skin hydration, melanin, erythema and lipids have not been traditionally used in PI risk; however, these may prove useful as a risk assessment tool. The relationship between subjective visual assessments of skin condition, biophysical measures and PI risk warrants investigation. This study used a descriptive correlational design to examine the relationship between measures of skin hydration, colour (melanin and erythema) and lipids at PI-prone areas amongst geriatric persons (*n* = 38), obtained using biophysical skin measures and visual skin assessment.

D.G. Mercurio, **Clinical scoring and instrumental analysis to evaluate skin types,** Clinical and Experimental Dermatology, 38, 302–309

Background. The biology of the skin is very complex, and there are a number of methods used to classify the different skin types. It is possible to measure or quantify the characteristics of the specific skin types, using a variety of techniques that can objectively evaluate the properties of the skin in a noninvasive manner.

S. Iizaka, **Skin hydration and lifestyle-related factors in community-dwelling older people,** Gerontology and Geriatrics 72, p. (2017) 121–126

Objective: This study aimed to investigate skin hydration status of the lower legs by comparing several methods and examining lifestyle-related factors in community-dwelling older people. Methods: A cross-sectional study was conducted in three community settings in Japan from autumn to winter. Participants were older people aged ◘65 years (n = 118). Skin hydration status of the lower legs was evaluated by stratum corneum hydration using an electrical device, clinical symptoms by an expert's observation and the visual analogue scale. Lifestyle factors of skin care were evaluated by a self-administered questionnaire. Results: The mean age of participants was 74.4 years and 83.9% were women. Stratum corneum hydration was significantly correlated with clinical scores by an expert's observation (rho = -0.46, P < 0.001), but it was not correlated with the visual analogue scale (rho = -0.08, P = 0.435). Among participants who did not perceive dry skin, 57.5% showed low stratum corneum hydration. Hospitalization in the past year (b = -9.4, P = 0.008), excessive bathing habits (b = -4.6, P = 0.014), and having an outdoor hobby (b = -5.7, P = 0.007) were negatively associated, and diuretics (b = 11.5, P = 0.002) and lotion-type moisturizer use (b = 4.6, P = 0.022) were positively associated with stratum corneum hydration. Conclusion: Stratum corneum hydration measurements show an adequate association with observation-based evaluation by an expert, but poor agreement with subjective evaluation in community-dwelling older people. Hospitalization experience and lifestyle factors are associated with skin hydration.

Y. Xu, R. Ma, J. Juliandri, X. Wang, B. Xu, D. Wang, Y. Lu, B. Zhou, D. Luo, **Efficacy of functional microarray of microneedles combined with topical tranexamic acid for melisma - A randomized, self-controlled, split-face study**, Medicine 2017

To evaluate the efficacy of a functional microarray of microneedles (MNs) plus topical tranexamic acid (TA) for melasma in middleaged women in China. Thirty female subjects with melasma were enrolled in this study. The left or right side of the face was chosen randomly to be pretreated with a functional microarray of MNs, followed by topical 0.5% TA solution once per week for 12 weeks. The other half-face was the control, treated with a sham device plus topical 0.5% TA solution. At baseline and at weeks 4, 8, and 12 of treatment, clinical (photographic) evaluations and parameters determined by Visia were recorded. At baseline and week 12, patient satisfaction scores and the biophysical parameters measured by Mexameter were also recorded. Side effects were evaluated at baseline and at the end of the 12 weeks. In total, 28 women (93.3%) completed the study. The brown spots' scores measured by Visia were significantly lower on the combined therapy side than on the control side at 12 weeks after starting treatment; there was no significant difference between sides at 4 or 8 weeks. After 12 weeks, melanin index (MI) decreased significantly in both 2 groups, and the MI was significantly less on the combined side at week 12. Transepidermal water loss, roughness, skin hydration, skin elasticity, and erythema index showed no significant differences between 2 sides at baseline, 4, 8, and 12 weeks after treatment. Physicians' evaluations of photographs showed better results at week 12with combined therapy: >25% improvement was observed in the MNs plus TA side in 25 patients, and in the TA side in only 10 patients. Subjective satisfaction scores on both sides increased significantly. The participants were more satisfied with the results of the combined therapy side than the control side. No obvious adverse reactions were observed throughout the study. Combined therapy with a functional microarray of MNs and topical TA solution is a promising treatment for melasma.

A. Rajabi-Estarabadi, H. Hasanzadeh, A. Taheri, S.R. Feldman, A. Firooz, **The efficacy of short-term clobetasol lotion in the treatment of scalp psoriasis**, Journal of Dermatological Treatment, 2017

Background: Scalp psoriasis can have a considerable impact on patients' quality of life and is considered difficult to treat. Treatment failure may, however, be due to poor adherence, as application of topical treatments to hair bearing areas is difficult and time consuming and also poor communication between physician and patient. Objective: To assess the efficacy of short-term treatment of scalp psoriasis with topical clobetasol lotion. Materials and methods: Twelve patients with mild to severe scalp psoriasis were recruited for this study. Patients applied clobetasol 0.05% lotion twice daily for seven days. They were followed up with phone calls three days after starting the treatment. Skin hydration, transepidermal water loss (TEWL) and skin erythema were assessed noninvasively at baseline and end of study. Results: One week after treatment, median PSI score decreased significantly (p ¼ .002). There was also a significant decrease in median TEWL (p ¼ .012) and increase in skin hydration one week after treatment (p ¼ .010). Eighty three percent of patients were satisfied with treatment result and felt convenient with applying clobetasol lotion. Limitations: Lack of a long-term follow-up. Conclusions: Psoriasis is a long-term disease, and improving adherence in the short time could improve patient's adherence to treatment in long time.

K. Ogai, M. Matsumoto, M. Aoki, R. Ota, K. Hashimoto, R. Wada, M. Kobayashi, J. Sugama, **Wash or wipe? A comparative study of skin physiological changes between water washing and wiping after skin cleaning,** Skin Research and Technology 2017; 23: p. 519-524

Background/purpose: Presently, skin-cleaning agents that claim to be removed by water or wiping alone are commercially available and have been used for the purpose of bed baths. However, there is a lack of knowledge on how water washing and wiping differently affect skin physiological functions or ceramide content. The aim of this study was to compare the effects of water washing and wiping on skin physiological functions and ceramide content. Methods: Three kinds of the cleaning agents with different removal techniques (ie, water washing and wiping) were used in this study. Skin physiological functions (ie, transepidermal water loss, skin hydration, and skin pH) and skin ceramide content were measured before and after seven consecutive days of the application of each cleaning agent. Results: No significant differences in skin physiological functions or ceramide content were observed between water washing and wiping. Conclusion: Cleaning agents that claim to be removed by water washing or wiping do not affect skin physiological functions or ceramide content by either removal method.

*E. Jacquet, J. Chambert, J. Pauchot, P. Sandoz***, Intra- and inter-individual variability in the mechanical properties of the human skin from in vivo measurements on 20 volunteers**, Skin Research and Technology 2017; 23: p. 491-499

Background/purpose: The mechanical properties and behavior of the human skin in vivo are of medical importance, particularly to surgeons who have to consider the skin extension capabilities in the preparation of surgical acts. Variable data can be found in literature that result from diverse kinds of tests (in vivo, ex vivo, and postmortem) performed with different instruments. Methods: This paper presents the results of in vivo measurements performed on a cohort of 20 healthy volunteers with an ultralight homemade uniaxial extensometer. Different anatomical zones were explored under different directions of solicitation in order to document inter- and intra-individual variability as well as skin anisotropy. Results: The experimental data obtained are fitted with a phenomenological exponential model allowing the identification of three parameters characteristic of the tested skin behavior. These parameters can be related to the concept of skin extensibility used by surgeons. Conclusion: The inter- and intra-variability observed on that cohort confirms the need for a patient-specific approach based on the in vivo measurement of the mechanical behavior of the human skin of interest. Even the direction of higher skin stiffness is found to be individual-dependent. The capability of the extensometer used in this study to fulfill such measurement needs is also demonstrated.

K. Bazela, R. Debowska, B. Tyszczuk, K. Rogiewicz, I. Eris, **Noninvasive Techniques for Anti-cellulite Product Efficacy Evaluation,** www.cosmeticsandtoiletries.com, December 2017

Cellulite is considered an endocrine metabolic microcirculatory disorder that causes interstitial matrix alterations and structural changes in subcutaneous adipose tissue. It is localized mainly on the thighs, buttocks and occasionally the abdomen, and it is characterized by an orange peel or cottage cheese appearance. Approximately 85% of women worldwide are concerned by cellulite. Although the cellulite pathogenesis is not fully understood, a variety of circulatory and structural changes have been identified that contribute to the orange peel appearance of the skin. First, the capillary networks of the dermis are impaired from the breakdown in blood vessel integrity, which causes fluid retention and clumping of engorged fat cells in the subcutaneous tissue. The aggregation of adipose cells and the growth of collagen fibrils further hamper microcirculation, leading to dermal metabolism reduction. Moreover, dermal thinning occurs in response to minimized protein synthesis and reduced degradation.

Adipose cells isolated from nutrition and toxins removal swell to micronodules that finally agglomerate to macronodules. Cellulite is a concern for many women. Therefore, appropriate research to investigate treatment options and objective methods measuring its efficacy are warranted. The present study aims to evaluate the efficacy of an anti-cellulite product using noninvasive investigation techniques. The key skin condition parameters measured include moisturization, roughness and the thickness of subcutaneous tissue.

E. Hahnel, U. Blume-Peytavi, C. Trojahn, J. Kottner, **Associations between skin barrier characteristics, skin conditions and health of aged nursing home residents: a multicenter prevalence and correlational study,** BMC Geriatrics (2017) 17:263

Background: Geriatric patients are affected by a range of skin conditions and dermatological diseases, functional limitations and chronic diseases. Skin problems are highly prevalent in elderly populations. Aim of this study was to investigate possible associations between health, functional and cutaneous variables in aged long-term care residents. Methods: This observational, cross-sectional, descriptive prevalence study was conducted in a random sample of 10 institutional long-term care facilities in Berlin. In total, n = 223 residents were included. Demographic and functional characteristics, xerosis cutis, incontinence associated dermatitis, pressure ulcers and skin tears were assessed. Stratum corneum hydration, transepidermal water loss, skin surface pH and skin temperature were measured. Data analysis was descriptive and explorative. To explore possible bivariate associations, a correlation matrix was created. The correlation matrix was also used to detect possible collinearity in the subsequent regression analyses. Results: Mean age (n = 223) was 83.6 years, 67.7% were female. Most residents were affected by xerosis cutis (99.1%; 95% CI: 97.7% - 100.0%). The prevalence of pressure ulcers was 9.0% (95% CI: 5.0% - 13.0%), of incontinence associated dermatitis 35.4% (95% CI: 29.9% - 42.2%) and of skin tears 6.3% (95% CI: 3.2% - 9.5%). Biophysical skin parameters were not associated with overall care dependency, but with age and skin dryness. In general, skin dryness and measured skin barrier parameters were associated between arms and legs indicating similar overall skin characteristics of the residents. Conclusion: Prevalence of xerosis cutis, pressure ulcers and skin tears were high, indicating the load of these adverse skin conditions in this population. Only few associations of demographic characteristics, skin barrier impairments and the occurrence of dry skin, pressure ulcers, skin tears and incontinence-associated dermatitis have been detected, that might limit the diagnostic value of skin barrier parameters in this population. Overall, the measured skin barrier parameters seem to have limited diagnostic value for the reported skin conditions except xerosis cutis.

E. Hahnel, U. Blume-Peytavi, C. Trojahn, G. Dobos, A. Stroux, N. Garcia Bartels, I. Jahnke, A. Lichterfeld-Kottner, H. Neels-Herzmann, A. Klasen, J. Kottner, **The effectiveness of standardized skin care regimens on skin dryness in nursing home residents: A randomized controlled parallel-group pragmatic trial,** International Journal of Nursing Studies 70 (2017) p. 1–10

Background: Aged residents of institutional long-term care facilities are at high risk for developing skin and tissue diseases. Besides various common skin problems, dry skin (xerosis cutis) is one of the most frequent skin conditions in this setting. Objectives: To investigate the effectiveness of two structured skin care regimens in comparison to routine skin care on xerosis cutis in nursing home residents. Design: A multi-center, pragmatic, randomized, controlled, investigator blinded study with three parallel groups. Settings: The study was conducted in a random sample of ten out of 291 institutional long-term care facilities of the federal state of Berlin, Germany. Participants: Long-term care residents being 65+ years affected by dry skin were included. Methods: The residents were allocated into one of three study groups. Two interventional groups used standardized skin care regimens, consisting of a body wash and twice daily applications of leave-on products for eight weeks. The third control group performed skin care as usual. All participating residents were examined at baseline and after 4 and 8 weeks. Xerosis cutis was measured with the Overall Dry Skin score. Instrumental skin barrier measurements were performed at baseline and after 8 weeks. Diaries were used to document washing and skin care frequencies. Results: In total, 133 residents were included and allocated to one of the three groups. Mean age was 83.8 (SD 8.3) years, 65.4% were female and most residents had care levels I (42.9%) or II (42.9%) according to the German Social Code Book XI. Mean Barthel score was 46.8 (SD 24.2) and mean Braden score was 17.6 (SD 3.7). Leg skin areas were drier compared to arms and trunk areas. At the end of the study the Overall Dry Skin scores in the intervention groups were lower compared to the control group. There were statistically significant improvements of skin dryness in both intervention groups compared to the control group over time. Conclusions: The results of this pragmatic trial indicate that structured skin care regimens are effective in reducing skin dryness in aged nursing home residents within eight weeks.

T. Tomova-Simitchieva, A. Lichterfeld-Kottner, U. Blume-Peytavi, J. Kottner, **Comparing the effects of**

3 different pressure ulcer prevention support surfaces on the structure and function of heel and sacral skin: An exploratory cross-over trial, International Wound Journal, 2017; p. 1–9

Special support surfaces are key in pressure ulcer prevention. The aim of this study was to measure the effects of 3 different types of mattresses (reactive gel, active alternating air, basic foam) on skin properties of the sacral and heel skin after 2 hours loading. Fifteen healthy females (median age 66 years) were included. Transepidermal water loss, skin surface temperature, erythema, stratum corneum hydration, epidermal hydration, skin extensibility, elastic function, and recovery as well as skin roughness parameters were measured under controlled room conditions before loading, immediately after loading, and 20 minutes postloading in the supine position on the different mattresses. The highest increases in transepidermal water loss, skin temperature, and erythema were observed for the foam mattress after loading, indicating higher deformation and occlusion. Cutaneous stiffness decreased in all 3 groups, indicating structural changes during loading. There was a substantial decrease of mean roughness at the heel skin in the foam group, leading to a flattening of the skin surface. Study results indicate that the type of support surface influences skin structure and function during loading. The gel and air mattress appeared to be more protective compared with the foam mattress, but the differences between the gel and air were minor.

M. Scharioa, T. Tomova-Simitchieva, A. Lichterfeld, H. Herfert, G. Dobos, N. Lahmann, U. Blume-Peytavi, J. Kottner, **Effects of two different fabrics on skin barrier function under real pressure conditions**, Journal of Tissue Viability 26 (2017), p. 150 -155

Background: Pressure Ulcers (PUs) are a severe form of skin and soft tissue lesions, caused by sustained deformation. PU development is complex and depends on different factors. Skin structure and function change during prolonged loading on PU predilection sites and surfaces being in direct contact with skin are likely to have an impact as well. Little is known about the influence of fabrics on skin function under pressure conditions. Objectives: To investigate skin responses to sustained loading in a sitting position and possible differences between two fabrics. Methods: Under controlled conditions 6 healthy females (median age 65.0 (61.0e67.8) years) followed a standardized immobilization protocol of a sitting position for 45 min on a spacer and on a cotton fabric. Before and after the loading period skin surface temperature, stratum corneum hydration, transepidermal water loss (TEWL), erythema, skin elasticity and 'relative elastic recovery' were measured at the gluteal areas. Results: A 45 min sitting period caused increases of skin surface temperature and erythema independent of the fabric. Loading on spacer fabric showed a two times higher increase of TEWL compared to cotton. Stratum corneum hydration showed slight changes after loading, skin elasticity and 'relative elastic recovery' remained stable. Conclusions: Sitting on a hard surface causes skin barrier changes at the gluteal skin in terms of stratum corneum hydration and TEWL. These changes are influenced by the fabric which is in direct contact to the skin. There seems to be a dynamic interaction between skin and fabric properties especially in terms of temperature and humidity accumulation and transport.

U. Schlossberger, T. Jansen, **Wirksamkeit eines neuartigen transdermalen Applikationssystems in der Therapie von gealterter und chronisch lichtgeschädigter Haut**, Dermatologie am Alter Markt, Köln, Germany

In einer offenen Pilotstudie wurde die Wirksamkeit eines neuartigen transdermalen Applikationssystems (Dermadrop®, Omega Diagnostics GmbH, Reinbek), bei dem mit Hilfe von hochkonzentriertem Sauerstoff definierte Wirkstoffe wie Hyaluronsäure in die Dermis eingebracht werden, bei Frauen mit gealterter und chronisch lichtgeschädigter Haut untersucht. Die Applikation erfolgte nach einem standardisierten Protokoll konsekutiv in 3 Sitzungen im Abstand von 1 Woche in der Periorbital- und der Oberlippenregion. Die Evaluierung fand vor Therapiebeginn, dann wöchentlich jeweils vor der Applikation sowie 1 Woche nach der letzten Applikation statt. An festgelegten Meßpunkten kamen biophysikalische Methoden zur Bestimmung verschiedener Hautfunktionsparameter wie SELS-Verfahren (Visioscan®), Cutometrie und Corneometrie (Courage u. Khazaka, Köln) zur Anwendung. Die klinischen Befunde wurden im Verlauf mit Hilfe von digitaler Photographie dokumentiert und miteinander verglichen. Die objektiven Befunde wurden mit der subjektiven Probandenzufriedenheit, die anhand von standardisierten Fragebögen ermittelt wurde, korreliert. Die Ergebnisse der Studie geben erste Hinweise auf die Wirksamkeit des Dermadrop®-Verfahrens in der Therapie von gealterter und chronisch lichtgeschädigter Haut. Es handelt sich um ein neuartiges dermatologisch-ästhetisches Therapiesystem, das eine Penetration von unterschiedlichen Wirkstoffen nicht-invasiv und schmerzfrei in die Dermis ermöglicht. Weitere Untersuchungen zur Evaluierung der Wirksamkeit des transdermalen Applikationssystems bei verschiedenen Indikationen sind vorgesehen.

K.C. Bernhöft, M. Streker, M. Kerscher, **Evaluation einer kosmetischen Maske bestehend aus einem**

Puder (27% Vitamin C, 4% Emblica Extrakt) und einer Lösung (40% Glykolsäure, 10% Zitronensäure) in Kombination mit einem Produkte-Set zur Reduktion fazialer Hyperpigmentierung

Fragestellung: Wie effektiv ist die Anwendung einer kosmetischen Peelingmaske in Kombination mit einem Produkte Set für zuhause bei der Reduzierung von Hyperpigmentierung bei Frauen? Methodik: In dieser Pilotstudie wurden 2×12 Probandinnen, insgesamt 24, zwischen 25 und 60Jahren in je einem Zeitraum von 12Wochen untersucht. Die Peelingmaske wurde 6x mit je einem Abstand von 10–14Tagen auf dem gesamten Gesicht nach einem speziellen Behandlungsablauf angewendet. Während des gesamten Studienzeitraums wurden die Probandinnen dazu angehalten das ausgegebene Produkte Set zuhause anzuwenden. Zur Evaluation der direkten Hautreaktion wurde eine Probanden Befragung, als auch eine Experten Einschätzung, zu jeder Visite eingeholt. Zusätzlich wurde zur Effekt Feststellung die standardisierte Fotographie (Visia, complexing analysis), Mexametrie und Probanden Befragungen vor Beginn der Studie, an Tag 42 und an Tag 84 angewendet. Die Verträglichkeit der Behandlung, die Corneometrie, der transepidermale Wasserverlust, als auch der pH Wert wurden mittels biophysikalischer Messungen festgehalten. Ergebnis: Die Probanden stellten in den Befragungen eine Verbesserung der Hauttextur, Ebenmäßigkeit und des gesamt Erscheinungsbildes der Haut fest. Größtenteils sind die Hyperpigmentierungen nach Anwendung der Peelingmaske und des Produkte Sets zurückgegangen. Die Hautfarbe, gemessen an Melanin und Hämoglobin (Erytheme) ist schwächer geworden, verglichen zu den Vorab-Messungen. Die Hautverträglichkeit gemessen an den biophysikalischen Werten ist gegeben gewesen. Schlussfolgerung: Die Anwendung der Peelingmaske, wie auch der Heimpflege-Produkte war verträglich und konnte eine Verbesserung der Haut erreichen. Dies lässt darauf schließen, dass ein oberflächliches, kosmetisches Fruchtsäurepeeling, in diesem Fall in Form einer Peelingmaske, mit einem ergänzendem Produkte Set für zuhause, eine zufriedenstellende und verträgliche Alternative zu aufhellenden Produkten auf dem Markt darstellt.

E. Merinville, C. Messaraa, C. O'Connor, G. Grennan, A. Mavon, **What Makes Indian Women Look Older—An Exploratory Study on Facial Skin Features,** cosmetics, December 2017

It remains important to investigate skin ageing signs across different skin types for targeted solutions. Limited data is available on Indian skin changes throughout ageing, hence three fields were investigated: skin features during the ageing process, their relationship with perceived age and self-declared skin ageing concerns. Photographs, skin topography, colour and biophysical measurements of 202 Indian female volunteers, 30–65 years old, were collected. Another panel of 693 naïve graders, 20–65 years old, estimated the age of photographs previously collected. Associations between 28 skin features and real/perceived age were assessed using linear correlation coefficients. Skin feature scores of an older perceived group were compared versus the scores of a younger perceived group, to establish skin features that lead to an older appearance. Additionally, the naïve graders were asked to rank 12 skin ageing concerns by importance. Twenty-four features correlated with real and perceived age. The ages of the volunteers were overestimated, especially those in their 30s. Skin features related to skin brightness suggested an older look for volunteers in their 30s. From the 40s onwards, wrinkles around the eye area, glabellar and corner of the mouth were also drivers for looking older. In the 50s, features such as upper lip wrinkles, hydration and roughness on the crow's feet were worse in the older perceived group, while nasolabial folds suggested an older appearance in the 60s. By having identified skin features that worsen with age and contribute to an older perceived face, this research will facilitate the creation of tailored products and communication for Indian women to look after their skin concerns throughout the ageing process.

C. Korponya, E. Szél, Z. Behány, E. Varga, G. Mohos, Á. Dura, S. Dikstein, L. Kemény, G. Erös, **Effects of Locally Applied Glycerol and Xylitol on the Hydration, Barrier Function and Morphological Parameters of the Skin**, Acta Derm Venereol. 2017

Glycerol and xylitol hydrate the skin and improve its barrier function over a short period. We studied the effects of glycerol and xylitol on the physiological properties and morphology of the skin after longer-term application. Twelve volunteers with dry skin were examined. Three areas on the arms were determined. Area 1 served as untreated control. The vehicle was applied to area 2, while area 3 was treated twice daily with a formulation containing glycerol (5%) and xylitol (5%) for 14 days. Transepidermal water loss (TEWL), hydration and biomechanical properties of the skin were monitored. Biopsies were taken for routine histology and immunohistochemistry for flaggrin and matrix metalloproteinase-1 (MMP-1). The polyols increased the skin hydration and protein quantity of flaggrin, elevated the interdigitation index, decreased the TEWL and improved the biomechanical properties of the skin, but did not change the protein expression of MMP-1. A combination of glycerol and xylitol can be useful additional therapy for dry skin.

R. Janiš, V. Pata, P. Egner, J. Pavla□ková, A. Zapletalová, K. Kejlová, **Comparison of metrological techniques for evaluation of the impact of a cosmetic product containing hyaluronic acid on the properties of skin surface**, Biointerphases 12, 021006 (2017)

The aim of this research was to evaluate mutual interchangeability of four principally different biometric instrumental techniques designed for objective measurement of changes in the physical, mechanical, and topographical properties of the skin surface treated with commercial antiaging cosmetic products with hyaluronic acid. The following instrumental devices were used: Visioscope PC 35, Corneometer Multiprobe Adapter MPA 6, Reviscometer RVM 600, and 3D scanner Talysurf CLI 500. The comparison of the individual methods was performed using cluster analysis. The study involved 25 female volunteers aged 40–65. Measurements were taken before and after 30 daily in vivo applications of an antiaging preparation to the skin surface in the periorbital area. A slight reduction in skin surface roughness was recorded in 55% of the volunteers. On the contrary, a worsening from their initial states was detected in 25% of the subjects, while for 20%, no significant change was reported. Cluster analysis confirmed that the mentioned methodologies can be divided into two basic clusters, namely, a cluster of methods recording the changes in skin relief by means of optical techniques, and a cluster of methods investigating changes in hydration and anisotropy. In practice, the techniques in different clusters are not interchangeable and should be assessed separately.

C. Bogdan, S. Iurian, I. Tomuta, M. Moldovan, **Improvement of skin condition in striae distensae: development, characterization and clinical efficacy of a cosmetic product containing *Punica granatum* seed oil and *Croton lechleri* resin extract**, Drug Design, Development and Therapy 2017:11, p. 521–531

Striae distensae are a frequent skin condition associated with pregnancy, weight change or lack of skin elasticity. The aim of this research was to obtain a topical product containing herbal active ingredients with documented antioxidant and anti-inflammatory activity (*Punica granatum* seed oil and *Croton lechleri* resin extract) and demonstrate its positive effect on prevention and treatment of striae distensae. First, the cream base formulation was optimized through experimental design. Secondly, the cream containing the two active ingredients was investigated in an interventional nonrandomized clinical trial. The clinical outcome was assessed through biophysical parameters and ultrasonographic evaluation. The state of the skin was evaluated by biophysical measurements and ultrasonography at the beginning of the study and after 3 and 6 weeks. The experimental design was successfully used to set the best ranges for the technological and formulation factors to obtain a cosmetic formulation with optimal characteristics. The study of clinical effcacy on the optimal formulation revealed an increase in the dermis thickness, hydration and elasticity values in both groups after 6 weeks of cream application. The new oil-in-water cream containing *P. granatum* seed oil and *C. lechleri* resin extract can be helpful in the prevention or improving of skin changes associated with striae.

L. von Oppen-Bezalel, **Detoxification and protection against pollution and UV**, PERSONAL CARE ASIA PACIFIC, November 2017, p. 59-61

Air pollution, caused mainly by industry, vehicle fumes,cigarette smoke together with high energy sunlight (UV), are known to have a detrimental effect on our skin and body, starting from our appearance, such as early signs of ageing including wrinkles, pigmentation spots, disrupted skin barrier, overall dryness and skin imperfections. Pollution and smog are not a single substance, but are rather a highly complex mixture of molecules and particles that are breathed in and absorbed through the skin. A major unmet need of the industry is for effective, natural and safe means to protect the body and the skin specifically as our outer protective layer against pollution to which it is exposed daily.

A. Aguirre, E. Gil-Quintana, M. Fenaux, S. Erdozain, I. Sarria, **Beneficial Effects of Oral Supplementation with Ovoderm on Human Skin Physiology: Two Pilot Studies**, J Diet Suppl. 2017 Nov 2; 14(6): p. 706-714

Collagens and hyaluronic acid have long been used in pharmaceuticals and food supplements for the improvement of skin elasticity and hydration. These compounds provide the building blocks of the skin. Ovoderm is an oral supplement obtained from eggshells that contains naturally occurring collagen and glycosaminoglycans, such as hyaluronic acid. We evaluated the efficacy of Ovoderm on skin biophysical parameters related to cutaneous aging such as elasticity, hydration, and pigmentation. Two pilot studies were run to assess the effect of daily oral supplementation with 300 mg Ovoderm on skin parameters. The first consisted of a self-assessment questionnaire intended to perform an assessment on skin, hair, and nail health after 50 days of treatment. The second measured the effect of 5-week treatment on hydration by corneometry, on elasticity with the cutometer, and on pigmentation with the mexameter. In the pilot study 1, participants were predominantly satisfied with the effects

obtained on general face (100% volunteers satisfied) and body (94% volunteers satisfied) skin condition and skin properties (100% volunteers satisfied with facial skin softness, 94% with facial skin hydration, and 89% with body skin hydration) and partly with effects on hair (67% volunteers satisfied) and nail (50% volunteers satisfied) condition. The study 2 revealed a statistically significant improvement in skin elasticity (12% increase, p =.0136), a tendency to reduce skin pigmentation (5% decrease), and no significant change in skin hydration. Our study reflects that oral supplementation with Ovoderm is efficacious to reduce the gradual loss of skin elasticity characteristic of aged skin, which helps to improve the appearance of the skin.

M.P. Wakeman, **An open-label forearm-controlled pilot study to assess the effect of a proprietary emollient formulation on objective parameters of skin function of eczema-prone individuals over 14 days,** Clinical, Cosmetic and Investigational Dermatology 2017:10, p. 275–283

Background: This study examines the effcacy of a new plant-based emollient and assesses product acceptability. Methods: Primary effcacy endpoints were improvement in transepidermal water loss, hydration, skin elasticity and frmness, erythema, and skin roughness and smoothness as measured using the versions of Tewameter, Corneometer, Cutometer, Mexameter, and Visioscan VC98, respectively. The cream was applied twice daily by 32 participants to an area of one forearm unaffected by eczema, while the same area of the other forearm was used as a control. Measurements were taken at day 0 and day 14. Secondary endpoints assessed the acceptability of the product. Results: At the end of 2 weeks, transepidermal water loss, hydration, skin elasticity and frmness, erythema, and skin roughness and smoothness improved. All changes were statistically signifcant (p<0.01). The rate of satisfaction with the emollient properties was 82%, and the rate of absorption into the skin was 88%. Results show that the emollient hydrates and repairs eczema-prone skin with high levels of acceptability.

K. Huimin, A.M. Rowledge, C.J. Borzdynski, C. Miller, N. Frescos, G. McKenzie, E. Perry, W. McGuiness, **Reliability of a Skin Diagnostic Device in Assessing Hydration and Erythema**, Adv Skin Wound Care, 2017 Oct;30(10): p. 452-459

Objective: To examine the reliability of a skin diagnostic device, the SD202 (Courage+Khazaka GmBH, Cologne, Germany), in assessing hydration and erythema of periwound skin and pressure injury-prone areas. Design: Intrarater reliabilities from 3 cross-sectional and prospective studies are reported. Setting and Participants: Patients attending an outpatient, nurse-led wound dressing clinic (n = 16), a podiatrist-led high-risk foot clinic (n = 17), and residents (n = 38) at a single residential aged-care facility. Main Outcome Measures: Skin hydration and erythema levels assessed using the SD202. Main Results: High internal consistency was maintained for consecutive skin hydration and erythema measures at a single point on the venous leg ulcer periwound (α > .996 and α > .970 for hydration and erythema, respectively) and for the pressure-prone areas of the sacrum (α > .916), right (α > .994) and left (α > .967) ischium, right (α > .989) and left (α > .916) trochanter, right (α > .985) and left (α > .992) calcaneus, and right (α > .991) and left (α > .990) lateral malleolus. High consistency was also found for the measures obtained at 4 different locations around the periwound for the venous leg ulcer (α > .935 and α > .870 for hydration and erythema, respectively). In diabetic foot ulcer assessment, acceptable internal consistency of hydration measures around the periwound was observed (α > .634). Internal consistency of erythema measures was variable, ranging from low to high reliability, particularly among predebridement measures. Conclusions: Using the protocols outlined in this study, the SD202 demonstrates high reliability for assessing skin hydration and erythema levels. It is possible that the SD202 can be used in clinical practice as an appropriate tool for skin hydration and erythema assessment.

N. Okamoto, K. Umehara, J. Sonoda, M. Hotta, H. Mizushima, Y. Takagi, K. Matsuo, N. Baba, **Efficacy of the combined use of a mild foaming cleanser and moisturizer for the care of infant skin**, Clinical, Cosmetic and Investigational Dermatology 2017:10, p. 393–401

Objective: Despite the application of skin care treatments, many infants have skin problems such as dryness and erythema. We proposed a new combination skin care for infants which consisted of a foaming cleanser with lower surfactant activity and moisturizers that contained pseudo-ceramide. Subjects and methods: A total of 50 infants (age: 3–24 months) with insignifcant levels of dry skin were enrolled in this usage trial. The parents washed the infants with the test cleanser while bathing and then applied the moisturizer (lotion or cream) containing pseudo-ceramide. Prior to and following the 4-week usage period, visual evaluation of the skin condition was conducted by a dermatologist, in addition to instrumental analysis. Results: Erythema and papule, accompanied by dryness, were commonly observed at week 0. However, by week 4, these symptoms signifcantly improved; the condition of none of the subjects deteriorated. The number of infants with lower cutaneous barrier function and higher skin pH decreased. The parents of the infants recognized improvements in the skin symptoms and were

appreciative of the test materials. Conclusion: The combined usage of the foaming cleanser with lower surfactant activity and a moisturizer containing pseudo-ceramide may be effective in maintaining healthy infant skin and ameliorating the skin symptoms.

M. Milani, A. Sparavigna, **The 24-hour skin hydration and barrier function effects of a hyaluronic 1%, glycerin 5%, and *Centella asiatica* stem cells extract moisturizing fluid: an intra-subject, randomized, assessor-blinded study,** Clinical, Cosmetic and Investigational Dermatology 2017:10, p. 311–315

Introduction: Moisturizing products are commonly used to improve hydration in skin dryness conditions. However, some topical hydrating products could have negative effects on skin barrier function. In addition, hydrating effects of moisturizers are not commonly evaluated up to 24 hours after a single application. Hyaluronic acid (HA) and glycerin are very well-known substances able to improve skin hydration. *Centella asiatica* extract (CAE) could exert lenitive, anti-inflammatory and reepithelialization actions. Furthermore, CAE could inhibit hyaluronidase enzyme activity, therefore prolonging the effect of HA. A fluid containing HA 1%, glycerin 5% and stem cells CAE has been recently developed (Jaluronius CS [JCS] fluid). Study aim: To evaluate and compare the 24-hour effects of JCS fluid on skin hydration and on transepidermal water loss (TEWL) in healthy subjects in comparison with the control site. Subjects and methods: Twenty healthy women, mean age 40 years, were enrolled in an intra-subject (right vs left), randomized, assessor-blinded, controlled, 1-day trial. The primary end points were the skin hydration and TEWL, evaluated at the volar surface of the forearm and in standardized conditions (temperature- and humidity-controlled room: 23°C and 30% of humidity) using a corneometer and a vapometer device at baseline, 1, 8 and 24 hours after JCS fluid application. Measurements were performed by an operator blinded for the treatments. Results: Skin hydration after 24 hours was signifcantly higher (P=0.001; Mann–Whitney U test) in the JCS-treated area in comparison with the control site. JCS induced a signifcant (P=0.0001) increase in skin hydration at each evaluation time (+59% after 1 hour, +48% after 8 hours and +29% after 24 hours) in comparison with both baseline (P=0.0001) and non-treated control site (P=0.001). TEWL after 24 hours was signifcantly lower (P=0.049; Mann–Whitney U test) in the JCS-treated area in comparison with the control site (13±4 arbitrary units [AU] vs 16±6 AU). JCS fluid signifcantly reduced post-stripping TEWL in comparison with baseline after 1, 8 and 24 hours (–52%, –32% and –48%, respectively). In the control site, TEWL was not reduced in comparison with baseline values at each time point's evaluation. Conclusion: A single application of JCS signifcantly improves skin hydration for up to 24 hours at the same time as improving skin barrier function.

S. Raab, M. Yatskayer, S. Lynch, M. Manco, C. Oresajo, **Clinical Evaluation of a Multi-Modal Facial Serum That Addresses Hyaluronic Acid Levels in Skin**, Journal of Drugs in Dermatology, Volume 16, Issue 9, September 2017, p. 884-890

Background: Hyaluronic acid (HA), the major glycosaminoglycan present in the human skin, is a key contributor to water retention and mechanical support in skin. The level, size, and functionality of cutaneous HA are known to diminish with age. Topical treatments designed to increase the HA content of skin have been met with limited success.The purpose of this study was to evaluate the tolerance and efficacy of a multi-modal facial serum containing HA, Proxylane (C-Xyloside), purple rice extract, and dipotassium glycyrrhizate in addressing HA levels in skin. Methods: A 12-week, single center, clinical study was conducted on 59 women with mild to moderate photodamage. Clinical grading to assess the efficacy and tolerability was conducted on the face at baseline and at weeks 4, 8, and 12. Bioinstrumentation measurements were taken, including corneometer, tewameter, ultrasound, and standardized digital imaging. A randomized subset of 20 subjects from the study population had 3 mm punch biopsies collected for quantitative RT-PCR analysis from 2 sites on the face at baseline and week 12. Additionally, a 4-week, single center, clinical study was conducted on the photodamaged forearms of 12 subjects. At both baseline and week 4, a 4 mm punch biopsy was obtained from the subjects' randomized forearms. Biopsy samples were subjected to immunohistochemical staining and analysis of HA content. Results: Statistically-significant improvements in all facial skin attributes (weeks 4, 8, and 12), stratum corneum hydration (week 12), and transepidermal water loss (week 12) were observed.Tolerability was excellent, with no increases in irritation parameters noted. A significant increase of HA content in skin after 4 weeks of treatment was observed. By PCR analysis, there was a significant increase in hyaluronan synthase 2, as well as a significant increase in collagen type 1a1 after 12 weeks of application. Conclusion: The findings suggest that this novel topical facial serum is capable of stimulating HA and skin extracellular matrix components, as well as improving skin hydration and skin quality in women with mild to moderate photodamage.

C. Uhl, D. Khazaka, **Test equipment supports anti-pollution claims,** PERSONAL CARE ASIA

PACIFIC, May 2017, p. 27-29 and PERSONAL CARE EUROPE, September 2017, p. 74-76

Pollution and its impact on the skin have recently become the main topic at all important cosmetic events, and products claiming to protect the skin from pollution effects are a major trend in the cosmetic and personal care industry.

N. Cameli, M. Mariano, M. Ardigò, C. Corato, G. De Paoli, E. Berardesca, **Comparative instrumental evaluation of efficacy and safety between a binary and a ternary system in chemexfoliation**, J Cosmet Dermatol, 2017 Sep

Objective: To instrumentally evaluate the efficacy and the safety of a new ternary system chemo exfoliating formulation (water-dimethyl isosorbide-acid) vs traditional binary systems (water and acid) where the acid is maintained in both the systems at the same concentration. Methods: Different peelings (binary system pyruvic acid and trichloroacetic acid-TCA, and ternary system pyruvic acid and TCA) were tested on the volar forearm of 20 volunteers of both sexes between 28 and 50 years old. The outcomes were evaluated at the baseline, 10 minutes, 24 hours, and 1 week after the peeling by means of noninvasive skin diagnosis techniques. In vivo reflectance confocal microscopy was used for stratum corneum evaluation, transepidermal waterloss, and Corneometry for skin barrier and hydration, Laser Doppler velocimetry in association with colorimetry for irritation and erythema analysis. Results: The instrumental data obtained showed that the efficacy and safety of the new ternary system peel compounds were significantly higher compared with the binary system formulations tested. The new formulation peels improved chemexfoliation and reduced complications such as irritation, redness, and postinflammatory pigmentation compared to the traditional aqueous solutions. Conclusion: The study showed that ternary system chemexfoliation, using a controlled delivery technology, was able to provide the same clinical effects in term of stratum corneum reduction with a significantly reduced barrier alteration, water loss, and irritation/erythema compared to traditional binary system peels.

M.P. Szczepanik , P.M. Wilko, ek, ,.R. Adamek, M. Zajazc†, M. Go, ynski, W. Sitkowski, I. Taszkun*, **Evaluation of the correlation between Scoring Feline Allergic Dermatitis and Feline Extent and Severity Index and skin hydration in atopic cats**, Veterinary Dermatology September 2017

Background: Evaluation of the severity of clinical signs of cats with allergic skin diseases has used two scoring systems: Scoring Feline Allergic Dermatitis (SCORFAD) and the Feline Extent and Severity Index (FeDESI). The integrity of the cutaneous barrier can also be evaluated by measuring skin hydration. A correlation between the clinical score and skin hydration has been observed in humans and dogs with atopic dermatitis (AD). Hypothesis: To demonstrate a correlation between the clinical score and skin hydration of cats affected with presumed AD. Animals: European short hair cats (n = 18): 11 females and seven males with a confirmed diagnosis of AD. Methods: SCORFAD and FeDESI scores were calculated and the measurements of skin hydration were assessed from seven body sites using corneometry. The correlation between the SCORFAD and FeDESI systems and skin hydration of each site, and the average skin hydration was calculated. Results: There was a positive correlation between the SCORFAD score and skin hydration for the axilla, thorax and forelimb; for FeDESI and axilla and lumbar sites. There was a negative correlation between the FeDESI and skin hydration for the pinna (r = 0.47). Conclusions and clinical importance: Measurements of skin hydration could be a useful tool for the evaluation of allergic cats. There is limited evidence of any useful correlation between clinical scoring systems and measurements of hydration. The pinna may be a suitable region for the assessment of skin barrier function in normal and allergic cats.

H.S. Scheer, **Untersuchung zur Hautbarriere bei Atopischem Ekzem und Filaggrinmutation,** Dissertation, Klinik und Poliklinik für Dermatologie und Allergologie am Biederstein, TU München, Germany, August 2017

Der Begriff Atopie leitet sich von dem griechischen Wort *atopos* ab und bedeutet „nicht am richtigen Platz“ oder „seltsam“. Er wurde 1923 eigens für die Beobachtungen von Coca und Cooke kreiert, die damit eine abnorme Hypersensitivitätsreaktion gegen ursprünglich harmlose Umweltsubstanzen beschreiben wollten. Wichtig war ihnen dabei die Abgrenzung zur Anaphylaxie und Allergie im Sinne einer Serumkrankheit (Coca & Cooke, 1923). Seitdem variierte die Begriffsdefiniton stark und ist Gegenstand andauernder Kontroversen.

J. Djokic-Gallagher, P. Rosher, G. Oliveira, J. Walker, **A Double-Blind, Randomised Study Comparing the Skin Hydration and Acceptability of Two Emollient Products in Atopic Eczema Patients with Dry Skin**, Dermatol Ther (Heidelb) (2017) 7: p. 397–406

Introduction: Healthcare professionals tend to recommend emollients based primarily on patient/consumer preference and cost, with cheaper options assumed to be therapeutically equivalent. The aim of this study was therefore to compare the effects on skin hydration of two emollients prescribed

in the UK, Doublebase DayleveTM gel (DELP) and a cheaper alternative, Zerobase EmollientTM cream (ZBC). Methods: This was a single-centre, randomised, double-blind, concurrent bi-lateral (within-patient) comparison in 18 females with atopic eczema and dry skin on their lower legs. DELPgel and ZBC cream were each applied to one lower leg twice daily for 4 days and on the morning only on day 5. The efficacy of both products was assessed by hydration measurements using a Corneometer CM825 probe (Courage-Khazaka Electronic). The measurements were made three times daily on days 1 to 5. The primary efficacy variable was the area under the curve (AUC) of the change from baseline corneometer readings over the 5 days. Results: Skin hydration using DELP gel was significantly higher than using ZBC cream (p \0.0001). The cumulative increase in skinm hydration observed for DELP gel was substantial and long lasting. In contrast, for ZBC cream, there was no significant improvement of the cumulative skin hydration as measured by the AUC (p = 0.22). Conclusion: DELP gel achieved substantial, long-lasting and cumulative skin hydration, whilst ZBC cream achieved no measurable improvement in skin hydration compared to before treatment. Healthcare professionals should be aware that different emollients can perform differently

J. M. Jackson. G.L. Grove. K. Allenby. T. Houser, **DFD-01 Reduces Transepidermal Water Loss and Improves Skin Hydration and Flexibility**, Dermatol Ther (Heidelb) (2017) 7: p. 507–514

Introduction: In plaque psoriasis, the benefit of topical steroids is well established. The vehicle formulation of topical steroids may also provide benefit in addition to the effects of the steroid itself. DFD-01 (betamethasone dipropionate spray, 0.05%) is a formulation composed of a topical steroid in an emollient-like vehicle that enhances penetration to the target site of inflammation in the skin. The aim of this study was to assess the effect of DFD-01 and its vehicle on skin hydration and barrier function in compromised skin and to evaluate its effect on flexibility in healthy skin. Methods: Eighteen healthy white volunteers were enrolled in each of two studies. In Study 1, dry shaving of volar forearms created a compromised skin barrier, through which transepidermal water loss (TEWL) was measured using an evaporimeter. Capacitance, a measure of epidermal hydration, was also measured at baseline and at 1, 2 and 4 h after application of DFD-01 or its vehicle formulation. In Study 2, intact skin flexibility was tested with a cutometer before and at 1, 2 and 4 h after application of DFD-01 or vehicle. Results: In Study 1, both DFD-01 and its vehicle were effective at reducing TEWL through the compromised stratum corneum. Capacitance measurements confirmed this finding; razor-chafed skin treated with either DFD-01 or vehicle exhibited levels of skin hydration similar to unshaved control skin. Study 2 found softening and greater flexibility of normal skin treated with either DFD-01 or vehicle compared with nontreated control skin samples. Conclusions: These tests suggest that the DFD-01 formulation and its vehicle are each effective at retaining moisture within a damaged skin barrier and for softening and increasing the flexibility of intact skin.

Xi Li, C. Yuan, L. Xing, P. Humbert, **Topographical diversity of common skin microflora and its association with skin environment type: An observational study in Chinese women**, Scientific Reports, (2017) 7:18046

This study evaluated cutaneous microbial distribution, and microbial co-occurrence at different body sites and skin environments in Chinese women (39.6 ± 11.9 years, N= 100) during the winter season. Microbial distribution (*Propionibacterium acnes*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Lactobacillus*, Pseudomonadaceae, and *Malassezia furfur*), association with biomarkers (antimicrobial peptides: LL-37, ◘-defiensins [HBD-2, HBD-3]), and claudin-1) and skin biophysical parameters (transepidermal water loss, pH, skin scaliness and roughness, sebum and hydration levels) were also determined. Skin sites (glabella [GL], hand-back [HB], interdigital web-space [IS], antecubital fossa [AF], volar forearm [VF], back [BA]) were classified as normal, oily or dry based on two-step cluster analysis and exposed or unexposed (uncovered or covered by clothes, respectively) based on seasonal apparel. Pseudomonadaceae and *Staphylococcus aureus* had the highest and lowest detection rate respectively at all sites. Cluster analysis identified skin sites as ‘normal’ (HB, BA, AF, VF), ‘dry’ (IS) and ‘oily’ (GL). Bacterial alpha diversity was higher in exposed (HB, IS, and GL) compared with unexposed sites (BA, AF and VF). Co-occurrence of *Staphylococcus aureus* with any of the other five microorganisms was lower in dry and oily skin versus normal skin. Skin exposure, biophysical/barrier profile and biomarkers were found to be associated with bacterial distribution and co-occurrence.

W. Chaiyana, P. Leelapornpisid, R. Phongpradist, K. Kiattisin, **Enhancement of antioxidant and skin moisturizing effects of olive oil by incorporation into microemulsions**, Nanomaterials and Nanotechnology, Volume 6: p. 1–8

The aims of the present study were to develop olive oil microemulsions and characterize their antioxidant and skin moisturizing properties. The acid, iodine, and saponification values of olive oil were 0.38 + 0.01 mg potassium hydroxide/g, 88.2 + 5.9 mg iodine/g, and 192.2 + 1.4 mg potassium

hydroxide/g, respectively. Pseudoternary phase diagrams, constructed using the water titration method, produced suitable microemulsions: microemulsion 1 (10% olive oil, 64% Tween 85, 16% propylene glycol, and 10% water) and microemulsion 2 (10% olive oil, 64% Tween 85, 16% ethanol, and 10% water). Microemulsions 1 and 2 exhibited Newtonian flow behavior with internal droplet sizes of 443.60 + 27.66 nm and 139.37 + 12.15 nm, respectively. Their in vitro antioxidant and skin moisturizing properties were investigated in comparison with native olive oil. Microemulsion 2 possessed the highest significant antioxidant effect ($p < 0.05$) giving half maximal inhibitory concentration values in radical-scavenging activity against 1,1-diphenyl-2-picrylhydrazyl and 2,20-azino-bis(3- ethylbenzothiazoline-6-sulphonic acid) of 4.78 + 1.25 mg/mL and 14.85 + 11.18 mg/mL, respectively. The lipid peroxidation inhibition of microemulsion 2 was comparable to native olive oil, whereas the skin moisturizing effect of microemulsion 1 was comparable to the well-known skin moisturizer, hyaluronic acid. In conclusion, microemulsions enhanced both antioxidant and skin moisturizing effects and were attractive formulations for using as a cosmetic or drug delivery system.

L. Lünnemann, **Klinische Studie zur Untersuchung verschiedener Hautpflegeregime in der Windelregion bei Säuglingen im Alter von 7 bis 11 Lebensmonaten**, Dissertation, Dissertation an der Charité Universität, Medizinische Fakultät, Juni 2017

Hintergrund: Die Windeldermatitis (WD) gehört mit 20% der pädiatrischen Konsultationen zu den häufigsten Hauterkrankungen in der Kindheit. Eine adäquate Pflege in der Windelregion gehört zu den Basismaßnahmen im Rahmen der Prävention einer WD bzw. möglichen Exazerbation. Bisher gibt es jedoch kein einheitliches nationales oder internationales Konzept zur Pflege der Haut speziell in der Windelregion von Säuglingen. Methodik: In einer monozentrisch, prospektiven Studie wurden 89 gesunde Säuglinge im Alter von 9 Monaten (+/- 8 Wochen) über 8 Wochen drei verschiedenen Pflegeregimen zugeordnet: in Gruppew wurde die Windelregion mit Baumwollwaschlappen und Wasser (n=30) gereinigt, Gruppew+c erhielt zusätzlich zu der Reinigung mit Baumwollwaschlappen eine zweimal tägliche Applikation einer Wundschutzcreme im Windelbereich (n=28), GruppeF+C erhielt eine Reinigung mit Feuchttüchern und eine Applikation mit Wundschutzcreme (n=31). Der Transepidermale Wasserverlust (TEWL), die Stratum corneum Hydratation (SCH), der Hautoberflächen pH-Wert (pH), Interleukin-1α und die mikrobielle Besiedelung wurden in der Windelregion (oberer äußerer Glutealbereich), in Haut außerhalb der Windelregion (Oberschenkel) und in von Windeldermatitis betroffenen Hautarealen an Tag 1, Woche 4 und Woche 8 gemessen. Der Hautzustand wurde mittels Neonatal Skin Condition Score und Diaper Rash Grade bewertet. Ergebnisse: Auf gesunder Haut in der Windelregion kam es zu einem Absinken der SCH in GruppeW+C und GruppeF+C, während es nur in GruppeW+C zu einem Absinken des TEWL kam. Der pH-Wert stieg in GruppeW+C und GruppeF+C an. Insgesamt zeigten sich SCH, pH-Wert und Interleukin-1α in gesunder Haut in der Windelregion im Vergleich zu gesunder Haut außerhalb der Windelregion erhöht. Das Auftreten von WD war in allen drei Gruppen vergleichbar. In von WD betroffener Haut zeigten sich erhöhte TEWL und pH-Werte im Vergleich zu gesunder Haut in und außerhalb der Windelregion. Schlussfolgerung: Säuglinge, die eine Pflege mit Wundschutzcreme erhielten, wiesen niedrigere SCH-Werte und höhere pH-Werte in der Windelregion im Vergleich zur Haut außerhalb der Windelregion auf. Es wurde keine Korrelation zu dem Auftreten von WD in den einzelnen Pflegegruppen festgestellt.

N. Cameli, M. Mariano, I. Cordone, E. Abril, S. Masi, M.L. Foddai, **Autologous Pure Platelet-Rich Plasma Dermal Injections for Facial Skin Rejuvenation: Clinical, Instrumental, and Flow Cytometry Assessment**, Dermatol Surg. 2017 Jun;43(6): p. 826-835

Background: Platelet-rich plasma (PRP) is an emerging treatment in dermatology recently proposed for skin rejuvenation. Objective: To evaluate the efficacy and safety of autologous pure PRP dermal injections on facial skin rejuvenation, investigating the cellularity of PRP samples. Material and Methods: Twelve patients underwent 3 sessions of PRP injection at 1-month intervals. The clinical and instrumental outcomes were evaluated before (T0) and 1 month (T1) after the end of treatment by means of transepidermal water loss, corneometry, Cutometer, Visioscan, and Visioface. A flow cytometry characterization on PRP and peripheral blood (PB) samples was performed. Results: Clinical and patient evaluation showed improvement of skin texture. Skin gross elasticity, skin smoothness parameters, skin barrier function, and capacitance were significantly improved. No difference between PRP and PB lymphocyte immunological asset was observed. A leukocyte population (mainly CD3) and neutrophils depletion were documented in all the PRP samples. Conclusion: This instrumental study demonstrated that PRP poor in leukocytes can provide objective improvements in skin biostimulation. Flow cytometry showed no variability among the PRP samples using a reproducible separation system and a low content in proinflammatory cells. Although a pilot study, it may be helpful for future investigations on PRP cellularity.

S. Mac-Mary, J.-M. Sainthillier, P. Humbert, **Mesure instrumentale de l'hydratation cutanée**, EMC - Cosmétologie et Dermatologie esthétique, June 2017

L'eau joue un rôle fondamental dans les propriétés physiques de la peau en permettant d'assurer sa solidité, sa flexibilité et une perméabilité minimale pour que l'eau endogène puisse jusqu'à la surface cutanée activer les enzymes responsables de la desquamation. Dans la couche cornée, elle est fixée sur des substances hydrosolubles et hygroscopiques intracellulaires appelées *natural moisturizing factors*. Cette eau représente l'aspect statique de l'hydratation cutanée.

N. Cameli, **Platelet-rich plasma injections show efficacy in facial skin biostimulation**, Dermatologic Surgery, June 2017, Volume 43, Issue 6, p. 826–835

Background: Platelet-rich plasma (PRP) is an emerging treatment in dermatology recently proposed for skin rejuvenation. Objective: To evaluate the efficacy and safety of autologous pure PRP dermal injections on facial skin rejuvenation, investigating the cellularity of PRP samples. Materials and Methods: Twelve patients underwent 3 sessions of PRP injection at 1-month intervals. The clinical and instrumental outcomes were evaluated before (T0) and 1 month (T1) after the end of treatment by means of transepidermal water loss, corneometry, Cutometer, Visioscan, and Visioface. A flow cytometry characterization on PRP and peripheral blood (PB) samples was performed. Results: Clinical and patient evaluation showed improvement of skin texture. Skin gross elasticity, skin smoothness parameters, skin barrier function, and capacitance were significantly improved. No difference between PRP and PB lymphocyte immunological asset was observed. A leukocyte population (mainly $CD3^+$) and neutrophils depletion were documented in all the PRP samples. Conclusion: This instrumental study demonstrated that PRP poor in leukocytes can provide objective improvements in skin biostimulation. Flow cytometry showed no variability among the PRP samples using a reproducible separation system and a low content in proinflammatory cells. Although a pilot study, it may be helpful for future investigations on PRP cellularity.

G. Nicoletti, P. Perugini, S. Bellino, P. Capra, A. Malovini, O. Jaber, M. Tresoldi, A. Faga, **Scar Remodeling with the Association of Monopolar Capacitive Radiofrequency, Electric Stimulation, and Negative Pressure,** Photomedicine and Laser Surgery, Volume 35, Number 5, 2017

Objective: A study was established to objectively assess the effects of low-intensity electromagnetic and electric stimulation plus negative pressure on mature scars. Background: Radiofrequency plus negative pressure therapy demonstrated a favorable reorganization and regeneration of the collagen and elastic fibers and was proposed for the treatment of cellulitis and skin stretch marks. Methods: Twenty-six mature scars in 20 Caucasian patients (15 females and 5 males) were enrolled in the study. The treatments were carried out with a Class I, BF-type electromedical device equipped with a radiofrequency generator, an electric pulse generator, and a vacuum pump twice a week for 3 months. Corneometry, transepidermal water loss, elastometry, colorimetry, and three-dimensional skin surface pattern were objectively assessed with Multi Probe Adapter System MPA and PRIMOS pico. A subjective assessment was carried out with the VAS and PSAS scales. Each scar was compared before and after the treatment and with the skin in the corresponding healthy contralateral anatomical area at the same times. Results: Reduction of the scar surface wrinkling and overall scar flattening were demonstrated after the treatment. The scar slightly tended to approach the color and elasticity of healthy skin too. Conclusions: The combined local treatment of mature scars with low-intensity electromagnetic and electric stimulation in association with negative pressure might suggest a favorable synergic effect on the scar collagen and elastic fiber remodeling.

Y.H. Hong, U.J. Chang, Y.S. Kim, E.Y. Jung, H.J. Suh, **Dietary galacto-oligosaccharides improve skin health: a randomized double blind clinical trial,** Asia Pac J Clin Nutr 2017;26(4): p. 613-618

Background and Objectives: To study the effects of galacto-oligosaccharides (GOS) on the skin, we investigated skin-related parameters in healthy adults who received GOS for 12 weeks. Methods and Study Design: This double-blind, randomized, placebo-controlled study included subjects divided into two groups (control and GOS) by stratified block randomization. The GOS group received 1.0 g of GOS twice a day, whereas the control group received only vehicle. Results: The results showed that the increase in corneometer values from baseline to week 12 was significantly greater in the GOS group than in the control group (6.91 vs 2.88 arbitrary units, $p<0.05$). The transepidermal water loss (TEWL) in the GOS group was reduced significantly after 12 weeks of GOS treatment (20.1 g/h/m2 at baseline vs 17.5 g/h/m2 at week 12, $p<0.05$). The differences in total and percentage of wrinkle areas between the two groups were statistically significant after 12 weeks of GOS treatment ($p<0.05$). Conclusion: Our findings support that oral treatment with GOS is beneficial to the skin and present the possibility of new nutritional strategies for skin care.

S.A. Nasrollahi, H. Hassanzade, A. Moradi, M. Sabouri, A. Samadi, M.N. Kashani, A. Firooz, **Safety Assessment of Tretinoin Loaded Nano Emulsion and Nanostructured Lipid Carriers: A Non-invasive Trial on Human Volunteers,** Curr Drug Deliv. 2017; 14(4): p. 575-580

Background and Aim: Topical application of tretinoin (TRE) is followed by a high incidence of side effects. One method to overcome the problem is loading TRE into lipid nanoparticles. The potential safety of the nanoparticle materials has been always considered as a major concern. In this in vivo study, changes in human skin biophysical parameters including hydration, TEWL, erythema, and pH have been used to determine the safety of tretinoin loaded nano emulsion (NE) and nanostructured lipid carriers (NLC). Method: TRE loaded NE and NLC were prepared using a high pressure homogenizer. Skin biophysical parameters were measured on the volar forearms of twenty healthy volunteers, before and after applying TRE-NE and TRE-NLC lotions. All the measurements were done using respective probes of MPA 580 Cutometer®. Results: We obtained particles of nanometric size (<130 nm) with narrow distribution and optimal physical stability. None of the formulations made any statistically significant change in any of the measured skin properties. P-values were 0.646, 0.139, 0.386, 0.169 after applying TRE-NE and 0.508, 0.051, 0.139, 0.333 after applying TRE-NLC, respectively. Conclusion: Both formulations are reasonably safe to apply on human skin and topicalapplication of TRE-NE and TRE-NLC had almost similar effects on skin biophysical parameters.

K. Takehara, S. Iizaka, M. Oe, H. Sanada, **Reliability and validity of a portable device for measuring stratum corneum hydration,** Journal of Japanese Society Wound, Ostomy, and Continence Management Vol. 21, No 4, pp 296 - 303, 2017

Objective: Deterioration of the skin's barrier function increases the risk of skin problems. Accurate and quanliLaLive measurement of skin hydration is necessary for the assessment of skin. Here, we aimed to evaluate the reliability and validity of a portable device for measuring stratum corneum hydration. Methods: This was a quasi-experimental sLudy. Participants included 37 healthy volunteers and 3 raters. For the assessment of intra-rater, inter-rater, and inter-device reliability, the volar forearm was measured three times consecutively by a rater using two portable devices. The same procedure was then performed by two other raters. For concurrent and known-groups validity testing, measurements were taken of the forehead, volar forearm, and heel using the portable device and a standard device. The study protocol was approved by an ethics committee. Results: The intra-class correlation coefficients (ICCs) were 0.97-0.99 for intra-rater reliability, 0.88-0.96 for inter-rater reliability, and 0.89-0.94 for intcr-dcvicc reliability. Spearman's rank correlation coefficients between measurements obtained using the portable device and the standard device demonstrated concurrent validity: 0.92 ($p < 0.001$) for the volar forearm, 0.82 ($p < 0.001$) for the forehead, and 0.80 ($p < 0.001$) for the heel. The stratum corneum hydration of the heel was significantly lower than that of the forearm when measured using the portable device or the standard device ($p < 0.001$ for both devices), supporting the known-groups validity of portable device. Conclusion: The portable device demonstrated sufficient reliability and validity for use in clinical and research settings.

M. Khurram Waqas, B.A. Khan, N. Akhtar, F. Chowdhry, H. Khan, S. Bakhsh, S. Khan, A. Rasul, **Fabrication of *Tamarindus indica* seeds extract loaded-cream for photo-aged skin: Visioscan® studies,** Adv Dermatol Allergol 2017, XXXIV (4): p. 339–345

Introduction: Intracellular and extracellular oxidative stress triggered by free radicals promotes skin aging, which is designated by atypical pigmentation and wrinkles. The consumption of antioxidants is an efcacious measure to avert symptoms involved in skin aging. Aim: The current research was commenced to explore the anti-aging potential of antioxidants present in *Tamarindus indica* seeds extract. Material and methods: *Tamarindus indica* seeds extract was obtained by concentrating the ethanolic extract of seeds. The antioxidant activities of the extract were measured by nitric oxide radical scavenging assay, 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay, hydroxyl radical scavenging assay and superoxide radical scavenging assay. Formulation comprising 4% of the concentrated extract of seeds was formulated by loading it in the internal aqueous phase of water-in-oil (W/O) cosmetic emulsion. The base, used as control, consisted of the same emulsion but without loading *Tamarindus indica* seeds extract. The cosmetic emulsions were applied to the cheeks of 11 healthy male volunteers for duration of 12 weeks. Both base and formulation were assessed for their antioxidant e□ects on di□erent skin parameters i.e. skin moisture contents, elasticity and surface evaluation of living skin (SELS). Results: The formulation showed statistically signifcant (p □ 0.05) and the base showed insignifcant ($p > 0.05$) effects on skin elasticity and skin moisture contents. There is a signifcant decline in SELS, skin scaliness (SEsc), skin wrinkles (SEw), skin smoothness (SEsm), and skin roughness (SEr) parameters after application of the formulation. Conclusions: Topical application of the cosmetic emulsion entrapped with *Tamarindus indica* seeds extract containing various antioxidants exerts potential skin antiaging e□ects.

J. Daybell, C. Maunsell, **Comprehensive skin barrier protection: colloidal oatmeal,** PERSONAL CARE EUROPE, April 2017, p. 85 - 90

Oatmeal has been used for many centuries as a soothing agent to relieve itch and irritation associated with various dry skin conditions. In 1945, a ready to use colloidal oatmeal, produced by finely grinding the oat and boiling it to extract the colloidal material, became commercially available.1 Today, colloidal oatmeal is available in various dosage forms from powders for bathing to shampoos, shaving gels, and moisturising creams. The clinical properties of colloidal oatmeal derive from its chemical composition diversity. The high concentration in starches and (3-glucan is responsible for the protective and water-holding functions of oat. The presence of different types of polyphenols confers antioxidant and anti-inflammatory activity. The cleansing activity of oat is mostly due to saponins. Its many functional properties make colloidal oatmeal a cleanser, moisturiser, buffer, as well as a soothing and protective anti-inflammatory agent. This present article profiles the key attributes of colloidal oatmeal and presents data on a new advanced colloidal oatmeal (Oat COM). Oat COM colloidal oatmeal is an advanced colloidal oatmeal due to its structural and chemical composition with marked improvements in oil and water binding capacities.

H.-J. Rösch, **Proving Efficacy**, C0SSMA 4 2017, p. 48-49

Cosmetic products are subl ject to Cosmetic Regulation 1223/2009/EC in the European Union. This regulation defines fundamental safety standards and protects consumers from misleading information. Article 20 states that " in the labelling, making available on the market and advertising of cosmetic products, text, names (and) pictures shall not be used to imply that these products have characteristics or functions which they do not have."

E. Bochietto, S.Todeschi, **Skin moisturizing: How to choose the best assay,** Household and Personal Care Today , vol. 12(2) March/April 2017, p. 52-53

To keep skin healthier and younger, the very first thing we need to do is maintain a good level of hydration. It may seem obvious, but the importance of this simple fact is often underestimated.

Interview with G. Mildau, **The Challenge of Proving Claims,** COSSMA 3 I 2017, p. 48-51

Regulations: Cosmetic claims are a complex topic. Which ones are legal and when do they go too far? This is part II of our interview with the organiser of the Cosmetic Days in Karlsruhe where 140 experts discussed all the ins and outs of the topic.

V. Hubiche, P. Lennon, J.-D. Rodier, **Flexible wax derivatives via polyglycerolysis**, PERSONAL CARE ASIA, March 2017, p. 37-4

Natural waxes are sustainable materials that remain under-exploited today in cosmetics while they represent a unique starting block for many green chemistry reactions. Moisturisation is one of the main objectives in skin care cosmetics

S. Shin, J.U. Shin, Y. Lee, W.Y. Chung, K.-H. Nam, T.G. Kwon, J.H. Lee, **The Effects of Multi-Growth Factors-Containing Cream on Post-Thyroidectomy Scars: A Preliminary Study,** Ann Dermatol Vol. 29, No. 3, 2017

Background: Growth factors play important roles in wound healing. However, the evidence for the effects of growth factors on post-thyroidectomy scars is limited. Objective: We performed a prospective study to assess the preventive and therapeutic effect of a multi-growth factor (MGF)-containing cream on post-thyroidectomy scars. Methods: Twenty-one patients with thyroidectomy scars applied MGF cream twice a day. We assessed the changes in erythema, pigmentation, skin elasticity, and skin hydration status using the erythema index, melanin index, cutometer, and corneometer, respectively. In addition, Vancouver scar scale (VSS) and patient satisfaction were assessed at 10 days after surgery (baseline), 2 weeks, 6 weeks, and 12 weeks after baseline. Results: The mean total VSS scores were significantly lower at 6 weeks (3.24±1.51 vs. 1.91±1.38) and 12 weeks (3.24±1.51 vs. 1.71±1.59) compared to the baseline. The degree of pigmentation was significantly lower at 12 weeks compared to the baseline, and the skin elasticity, and the skin hydration status were significantly higher at 12 weeks compared to the baseline. Over 85% of the patients were satisfied with the use of MGF cream without any adverse effect. Conclusion: MGF cream might have additive or supportive effect for scar formation after thyroidectomy.

P. Mokrejš, M. Hu□□a, J. Pavla□ková, P. Egner, **Preparation of Keratin Hydrolysate from Chicken Feathers and Its Application in Cosmetics**, Cosmetics, J. Vis. Exp. (129), 2017

Keratin hydrolysates (KHs) are established standard components in hair cosmetics.

Understanding the moisturizing effects of KH is advantageous for skin-care cosmetics. The goals of the protocol are: (1) to process chicken feathers into KH by alkaline-enzymatic hydrolysis and purify it by dialysis, and (2) to test if adding KH into an ointment base (OB) increases hydration of the skin and improves skin barrier function by diminishing transepidermal water loss (TEWL). During alkaline-enzymatic hydrolysis feathers are first incubated at a higher temperature in an alkaline environment and then, under mild conditions, hydrolyzed with proteolytic enzyme. The solution of KH is dialyzed, vacuum dried, and milled to a fine powder. Cosmetic formulations comprising from oil in water emulsion (O/W) containing 2, 4, and 6 weight% of KH (based on the weight of the OB) are prepared. Testing the moisturizing properties of KH is carried out on 10 men and 10 women at time intervals of 1, 2, 3, 4, 24, and 48 h. Tested formulations are spread at degreased volar forearm sites. The skin hydration of stratum corneum (SC) is assessed by measuring capacitance of the skin, which is one of the most world-wide used and simple methods. TEWL is based on measuring the quantity of water transported per a defined area and period of time from the skin. Both methods are fully non-invasive. KH makes for an excellent occlusive; depending on the addition of KH into OB, it brings about a 30% reduction in TEWL after application. KH also functions as a humectant, as it binds water from the lower layers of the epidermis to the SC; at the optimum KH addition in the OB, up to 19% rise in hydration in men and 22% rise in women occurs.

J. Theunis, H. Chaussade, O. Bourgeois, V. Mengeaud, **Efficacy of a Rhealba® Oat Extract-based emollient on chronic pruritus in elderly French outpatients**, J Eur Acad Dermatol Venereol, 2017 Feb:31 Suppl 1: p. 1-7

Background: Chronic pruritus, defined as itch persisting more than 6 weeks, is a debilitating problem that affects one in four elderly adults. Emollients are recommended for the management of pruritus, but evidence of efficacy is scarce. Objective: Assess the efficacy of a Rhealba® Oat Extract-based emollient in the management of chronic pruritus in elderly outpatients. Methods: This was a randomized, mono-centric, open-label, cross-over study in adults ◘60 years of age with xerosis associated with chronic pruritus. Subjects were randomized 1:1 to start with a 2-week non-treatment phase or a 2-week treatment phase in which they applied the emollient once or twice daily. The primary outcome was subject-assessed pruritus using an established visual analogue scale. Subjects also assessed pruritus using the 5-D itch scale. Investigators assessed xerosis using the Overall Dry Skin Score and measured hydration index by Corneometer®, desquamation by D-Squame and transepidermal water loss by Aquaflux®. Results: Thirty subjects were included. Pruritus intensity on the visual analogue scale improved significantly more during the treatment phase than during the non-treatment phase ($P < 0.0001$). This was also observed immediately after the first product application ($P < 0.0001$). According to the 5-D itch scale, pruritus decreased during the treatment phase but remained stable during the non-treatment phase ($P = 0.0042$). At the end of the treatment phase, more than half of the subjects reported an improvement in pruritus, and 30% reported complete disappearance, whereas pruritus remained stable during the non-treatment phase ($P < 0.0001$). Xerosis improved significantly more during the treatment phase than during the non-treatment phase as measured by D-Squame, clinical assessment and hydration index ($P < 0.0001$). Transepidermal water loss did not significantly change. Conclusion: Daily use of a Rhealba® Oat Extract-based emollient can provide relief to elderly adults who suffer from xerosis associated with chronic pruritus.

J. Fabrowska, A.Kapucinska, B. £eska, K. Feliksik-Skrobich, I. Nowak, ***In Vivo*** **Studies and Stability Study of *Cladophora Glomerata* Extract as a Cosmetic Activ Ingredient,** Acta Poloniae Pharmaceutica ñ Drug Research, Vol. 74 No. 2, p. 633-641, 2017

Abstract: Marine algae are widely used as cosmetics raw materials. Likewise, freshwater alga *Cladophora glomerata* may be a good source of fatty acids and others bioactive agents. The aims of this study was to find out if the addition of the extract from the freshwater *C. glomerata* affects the stability of prepared cosmetic emulsions and to investigate *in vivo* effects of the extract in cosmetic formulations on hydration and elasticity of human skin. Extract from the freshwater *C. glomerata* was obtained using supercritical fluid extraction (SFE). Two forms of O/W emulsions were prepared: placebo and emulsion containing 0.5% of *Cladophora* SFE extract. The stability of obtained emulsions was investigated by using Turbiscan Lab Expert. Emulsions were applied by volunteers daily. Corneometer was used to evaluate skin hydration and cutometer to examine skin elasticity. Measurements were conducted at reference point (week 0) and after 1st, 2nd, 3rd and 4th week of application. The addition of *Cladophora* extract insignificantly affected stability of the emulsion. The extract from *C. glomerata* in the emulsion influenced the improvement of both skin hydration and its elasticity. Thus, freshwater *C. glomerata* extract prepared *via* SFE method may be considered as an effective cosmetic raw material used as a moisturizing and firming agent.

C.J. Borzdynski, W. McGuiness, C. Miller, **Emerging Technology for Enhanced Assessment of Skin Status,** *J Wound Ostomy Continence Nurs.* 2017; 44(1): p.48-54

Pressure injury (PI) prevention has become a key nursing priority that requires clear identifcation of visual cues representative of PI risk. There is generalized agreement that erythema and skin wetness and/or maceration should be routinely examined by the clinician as part of PI risk assessment. Such an assessment is largely qualitative, deeply reliant on the perception and interpretation of the clinician. Consequently, skin parameters may be misinterpreted, underestimated, or even missed completely. Objective techniques are needed to augment accurate assessment of erythema and skin wetness and/or maceration. Biophysical skin analysis devices have been widely used in the cosmetic industry and clinical research to measure certain skin parameters for the purpose of skin health evaluation. This article describes 3 devices that enable noninvasive digital measurements of epidermal hydration, erythema, and epidermal lipids, respectively. The clinical application of biophysical skin analysis instruments in the assessment PI-related skin parameters could provide a feasible alternative to subjective assessment.

C.L. Burnett, B. Heldreth, W.F. Bergfeld, D.V. Belsito, R.A. Hill, C.D. Klaassen, D.C. Liebler, J.G. Marks Jr., R.C. Shank, T.J. Slaga, P.W. Snyder, F.A. Andersen, **Amended Safety Assessment of Isethionate Salts as Used in Cosmetics**, International Journal of Toxicology, 2017, Vol. 36 (Supplement 1), p. 5S-16S

The Cosmetic Ingredient Review (CIR) Expert Panel (Panel) rereviewed the safety of 12 isethionate salts as used in cosmetics and concluded that these ingredients are safe in the present practices of use and concentration, when formulated to be nonirritating. These isethionate salts are reported to function mostly as surfactants and cleansing agents in cosmetic products. The Panel reviewed the available animal and clinical data as well as information from previous CIR reports. Although there are data gaps, the shared chemical core structure, expected similarities in physicochemical properties, and similar functions and concentrations in cosmetics enabled grouping these ingredients and reading across the available toxicological data to support the safety assessment of each ingredient.

I. Göllner, W. Voss, U. von Hehn, S. Kammerer, **Ingestion of an Oral Hyaluronan Solution Improves Skin Hydration, Wrinkle Reduction, Elasticity, and Skin Roughness: Results of a Clinical Study**, Journal of Evidence-Based Integrative Medicine, 2017

Intake of oral supplements with the aim of a cutaneous antiaging effect are increasingly common. Hyaluronic acid (HA) is a promising candidate, as it is the key factor for preserving tissue hydration. In our practice study, we evaluated the effect of an oral HA preparation diluted in a cascadefermented organic whole food concentrate supplemented with biotin, vitamin C, copper, and zinc (Regulatpro Hyaluron) on skin moisture content, elasticity, skin roughness, and wrinkle depths. Twenty female subjects with healthy skin in the age group of 45 to 60 years took the product once daily for 40 days. Different skin parameters were objectively assessed before the first intake, after 20 and after 40 days. Intake of the HA solution led to a significant increase in skin elasticity, skin hydration, and to a significant decrease in skin roughness and wrinkle depths. The supplement was well tolerated; no side effects were noted throughout the study.

M. Inamoto, W. Nishida, N. Okahata, **Control and Evaluation of Glass Tactile-feeling,** Res. Reports Asahi Glass Co., Ltd., 67 (2017) (article in Japanese)

By imparting visually imperceptible structure to the glass surface, it is possible to control the touch feeling of the glass while keeping its exterior appearance. In addition to sensory methods such as questionnaires, quantitative evaluation methods were examined. In the present study, based on the hypothesis that the main factor of touch feeling is finger slipperiness, we succeeded in quantitative evaluation by measuring the dynamic friction coefficient when actually touching the glass. Furthermore, we found that there is a correlation between surface texture and finger slipperiness.

T. Oliphant, R. A. Harper, **Benefits of naturally-derivedingredients in sunscreens,** PERSONAL CARE ASIA PACIFIC, January 2017, p. 41-43

Naturally-derived ingredients that are as multifunctional as their synthetic counterparts are not easy to find. This article will discuss both a jojoba-derived ingredient and a macadamia-derived ingredient that provide aesthetic benefits and functionality to sunscreen formulations and improve the dispersion of organic and inorganic sunscreens within said formulations.

Z.D. Draelos, J. Karnik, G. Naughton, **The Anti-Aging Effects of Low Oxygen Tension Generated Multipotent Growth Factor Containing Serum**, J Drugs Dermatol. 2017; 16(1): p. 30-34

Growth factors are a new category of ingredient found in modern cosmeceutical formulations. One novel method of obtaining cosmeceutical growth factors is the use of a bioreactor to culture neonatal broblasts on dextran microcarrier beads for 8 weeks under low oxygen tension (1-5%) mimicking embryonic conditions and eliminating the need for fetal bovine serum constituents in the final cosmetic material. This research evaluated the ingredient in a moisturizing vehicle on 40 females to determine its efficacy in improving overall facial skin appearance, as well as skin brightness, evenness, firmness, pore size, radiance, fine lines, coarse wrinkles, and blotchiness/ dispigmentation. Statistically significant improvement was seen in 90 days in skin hydration through corneometry, as well in global investigator and subject assessments.

J. Seok, J.Y. Hona, S.Y.Choi, K.Y. Park, B.J. Kim, **A potential relationship between skin hydration and stamp-type microneedle intradermal hyaluronic acid injection in middle-aged male face**, J Cosmet Dermatol. 2016 Dec; 15(4): p. 578-582

There is an increasing interest in skin rejuvenation using hyaluronic acid (HA) fillers beyond the improvement of deep wrinkles and volume deficiencies, which have been primary research foci in the past. We conducted a pilot study using a sample of six middle-aged male subjects. Using an automatic intradermal injector with 0.020 ml_ of material contained in each injection point with a total of 100 points, 2 ml_ of non-cross-HA filler was injected into the entire face at every treatment session. We administered injections of HA for a total of three sessions per subject at 2-week intervals and evaluated the results using a corneometer, TEWL, cutometer, measures of patient satisfaction, and the global aesthetic improvement scale (GAIS). Corneometer values increased steadily at each measurement, while the average value of TEWL increased in comparison with baseline after each application of the procedure. However, values returned to readings similar to those at 4 weeks after complete termination of the procedures. Cutometer values differed between the baseline and after procedures. All patients were assessed as "very much improved" or "much improved" according to GAIS, and all were pleased with the outcomes of treatment in terms of the enhancement of moisture, elasticity, and brightness.

M. Zasada, R. Debowska, M. Pasikowska, E. Budzisz, **The assessment of the effect of a cosmetic product brightening the skin of people with discolorations of different etiology,** J Cosmet Dermatol. 2016 Dec; 15(4): p. 493~502

Background: Hyperpigmentations are disorders displayed with a change in the color of the skin, its strange shape, the lack of symmetry, and irregular placement. They appear no matter on the age, gender, and often as a congenital defect. Disorder connected with overproduction of melanin by pigmentary cells. The change of color is due to endogenous and exogenous cause. Objectives: The aim of this thesis was to conduct a research in vivo. This will allow to judge the effectiveness of the cosmetic product which brightens the skin with hyperpigmentation problems. The characteristics of dermocosmetics were tested on people with various etiology of hyperpigmentation. The aim of the research was to assess the effect of the active substances used daily on skin hyperpigmentation. Methods: The tests were carried out on groups of patients with hyperpigmentations. The application of the pharmaceutical and the use of specific apparatus measurements were taken on every medical checkup. A survey was conducted to assess the changes in the face, neck, and neckline skin. The research was based on the apparatus analysis of the skin condition (MPA®, VISIA®). Results: Regular application of the pharmaceutical caused brightening of hyperpigmentations ($P < 0.05$). General improvement in skin condition was also observed - the increase in skin elasticity, smoothness, and the enhancement of hydration levels. Conclusions: Dermocosmetics for people with hyperpigmentation are an essential part of their medical treatment. In case of epidermal hyperpigmentation, the recipe of individually chosen and tested combination of ingredients enables us to reach satisfactory results.

H. Gamze Demirdağ, H. Özcan, Ş. Gürsoy, G. Beker Akbulut, **The effects of sebum confguration on Demodex spp. Density**, urk J Med Sci (2016) 46: p. 1415-1421

Background/aim: Demodex spp. are ectoparasites living in the pilosebaceous units, which feed on the host's sebum and cellular proteins. Te protective barrier of the skin consists of sebum secretion, moisture, and the acid mantle. In this study, we aimed to determine the effects of skin sebum, moisture, pH levels, and sebum confguration on Demodex spp. Density Materials and methods: Forty-fve patients who had demodicosis were enrolled in the study group, while the control group consisted of 40 subjects without demodicosis. Body fat percentage, serum triglyceride and cholesterol levels, skin sebum, moisture, and pH levels were measured. Demodex spp. density was determined with a standardized skin surface biopsy. Sebum samples were taken from the forehead and a high-performance thin-layer chromatography (HPTLC) method was performed on these samples. Subsequently, densitometric analyses were applied to the HPTLC plates. Results: Demodex spp. were found on the cheeks and lived in an alkali environment. Skin sebum and moisture levels were low in all groups. Te skin pH levels and

cholesterol ester in the sebum confguration were determined to be signifcantly higher in the group with demodicosis. Conclusion: We suggest that Demodex spp. may use cholesterol ester in the sebum as nutriment. In other words, cholesterol ester may be a suitable growth medium for the proliferation of Demodex spp.

A. Firooz, H. Zartab, B. Sadr, L. Naraghi Bagherpour, A. Masoudi, F. Fanian, Y. Dowlati, A. Hooshang Ehsani, A. Samadi, **Daytime Changes of Skin Biophysical Characteristics: A Study of Hydration, Transepidermal Water Loss, pH, Sebum, Elasticity, Erythema, and Color Index on Middle Eastern Skin,** Iranian Journal of Dermatology, Dec. 2016

Background: The exposure of skin to ultraviolet radiation and temperature differs signifcantly during the day. It is reasonable that biophysical parameters of human skin have periodic daily fluctuation. The objective of this study was to study the fluctuations of various biophysical characteristics of Middle Eastern skin in standardized experimental conditions. Materials and Methods: Seven biophysical parameters of skin including stratum corneum hydration, transepidermal water loss, pH, sebum, elasticity, skin color, and erythema index were measured at three time points (8 a.m., 12 p.m. and 4 p.m.) on the forearm of 12 healthy participants (mean age of 28.4 years) without any ongoing skin disease using the CK MPA 580 device in standard temperature and humidity conditions. Results: A significant difference was observed between means of skin color index at 8 a.m. (175.42 ± 13.92) and 4 p.m. (164.44 ± 13.72, $P = 0.025$), between the pH at 8 a.m. (5.72 ± 0.48) and 4 p.m. (5.33 ± 0.55, $P = 0.001$) and pH at 12 p.m. (5.60 ± 0.48) and 4 p.m. (5.33 ± 0.55, $P = 0.001$). Other comparisons between the means of these parameters at different time points resulted in nonsignifcant *P* values. Conclusion: There are daytime changes in skin color index and pH. Skin color index might be higher and cutaneous pH more basic in the early morning compared to later of the day.

A. Nkenane, C. Bertin, **Aging and Facial Changes-Documenting Clinical Signs, Part 2: Methods of Documentation of Facial Changes,** Skinmed. 2016 Dec 1;14(6): p. 429-435

Skin metrology has emerged as a multidisciplinary approach for objectively documenting skin anatophysiologic aspects and transformations. Methods have been proposed to describe age-related changes of facial skin. Some of them capture information describing visible clinical signs of aging such as wrinkles, sagging, and pigmentation. These methods include but are not limited to digital imaging, 3-dimensional imaging, and colorimetry. Other methods focus more on structural or physiologic changes of underlying tissues, among these are reflectance confocal imaging, magnetic resonance imaging, and ultrasound imaging. Finally, a group of methods including corneometry and reviscometry are used to describe changes in skin properties. This contribution describes available methods for documenting age-related changes affecting the shape, texture and color of the face.

M. Kanlayavattanakul, N. Lourith, P. Chaikul, **Jasmine rice panicle: A safe and efficient natural ingredient for skin aging treatments**, Journal of Ethnopharmacology, Volume 193, 4 December 2016, p. 607-616

Ethnopharmacological relevance: While rice is one of the most important global staple food sources its extracts have found many uses as the bases of herbal remedies. Rice extracts contain high levels of phenolic compounds which are known to be bioactive, some of which show cutaneous benefits and activity towards skin disorders. This study highlights an assessment of the cellular activity and clinical efficacy of rice panicle extract, providing necessary information relevant to the development of new cosmetic products. Materials and methods: Jasmine rice panicle extract was standardized, and the level of phenolics present was determined. *In vitro* anti-aging, and extract activity towards melanogenesis wasconducted in B16F10 melanoma cells, and antioxidant activity was assessed in human skin fibroblast cell cultures. Topical product creams containing the extract were developed, and skin irritation testing using a single application closed patch test method was done using 20 Thai volunteers. Randomized double-blind, placebo-controlled efficacy evaluation was undertaken in 24 volunteers over an 84 d period, with the results monitored by Corneometer® CM 825, Cutometer® MPA 580, Mexameter® MX 18 and Visioscan® VC 98. Results: Jasmine rice panicle extract was shown to have a high content ofp-coumaric, ferulic and caffeic acids, and was not cytotoxic to the cell lines used in this study. Cells treated with extract suppressed melanogenesis *via* tyrosinase and TRP-2 inhibitory effects, which protect the cell from oxidative stress at doses of 0.1 mg/ml or lower. The jasmine rice panicle preparations (0.1-0.2%) were safe (MII=0), and significantly ($p<0.05$) increased skin hydration levels relative to baseline. Skin lightening, and anti-wrinkle effects related to skin firmness and smoothness were observed, in addition to a reduction in skin wrinkling. Improvements in skin biophysics of both 0.1% and 0.2% extracts were showed to be comparable ($p>0.05$). Conclusions: Jasmine rice panicle extract having high levels of phenolics shows cutaneous benefits as the basis for skin aging treatments, as indicated through *in vitro* cytotoxicity assessments and skin testing in human subjects.

N.N. Konate, M. Nahrwold, **From pharma to skin care products Hexamidine diisethionate as preservative**, HPC today, Vol. 11 (6) November/December 2016

Safe and efficient preservation have become key words inthe cosmetic business, and this topic has never beendiscussed so intensively since the turn of the 21st century.Following these discussions, several highly efficient classicalpreservatives, used without issues over decades, became discredited and their usage further restricted. Ingredient suppliers are more and more striving to supply secure andefficient alternatives. Some suppliers also try to fulfill the strong demand for "green" preservatives. However, whether molecules stem from Mother Nature or are made by mankind, in both cases some are safe and others less. This article describes the safety and performance profile of a man-made substance. It acts as an efficient preservative and is safe and gentle to human skin.

Y.J. Suh, J. Shin, M. Kang, H.J. Park, K. Lee, Y.-M. Song, J. Sung, **Genetic and Environmental Influences on General Skin Traits: Healthy Twins and Families in Korea**, Twin Research and Human Genetics, Volume 20 Number 1, p. 36–42

Family study can provide estimates of overall genetic influences on a particular trait because family relationships provide accurate measures of average genetic sharing. However, evidence of genetic contributions to skin phenotypes is limited, which may preclude genetic studies to identify genetic variants or to understand underlying molecular biology of skin traits. This study aimed to estimate genetic and environmental contributions to selected dermatologic phenotypes, that is, to melanin index, sebum secretion, and skin humidity level in a Korean twin-family cohort. We investigated more than 2,000 individuals from 486 families, including 388 monozygotic twin pairs and 82 dizygotic twin pairs. Variance component method was used to estimate genetic influences in terms of heritability. Heritability of skin melanin index, sebum secretion, and skin humidity (arm and cheek) were estimated to be 0.44 [95% CI 0.38–0.49], 0.21 [95% CI 0.16–0.26], 0.13 [95% CI 0.07–0.18], and 0.11 [95% CI 0.06–0.16] respectively, after adjusting for confounding factors. Our findings suggest that genetics play a major role on skin melanin index, but only mild roles on sebum secretion and humidity. Sebum secretion and skin humidity are controlled predominantly by environmental factors notably on shared environments among family members. We expect that our findings add insight to determinants of common dermatologic traits, and serve as a reference for biologic studies.

J. Lademann, T. Veraou. M.E. Darvin, A. Patzelt, M.C. Meinke, C. Voit, D. Papakostas, L. Zastrow, W. Sterry, O. Doucet, **Influence of Topical, Systemic and Combined Application of Antioxidants on the Barrier Properties of the Human Skin**, Skin Pharmacol Physiol. 2016: 29, 11: p. 41-6

Background: The formation of free radicals in human skin by solar ultraviolet radiation is considered to be the main reason for extrinsic skin aging. The antioxidants in human tissue represent an efficient protection system against the destructive action of these reactive free radicals. In this study, the parameters of the skin, epidermal thickness, stratum corneum moisture, elasticity and wrinkle volume, were determined before and after the treatment with antioxidant- or placebo-containing tablets and creams. Methods: The study included 5 groups of 15 volunteers each, who were treated for 2 months with antioxidantcontaining or placebo tablets, creams or a combination of antioxidant-containing tablets and cream. The skin parameters were measured at time point 0 and at week 8 utilizing ultrasound for the determination of epidermal thickness, a corneometer for stratum corneum moisture measurements, skin profilometry for quantifying the wrinkle volume and a cutometer for determining the elasticity. Results: The verum cream had a positive influence on epidermal thickness, elasticity and skin moisture, but the verum tablets improved the epidermal thickness only. The combined application of verum tablets and creams led to a significant improvement of all investigated skin parameters, whereas the application of placebo tablets or cream did not influence any parameters. Conclusion: The topical and oral supplementation of antioxidants can be an instrument to improve several skin parameters and potentially counteract or decelerate the process of extrinsic skin aging.

P. Pérez Villaverde, J. Sánchez Gálvez, J.M. Rumbo Prieto, M**edición De Parámetros Cutáneos A Través De Un Dispositivo No Invasivo Multi-Sonda. Estudio De Casos En Lesiones Radio,** Enferm Dermatol. 2016; 10 (28)

Objetivo: Valorar el adecuado estado de la piel a través de la medición de parámetros cutáneos por un dispositivo no invasivo multi sonda en pacientes afectados de radiodermitis (lesión radio inducida). Metodología: Estudio observacional descriptivo. Medición de parámetros cutáneos (hidratación, eritema, melanina, elasticidad) a través de un dispositivo multi-sonda y, aplicación de unprotocolo de tratamiento de cura en ambiente húmedo a pacientes con radiodermitis. Estadística descriptiva y de dispersión. Resultados: Se evaluaron 6 casos clínicos (4 hombres y 2 mujeres) afectados de radiodermitis de grado 2-3. En el 67% de los casos se obtuvo una disminución del 74,6%

del área de lesión. De todos los parámetros cutáneos evaluados, el eritema y la hidratación fueron los valores que más variabilidad presentaron en referencia al valor de control. Conclusiones: La información de los parámetros cutáneos obtenidos por el dispositivo no invasivo multi-sonda resultó ser útil para determinar la efectividad del tratamiento de cura en ambiente húmedo en lesiones radio inducidas; así como, para el seguimiento, la evolución y el pronóstico de cicatrización.

N. Cameli, M. Mariano, M. Serio, E. Berardesca, **Clinical and instrumental evaluation of a cross-linked hyaluronic acid filler dermal injection: effects on nasolabial folds skin biophysical parameters and augmentation from a single-dose, monocentric, openlabel trial**, G Ital Dermatol Venereol. 2016 Oct; 151(5): p 507-14

Background: When a hyaluronic acid dermal device to fill soft tissues is chosen, efficacy, safety and durability are key concerns. This is an open-label prospective study to instrumentally evaluate the effects of HA filler dermal injection on nasolabial folds skin biophysical parameters and augmentation. Methods: A single Italian site treated female subjects aged 40-55, for nasolabial folds, with a single standardized injection. The outcome was evaluated with objective quantitative measurements after 90 (T1) and 180 days (T2) from the injection comparing to baseline (TO) by means of Corneometer (skin hydration measurement), Cutometer (skin elasticity measurement), and Visioface devices for digital and UV computerized image analysis. Secondary endpoints were safety assessment, subject investigator satisfaction with the intervention. Assessment of aesthetic results included photographic documentation. Results: The computerized image analysis confirmed the clinical assessment showing statistically significant reduction in nasolabial folds both at T1 and T2. Visioface® indexes showed a marked and statistical significant response. An excellent profile of satisfaction of the product at T2 from investigators and patients was recorded. Skin hydration and elasticity did not show significant changes. Conclusions: In our study, a standardized HA filler dermal injection on nasolabial folds did not influence skin biophysical parameters such as skin hydration and elasticity. Nasolabial folds showed a persistent and significative response at T2 confirmed by instrumental evaluation. The tolerability and safety profile of the product was excellent.

M. Tanaka, Y. Yamamoto, E. Misawa, K. Nabeshima, M. Saito, K. Yamauchi, F. Abe, F. Furukawa, **Aloe sterol supplementation improves skin elasticity in Japanese men with sunlight-exposed skin: a 12-week double-blind, randomized controlled trial,** Clinical, Cosmetic and Investigational Dermatology 2016:9, p. 435–442

Background/objective: Recently, it was confrmed that the daily oral intake of plant sterols of *Aloe vera* gel (*Aloe* sterol) signifcantly increases the skin barrier function, moisture, and elasticity in photoprotected skin. This study aimed to investigate whether *Aloe* sterol intake affected skin conditions following sunlight exposure in Japanese men. Methods: We performed a 12-week, randomized, double-blind, placebo-controlled study to evaluate the effects of oral *Aloe* sterol supplementation on skin conditions in 48 apparently healthy men (age range: 30–59 years; average: 45 years). The subjects were instructed to expose the measurement position of the arms to the sunlight outdoors every day for 12 weeks. The skin parameters were measured at 0 (baseline), 4, 8, and 12 weeks. Results: Depending on the time for the revelation of the sunlight, the b^* value and melanin index increased and the skin moisture decreased. After taking an *Aloe* sterol tablet daily for 12 weeks, the skin elasticity index (R2, R5, and R7) levels were signifcantly higher than the baseline value. There were no differences between the groups in these skin elasticity values. In the subgroup analysis of subjects aged <46 years, the change in the R5 and R7 was signifcantly higher in the *Aloe* group than in the placebo group at 8 weeks (P=0.0412 and P=0.0410, respectively). There was a difference in the quantity of sun exposure between each subject, and an additional clinical study that standardizes the amount of ultraviolet rays is warranted. No *Aloe* sterol intake-dependent harmful phenomenon was observed during the intake period. Conclusion: *Aloe* sterol ingestion increased skin elasticity in the photodamaged skin of men aged <46 years.

M. Lee, Y. Jung, E. Kim, H.K. Lee, **Comparison of skin properties in individuals living in cities at two different altitudes: an investigation of the environmental effect on skin**, J Cosmet Dermatol. 2016 Sep 11

Background: Skin properties vary depending on exogenous factors. Various studies have been used for comparing skin properties between cities for studying environment influence on skin properties. However, for comparison of skin properties between cities, various environmental factors have to be considered. Objectives: The purpose of this study therefore was to compare skin properties in individuals of the same ethnicity and sex (Indonesian women) between different altitudes and to interpret the environmental effect on skin. Methods: In this study, we reanalyzed the data obtained from previous study. The data were for healthy Sundanese Indonesian females [(n = 136) at Jakarta (n = 49) and

Bandung (n = 87)], and the data consisted of published data (skin hydration, sebum level, pH, elasticity, and transepidermal water loss) and unpublished data [skin color (L*, a*, and b*)]. The skin parameters were measured on Indonesian females aged 20-34 using C+K devices (corneometer, sebumeter, pH meter, and cutometer), Delfin vapometer, and Minolta spectrophotometer, respectively. Results: Sundanese Jakarta (low-altitude) females had higher sebum level and greater redness (a*) value in the forehead than Sundanese Bandung (high-altitude) females. In contrast, Bandung females had higher skin pH, brighter skin color, and greater forehead skin elasticity than Jakarta females. Conclusions: The skin properties can be influenced by changing altitude because different altitudes have different environments such as air temperature, humidity, UV radiation, and so on, and it is also necessary to investigate the factors which can influence with perceived skin condition such as skin type and skin concerning.

M. Morales Hurtado, E.G. de Vries, X. Zeno, E. van der Heide, **A tribo-mechanical analysis of PVA-based building-blocks for implementation in a 2-layered skin model,** J Mech Behav Biomed Mater. 2016 Sep; 62: p. 319-32

Poly(vinyl) alcohol hydrogel (PVA) is a well-known polymer widely used in the medical field due to its biocompatibility properties and easy manufacturing. In this work, the tribo-mechanical properties of PVA-based blocks are studied to evaluate their suitability as a part of a structure simulating the length scale dependence of human skin. Thus, blocks of pure PVA and PVA mixed with Cellulose (PVA-Cel) were synthesised via freezing/thawing cycles and their mechanical properties were determined by Dynamic Mechanical Analysis (DMA) and creep tests. The dynamic tests addressed to elastic moduli between 38 and 50kPa for the PVA and PVA-Cel, respectively. The fitting of the creep compliance tests in the SLS model confirmed the viscoelastic behaviour of the samples with retardation times of 23 and 16 seconds for the PVA and PVA-Cel, respectively. Micro indentation tests were also achieved and the results indicated elastic moduli in the same range of the dynamic tests. Specifically, values between 45-55 and 56-81kPa were obtained for the PVA and PVA-Cel samples, respectively. The tribological results indicated values of 0.55 at low forces for the PVA decreasing to 0.13 at higher forces. The PVA-Cel blocks showed lower friction even at low forces with values between 0.2 and 0.07. The implementation of these building blocks in the design of a 2-layered skin model (2LSM) is also presented in this work. The 2LSM was stamped with four different textures and their surface properties were evaluated. The hydration of the 2LSM was also evaluated with a corneometer and the results indicated a gradient of hydration comparable to the human skin.

C. Hartung, B. Klann-Metz, P. Winter, U. Westerholt, U. Kortemeier, U. Linke, B. Yang, W. Berkels, D. Schuch, P. Schwab, **PEG-free solubilisation via naturally-derived esters,** PERSONAL CARE EUROPE, September 2016, p. 46-50

A novel set of three completely naturally-derived, PEG-free products based on polyglycerol ester chemistry covers the efficient solubilisation of a broad variety of different oils in water-based formulations. Polyglyceryl-3 Caprate/Caprylate/Succinate (and) Propylene Glycol (trade name: Tego® Solve 55) is especially suitable for solubilising perfume and essential oils. In addition, Polyglyceryl-6 Caprylate (and) Polyglyceryl-3 Cocoate (and) Polyglyceryl-4 Caprate (and) Polyglyceryl-6 Ricinoleate (trade name: Tego® Solve 61) is more effective for the solubilisation of very hydrophobic ingredients like natural oils (e.g. sunflower oil). Finally, light emollient esters like isopropyl myristate are effectively solubilised with Polyglyceryl-4 Caprate (trade name: Tegosoft® PC 41). In addition to their excellent solubilising properties, the three products are cold processable as well as electrolyte-resistant. They exhibit ultramild cleansing properties and deliver moisturisation benefits. Formulations for various applications such as hair & body cleansers, AP/Deo roll-ons, wet wipe liquids, perfumes and micellar water/makeup remover can be prepared with these environmentally benign materials.

K. Mazurek, E. Pierzchał a, **Comparison of efficacy of products containing azelaic acid in melasma treatment,** J Cosmet Dermatol, 2016 Sep;15(3): p. 269-2 82

Melasma is one of the most frequently diagnosed hyperpigmentation changes on the skin of women's faces. Nearly 30% of women using oral estrogen therapy struggle with this problem. A common way of reducing melasma is the application of azelaic acid products. Aim:
Comparison of efficacy of three dermocosmetic products, containing azelaic acid, in the reduction in melasma for women aged 35-55. Material and Methods: A group of 60 women diagnosed with melasma were divided into three even, twenty-person subgroups. Each subgroup was assigned one dermocosmetic product containing azelaic acid. For 24 weeks, the patients applied the assigned product twice a day. The level of the colorant within the hyperpigmentation was marked before the treatment, after 1 month, after 3 months, and after 6 months of therapy. The pigmentation was measured using Mexameter(®) (Courage + Khazaka electronic, Germany). In addition, during each inspection, the

patients' level of hydration, elasticity, and intensity of erythema was checked using Corneometer(®) , Reviscometer(®) .Results: All dermocosmetics containing azelaic acid that were applied significantly contributed to the reduction in pigment in the pigmentary lesion. The largest decrease in the amount of pigment was observed in the first 3 months of use of the products. A combination containing 20% azelaic acid and mandelic acid, phytic acid, 4N-butyl resorcinol, and ferulic acid proved to be the most effective dermocosmetic III (Sesderma, Valencia, Spain). Conclusions: Dermocosmetics containing azelaic acid significantly contribute to the clearing of melasma. The effect depends on the treatment time, the acid concentration, and addition of other components.

M. Mendes Fossa Shirata, P.M. Berardo Gonçalves Maia Campos, **Importance of texture and sensorial profle in cosmetic formulations development,** Surg Cosmet Dermatol 2016;8(3): p. 223-30

Introduction: The evaluation of the clinical effcacy of cosmetic formulations in real conditions of use is indispensable and the correlation of these results with texture and sensory profle analyses is necessary because impacts directly in the continuity of cosmetic treatment. Objective: The evaluation and correlation of the texture and sensorial profle, and clinical effcacy of cosmetic formulations containing alfafa oligosaccharides, cassava polysaccharides and sunscreens. Methods: It was evaluated the texture and sensorial profle, and clinical effcacy of formulations through biophysical and imaging analysis techniques. Results: The methods presented a good correlation, because formulation added with suncreens and active ingredients provided better spreadability and sensorial properties. The assessment of clinical effcacy was coherent with the sensory analysis once the "skin smoothness" parameter could be proven with the increase of hydration and improvement of skin microrelief. Conclusions: The application and correlation of the used techniques enabled the defnition and obtainment of a formulation with sensory acceptance and proven clinical effcacy in the improvement of texture and skin hydration. Thus, this study provides contribution in dermatological area, once an appropriate sensory favors the adhesion to the use of the product and the consequent treatment success.

F. Hashmi, S. Kirkham, C. Nester, S. Lam, **The effect of topical anti blister products on the risk of friction blister formation on the foot,** J Tissue Viability, 2016 Aug;25(3): p. 167-74

Introduction: Foot blisters are a common injury, which can impact on activity and lead to infection. Increased skin surface hydration has been identified as a risk factor for blister formation, indicating that a reduction in hydration could reduce the risk of blister. Method: Thirty healthy adults were randomised into 3 groups, each receiving a preventative foot blister treatment (2Toms(®) Blister Shield(®); Flexitol(®) Blistop and Boots Anti-Perspirant Foot Spray). Cycles of compression and shear loads where applied to heel skin using a mechanism driven by compressed air. Temperature changes were measured during load application using a thermal imaging camera (FLIR Systems Inc. and Therm CAM Quick Report). Near surface hydration of the skin was measured using a Corneometer(®) (C & K, Germany). Result: There was no significant difference in the rate of temperature change of the skin between the three groups compared to not using products ($p = 0.767$, $p = 0.767$, $p = 0.515$) or when comparing each product ($p = 0.551$). There was a significant decrease in near surface skin hydration, compared to baseline, after the application of powder (-8.53 AU, $p = 0.01$). There was no significant difference in hydration after the application of film former and antiperspirant (-1.47 AU, $p = 0.26$; -1.00 AU, $p = 0.80$, respectively). Conclusion: With the application of external load we found no significant difference in the effect of the three products on temperature change. The powder product demonstrated an effect on reducing the risk of blister. It is postulated that powder may have a barrier effect.

J.M. Crowther, **Understanding effects of topical ingredients on electrical measurement of skin hydration,** Intern. Journ. Of Cosm. Sc., 2016, p. 1-10

OBJECTIVE: Methods that assess skin hydration based on changes in its electrical properties are widely used in both cosmetic and medical research. However, the devices themselves often give results which are significantly different to each other. Although some work has previously been carried out to try and understand what these devices are actually reading, it was based on a technique for measuring the devices' responses to filter discs impregnated with different liquids, which could in itself be influencing the measurements. Presented here is a new method for measuring the devices' direct responses to different materials and solutions whichremoves any other confounding effects, thereby providing a clearer inside to their operation.

J. Eo, Y.-K. Seo, J.-H. Baek, A.-R. Choi, M.-K. Shin, J.-S. Koh, **Facial skin physiology recovery kinetics during 180 min post-washing with a cleanser**, Skin Research and Technology 2016; 22: p. 148-151

Background/Purpose: Facial cleansing is important to clean and exfoliate the skin while maintaining optimal physiologicfunction. However, there is insufficient data on the very early stage of skin change after applying soap or cleansing foam. We investigated the recovery kinetics of facial skin physiologyduring 180 min after exposure to the cleanser.

M.Q. Man, R. Sun, G. Man, D. Lee, Z. Hill, P.M. Elias, **Commonly Employed African Neonatal Skin Care Products Compromise Epidermal Function in Mice,** Pediatr Dermatol., 2016 Jul 11

Background: Neonatal mortality is much higher in the developing world than in developed countries. Infections are a major cause of neonatal death, particularly in preterm infants, in whom defective epidermal permeability barrier function facilitates transcutaneous pathogen invasion. The objective was to determine whether neonatal skin care products commonly used in Africa benefit or compromise epidermal functions in murine skin. Methods: After twice-daily treatment of 6- to 8-week-old hairless mice with each skin care product for 3 days, epidermal permeability barrier function, skin surface pH, stratum corneum hydration, and barrier recovery were measured using a multiprobe adapter system physiology monitor. For products showing some benefits in these initial tests, the epidermal permeability barrier homeostasis was assessed 1 and 5 hours after a single application to acutely disrupted skin. Results: All of the skin care products compromised basal permeability barrier function and barrier repair kinetics. Moreover, after 3 days of treatment, most of the products also reduced stratum corneum hydration while elevating skin surface pH to abnormal levels. Conclusion: Some neonatal skin care products that are widely used in Africa perturb important epidermal functions, including permeability barrier homeostasis in mice. Should these products have similar effects on newborn human skin, they could cause a defective epidermal permeability barrier, which can increase body fluid loss, impair thermoregulation, and contribute to the high rates of neonatal morbidity and mortality seen in Africa. Accordingly, alternative products that enhance permeability barrier function should be identified, particularly for use in preterm infants.

M. Saito, M. Tanaka, E. Misawa, R. Yao, K. Nabeshima, K. Yamauchi, F. Abe, Y. Yamamoto, F. Furukawa, **Oral administration of Aloe vera gel powder prevents UVB-induced decrease in skin elasticity via suppression of overexpression of MMPs in hairless mice**, Bioscience, Biotechnology and Biochemistry, 2016 Vol. 80 No. 7, p. 1416-1424

This study reports the effects of oral Aloe vera gel powder (AVGP) containing Aloe sterols on skin elasticity and the extracellular matrix in ultraviolet B (UVB)-irradiated hairless mice. Ten-week-old hairless mice were fed diets containing 0.3% AVGP for 8 weeks and irradiated UVB for 6 weeks. Mice treated with AVGP showed significant prevention of the UVB-induced decrease in skin elasticity. To investigate the mechanism underlying this suppression of skin elasticity loss, we measured the expression of matrix metalloproteinase (MMP)-2, -9, and -13. AVGP prevented both the UVB-induced increases in MMPs expressions. Moreover, we investigated hyaluronic acid (HA) content of mice dorsal skin and gene expression of HA synthase-2 (Has2). In the results, AVGP oral administration prevented UVB-induced decreasing in skin HA content and Has2 expression and attenuates the UVB-induced decrease in serum adiponectin, which promotes Has2 expression. These results suggested that AVGP has the ability to prevent the skin photoaging.

T. de Farias Pires, A.P. Azambuja, A.R. Vançan, R. Horimoto, M.S. Nakamura, R. de Oliveira Alvim, J.E. Krieger, A.C. Pereira, **A population-based study of the stratum corneum moisture,** Clinical, cosmetic and investigational Dermatology 2016:9, p. 79–87

Background: The stratum corneum (SC) has important functions as a bound-water modulator and a primary barrier of the human skin from the external environment. However, no large epidemiological study has quantifed the relative importance of different exposures with regard to these functional properties. In this study, we have studied a large sample of individuals from the Brazilian population in order to understand the different relationships between the properties of SC and a number of demographic and self-perceived variables. Methods: One thousand three hundred and thirty-nine individuals from a rural Brazilian population, who were participants of a family-based study, were submitted to a cross-sectional examination of the SC moisture by capacitance using the Corneometer® CM820 and investigated regarding environmental exposures, cosmetic use, and other physiological and epidemiological measurements. Self-perception-scaled questions about skin conditions were also applied. Results: We found signifcant associations between SC moisture and sex, age, high sun exposure, and sunscreen use frequency (*P*,0.025). In specifc studied sites, self-reported race and obesity were also found to show signifcant effects. Dry skin self-perception was also found to be highly correlated with the objective measurement of the skin. Other environmental effects on SC moisture are also reported.

J. Pardeike, R. Müller, **Bestimmung der Hautfeuchtigkeit, Hautelastizität und des Transepidermalen Wasserverlusts (TEWL),** pharmazie-lehrbuch.de

Hintergrund: Zur Bestimmung der Effektivität und Wirksamkeit von dermal zu applizierenden Arzneizubereitungen, kosmetischen Produkten und Rohstoffen sind die Bestimmung der Hautfeuchtigkeit, Hautelastizität und des transepidermalen Wasserverlusts (TEWL) weit verbreitete Methoden.

R.M. Robati, B. Einollahi, H. Einollahi, S. Younespour, S. Fadaifard, **Skin Biophysical Characteristics in Patients with Keratoconus: A Controlled Study,** Scientifica Volume 2016

Background. Keratoconus is a relatively common corneal disease causing signifcant visual disability. Individuals with connective tissue disorders that affect the skin such as Marfan's syndrome and Ehlers-Danlos syndrome or patients with atopic dermatitis show an increased prevalence of keratoconus. It seems that there are some concurrent alterations of skin and cornea in patients with keratoconus. Objective. We plan to compare skin biophysical characteristics in patients with keratoconus and healthy controls. Methods. Forty patients with keratoconus (18 females and 22 males) with mean (SD) age of 33.32 (9.55) years (range 19–56) and 40 healthy controls were recruited to this study. Skin biophysical characteristics including cutaneous resonance running time (CRRT), stratum corneum hydration, and melanin values were measured in patients and controls. Results. Te median CRRT, stratum corneum hydration, and melanin measurements were signifcantly lower in patients with keratoconus in comparison with healthy controls. Conclusion. Tere are some alterations of skin biophysical properties in patients with keratoconus. Terefore, the assessment of these skin parameters could provide us some clues to the possible common biophysical variations of cornea and skin tissue in diseases such as keratoconus.

J. Kim, J. W. Ahn, S. Ha, S. H. Kwon, O. Lee, C. Oh, **Clinical assessment of rosacea severity: oriental score vs. quantitative assessment method with imaging and biomedical tools,** Skin Research and Technology 2016; 23: p. 186-193

Rosacea is a common chronic inflammatory disorder affecting facial skin. Currently, no accurate and objectivemethod is available for assessing the severity of rosacea. Most studies use the National Rosacea Society Standard (NRSS) grading method, which lacks objectivity and yields varying results.

H*. Jeon, D.H. Kim, Y.-H. Nho, J.-E. Park, S.-N. Kim, E.H. Choi,* **A Mixture of Extracts of Kochia scoparia and Rosa multiflora with PPAR □/□ Dual Agonistic Effects Prevents Photoaging in Hairless Mice**, Int. J. Mol. Sci. 2016, 17

Activation of peroxisome proliferator-activated receptors (PPAR) □/□ is known to inhibit the increases in matrix metalloproteinase (MMP) and reactive oxygen species (ROS) induced by ultraviolet light (UV). Extracts of natural herbs, such as *Kochia scoparia* and *Rosa multiflora*, have a PPAR □/□ dual agonistic effect. Therefore, we investigated whether and how they have an antiaging effect on photoaging skin. Eighteen-week-old hairless mice were irradiated with UVA 14 J/cm2 and UVB 40 mJ/cm2 three times a week for 8 weeks. A mixture of extracts of *Kochia scoparia* and *Rosa multiflora* (KR) was topically applied on the dorsal skin of photoaging mice twice a day for 8 weeks. Tesaglitazar, a known PPAR □/□ agonist, and vehicle (propylene glycol:ethanol = 7:3, *v*/*v*) were applied as positive and negative controls, respectively. Dermal effects (including dermal thickness, collagen density, dermal expression of procollagen 1 and collagenase 13) and epidermal effects (including skin barrier function, epidermal proliferation, epidermal differentiation, and epidermal cytokines) were measured and compared. In photoaging murine skin, KR resulted in a significant recovery of dermal thickness as well as dermal fibroblasts, although it did not change dermal collagen density. KR increased the expression of dermal transforming growth factor (TGF)-□. The dermal effects of KR were explained by an increase in procollagen 1 expression, induced by TGF-□, and a decrease in MMP-13 expression. KR did not affect basal transepidermal water loss (TEWL) or stratum corneum (SC) integrity, but diddecrease SC hydration. It also did not affect epidermal proliferation or epidermal differentiation. KR decreased the expression of epidermal interleukin (IL)-1□. Collectively, KR showed possible utility as a therapeutic agent for photoaging skin, with few epidermal side effects such as epidermal hyperplasia or poor differentiation.

N.R. Lee, H.-J. Lee, N.Y. Yoon, D. Kim, M. Jung, E.H. Choi, **Application of Topical Acids Improves Atopic Dermatitis in Murine Model by Enhancement of Skin Barrier Functions Regardless of the Origin of Acids,** Ann Dermatol Vol. 28, No. 6, 2016, p. 690-696

Background: The acidic pH of the stratum corneum (SC) is important for epidermal permeability barrier homeostasis. Acidification of the skin surface has been suggested as a therapeutic strategy for skin disorders such as atopic dermatitis (AD). Objective: We performed an animal study to evaluate the

usefulness of acidification of SC for inhibition of AD lesions and to find out if the therapeutic effect of vinegar is attributable to its herbal contents, rather than its acidity. Methods: Five groups of six oxazolone-treated (Ox)-AD mice were treated for three weeks with creams of different acidity: vehicle cream alone (pH 5.5), neutralized vinegar cream (pH 7.4), pH 5.0 vinegar cream, pH 3.5 vinegar cream, and pH 3.5 hydrogen chloride (HCl) cream. Also, we have compared two groups of Ox-AD mice treated with pH 5.5 vehicle cream or pH 5.5 vinegar cream. Results: Ox-AD mice treated with acidic creams exhibited fewer AD-like lesions, had significantly lower eczema scores, decreased basal by transepidermal water loss (TEWL), and increased SC hydration compared to the groups given only vehicle and neutral cream. There was no significant difference between the acidic vinegar and HCl groups. Between the groups treated with vehicle and pH 5.5 vinegar cream, there was no difference in eczema score, basal TEWL and SC hydration. Conclusion: Application of topical acids, regardless of their source materials, inhibits the development of AD lesions by maintenance of skin surface pH and skin barrier function in murine model.

S. Xin, L. Ye, G. Man, C.Lv, P.M. Elias, M.-Q. Man, **Heavy Cigarette Smokers in a Chinese Population Display a Compromised Permeability Barrier,** BioMed Research International, Volume 2016

Cigarette smoking is associated with various cutaneous disorders with defective permeability. Yet, whether cigarette smoking influences epidermal permeability barrier function is largely unknown. Here, we measured skin biophysical properties, including permeability barrier homeostasis, stratum corneum (SC) integrity, SC hydration, skin surface pH, and skin melanin/erythema index, in cigarette smokers. A total of 99 male volunteers were enrolled in this study. Smokers were categorized as light-tomoderate (<20 cigarettes/day) or heavy smokers (¤20 cigarettes/day). An MPA5 was used to measure SC hydration and skin melanin/erythema index on the dorsal hand, forehead, and cheek. Basal transepidermal water loss (TEWL) and barrier recovery rates were assessed on the forearm. A Skin-pH-Meter pH900 was used to measure skin surface pH. Our results showed that heavy cigarette smokers exhibited delayed barrier recovery afer acute abrogation (1.02% ± 13.06 versus 16.48% ± 6.07), and barrier recovery rates correlated negatively with the number of daily cigarettes consumption ($p = 0.0087$). Changes in biophysical parameters in cigarette smokers varied with body sites. In conclusion, heavy cigarette smokers display compromised permeability barrier homeostasis, which could contribute, in part, to the increased prevalence of certain cutaneous disorders characterized by defective permeability. Thus, improving epidermal permeability barrier should be considered for heavy cigarette smokers.

C.W. Bradley, D.O. Morris, S.C. Rankin, C.L. Cain, A.M. Misic, T. Houser, E.A. Mauldin, E.A. Grice, **Longitudinal evaluation of the skin microbiome and association with microenvironment and treatment in canine atopic dermatitis,** J Invest Dermatol, 2016 June ; 136(6): p. 1182–1190

Host-microbe interactions may play a fundamental role in the pathogenesis of atopic dermatitis (AD), a chronic relapsing inflammatory skin disorder characterized by universal colonization with Staphylococcus. To examine the relationship between epidermal barrier function and the cutaneous microbiota in AD, this study employed a spontaneous model of canine AD (cAD). In a cohort of 14 dogs with cAD, the skin microbiota was longitudinally evaluated with parallel assessment of skin barrier function at disease flare, during antimicrobial therapy and posttherapy. Sequencing of the bacterial 16S ribosomal RNA gene revealed decreased bacterial diversity and increased proportions of Staphylococcus (S. pseudintermedius in particular) and Corynebacterium in comparison to a cohort of healthy control dogs (n=16). Treatment restored bacterial diversity with decreased Staphylococcus proportions, concurrent with decreased cAD severity. Skin barrier function, as measured by corneometry, pH, and transepidermal water loss (TEWL) also normalized with treatment. Bacterial diversity correlated with TEWL and pH, but not corneometry. These findings provide insights into the relationship between the cutaneous microbiome and skin barrier function in AD, the impact of antimicrobial therapy on the skin microbiome, and highlight the utility of cAD as a spontaneous non-rodent model of AD.

A. Ezerskaia, F. Pereira, H.P. Urbach, R. Verhagen, B. Varghese, **Quantitative and simultaneous non-invasive measurement of skin hydration and sebum levels**, Biomedical Optics Express 2311, June 2016, Vol. 7, No. 6

We report a method on quantitative and simultaneous noncontact in-vivo hydration and sebum measurements of the skin using an infrared optical spectroscopic set-up. The method utilizes differential detection with three wavelengths 1720, 1750, and 1770 nm, corresponding to the lipid vibrational bands that lay “in between” the prominent water absorption bands. We have used an emulsifier containing hydro- and lipophilic components to mix water and sebum in various volume fractions which was applied

to the skin to mimic different oily-dry skin conditions. We also measured the skin sebum and hydration values on the forehead under natural conditions and its variations to external stimuli. Good agreement was found between our experimental results and reference values measured using conventional biophysical methods such as Corneometer and Sebumeter.

M. Zhou, H. Xie, L. Cheng, J. Li, **Clinical characteristics and epidermal barrier function of papulopustular rosacea: A comparison study with acne vulgaris,** Pak J Med Sci 2016 Vol. 32 No. 6

Objective: To evaluate the clinical characteristics and epidermal barrier function of papulopustular rosacea by comparing with acne vulgaris. Methods: Four hundred and sixty-three papulopustular rosacea patients and four hundred and twelve acne vulgaris patients were selected for the study in Xiangya Hospital of Central South University from March 2015 to May 2016. They were analyzed for major facial lesions, self-conscious symptoms and epidermal barrier function. Results: Erythema**,** burning, dryness and itching presented in papulopustular rosacea patients were signifcantly higher than that in acne vulgaris patients (P<0.001). The clinical scores of erythema, burning, dryness and itching in papulopustular rosacea patients were signifcantly higher than those in acne vulgaris patients (P<0.001). The water content of the stratum cornuem and skin surface lipid level were both signifcantly lower in papulopustular rosacea patients than that of the acne vulgaris patients (P<0.001) and healthy subjects (P<0.001); Water content of the stratum cornuem and skin surface lipid level were higher in acne vulgaris patients in comparison with that of healthy subjects (P>0.05, P<0.001; respectively). Transepidermal water loss was signifcantly higher in papulopustular rosacea patients than that of acne vulgaris patients and healthy subjects (P<0.001); transepidermal water loss was lower in skin of acne vulgaris patients than that of healthy subjects (P<0.001). Conclusion: Erythema, burning, dryness and itching are the characteristics of papulopustular rosacea, which makes it different from acne vulgaris. The epidermal barrier function was damaged in papulopustular rosacea patients while not impaired in that of acne vulgaris patients.

Z.D. Draelos, **A pilot study investigating the efficacy of botanical anti-inflammatory agents in an OTC eczema therapy**, J Cosmet Dermatol, 2016 Jun; 15(2): p. 117-119

Background: Eczema is a frequently encountered dermatologic condition characterized by inflammation resulting in erythema, scaling, induration, and lichenification. Aims: The objective of this research was to examine the roll of botanical anti-inflammatories in alleviating the signs and symptoms of mild-to-moderate eczema. Method: A total of 25 subjects 18+ years of age with mild-to-moderate eczema were asked to leave all oral medications and cleansers unchanged substituting the botanical study moisturizer for all topical treatment three times daily for 2 weeks. Investigator, subject, and noninvasive assessments were obtained at baseline and week 2. Results: There was a highly statistically significant (P < 0.001) improvement in investigator-assessed irritation, erythema, desquamation, roughness, dryness, lichenification, itching, and overall skin appearance after 2 weeks of botanical anti-inflammatory moisturizer use. Overall, a 79% reduction in itching was noted. Skin hydration as measured by corneometry increased 44% increase (P < 0.001). Conclusion: The study moisturizer containing the occlusive ingredients of dimethicone and shea butter oil; the humectant ingredients of glycerin, vitamin B, sodium PCA, and sodium hyaluronate; the barrier repair ingredients of ceramide 3, cholesterol, phytosphingosine, ceramide 6 II, and ceramide 1; and the botanical anti-inflammatories allantoin and bisabolol were helpful in reducing the signs and symptoms of mild-to-moderate eczema.

J. Djokic-Gallagher, P. Rosher, J. Walker, K. Sykes, V. Hart, **Emollient efficacy and acceptability in the treatment of eczematous dry skin: A double-blind, randomised comparison of two UK-marketed products**, J Dermatolog Treat, 2016; 27(5): p. 461–466

Objective**:** The aim of this study was to compare the moisturising efficacy and acceptability of physical characteristics of two commonly prescribed emollients licenced in the UK, Doublebase Dayleve gel (DELP) and Diprobase cream (DIPC). Methods: The study was a double-blind, concurrent bi-lateral comparison in female eczema subjects with dry skin. Results**:** In Part 1, comparing the area under the curve (AUC) change from baseline corneometer readings over 24 h following single applications of the emollients to the volar forearms of 34 subjects, the AUC for DELP was more than three times that seen for DIPC (p*5*0.0001). In Part 2, comparing the same outcome measured over 5 days of twice daily applications to the lower legs in 36 subjects, the AUC for DELP was approximately five times that for DIPC (p*5*0.0001). 69% of subjects ''Like Slightly'' or ''Like Strongly'' DELP compared to 33% for DIPC (p ¼ 0.025). 72% indicated they would use DELP again compared to 33% for DIPC (p ¼ 0.033). 75% of subjectspreferred DELP, 17% preferred DIPC and 8% expressed no preference (p ¼ 0.0004).

W. Weistenhöfer, W. Uter, H. Drexler, **Has dry/cold weather an impact on the skin condition of cleanroom workers?** J Toxicol Environ Health A. 2016; 79 (22-23): p. 1118-1124

In previous epidemiological studies irritant skin changes were reported significantly more frequently under dry/cold ambient air conditions. The aim of this study was to assess whether a similar effect might be observed in cleanroom workers, occupationally exposed to strictly controlled ambient conditions. This investigation examined 690 employees of a semiconductor production company in Germany, one half in winter (n = 358) and the other half in spring (n = 332). In both waves, both cleanroom workers, who used occlusive gloves predominantly during the entire shift, and employees in the administration, serving as the control group, were included. Ambient outdoor temperature and relative humidity (RH) were measured and absolute humidity (AH) was calculated. Hands were dermatologically examined with quantitative clinical skin score HEROS, supplemented by transepidermal water loss (TEWL) and stratum corneum hydration measurements. Temperature ranged from -5.41 to 6.51°C in winter (RH 71.04-92.38%; AH 2.85-6.7 g/m^3) and from 6.35 to 10.26°C in spring (RH 76.17-82.79%; AH 5.66-7.92 g/m^3). Regarding HEROS, TEWL, and corneometry, no marked consistent pattern regarding an enhanced or decreased risk of irritant skin changes was found. Work in a strictly controlled environment with prolonged wearing of occlusive gloves, with clean hands and without exposure to additional hazardous substances, did not seem to negatively affect the skin. In this particular setting, meteorological conditions also did not appear to adversely affect the skin. It is conceivable that wearing of gloves and air conditioning in the plant protect skin of the hands from adverse effects due to dry and cold air encountered when not working.

V. Mengeaud, **Évaluation de l'effet hydratant, in: A.-M. Pénse-Lhéritier (Editor): Évaluation des produits cosmétiques**, Lavoisier Paris, Tec & Doc, chapter 3, p. 32-57, 2016

La peau constitute Einterface principale entre l'environnement extérieur et notre organisme, qui est équipe à son extrême surface d'une très fine couche tissulaire appelée *stratum corneum* (SC) dont la fonction spécifique de «barrière» est indispensable à notre survie terrestre, Elle est non seulement protectrice vis-à-vis des agressions extérieures qu'elles soient physiques, chimiques ou microbiologiques, mais aussi capable de limiter les pertes hydriques corporelles. Ainsi, Tune des fonctions majeures de la peau est d'assurer son rôle de barrière entre l'organisme et le milieu extérieur tout en préservant des échanges avec celui-ci. La fonctionnalité de cette barrière depend donc d'un équilibre dynamique. En effet, au niveau de cette interface, sont mis en jeu des mécanismes régulés de manière dynamique et réactive, qui concourent au maintien d'un milieu interne stable alors que l'environnement extérieur subit des variations: ces mécanismes garantissent l'homéostasie cutanée.

A.C. da Silva Marques, **Biometrologic Evaluation of Cosmetic Products**, Dissertation in pharmaceutical sciences at the University of Coimbra, 2016, Portugal

Given the growing importance that cosmetic products have on human's health and in our daily life, it is important to increase the control of these products, both in terms of safety and effectiveness. Taking into account that conducting animal tests for the production and validation of cosmetic products is prohibited by law, producers of these products have to resort to alternative methods. Biophysical methods have gained an important highlight in the scientific community, in particular the non-invasive methods. They allow a safe and faster evaluation of cosmetics. The purpose of this work is to describe some methods and equipments used at national and European level to test the effectiveness of cosmetic products and correlate the parameters evaluated with the alleged properties in the products. The methods include evaluation tests of the following skin properties: hydration, elasticity, coloring, sebum production and perspiration.

K.S. Wei, C. Stella, K.R. Wehmeyer, J. Christman, A. Altemeier, R. Spruell, R.L. Wimalasena, G.M. Fadayel, R.A Reilman, S. Motlagh, P.J Stoffolano, K. Benzing, R.R. Wickett, **Effects of season stratum corneum barrier function and skin biomarkers**, J Cosmet Sci, 2016 May-Jun;67(3): p. 185-203

The skin on the lower legs of 25 female subjects was evaluated first in the winter, and then again in the summer of the same subjects. Barrier function was determined by measuring transepidermal water loss (TEWL), and skin hydration and dryness were evaluated by electrical measurements (Corneometer ® CM825) and visual grading. Stratum corneum (SC) was sampled using 10 sequential D-Squame sampling discs and analyzed for 2-pyrrolidone-5-carboxylic acid (PCA), keratin-1,10,11, interleukin 1□ (IL-1□), interleukin 1 receptor antagonist (IL-1ra), selected ceramides, cholesterol, cholesterol sulfate, and selected free fatty acids. TEWL as well as the visual dryness grades were significantly lower in the summer while hydration was higher. PCA was significantly higher in the summer as were the keratins. The ratio IL-1ra:IL-1□, an indicator of skin inflammation, was significantly lower in the summer. The amount of protein removed by the tape strips was also significantly lower in summer indicating better SC cohesion. Among the SC lipids measured, total ceramides, individual ceramides,

total fatty acids, and cholesterol were higher in summer compared to winter. Stearic acid and cholesterol sulfate were not significantly different between winter and summer.

A. Formann, **Eine Interventionsstudie mit dem Nahrungsergänzungsmittel Pycnogenol® und dessen physiologische und molekular-genetischen Auswirkungen auf postmenopausale Frauen,** Dissertation an der medizinischen Faltät der Heinrich-Heine-Universität, Düsseldorf, 2016

Die Haut ist mit einer Fläche von circa 1,5 bis 2 m² das größte Organ des menschlischen Körpers.

M. Nachman, S.E. Franklin, **Artificial Skin Model simulating dry and moist in vivo human skin friction and deformation behavior**, Tribology International, 97, 2016, p. 431-439

In vivo friction and indentation deformation experiments were carried out using the human volar forearm of a healthy 29 year old Caucasian woman and compared with various synthetic materials in order to select materials and develop a new moisture-sensitive artificial skin model (ASM). Analogous to human skin the final ASM comprised two different layers a relatively stiff hydrophilic moisture-absorbing top layer representing the epidermis and a very soft underlayer representing the dermis and hypodermis. The friction and deformation behaviour of the new ASM was comparable to human skin when tested under dry and moist skin conditions. This development has potential for use as a test-bed in the development of devices that interact with the skin in a mechanical way.

D. Tasron, R. Maiti, M Hemming, R Lewis, M. Carré, **Frictional interaction between running sock fabrics and plantar aspect of first metatarsal head in different moisture conditions**, Procedia Engineering 147 (2016), p. 753–758

In a pursuit to further improve the understanding of the factors influencing friction blister formation, friction between running sock textiles and the skin at the first metatarsal head (1MTH) region was investigated in three different moisture conditions (dry, low moisture and wet). Twenty-six participants were recruited and two running sock types were selected based on the variations of their fibre composition and knit structure: 1) a predominantly nylon anti-blister sock and 2) a cotton-rich sock. All friction tests were conducted in controlled room conditions with a temperature of between 20 to 22°C and a relative humidity of 40 to 60% using a bespoke rig developed at the University of Sheffield for foot friction studies. Water was applied to the inside of the plantar region of the sock textiles to different levels using a moisture control protocol. The moisture level of both the 1MTH region and the sock fabrics were monitored throughout testing using a Corneometer® device. Increasing sock moisture above the dry condition was found to increase foot-sock sliding friction for both sock materials tested. No significant correlation was found at the level $p < 0.05$ between foot hydration level and sliding friction over the hydration range tested. In dry conditions, the cotton-rich sock exhibited lower levels of friction compared with the anti-blister sock. However, in both low moisture and wet conditions, the anti-blister sock showed comparatively lower levels of friction than the cotton-rich sock. This suggests that for intensive athletic events where significant perspiration is likely to occur, the anti-blister sock would provide lower friction. This study offers a new approach to friction testing of sock materials and it is hoped that its outcomes will provide new insights on the preventative measures for friction blisters.

B. Kamczycka, **Corneometry Assessment of Epidermal Hydration after Application of the Creams with the Addition of Herb Ashwagandha**

In this research work has been done hydro-alcoholic extracts, and develop and execute recipes of cosmetic herb creams with Ashwagandha. In this work it was performed corneometrical measurements of the degree of epidermis moisturizing after application of tested creams. It was found that all cosmetic creams created in our laboratory exhibit bad moisturizing properties. Results of study using the surface corneometer indicate that face creams showed that after 45 minutes after administration on skin creams, skin moisturizing decreased. It should be noted, however, the lowest moisturizing effect of skin was reached 75 minutes after application of the cream. The results show that the herb Ashwagandha dried skin. It follows that a component of Ashwagandha herb that has been used in these studies should not be used in cosmetics moisturizing.

A. Ezerskaia, S.F. Pereira, **Infrared spectroscopic measurement of skin hydration and sebum levels and comparison to corneometer and sebumeter**, in J. Popp et al. (Editor): Biophotonics: Photonic Solutions for Better Health Care V

Skin health characterized by a system of water and lipids in Stratum Corneum provide protection from harmful external elements and prevent trans-epidermal water loss. Skin hydration (moisture) and sebum (skin surface lipids) are considered to be important factors in skin health; a right balance between these components is an indication of skin health and plays a central role in protecting and preserving

skin integrity. In this manuscript we present an infrared spectroscopic method for simultaneous and quantitative measurement of skin hydration and sebum levels utilizing differential detection with three wavelengths 1720, 1750, and 1770 nm, corresponding to the lipid vibrational bands that lie “in between” the prominent water absorption bands. The skin sebum and hydration values on the forehead under natural conditions and its variations to external stimuli were measured using our experimental set-up. The experimental results obtained with the optical set-up show good correlation with the results obtained with the commercially available instruments Corneometer and Sebumeter.

T. Venter, L.T. Fox, M. Gerber, J.L. du Preez, S. van Zyl, B. Boneschans, J. du Plessis, **Physical stability and clinical efficacy of Crocodylus niloticus oil lotion**, Revista Brasileira de Farmacognosia 26 (2016), p. 521–529

The stability and the anti-ageing, skin hydrating and anti-erythema effects of a commercialized Crocodylus niloticus Laurenti, 1768, Crocodylidae, oil lotion was determined. The lotion was stored at controlled conditions over six months during which several stability tests were performed. For the clinical efficacy studies lotion was applied on volar forearm skin (female volunteers) and compared to a liquid paraffin-containing reference product. Skin hydrating and anti-ageing effects were determined with a Corneometer®, Cutometer® and Visioscan®, following single (3 h) and multiple applications (12 weeks). The Vapometer® and Mexameter® were utilized to determine this lotion’s anti-erythema effects on sodium lauryl sulfate irritated skin. The lotion demonstrated good stability over 6 months. The reference product increased skin hydration and decreased skin wrinkles to a larger extent than the C. niloticus lotion after a single application, whereas the C. niloticus lotion decreased skin scaliness better than the reference product. During the long-term study, the reference product overall increased skin hydration more than the C. niloticus lotion, whereas C. niloticus lotion increased skin elasticity to a larger extent than the reference product. C. niloticus lotion increased skin wrinkles and decreased skin scaliness over 12 weeks. Compared to non-treated, irritated skin, C. niloticus lotion demonstrated some potential anti-inflammatory characteristics.

M.O. de Melo, **Técnicas para Avaliar a Hidratação e a Oleosidade da Pele,** Cosmetics & Toiletries (Brasil) Vol. 28, mar-avr 2016

Clinical research for cosmetic products uses several methods developed and or improved over the last 30 years. In this article, the authors describe the main methods used for quantitative and qualitative assessment or the aqueous and lipid content of the skin. *(Article in Portuguese)*

A.I. Arshad, S.H. Khan, N. Akhtar, **Formulation Development of Topical Cream loaded withAnanas Comomus Extract: in vivo Evaluation for Changes in Skin barrier Function using Biophysical Techniques**, Acta Pol Pharm. 2016 Mar-Apr;73(2): p. 485-94

The prime objective of current investigation was to develop a topical skin care cream (w/o) loaded with Ananas comosus extract versus placebo control, and evaluated non-invasively for changes in skin barrier function i.e., epidermal hydration levels and transepidermal water loss (TEWL), on healthy human volunteers. Active cream carrying 2% extract of Ananas comosus in the internal phase of w/o emulsion was prepared while placebo contained no extract. Stability assessment of both creams was performed at various storage conditions 8, 25, 40 degrees C, 40 degrees C + 75% RH (relative humidity) and 50 degrees C. Effects on epidermal hydration and TEWL were observed by applying active cream at one side and placebo on the other side of face by 11 healthy human volunteers during 12 weeks period using Corneometer MPA5 and Tewameter MPA5. Results indicated that both creams (active and placebo) remained stable at all storage conditions. All samples manifested non-Newtonian, shear thinning behavior with increasing shear rate, whereas statistical interpretation indicated that effects of active cream were superior than placebo, as it significantly ($p = 0.05$) improves the epidermal hydration levels up to 56.74% and reduces TEWL up to -73.19% at the end of study period compared to baseline value. The surface evaluation of living skin (SELS) parameters SEr, SEsc, SEsm, SEw were also assessed and indicated a significant ($p = 0.05$) reduction. Conclusively, creams loaded with Ananas comosus extract exhibit better physicochemical stability and represent a propitious improvement in skinbarrier function, used as a functional moisturizing and anti-aging ingredient in topical skincare products.

N.K. Roh, M.J. Kim, Y.W. Lee, Y.B. Choe, K.J. Ahn, **A Split-Face Study of the Effects of a Stabilized Hyaluronic Acid-Based Gel of Nonanimal Origin for Facial Skin Rejuvenation Using a StampType Multineedle Injector: A Randomized Clinical Trial**, Plast Reconstr Sura. 2016 Mar; 137(3): p. 809-16

Background: The mid-dermal injection of stabilized hyaluronic acid-based gel of nonanimal origin has been shown to be an effective method for skin rejuvenation. The previous manual technique, using a prefilled syringe, made it difficult to precisely control the injection into the mid-dermal layers and

to achieve an even distribution of gel across the area. This single-center, evaluator-blinded, prospective, split-face, randomized controlled trial investigated the efficacy and safety of nonanimal stabilized hyaluronic acid using a stamp-type electronic multineedle injector. Methods: Twenty-five patients (aged 27 to 59 years) were recruited into this study. Each participant submitted to a single treatment with a nonanimal stabilized hyaluronic acid injection to one side of the lower cheek. The skin hydration, melanin content, erythema, and elasticity of both cheeks were evaluated at each follow-up visit, at 1, 2, 4, 8, and 12 weeks after treatment. Results: Stratum corneum hydration was significantly improved after injection. Although no significant improvement was observed at 1 week after treatment, the Corneometer readings for the treated side were significantly higher than those for the untreated the side after the 2-, 4-, 8-, and 12-week treatment visits. Skin elasticity was also significantly improved during the study. The injection had no significant effect on the melanin and erythema indices throughout the follow-up period. The treatment was well tolerated, and no serious adverse events were reported. Conclusions: Nonanimal stabilized hyaluronic acid treatment resulted in improved hydration and elasticity of the facial skin. The specialized stamp-type electronic multineedle injector enables the hyaluronic acid filler to rejuvenate the skin effectively and safely.

J.-C. Kattenstroh, **Einfluss oral zugeführter Kollagen-Peptide auf Hautfeuchtigkeit, Hautelastizitat, Faltenvolumen und Cellulite,** Aesthetische Dermatologie 2/2016

Mit zunehmendem Alter sowie durch aufiere Einfliisse wie UV-Exposition oder Nikotinabusus kommt es zu einer Beeintrachtigung der dermalen extrazellularen Matrix und des Kollagengeriists. Die Folge ist eine Abnahme der Dicke, Elastizitat und Feuchtigkeit der Haut, die mit einer verstarkten Faltenbildung einhergeht. Welchen Einfluss kurzkettige Kollagen-Peptide auf diese Parameter haben, zeigen aktuelle Studien.

H. Haeusler, **The key to effective skincare: customized hyaluronic acid gels,** NutraCos Cosmetics; January/April 2016

A multi-faceted ingredient: Hyaluronic acid (HA) is a well-established ingredient in various cosmetic products and offers numerous benefits. It controls the proliferation of skin cells via the CD44 receptor and has anti-inflammatory effects of the skin (1). In addition, HA infuences the growth of keratinocytes, which protect the epidermis from aging, and, thanks to the double bond structure of its D-glucuronic acid moiety (2), HA also has antioxidant properties. The molecular weight of HA is a key aspect of product formulation: the smaller molecule, the deeper the penetration (3).

A. Ratz-Łyko, J. Arct, K. Pvtkowska, **Moisturizing and Antiinflammatory Properties of Cosmetic Formulations Containing *Centella asiatica* Extract**, Indian J Pharm Sci. 2016 Jan-Feb, 78(1): p. 27-33

Centella asiatica extract is a rich source of natural bioactive substances, triterpenoid saponins, flavonoids, phenolic acids, triterpenic steroids, amino acids and sugars. Thus, many scavenging free radicals, exhibit antiinflammatory activity and affect on the *stratum corneum* hydration and epidermal barrier function. The aim of the present study was to evaluate the *in vivo* moisturizing and antiinflammatory properties of cosmetic formulations (oil-in-water emulsion cream and hydrogel) containing different concentrations of *Centella asiatica* extract. The study was conducted over four weeks on a group of 25 volunteers after twice a day application of cosmetic formulations with *Centella asiatica* extract (2.5 and 5%, w/w) on their forearms. The measurement of basic skin parameters *{stratum corneum* hydration and epidermal barrier function) was performed once a week. The *in vivo* antiinflammatory activity based on the methyl nicotinate model of microinflammation in human skin was evaluated after four weeks application of tested formulations. *In vivo* tests formulations containing 5% of *Centella asiatica* extract showed the best efficacy in improving skin moisture by increase of skin surface hydration state and decrease in transepidermal water loss as well as exhibited antiinflammatory properties based on the methyl nicotinate model of microinflammation in human skin. Comparative tests conducted by comeometer, tewameter and chromameter showed that cosmetic formulations containing *Centella asiatica* extract have the moisturizing and antiinflammatory properties.

H. Haeusler, **Combinations for better results,** Cossma 12/2015

Hyaluronic acid (HA) is widely used in health and beauty applications. New research indicates some promising new findings for HA gels in topical anti-ageing cosmetics. HA is a well-established ingredient in various cosmetic products and offers numerous benefits. It controls the proliferation of skin cells via the CD44 receptor and has some anti-imflammatory effects on the skin. In addition, it influences the growth of keratinocytes, which protect the epidermis from ageing and, thanks to the double bond structure of its D-glucuronic acid moiety, it also has antioxidant properties.

V. Sedini, **The natural way to skin firmness,** SPC December 2015

Valentina Sedini presents a novel ingredient, comprising two natural extracts and a naturally-derived skin permeation enhancer, which prevents oxidative stress and boosts skin firmness and smoothness. Skin ageing is caused by a number of different factors that trigger biochemical and structural changes, finally leading to loss of skin firmness and elasticity. The primary player in these degenerative processes is oxidative stress. It is causedby a huge increase in reactive oxygen species (ROS) which exceeds the capacity of physiological antioxidant systems.

Z.D. Draelos, **Triamcinolone spray: no-rub application as effective as rub application**, JCD, Volume 14, Issue 4, December 2015, p. 286-290

Background: Adherence to therapy is important to achieve successful treatment outcomes. Although effective, topical treatments in dermatology may result in sticky skin or may be too time-consuming to apply, thereby creating adherence issues. Spray formulations have excellent products aesthetics, but may require a 2-step application process. Aims: This study was conducted to determine whether the spray formulation of triamcinolone acetonide (TAC) 0.2% works equally well in a no-rub and rub application process. Methods: Fifty patients 18 years of age and older with mild symmetrical arm or leg eczema or atopic dermatitis were enrolled in a 2-week investigator-blinded study. One limb was randomized to be treated with TAC spray and no rubbing, and the other was to be treated with TAC spray and rubbing. Patients applied the spray three times daily for 2 weeks. The use of moisturizers was not permitted. Results: After 2 weeks, there was a highly clinical and statistical (P<0.001) improvement in all investigator and patient parameters evaluated with both the no-rub and rub techniques. There was no difference in final assessment scores between the no-rub and rub applications (P>0.7), and no study product tolerability issues were identified. Transepidermal water loss and corneometry measures revealed no issues in skin barrier impairment even though patients were not permitted to use moisturizers. Conclusion: This study demonstrates the application parity between a no-rub and rub application of TAC spray in the absence of a moisturizer. Both techniques resulted in clinical and significant improvement in eczema and atopic dermatitis and neither resulted in skin barrier issues.

J. Asserin, E. Lati, T. Shioya, J. Prawitt, **The effect of oral collagen peptide supplementation on skin moisture and the dermal collagen network: evidence from an ex vivo model and randomized, placebo-controlled clinical trials,** J Cosmet Dermatol, 2015 Dec;14(4): p. 291-301

Background: Skin dryness and an accelerated fragmentation of the collagen network in the dermis are hallmarks of skin aging. Nutrition is a key factor influencing skin health and consequently its appearance. A wide range of dietary supplements is offered to improve skin health. Collagen peptides are used as a bioactive ingredient in nutricosmetic products and have been shown in preclinical studies to improve skin barrier function, to induce the synthesis of collagen and hyaluronic acid, and to promote fibroblast growth and migration. Our aim was to investigate the effect of oral supplementation with specific collagen peptides on skin hydration and the dermal collagen network in a clinical setting. Methods: Two placebo-controlled clinical trials were run to assess the effect of a daily oral supplementation with collagen peptides on skin hydration by corneometry, on collagen density by high-resolution ultrasound and on collagen fragmentation by reflectance confocal microscopy. Human skin explants were used to study extracellular matrix components in the presence of collagen peptides ex vivo. Results: Oral collagen peptide supplementation significantly increased skin hydration after 8 weeks of intake. The collagen density in the dermis significantly increased and the fragmentation of the dermal collagen network significantly decreased already after 4 weeks of supplementation. Both effects persisted after 12 weeks. Ex vivo experiments demonstrated that collagen peptides induce collagen as well as glycosaminoglycan production, offering a mechanistic explanation for the observed clinical effects. Conclusion: The oral supplementation with collagen peptides is efficacious to improve hallmarks of skin aging.

K. von Oppen-Bezalel, **Shielding against pollution for pristine clear skin,** Personal Care November 2015

A major unmet need the cosmetic industry is the effective, natural and safe means to protect and detoxify the skin against environmental pollution to which it is exposed daily. Pollution in general and air pollution specifically have detrimental effects on skin health and apprearance. Constant exposure to environmental toxins leads to accumulated damage in two main ways: DNA damage and chronic imflammation, which over time produces premature signs of ageing.

J. Polaskova, J. Pavlackova, P. Egner, **Effect of vehicle on the performance of active moisturizing substances**, Skin Res Technol, 2015 Nov; 21(4): p. 403-412

Purpose: The work is aimed at the description and study of the hydration effect of different active substances (hyaluronic acid, sericin, glycerol, and urea) incorporated in two different vehicles commonly used for compounding pharmaceutical ingredients, gel, and emulsion. Methods: The effects of the formulations were investigated by instrumental methods in vivo after their administration to the skin of volar forearms in a group of 20 healthy volunteers (women, mean age of 28 years). Hydration effect was observed by corneometry and barrier properties (TEWL) by tewameter at regular time intervals (1-26 h) after application of the prepared samples. Results: The results indicate that the active substances incorporated in the emulsion moisturize the skin better compared to the same substances contained in the gel. Furthermore, it was found that these ingredients, whether they are present in the emulsion or in the gel, prevent TEWL in a similar manner. Conclusion: The study showed that differences exist among the tested active ingredients in their ability to moisturize the skin. These differences are dependent not only on the type and concentration of the active substance used but also on the type of vehicle in which they are applied. It was also found that the active substances influence the viscosity of the prepared formulations.

K. Azevedo Tadini, D. Garcia Mercurio, P.M.B.G. Maia Campos, **Acetyl hexapeptide-3 in a cosmetic formulation acts on skin mechanical properties - clinical study,** Brazilian Journal of Pharmaceutical Sciences, Vol. 51, N. 4, Oct./Dec., 2015

Acetyl hexapeptide-3 has been used in anti-aging topical formulations aimed at improving skin appearance. However, few basic studies address its e□ects on epidermis and dermis, when vehiculated in topical formulations. Thus, the objective of this study was to determine the clinical efcacy of acetyl hexapeptide-3 using biophysical techniques. For this purpose, formulations with and without acetyl hexapeptide-3 were applied to the ventral forearm and the face area of forty female volunteers. Skin conditions were evaluated after 2 and 4-week long daily applications, by analyzing the stratum corneum water content and the skin mechanical properties, using three instruments, the Corneometer® CM 825, Cutometer® SEM 575 and Reviscometer® RV600. All formulations tested increased the stratum corneum water content in the face region, which remained constant until the end of the study. In contrast, only formulations containing acetyl hexapeptide-3 exhibit a signifcant e□ect on mechanical properties, by decreasing the anisotropy of the face skin. No signifcant e□ects were observed in viscoelasticity parameters. In conclusion, the e□ects of acetyl hexapeptide-3 on the anisotropy of face skin characterize the compound as an e□ective ingredient for improving conditions of the cutaneous tissue, when used in anti-aging cosmetic formulations.

K.L. Hon, Y.C. Tsang, N.H. Pong, V.W.Y Lee, N.M. Luk, C.M. Chow, T.F. Leung, **Patient acceptability, efficacy, and skin biophysiology of a cream and cleanser containing lipid complex with shea butter extract versus a ceramide product for eczema**, Hong Kong Med J, Volume 21 Number 5, October 2015

Objectives: To investigate patient acceptability, efcacy, and skin biophysiological e□ects of a cream/cleanser combination for childhood atopic dermatitis. Design: Case series. Setting: Paediatric dermatology clinic at a university teaching hospital in Hong Kong. Patients: Consecutive paediatric patients with atopic dermatitis who were interested in trying a new moisturiser were recruited between 1 April 2013 and 31 March 2014. Swabs and cultures from the right antecubital fossa and the worst eczematous area, disease severity (SCORing Atopic Dermatitis index), skin hydration, and transepidermal water loss were obtained prior to and following 4-week usage of a cream/cleanser containing lipid complex with shea butter extract (Ezerra cream; Hoe Pharma, Petaling Jaya, Malaysia). Global or general acceptability of treatment was documented as 'very good', 'good', 'fair', or 'poor'. Results: A total of 34 patients with atopic dermatitis were recruited; 74% reported 'very good' or 'good', whereas 26% reported 'fair' or 'poor' general acceptability of treatment of the Ezerra cream; and 76% reported 'very good' or 'good', whereas 24% reported 'fair' or 'poor' general acceptability of treatment of the Ezerra cleanser. Tere were no intergroup di□erences in pre-usage clinical parameters of age, objective SCORing Atopic Dermatitis index, pruritus, sleep loss, skin hydration, transepidermal water loss, topical corticosteroid usage, oral antihistamine usage, or general acceptability of treatment of the prior emollient. Following use of the Ezerra cream, mean pruritus score decreased from 6.7 to 6.0 (P=0.036) and mean Children's Dermatology Life Quality Index improved from 10.0 to 8.0 (P=0.021) in the 'very good'/'good' group. Tere were no statistically significant di□erences in the acceptability of wash (P=0.526) and emollients (P=0.537) with pre-trial products. When compared with the data of another ceramideprecursor moisturiser in a previous study, there was no statistical di□erence in efcacy and acceptability between the two products. Conclusions: Te trial cream was acceptable in three quarters of patients with atopic dermatitis. Patients who accepted the cream had less pruritus and improved quality of life than the non-accepting patients following its usage. Te cream containing shea butter extract did not di□er in acceptability or efcacy from a ceramide-precursor product. Patient acceptability is an

important factor for treatment efcacy. Tere is a general lack of published clinical trials to document the efcacy and skin biophysiological e□ects of many of the proprietary moisturisers.

R. Voegeli, P. Seroul, L.A. Raaff, M. Lategan, A.V. Rawlings, B. Summers, **Examination of the effects of a moisturizer on facial barrier and hydration of three skin ethnicities using a novel mapping approach,** IFSCC 2015 Zurich

Objectives: Research tells us that we are not completely meeting consumers' needs for skin moisturization. As much as 70% of women can be affected with dryness on their faces which can vary with season and also facial location [1] [2] [3]. Recent work indicates that the use of single point measures on the face is not enough to describe the complexity of the moisturization needs of the face. Mapping procedures have been undertaken with a limited number of sites [4] [5] [6] but we recently demonstrated the immense complexity of the barrier and hydration properties of facial skin using 30 predefined sites on one side of the face of subjects of four different skin ethnicities [7]. The aim of this study was to evaluate the effect of a moisturizer on continuous facial color maps of transepidermal water loss (TEWL) and skin hydration. Materials and Methods: *Study population and study set up* The study was a cross-sectional study and was approved from the School of Health Care Sciences Research and Ethics committee (SREC) together with the Medunsa Campus Research and Ethics Committee (MREC) and was conducted in accordance with the Declaration of Helsinki Principles. Written, informed consent was obtained from all participants before enrollment.

R. Voegeli, M. Cherel, L.-A. Raaff, P. Kollias, P. Seroul, B. Summers, A.V. Rawlings, **Facial color mapping of stratum corneum hydration of different ethnic groups and the effect of a moisturizer,** IFSCC Conference, 2015, Zurich

Introduction: As much as 70% of women can be affected with dryness on their faces, which can vary with season and facial location. It has recently become obvious that the use of single point measurements of skin hydration is not enough to describe the facial moisturization needs of consumers. We recently demonstrated the immense complexity of facial skin hydration on subjects from four ethnic groups using a novel continuous facial color mapping technology. The aim of this study was now to evaluate the effect of a moisturizer using this approach.

B. Behm, M. Kemper, P. Babilasa, C. Abels, S. Schreml, **Impact of a Glycolic Acid-Containing pH 4 Water-in-Oil Emulsion on Skin pH**, Skin Pharmacol Physiol 2015;28: p. 290–295

The skin pH is crucial for physiological skin functions. A decline in stratum corneum acidity, as observed in aged or diseased skin, may negatively affect physiological skin functions. Therefore, glycolic acid-containing water-in-oil (W/O) emulsions adjusted to pH 4 were investigated regarding their effect on normal or increased skin pH. A pH 4 W/O emulsion was applied on three areas with pathologically increased skin surface pH in diabetics (n = 10). Further, a 28- day half-side trial (n = 30) was performed to test the longterm efficacy and safety of a pH 4 W/O emulsion (n = 30). In summary, the application of a pH 4 W/O emulsion reduced the skin pH in healthy, elderly and diabetic subjects, which may improve epidermal barrier functions.

C.S.C. Pereira, A. R. Baby, MV R. Velasco, M.T. Scotti, **Correlação Instrumental e Sensorial de Composição Aromática no Ciclo Menstrual,** Cosmetics & Tolietries (Brasil) Vol 27, set-out 2015

In order to know the variables that may influence the fragrance-substarte interface and consumer perception in the menstrual cycle, and contribute to the development of fragrances, there was a study correlating the sensory analysis and instrumental (biochemical and chromatographic measurements) as a function of the cycle menstrual. *(Article in Portuguese)*

M. Schultz, **Charakterisierung der Hautbarrierefunktion von Früh- und Reifgeborenen innerhalb der ersten Lebensjahre unter Berücksichtigung angewandter Pflegekonzepte in der Neonatalperiode,** Dissertation Charité - Universitätsmedizin Berlin, Germany, September 2015

Die Reifungsprozesse der Hautbarriere dauern vermutlich bis ins Kleinkindalter hinein an und führen zu einer erhöhten Vulnerabilität der Hautbarriere gegenüber externen Einflüssen. Deshalb ist es wichtig, den Einfluss von Hautpflege auf die kindliche Hautbarriere wissenschaftlich zu untersuchen. Ziel dieser Studie war die Charakterisierung der kindlichen Hautbarriere in ihrer postnatalen Entwicklung unter Berücksichtigung standardisierter postnataler Pflegekonzepte und weiterer Faktoren.

H. Haeusler, **Wirksamkeit eines Hyaluronsäure Gels zur Verbesserung des Hautbildes**, SOFW-Journal 141 - 09/2015

Zusammenfassung: Hyaloronsäure wird schon seit langer Zeit in diversen Anti-Aging-Produkten eingesetzt. Hierbei unterscheidet man die Hyaloronsäuren nach ihren Molekulargewichten. Es ist

bekannt, dass Hyaloronsäuren mit molekularen Massen <200 kDa aktiv an der zellulären Signalübertragung mitwirken und dabei auch die extrazelluläre Matrix gestalten. Letztlich beeinflusst Hyaloronsäure das Wachstum von Keratinozyten, Zellen, die die Oberhaut vor Alterung schützen.

G.W. Nam, J.H. Baek, J.S. Koh, J.K. Hwang, **The seasonal variation in skin hydration, sebum, scaliness, brightness and elasticity in Korean females,** Skin Research and Technology 2015; 21: p. 1-8

Background/purpose: Age, gender, regional, and ethnic differences influence skin conditions. The purpose of this study was to obverse the effects of enviroments, especially the air temperature, relative humidity, air pressure, duration of sunshine, and percipitation on skin and the seasonal variation in skin hydration, sebum, scales, brightness, and elasticity in Korean females.

R.C. Killaars, T.R. Penha, E.M. Heuts, R.R. van der Hulst, A.A. Piatkowski, **Biomechanical Properties of the Skin in Patients with Breast Cancer Related Lymphedema Compared to Healthy Individuals**, Lvmphat Res Biol. 2015 Sep;13(3): p. 215-21

Background: Biomechanical skin changes in breast cancer-related lymphedema (BRCL) have barely been described and objectively tested. This study aims to compare the skin of upper limb lymphedema with skin of the healthy contralateral arm, in order to demonstrate changes of elasticity, viscoelasticity, and level of hydration of the skin in BCRL. The secondary aim is to investigate the correlation between biomechanical skin changes and measurements that are currently used in clinical practice, such as volume measurement and lymph-ICF score. Methods and Results**:** Eighteen patients with BCRL and 18 healthy individuals were included in the study. A Cutometer® was used for measurements for skin elasticity and viscoelasticity on both arms of each subject. A Corneometer® was used for measurements of skin hydration. Measurements of both test groups were compared. In BCRL patients, there was a significant difference (p=<0.028) between the elasticity of the skin of the lymphedema arm compared to the healthy contralateral arm. There were no significant differences for level of skin hydration or viscoelasticity in lymphedema patients between the measurements on the skin of the lymphedematous and healthy arm. In healthy individuals, there were no significant differences for all measurements between skin of both arms. Spearman's correlation was significant (p=<0.01) for difference in volume and difference in elasticity in BCRL patients. Conclusion: This study shows an impaired elasticity for the skin of the lower arm in patients with lymphedema compared to the contralateral healthy arm. Promising evidence is suggested for the use of the Cutometer device in the diagnostic evaluation of BCRL.

A. Kleiner, E. Doridot, F. Debaene, C. Ringenbach, O. Peschard, P. Mondon, **Das Phänomen der empfindlichen Haut,** SOFW-Journal 141 - 09/2015

Viele Konsumenten haben nach eigener Einschätzung eine empfindliche Haut. Dabei gibt es keine allgemein anerkannte Definition für empfindliche Haut. Bislang gab es ebenso wenig gesicherte Erkenntnisse zu konstitutionellen Faktoren für diesen Hautzustand. Neuere Untersuchungen deuten dagegen auf Unterschiede im Aufbau normaler und empfindlicher Haut hin. Zusätzlich unterliegt die Haut im Laufe des Lebens auch Veränderungen bedingt durch intrinsche und extrinsische Faktoren. Dies bestätigen ebenfalls die Wahrnehmungen der Konsumenten. Mit zunehmendem Alter steigt der Anteil derjenigen, die angeben, eine empfindliche Haut zu haben.

R.D. Albert, S. Hurff, **Sensory perceptions improve via biobased propanediol,** Personal Care September 2015

New comsumer moisturisation and sensory testing has shown that by using a blend of Zemea and glycerin in a lotion formulation it is possible to improve the consumer perceived aesthetics without compromising hydration performance. The objective of this study was to determine if Zemea Propanediol could improve consumer sensory perceptions of a typical high moisturizing lotion based on glycerin while maintaining satisfactory humectancy performance. The generic lotion containing 20 wt.% glycerin was compared to both a lotion with 20 wt.% Zemea, and a lotion using a blend of Zemea/glycerin (10 wt.% each).

V. Küppers, M. Kemper, C. Abels, **Clinical evaluation of a water-in-oil emulsion with protective and regenerative properties for the anogenital area**, Clinical, Cosmetic and Investigational Dermatology 2015:8, p. 555–562

Abstract: Inadequate hygiene, aggressive cleansing, and chafng skin folds, as well as urine, feces, and sweat may trigger irritative contact dermatitis in the anogenital area. Serious recommendations for protection of the skin toward irritants include hygienic aspects and the use of appropriate skin care. Furthermore, preventing an accumulation of irritants on unprotected skin is

mandatory. An intraindividual comparison study with 30 participants (17 female, 13 male; age: 44.2±8.3 years) was performed to evaluate the properties of a newly developed water-inoil (W/O) balm on artifcial sodium dodecyl sulfate-damaged epidermal barrier. The balm was applied 14 days twice daily, and transepidermal water loss and erythema were investigated. A signifcant improvement of both parameters after 12 days and even after 21 days could be confrmed. Two major clinical trials were performed to evaluate the safety and effcacy regarding protective and regenerative properties of the W/O balm on irritated skin in the anogenital area. Therefore, 29 children were enrolled (14 male, 15 female, age: 15.5±7.8 months) in an openlabeled 4-week clinical study. The balm was used in the area under disposable diapers at least after diaper change or if required. Furthermore, in a second open, multicenter study, 43 women (mean age: 46.2±16.9) with predisposition to skin irritation in the outer anogenital region were included. The product was applied for 4 weeks 1–2 times daily. In both studies, skin tolerability, applicability, scent, spreadability, and removability of the balm were evaluated by participants and practitioners predominantly as good or even very good, also skin hydration, protection, and regeneration were judged positively. The studies confrmed that the newly developed W/O balm exhibits excellent tolerability and is easy to remove. At the same time, excellent properties with respect to effcacy regarding regeneration and protection could be observed, without any undesired effects at any time.

Klinische Studie bezüglich der Wirksamkeit und Verträglichkeit (Auszug), Institut Dermatologie an der Universität Hamburg (2013), Ästhetische Dermatologie 8, 2015

Fragestellungen: Eruiert warden sollten der Vitalisierungseffekt für die Wimpern, die Patientenzufriedenheit sowie biophysikalische Messergebnisse. Untersuchungskriterien und Methoden: Ausschlusskriterien waren gefärbte Wimpern und künstliche Wimpernverlängerungen. Entsprechend einer 5-Punkte-Skala wurden die Effekte untersucht. Die Bewertung geschah sowohl durch die Probanden als auch durch neutral externe Auswertung basierend auf standardisierten klinischen Photographien (Fotofinder Systems/Deutschland). Zusätzlich wurde die Patientenzufriedenheit ausgewertet. Zur Bestimmung der Hauttoleranz wurden eingesetzt: pH-Wert-Messung, Corneometrie und die Messung des Lipidgehaltes in der Tränenflüssigkeit (alles durchgeführt mit Geräten von Courage & Khazaka, Köln).

M. Tanaka, E. Misawa, K. Yamauchi, F. Abe, C. Ishizaki, **Effects of plant sterols derived from *Aloe vera* gel on human dermal fibroblasts in vitro and on skin condition in Japanese women,** Clinical, Cosmetic and Investigational Dermatology 2015:8, p. 95–104

Background: Aloe is known for its topical use for treating wounds and burns. Many previous studies reported the healing effects of Aloe vera. However, there are few clinical studies on the effect of orally administered A. vera gel on the skin. Aloe sterols are a type of plant sterols that have the capability to regulate the metabolism of glucose and lipids. In a recent study, we confirmed that ingested Aloe sterols reached the peripheral tissues through the bloodstream. However, their influence on dermal fibroblasts has not been investigated.

M. Mehrbani, R. Choopani, A. Fekri, M. Mehrabani, M. Mosaddegh, M. Mehrabani, **The efficacy of whey associated with dodder seed extract on moderate-to-severe atopic dermatitis in adults: A randomized, double-blind, placebo-controlled clinical trial**, J Ethnopharmacol, 2015 Aug 22;172: p. 325-32

Ethnopharmacological Relevance: Atopic dermatitis is a common chronic inflammatory skin condition that is on the rise and adversely affects quality of life of the affected individual. Dry skin and pruritus, major characteristics of this disease, are associated with the dysfunction of the skin barrier. Though mild cases of the disease can be controlled with antihistamines and topical corticosteroids, moderate-to-severe cases often require treatment with immunomodulatory drugs, which have many side effects. It is now more common to use complementary and alternative medicines in the treatment of atopic dermatitis. In traditional Iranian medicine, the use of whey with the aqueous extract of field dodder (Cuscuta campestris Yunck.) seeds in severe and refractory cases of atopic dermatitis is common and has no side effects. The aim of this study was to assess the efficacy and safety of whey associated with dodder seed extract in the treatment of moderate-to-severe atopic dermatitis in adults. Materials and Methods: The study was a randomized, double-blind placebo control trial that was conducted on 52 patients with moderate-to-severe atopic dermatitis for 30 days. In this study patients received freeze dried whey powder with spray dried water extract of field dodder or the placebo for 15 days. At baseline (week zero), after the end of the 15 day treatment period (week three) and 15 days after stopping the drug or placebo (follow-up/week five), patients were evaluated in terms of skin moisture, elasticity, pigmentation, surface pH and sebum content on the forearm with Multi Skin Test Center® MC1000 (Courage & Khazaka, Germany) and the degree of pruritus and sleep disturbance in patients were also

recorded. Results: 42 patients completed 30 days of treatment with the medicine and the follow-up period. At the end of the follow-up period a significant increase in skin moisture and elasticity in the group receiving whey with dodder was observed compared with the placebo group ($p<0.001$). There was a significant difference between the two groups regarding the pruritus after 15 days of receiving treatment or the placebo ($p<0.05$), and at the end of the 30-day study period the difference was clearly significant ($p<0.001$). Sleep disturbance showed significant changes at the end of follow-up period ($p<0.05$). There was no significant difference between the two groups concerning changes in skin pigmentation, however, a significant decrease was observed in the group receiving whey associated with dodder seed extract over time ($p<0.001$). There were no significant alterations in skin surface pH and the amount of sebum between the two groups. Temporary side effects were reported including anorexia and mild gastrointestinal problems in drug use. It is noteworthy that in this study despite the fact that patients received whey with dodder for just 15 days, moisture and elasticity of the skin continued to increase in the second half of the study (follow-up period). This shows that the effect of whey with dodder is not transient and this drug really helped skin barrier reconstruction and accelerated the healing process of skin. This positively influenced the skin parameters and consequently the improvement of pruritus and sleep disturbance. Conclusions: The results indicate that whey associated with dodder seed extract can serve as a promising alternative for the treatment of moderate-to-severe atopic dermatitis.

F. Hashmi, C. Wright, C. Nester, S. Lam, **The reliability of non-invasive biophysical outcome measures for evaluating normal and hyperkeratotic foot skin**, Journal of Foot and Ankle Research (2015) 8:28

Background: Hyperkeratosis of foot skin is a common skin problem affecting people of different ages. The clinical presentation of this condition can range from dry flaky skin, which can lead to fissures, to hard callused skin which is often painful and debilitating. The purpose of this study was to test the reliability of certain non-invasive skin measurement devices on foot skin in normal and hyperkeratotic states, with a view to confirming their use as quantitative outcome measures in future clinical trials. Methods: Twelve healthy adult participants with a range of foot skin conditions (xerotic skin, heel fissures and plantar calluses) were recruited to the study. Measurements of normal and hyperkeratotic skin sites were taken using the following devices: Corneometer® CM 825, Cutometer® 580 MPA, Reviscometer® RVM 600, Visioline® VL 650 Quantiride® and Visioscan® VC 98, by two investigators on two consecutive days. The intra and inter rater reliability and standard error of measurement for each device was calculated. Results: The data revealed the majority of the devices to be reliable measurement tools for normal and hyperkeratotic foot skin (ICC values > 0.6). The surface evaluation parameters for skin: SEsc and SEsm have greater reliability compared to the SEr measure. The Cutometer® is sensitive to soft tissue movement within the probe, therefore measurement of plantar soft tissue areas should be approached with caution. Reviscometer® measures on callused skin demonstrated an unusually high degree of error. Conclusions: These results confirm the intra and inter rater reliability of the Corneometer®, Cutometer®, Visioline® and Visioscan® in quantifying specific foot skin biophysical properties.

I. Waller, B. Suter, S. Hettwer, B. Obermayer, S. Bänziger, **In-Vitro Corneometry and Tewametry – Setting up skin substitute modelst o evaluate cosmetic moisturising materials,** H&PC, Vol. 10 (4) – July/August 2015

Abstract: Moisturisers improve skin hydration by using humectants and/or occlusive agents. Their efficacy is investigated by monitoring skin hydration or transepidermal water loss. In-vivo measurements, however, are costly and we therefore aimed to provide equivalent skin substitute in-vitro models. Two major models were established: collagen or synthetic membranes placed on agar-agar 'subsurface' gels. Their suitability for in-vitro hydration testing was evaluated by assessing their ability to accurately differentiate well-established moisturising ingredients. Second, the models were used for proof-of-concept investigations, e.g. assessing a novel active ingredient's moisturising efficacy. Indeed, the models successfully discriminated between occlusive and emollient, as well as between formulations with different moisturising characteristics. Taken together, each model had its strengths and weaknesses. In combination, however, such models may facilitate preliminary efficacy testing and thereby prove supportive for product development.

D. Tasron, R. Maiti, M Hemming, R. Lewis, M. Carré, **Investigating a methodology to measure moisture in skin–textile friction experiments,** Footwear Science, 7. S15 - S16, 2015

During running, foot skin is subjected to continuous pressure and repeated shearing, along with high levels of humidity due to perspiration and heat (Baussan et al. 2010). Moisture content in the stratum corneum skin layer and presence of moisture in the skinfabrics interface can strongly influence the available friction (Tomlinson et al. 2011, Kenins 1994).

J.Y. Kim, O.S. Lee, S. Ha, J.H. Kim, G. Park, J.K. Kim, C.H. Oh, **In vivo assessment of the effect of taxifolin glycoside on atopic dermatitis-like skin lesions using biomedical tools in NC/Nga mice**, Clin Exp Dermatol, 2015 Jul;40(5): p. 547-555

Background: Noninvasive methods of assessment are widely used in clinical trials. However, such methods have not been established in atopic dermatitis (AD), which is a chronic inflammatory skin disease. Aim: To demonstrate, using biomedical tools, the benefits of a new substance, taxifolin glycoside (TAX), in an AD model, the NC/Nga mouse. Methods: We evaluated the efficacy of topical TAX for AD by measuring clinical skin severity score, cytokine expression and serum IgE level, and by using biomedical measures (vapometry and corneometry). Topical TAX was applied to AD-induced NC/Nga mice for 3 weeks. The anti-inflammatory effects of this compound were demonstrated noninvasively using biomedical tools and immunological assays. Results: Our method of AD assessment using biomedical tools is more objective and accurate than visual inspection. The results obtained using the biomedical tools were identical to those obtained using immunological assays. Conclusions: In vivo biomedical tools are useful for diagnosing and monitoring treatment effects in AD.

L. Pouran, M. Masoud, R.M. Seyed, Y. Hadis, M. Akram, S. Golmohammadzadeh, M. Balali-Mood, **Epidermal hydration and skin surface lipids in patients with long-term complications of sulfur mustard poisoning**, J Res Med Sci. 2015 Jul; 20(7): p. 640-645

Background: Despite almost the three decades passed since the chemical attacks of Iraqi's army against the Iranian troops, some veterans are still suffering from long-term complications of sulfur mustard (SM) poisoning, including certain skin complaints specially dryness, burning, and pruritus. We thus aimed to evaluate the skin's water and lipid content in patients with a disability of >25% due to complications of SM poisoning and compare them with a matched control group. Materials and Methods: Sixty-nine male participants were included in this study; 43 SM-exposed patients, and 26 normal controls from their close relatives. The water and lipid content was measured in four different locations: Extensor and flexor sides of forearms and lateral and medial sides of legs by the Comeometer CM 820/Sebumeter SM 810. Collected data was analyzed and $P < 0.05$ was considered as statistically significant. Results: The mean age of the patients and controls was 49.53 ± 11.34 (ranges: 40-71) and 29.08 ± 8.836 (ranges: 15- 49 years), respectively. In the veterans group, the main cutaneous complaint was itching and skin dryness. Cherry angioma, dry skin, and pruritus were significantly more common in the SM-exposed cases than in the controls. *(*$P = 0.01$, 0.05, and 0.04, respectively). The moisture and lipid content of all areas were lower in the SM-exposed group, but it was only significant in skin sebum of lateral sides of legs *(*$P = 0.02$). Conclusion: Exposure to SM could decrease the function of stratum comeum and lipid production as a barrier, even after several years of its exposure.

S. Higurashi, Y. Haruta-Ono, H. Urazono, T. Kobayashi, Y. Kadooka, **Improvement of skin condition by oral supplementation with sphingomyelin-containing milk phospholipids in a double-blind, placebo-controlled, randomized trial,** J. Dairy Sci. 98, 2015: p. 6706–6712

Sphingomyelin (SM), an essential phospholipid for the skin, is contained largely in the milk fat globule membrane surrounding milk fat, concentrated fractions of which are also generated concurrently during the manufacture of dairy products. Such an SM-containing milk phospholipid concentrate (SM-MPC) is useful for investigating the benefits of dietary SM. Here, we examined the effect of consuming SM-MPC on the condition of skin in a double-blind, placebo-controlled, randomized trial. Ninety-six healthy subjects aged 20 to 39 yr with low skin hydration were randomly assigned to 3 groups: a high-SM group supplemented with SM-MPC at a dose equivalent to 10 mg/d of SM, a low-SM group supplemented with SM-MPC equivalent to 5 mg/d of SM, and a placebo group fed a vehicle composed of olive oil and beeswax. During daily supplementation for 12 wk, parameters related to the condition of skin were evaluated at baseline and every 3 wk. Skin hydration at the heel was significantly increased at wk 9 and 12 in the low-SM group compared with the placebo group. Skin elasticity in the region below the eye was significantly increased at wk 9 in the high-SM group versus placebo. Questionnaire-based subjective perceptions of skin conditions were significantly improved for facial skin moisture at wk 3 and 12, and in the wrinkle around the eyes at wk 9 and 12 in the high-SM group versus placebo. Our results indicate that constant and long-term supplementation with SM-MPC is capable of improving the general condition of skin.

H.J. Kim, J.H. Baek, J.E. Eo, K.M. Choi, M.K. Shin, J.S. Koh, **Dermal matrix affects translucency of incident light on the skin,** Skin Research and Technology 2015; 21: p. 41-46

Background/aims: The age-dependent changes in the optical reflection characteristics have been studied about skin hydration, melanin index, or skin color. However, the age-dependent changes in the optical reflection have little attention on inner skin structures. To control the factors affecting the

optical reflection except for dermal matrix, subjects were selected as our guideline and we evaluated the optical reflection of subsurface on skin layers of two age groups.

N. Aghazadeh, A. Firooz, A. Rajabi Estarabadi, P. Hejazi, **The effects of water exposure on biophysical properties of normal skin,** Skin Research and Technology 2015; 21: 131-136
Background: Water exposure is an influential factor in some common dermatoses. It has also been shown that water has an effect on barrier function and biophysical properties of skin. The aim of this study was to evaluate the effect of water immersion on biophysical properties of normal skin.

G.N. Stamatas, A. Lopes-DaCunha, A. Nkengne, C. Bertin, **Biophysical properties of striae distensae evaluated in vivo using non-invasive assays,** Skin Research and Technology 2015; 21:254-258

Background: Striae Distensae (SD) or stretch marks are manifestations of epidermal atrophy that occurs after tissure tearing due to rapid growth or over-stretching and are characterized by distinct microstructural features. The objective of this in vivo studay was to investigate the biophysical properties of SD lesions, including skin barrier function, skin surface hydration, mechanical properties, and chromophore concentrations, compared to normal adjacent skin.

M. Anthonissen, D. Daly, R. Peeters, M. Van Brussel, S. Fieuws, P. Moortgat, M. Flour, E. van den Kerckhove, **Reliability of repeated measurements on post-burn scars with Corneometer CM825,** Skin Research and Technology 2015; 21: p. 302-312

Background/purpose: The water content in burn scars, the parameter of stratum corneum water holding capacity, is an important feature in evaluation of biophysical properties of scars. Nevertheless, quantifiying this parameter is a challenge. In this study, the reliability of repeated water content measurements with Corneometer CM825 on (burn) scars was investigated.

K. Krull, **Untersuchung von Hautrötung und Helligkeit mittels verschiedener Farbmessverfahren *in vitro* und *in vivo*,** Dissertation an der Medizinische Fakultät der Universität zu Jena, 2015

Zusammenfassung: Die Haut ist das größte Organ unseres Körpers und bildet aufgrund ihres spezifischen Aufbaus eine wichtige Barriere des Organismus gegenüber der Umwelt. Diese Barriere kann jedoch durch verschiedene Reize geschädigt werden, was zu Veränderungen im Aufbau, z. B. durch Abtragung oberster Zellschichten, sowie Änderungen von hautphysiologischen Parametern führt. Diese Parameter sind unter anderem der transepidermale Wasserverlust (TEWL), der Wassergehalt im Stratum Corneum, die Hautdurchblutung und die Pigmentierung der Haut. In der vorliegenden Dissertation wurden die Veränderungen der eben genannten Parameter nach Einfluss exogener Reize mit Hilfe verschiedener Messgeräte untersucht. Ziel war es, die Haut mechanisch mittels Tapestripping, sowie chemisch durch Einwirkung von Natriumlaurylsulfat (engl. Sodium Lauryl Sulfate, SLS) und Wasser unter Okklusion zu reizen, um anschließend herauszufinden, ob eine erfolgte milde Irritation in einer Veränderung der Hautrötung und – pigmentierung resultiert und mit welcher Sensitivität diese Farbveränderungen durch die einzelnen Farbmessgeräte erfasst wurden. Zum Einsatz kamen das Mexameter MX18 (Fa. Courage & Khazaka), die Chromameter 200 und 300 (Fa. Minolta), der DermaSpectropen (Fa. Lange GmbH) und das Colorimeter (Fa. Courage & Khazaka).

A. Tuzuner, S. Akdagli, T. Sen, et al., **An objective analysis of sebum, pH and moisture levels of the external ear canal skin**, American Journal of Otolaryngology (2015) 424-428

Objective: To determine sebum, pH and moisture levels of external ear canal skin, and compare the patients who complain of ear itching and the normal population for these parameters. And evaluate the improvement subjectively in the ones given dexamethasone sodium phosphate (DSP) cream or placebo-water in oil emulsion type cream, and to determine the changes in sebum, pH and moisture levels after the treatment. Methods: 32 females with the complaint of isolated external ear canal itching and 42 healthy women were included in this randomized prospective controlled study. The sebum, pH and moisture levels of ear skin of the patients and the controls were determined from baseline and following treatment. Patients used DSP in their right and the placebo in their left ears for 15 days. Subjective analysis of itching level was measured at baseline, and on 15th and 30th days using visual analog scale (VAS).

*G. Schlippe, L. Bolke, W. Voss,***Einfluss oraler Einnahme von Kollagen-Peptiden auf relevante Parameter der Hautalterung: Hautfeuchtigkeit, Hautelastizität und Hautrauigkeit,** Aktuelle Dermatologie 2015; 41: 529-534

Zusammenfassung: Mit zunehmendem Alter und unter Einfluss weiterer Noxen, wie UV-Exposition und Nikotinabusus, kommt es zu einer Abnahme der dermalen extrazellulären Matrix und

des Kollagengerüsts. Dies führt zu einer Abnahme der Hautdicke, Elastizität und Feuchtigkeit und damit einhergehend zu einer verstärkten Faltenbildung. Studien haben gezeigt, dass die orale Aufnahme von speziellen Kollagen-Peptiden über einen längeren Zeitraum die Hautphysiologie positiv beeinflusst. In der vorliegenden klinisch-dermatologischen Prüfung zeigte die Einnahme von kurzkettigen Kollagen-Peptiden (Prüfpräparat: ELASTEN®) über einen Zeitraum von 3 Monaten signifikant positive und nachhaltige Effekte auf die Hautparameter Elastizität, Feuchtigkeit und Hautrauigkeit.

Abstract: With increasing age, the dermal matrix and collagen content decreases which results in a loss of skin hydration, elasticity and increased wrinkling. In addition to the normal ageing process, several other factors like UV radiation or smoking negatively influence skin physiology. Prior studies demonstrated that the oral intake of bioactive collagen peptides induces beneficial effects on human skin structure and functioning. In this study the oral intake of special collagen peptides (investigational product: ELASTEN®) for 3 months results in significant and sustainable improvements in skin parameters including skin hydration, elasticity and roughness.

J. Kottner, G. Dobos, A. Andruck, C. Trojahn, J. Apelt, H. Wehrmeyer, C. Richter, U. Blume-Peytavi, **Skin response to sustained loading: A clinical explorative study,** Journal of Tissue Viability (2015) 24, 114 – 122

Background: Severe illness, disability and immobility increase the risk of pressure ulcer development. Pressure ulcers are localized injuries to the skin and/or underlying tissue as a result of long enduring pressure and shear. Little is known about the role of the stratum corneum and the upper skin layers in superficial pressure ulcer development. Objectives: To investigate possible effects of long enduring loading on the skin barrier function under clinical conditions at two pressure ulcer predilection sites. Methods: Under controlled conditions 20 healthy females (mean age 69.9 (3.4) years) followed a standardized immobilization protocol of 90 and 150 min in supine position wearing hospital nightshirts on a standard hospital mattress. Before and immediately after the loading periods skin surface temperature, stratum corneum hydration, transepidermal water loss and erythema were measured at the sacral and heel skin. Results: Prolonged loading caused increases of skin surface temperature and erythema at the sacral and heel skin. Stratum corneum hydration remained stable. Transepidermal water loss increased substantially after loading at the heel but not at the sacral skin. Conclusions: Skin functions change during prolonged loading at the sacral and heel skin in aged individuals. Accumulation of heat and hyperaemia seem to be primarily responsible for increasing skin temperature and erythema which are associated with pressure ulcer development. Increased transepidermal water loss at the heels indicate subclinical damages of the stratum corneum at the heel but not at the sacral skin during loading indicating distinct pathways of pressure ulcer development at both skin areas.

N.Y. Kim, J.S. Cho, H.Y. Lee, **Evaluation of clinical trial of atopic dermatitis by a topical cream containing the extracts from photosynthetic bacteria**, Rhodobacter sphaeroides, AMB Expr (2015) 5:49

The photosynthetic bacteria Rhodobacter sphaeroides has been studied as a functional food source; however, in this clinical study, we report for the frst time its use as a treatment for atopic dermatitis. Topical cream containing 10% (v/v) extract was demonstrated to have the ability to reduce skin moisture content loss and pruritus by 27.82% in clinical trials for atopic dermatitis compared with controls. In particular, there were statistically signifcant differences in the pH and temperature changes of the skin, skin frmness and general skin appearance. Changes in the skin pH were measured as 4.83, and there was a 3.37% change in temperature after 4 weeks of treatment. It was also found that there were great differences in wrinkle states according to the grading scale of patients before and after treatment with topical cream. Therefore, these results strongly suggest that extracts from photosynthetic bacteria can be employed to soothe atopic irritation as a new cosmetic bioresource.

B. Khameneh, V. Halimi, M.R. Jaafari, S. Golmohammadzadeh, **Safranal-loaded solid lipid nanoparticles: evaluation of sunscreen and moisturizing potential for topical applications**, Iran J Basic Med Sci 2015; 18: p. 58-63

Objective(s): In the current study, sunscreen and moisturizing properties of solid lipid nanoparticle (SLN)-safranal formulations were evaluated. Materials and Methods: Series of SLN were prepared using glyceryl monostearate, Tween 80 and different amounts of safranal by high shear homogenization, and ultrasound and high-pressure homogenization (HPH) methods. SLN formulations were characterized for size, zeta potential, morphology, thermal properties, and encapsulation efficacy. The Sun Protection Factor (SPF) of the products was determined *in vitro* using transpore tape. The moisturizing activity of the products was also evaluated by corneometer. Results: The SPF of SLN-safranal formulations was increased when the amount of safranal increased. Mean particle size for all formulas was approximately 106 nm by probe sonication and 233 nm using HPH method. The

encapsulation efficiency of safranal was around 70% for all SLN safranal formulations. Conclusion: The results conclude that SLN-safranal formulations were found to be effective for topical delivery of safranal and succeeded in providing appropriate sunscreen properties.

R. Voegeli, A.V. Rawlings, P. Seroul, B. Summers, **A novel continuous colour mapping approach for visualization of facial skin hydration and transepidermal water loss for four ethnic groups**, International Journal of Cosmetic Science, 2015, 37 **,** p. 595-605

Objectives: The aim of this exploratory study was to develop a novel colour mapping approach to visualize and interpret the complexity of facial skin hydration and barrier properties of four ethnic groups (Caucasians, Indians, Chinese and Black Africans) living in Pretoria, South Africa. Methods: We measured transepidermal water loss (TEWL) and skin capacitance on 30 pre-delined sites on the forehead , cheek, jaw and eye areas of sixteen women (four per ethnic group) and took digital images of their faces. Continuous colour maps were generated by interpolating between each measured value and superimposing the values on the digital images. Results: The complexity of facial skin hydration and skin barrier properties is revealed by these measurements and visualized by the continuous colour maps of the digital images. Overall, the Caucasian subjects had the better barrier properties followed by the Black African subjects, Chinese subjects and Indian subjects. Nevertheless, the two more darkly pigmented ethnic groups had superior skin hydration properties. Subtle differences were seen when examining the different facial sites. Conclusions: There exists remarkable skin capacitance and TEWL gradients within short distances on selected areas of the face. These gradients are distinctive in the different ethnic groups. In contrast to other reports, we found that darkly pigmented skin does not always have a superior barrier function and differences in skin hydration values are complex on the different parts of the face among the different ethnic groups

A randomized home use study in two parallel groups, consisting of 30 healthy subjects aged 35-70, to assess the efficacy of one anti-wrinkle regimen compared to a placebo regimen, Princeton Consumer Research Report 2015

The objective of this study was to determine the efficacy of an anti-wrinkle regimen when compared to a placebo regimen, and to demonstrate the overall improvement/deterioration in skin condition following two, four, and eight weeks of test article use.

Shields against pollution for pristine clear skin, IBRPristinizer® Product Information

Pollution in general and air pollution specifically affect skin health and appearance. Constant exposure to environmental toxins leads to accumulated damage to DNA and to chronic inflammation. Both leading to premature signs of aging. Preventing damage from pollutant, detoxifying them and enhancing skin ability to defend itself against pollution, is a major unmet need of the cosmetic industry we are trying to answer with the IBR-Pristinizer®.

L. Phetcharat, K. Wongsuphasawat, K. Winther, **The effectiveness of a standardized rose hip powder, containing seeds and shells of *Rosa canina*, on cell longevity, skin wrinkles, moisture, and elasticity,** Clinical Interventions in Aging 2015:10, p. 1849–1856

Objective: To evaluate the effects of a rose hip powder (Hyben Vital®) made from seeds and shells on cell senescence, skin wrinkling, and aging. Methods: A total of 34 healthy subjects, aged 35–65 years, with wrinkles on the face (crow'sfeet) were subjected to a randomized and double-blinded clinical study of the effects of the rose hip powder, as compared to astaxanthin, a well-known remedy against wrinkles. During the 8-week study, half of the participants ingested the standardized rose hip product, while the other half ingested astaxanthin. Objective measurements of facial wrinkles, skin moisture, and elasticity were made by using Visioscan, Corneometer, and Cutometer at the beginning of the study, after 4 weeks, and after 8 weeks. Evaluation of participant satisfaction of both supplements was assessed using questionnaires. In addition, the effect of the rose hip preparation on cell longevity was measured in terms of leakage of hemoglobin through red cell membranes (hemolytic index) in blood samples kept in a blood bank for 5 weeks. Signifcance of all values was attained with *P*#0.05. Results: In the double-blinded study, the rose hip group showed statistically signifcant improvements in crow's-feet wrinkles (*P*,0.05), skin moisture (*P*,0.05), and elasticity (*P*,0.05) after 8 weeks of treatment. A similar improvement was observed for astaxanthin, with *P*-values 0.05, 0.001, and 0.05. Likewise, both groups expressed equal satisfaction with the results obtained in their self-assessment. The rose hip powder further resulted in increased cell longevity of erythrocyte cells during storage for 5 weeks in a blood bank. Conclusion: Results suggest that intake of the standardized rose hip powder (Hyben Vital®) improves aging-induced skin conditions. The apparent stabilizing effects of the rose hip product on cell membranes of stored erythrocyte cells observed in this study may contribute to improve the cell longevity and obstructing skin aging.

T. Jaeger, M. Rothmaier, H. Zander, J. Ring, J. Gutermuth, M.D. Anliker, **Acid-coated Textiles (pH 5.5–6.5) – a New Therapeutic Strategy for Atopic Eczema?**, Acta Derm Venereol 2015; 95: p. 659–663

Increased transepidermal water loss (TEWL) and decreased skin capacitance are characteristic features of the disturbed epidermal barrier in atopic eczema (AE). The “acid mantle”, which is a slightly acidic flm on the surface of the skin has led to the development of acidic emollients for skin care. In this context, the effect of citric acid-coated textiles on atopic skin has not been examined to date. A textile carrier composed of cellulose fbres was coated with a citric acid surface layer by esterifcation, ensuring a constant pH of 5.5–6.5. Twenty patients with AE or atopic diathesis were enrolled in the study. In a double-blind, half-side experiment, patients had to wear these textiles for 12 h a day for 14 days. On day 0 (baseline), 7 and 14, tolerability (erythema, pruritus, eczema, wearing comfort) and effcacy on skin barrier were assessed by TEWL skin hydration (corneometry/ capacitance), pH and clinical scoring of eczema (SCORAD). Citric acid-coated textiles were well tolerated and improved eczema and objective parameters of skin physiology, including barrier function and a reduced skin surface pH, with potential lower pathogenic microbial colonisation.

G. Nicoletti, F. Brenta, M. Bleve, T. Pellegatta, A. Malovini, A. Faga, P. Perugini, **Long-term in vivo assessment of bioengineered skin substitutes: a clinical study,** J Tissue Eng Regen Med, 2015 Apr;9(4): p. 460-468

The aim of the study was an objective in vivo assessment of skin properties after reconstruction with two artificial dermal substitutes, Integra® and Hyalomatrix®. Twenty-seven patients underwent reconstruction of 36 skin-loss sites with full-thickness skin graft, split-thickness skin graft, Hyalomatrix® bioengineered skin substitute and sequential split-thickness skin graft and Integra® bioengineered skin substitute and sequential split-thickness skin graft. Objective assessments were carried out using three instrumental devices: Multi Probe Adapter System MPA; 22 MHz ultrasound skin scan; and Primos Pico for a three-dimensional (3D) skin scan. The skin parameters under study in our sample were: corneometry, transepidermal water loss, elastometry, colorimetry, skin thickness and 3D skin surface pattern. A skin reconstruction with Hyalomatrix seemed to most closely approach the hydration, transepidermal water loss and skin surface 3D pattern of normal skin. A skin reconstruction with Integra seemed to demonstrate the best skin colour feature and elastic properties. Although no statistically significant differences were observed, the descriptive analysis of the outcomes might suggest a better cell regulation, regenerated extracellular matrix and neoangiogenesis with the use of Hyalomatrix, and the formation of a more elastic regenerated dermis, with overall better physical, mechanical and optical properties, with the use of Integral.

A. Ratz-Łyko, J. Arct, K. Pytkowska, S. Majewski, **In vivo and ex vivo evaluation of cosmetic properties of seedcakes,** J Cosmet Laser Ther. 2015 Apr; 17(2): p. 109-15

The seedcakes are a potential source of natural bioactive substances: antioxidants, protein, and carbohydrates. Thus, they may scavenge free radicals and have an effect on the stratum corneum hydration and epidermal barrier function. The aim of the study was to evaluate the in vivo and ex vivo properties of emulsions with the seedcake extracts using the pH meter, corneometer, tewameter, methyl nicotinate model of micro-inflammation in human skin, and tape stripping of the stratum corneum. The in vivo and ex vivo studies showed that the emulsions with Oenothera biennis, Borago officinalis, and Nigella sativa seedcake extracts have anti-inflammatory and antioxidant activity. The 6-week topical application of the emulsions with the B. officinalis and N. sativa seedcakes significantly reduced skin irritation and influenced the improvement of the skin hydration and epidermal barrier function compared with placebo. The seedcakes due to their antioxidant and anti-inflammatory activities have potential application in anti-aging, moisturizing, mitigating, and protective cosmetics.

Y. Fukushima, Y. Takahashi, Y. Hori, Y. Kishimoto, K. Shiga, Y. Tanaka, E. Masunaga, M.Tani, M. Yokoyama, K. Kondo, **Skin photoprotection and consumption of coffee and polyphenols in healthy middle-aged Japanese females**, Int J Dermatol. 2015 Apr; 54(4): p. 410-8

Background: Reactive oxygen species are known to mediate skin photoaging, which results in the formation of pigmented spots and wrinkles. Coffee is the largest source of polyphenols, which supplies a large number of antioxidants in one's daily life. However, little is known about how much coffee and polyphenol consumption influences skin health. Materials and Methods: In this study, a cross-sectional survey of the diet, environmental factors, and skin conditions was conducted in healthy Japanese females to explore the influence of coffee and polyphenol consumption on skin conditions. Non-smoking, healthy female subjects with moderate sun exposure in their daily lives were recruited for this study (n = 131, age range: 30-60 years old) and recorded their food and beverage intake and life

circumstances using questionnaires. The skin water content, transepidermal water loss, and elasticity were measured on the cheek of each subject using noninvasive methods: Corneometer, a Tewameter, and a Cutometer, respectively. Wrinkles and pigmented spots were evaluated using digital photograph images. Results: Consumption of coffee and total polyphenols from all sources and from coffee showed a statistically significant correlation towards a decrease in pigmented spot scores ($P < 0.05$). Subjects with high total polyphenol consumption from coffee or chlorogenic acids (the third tertile group) showed the lowest score of ultraviolet pigmented spots ($P < 0.05$). Conclusion: Coffee and polyphenol consumption was associated with low facial pigmented spots in Japanese middle-aged females. We speculated that coffee helps protect human skin from photoaging, and polyphenols, including chlorogenic acids, may contribute to the decreased hyperpigmentation of pigmented spots.

P. Todorova, P. Grant-Ross, S. Tamburic, **Biomimetic vs. Traditional Skin Moisturization: An In vivo Comparison,** www.cosmeticsandtoiletries.com, April 2015

The stratum corneum's (SC's) functional status depends on it being in a plasticized state, which relies on adequate water-holding and waterproofing abilities. These abilities will depend on the state of the skin barrier, which is crucial to human survival. Daily life presents a number of challenges for this protective layer of the body. These include the use of simple cleansers, UV damage, environmental conditions, aging and skin diseases. Of these, the effects of aging and the environment were the main focus for the present study, which was conducted over winter months in a Nordic country and employed elderly female volunteers.

C. Lim, H. Nomura, A. Takeoka, **Skin care vaccine indues self-maintenance system,** Personal Care April 2015

Abstract: Skin care is the major topic for the personal care market. People demand to remain young, with better looks as they age, such as smaller pores, fewer wrinkles, and less sagging, and to moderate skin disorders, such as irritation, dryness, redness, dandruff etc. The former target is mainly known as anti-ageing. The main target is to remodel and rescue our skin from intrinsic and extrinsic damage. People want to keep their youth or even to turn back time in order to look younger.

A. Thibodeau, **Global skin action of a luminaria extract,** Personal Care April 2015

Skin is a large and complex tissue where the orchestrated actions of resident cells are necessary to support its structural and metabolic integrity. Cells of the epidermis (mainly keratinocytes) play a role in protecting from environmental stress such as UV exposure, mechanical damage and pro-oxidative attacks. Perhaps more importantly, top layers of the epidermis along with a lipid-rich intercellular matrix from the skin barrier. It is no secret that the skin barrier is fundamental in preventing excessive water evaporation thereby supporting normal skin hydration levels.

W. Weistenhöfer, M. Wacker, F. Bernet, W. Uter, H. Drexler, **Occlusive gloves and skin conditions: is there a problem? Results of a cross-sectional study in a semiconductor company**, Br J Dermatol, 2015 Apr; 172(4): p. 1058-1065

Background: Although there is poor scientific evidence that working with occlusive gloves is as damaging as wet work, prolonged glove occlusion is considered to be a risk factor for developing hand eczema similar to wet work. Objective: To assess the effects of wearing occlusive gloves during the whole working day, without exposure to any additional hazardous substances, on skin condition and skin barrier function. Methods: We investigated 323 employees of a semiconductor production company in Germany: 177 clean-room workers wearing occlusive gloves during the whole shift (exposed group) and 146 employees working in administration (control group). A standardized interview was performed, the skin condition of both hands was studied using the quantitative skin score HEROS, and transepidermal water loss (TEWL) and stratum corneum hydration were measured. Results: There was no significant difference in skin condition between the two subgroups. Values for TEWL and corneometry were significantly higher in exposed participants ($P<0{\cdot}05$). However, the TEWL values were similar to control values if participants took off the occlusive gloves at least 30 min before the measurement. Hence, the effect of occlusion on skin barrier function seems to be transient. Conclusion: Prolonged wearing of occlusive gloves with clean hands and without exposure to additional hazardous substances does not seem to affect the skin negatively.

E.D. Son, Y. Kim, K.M. Joo, H.J. Kim, E. Lee, G.W. Nam, E.G. Cho, M. Noh, J.H. Chung, S.Y. Byun, T.R. Lee, **Skin dryness in apparently healthy human skin is associated with decreased expression of bleomycin hydrolase in the stratum corneum**, Clin Exp Dermatol. 2015 Apr; 40(3): p. 247-53

Background: Maintenance of water balance in the stratum corneum (SC) is determined by the content of intercellular lipids and natural moisturizing factors (NMFs) in corneocytes. Aim: To investigate the association between the NMFs and (pro)filaggrin and the proteases responsible for the processing of (pro)filaggrin to NMFs in the SC of hydrated and dry skin areas of healthy human subjects. Methods: The SC hydration state and the transepidermal water loss (TEWL) were measured using a Corneometer and a Tewameter, respectively. Proteases, (pro)filaggrin and NMFs were extracted from SC samples obtained by tape-stripping of the tested skin. Expression levels of (pro)filaggrin were determined by dot blotting and western blotting, and total NMFs by ultra-high performance liquid chromatography. Expression of the proteases caspase-14, calpain-1 and bleomycin hydrolase was measured by western blotting. Results: The levels of (pro)filaggrin were not significantly different between hydrated and dry skin, whereas the level of total NMFs was significantly reduced in dry skin. A negative correlation between (pro)filaggrin and NMFs was found in dry skin (Pearson correlation coefficient r = - 0.57, *P < 0.05). Bleomycin hydrolase expression was significantly decreased in the SC of dry skin. Conclusions: These results suggest that the low hydration state of dry skin may be due to the reduction in (pro)filaggrin degradation caused by decreased bleomycin hydrolase expression.

D. Mahrhauser, C. Nagelreiter, A. Baierl, J. Skipiol, C. Valenta, **Influence of a multiple emulsion, liposomes and a microemulsion gel on sebum, skin hydration and TEWL,** Int J Cosmet Sci. 2015 Apr;37(2): p. 181-6

Objective: In this study, the influence of three cosmetically relevant, priorly characterized vehicles on skin hydration, sebum content and transepidermal water loss was investigated. Methods; The chosen vehicles included a liposomal pre-formulation, a multiple W/O/W emulsion and a microemulsion gel. The in vivo effects of these vehicles were demonstrated and compared among them. The stability of the prepared vehicles was determined visually, microscopically, rheologically by pH measurements and particle size. Interactions with skin were assessed by non-invasive biophysical techniques using the Corneometer(®), Aqua Flux(®) and Sebumeter, measuring skin hydration, TEWL and skin sebum content, respectively. Results: All vehicles remained stable over an observation period of 6 weeks. The multiple emulsion increased sebum content and skin hydration. In case of the liposomes, each monitored parameter remained almost constant. In contrast, the microemulsion gel lowered skin hydration and increased TEWL values, but even 1 week after termination of the treatment TEWL decreased almost close to control levels. Conclusion: All produced vehicles were proven to remain physically stable over the duration of this study. The used multiple emulsion showed very skin-friendly properties by increasing sebum and skin hydration. Likewise, the liposomal pre-formulation exhibited no negative effects. On the contrary, the investigated microemulsion gel seemed to have skin dehydrating and TEWL increasing features. However, the multiple emulsion as well as liposomes was identified to be well-tolerated vehicles for skin which might qualify them for the use in cosmetic formulations.

M. Zaj□c, M.P. Szczepanik, P.M. Wilkoł ek, Ł.R. Adamek, Z.J.H. Pomorski, W. Sitkowski, M. Goł y□ski, **Assessment of a correlation between Canine Atopic Dermatitis Extent and Severity Index (CADESI-03) and selected biophysical skin measures (skin hydration, pH, and erythema intensity) in dogs with naturally occurring atopic dermatitis**, The Canadian Journal of Veterinary Research, 2015

Atopic dermatitis is a common allergic skin disease in dogs. The aim of this study was to examine the possibility of a correlation between biophysical skin variables: skin hydration (SH), skin pH, and erythema intensity measured in 10 different body regions and both total Canine Atopic Dermatitis Extent and Severity Index (CADESI-03) and CADESI measured in a given region (CADESI L). The study was conducted using 33 dogs with atopic dermatitis. The assessment of the biophysical variables was done in 10 body regions: the lumbar region, right axillary fossa, right inguinal region, ventral abdominal region, right lateral thorax region, internal surface of the auricle, interdigital region of right forelimb, cheek, bridge of nose, and lateral site of antebrachum. Positive correlations were found between SH and CADESI L for the following regions: the inguinal region (r = 0.73) and the interdigital region (r = 0.82), as well as between total CADESI and SH on digital region (r = 0.52). Also, positive correlations were reported for skin pH and CADESI L in the lumbar region (r = 0.57), the right lateral thorax region (r = 0.40), and the lateral antebrachum (r = 0.35). Positive correlations were found in the interdigital region between erythema intensity and the total CADESI-03 (r = 0.60) as well as the CADESI L (r = 0.7). The results obtained suggest that it may be possible to use skin hydration, pH, and erythema intensity to assess the severity of skin lesion but positive correlation was only found in < 13.3% of possible correlations and usage of these measures in dogs is limited.

N. Srivastava, S. Gehlot, S. Singh, B.M. Singh, **Application of different parameters for selecting normal and abnormal skin characteristics in determination of Prakriti in infants,** Int. J. Res. Ayurveda Pharm. 6(2), Mar - Apr 2015

Prakriti (Basic physical constitution) of an individual is decided at the time of conception and subsequently during intra-uterine life, as a result of overall effect of dominant Dosha of Shukra (Sperm), Shonit (Ovum), Ahara (diet) and Vihara (regimen) of Garbhini (pregnant women), Kaalgarbhashaya (in-utero duration and condition of uterus) and Mahabhautic components. Assessment of Prakriti and Vikriti in children is essential and enables the pediatrician to evaluate metabolic imprinting, individual physiology and susceptibility to specific disease, its diagnosis, prevention, treatment as well as the prognosis after illness. There are many subjective criteria to determine the Prakriti in adults, but as far as infants are concerned, no detail description is available in Ayurvedic classics. Individual Prakriti can be determined as per the characteristics specified in Brihattrayi and Laghutrayi, which include the examination of skin, hair, nails, eyes, palm, sole and other physical and psychological features, and may be used in children for Prakriti determination. However, it can be better understood and differentiated each other by considering various methods and modern technology. Out of various characteristics of body parts, skin characteristics such as texture (roughness or smoothness, elasticity and thickness), color and temperature of skin significantly contribute in Prakriti determination. Use of objective parameters such as RGB and HSV method, Fitzpatrick Scale method and derma spectrometer for the skin color differentiation; skin-pH, stratum corneum hydration, TEWL, sebum content, cutometer and ultrasonography for skin texture as well as thermometer, thermister via pulse oxymeter for skin temperature may be very useful tools to differentiate individual Prakriti under controlled conditions. The aim of this conceptual study was to explore importance of various methodologies for differentiating Prakritaskin characteristics from the Vaikrita skin characteristics more precisely and scientifically in infants.

F. Sugihara, N. Inoue, X. Wang, **Clinical Effects of Ingesting Collagen Hydrolysate on Facial Skin Properties**, Jpn Pharmacol Ther 2015; 43: p. 67-70

Objectives: The objective of this research was to investigate the effectiveness of daily ingestion of a specific collagen hydrolysate (CH), which contains prolylhydroxyproline (Pro-Hyp) and hydroxy-prolylglycine (Hyp-Gly), on facial skin properties. Methods: In this randomized, placebo-controlled, double-blind trial, 56 women aged 30-55 years were randomized to receive 2.5 g of CH or 5 g of placebo once daily for 8 weeks, with 28 subjects assigned to each group. The hydration, elasticity and roughness properties of facial skin were measured at week O (baseline), week 4 and week 8. Results: Levels of skin hydration, elasticity and roughness in subjects who received CH significantly improved between baseline and weeks 4 and 8, while there was no significant improvement in subjects who received placebo. Moreover, the levels of skin elasticity, roughness and the net change of skin hydration improved significantly in the CH group compared to the placebo group by both weeks 4 and 8. Conclusion: The present results suggest that daily ingestion of 2.5 g of CH improves facial skin hydration, elasticity and roughness.

Y. Takagi, N. Tanaka, M. Miyaki, K. Takeuchi, K. Matsuo, **An effective novel facial cleanser for mild acne: Cleanser formulated with Sodium Laureth Sulfate and Alkyl Ether Carboxylates,** H&PC Vol. 10 (2) March/April 2015

Many people suffer from acne. Washing the face with cleansers is generally recommended for acne care and cleansers containing salicylic acid are frequently used in the United States. However, salicylic acid has many side effects such as inducing dryness and irritation. Here we demonstrate that a facial cleanser based on alkyl ether carboxylates (AEC) and sodium laureth sulfate (SLES), which does not contain and anti-acne ingredients including salicylic acid, improved the acne more quickly than general cleansers containing salicylic acid (≈ 1.5%). No side effects were observed and a favorability rating was obtained from the subjects in a questionnaire. These results suggest that the skin cleanser formulated with AEC and SLES is an effective cleanser for the care of mild acne.

S. Manzoni, S. Ferrigato, D. Calamiello, **Moisturizers: what they are and how improve formulation with a novel emulsifier,** H&PC Vol. 10 (2) March/April 2015

Moisturizers are widely used products that are important in several dermatologic and cosmetic skin therapies. They contain varyious combinations of emollients, occlusive, and humectants to achieve their beneficial effects, and there is an overwhelming number of formulations available. To develop a rational approach in chosing moisturizers, they should be categorized on the basis of application site.

A. Scheel-Sailer, A. Frotzler, G. Mueller, S. Annaheim, R.M. Rossi, S. Derler, **Challenges to measure hydration, redness, elasticity and perfusion in the unloaded sacral region of healthy persons**

after supine position, J Tissue Viability, 2015 Mar 13

Aim of the study: To combine measurement methods of biophysical skin properties in a clinical setting and to measure baseline values in the unloaded sacral region of healthy persons after lying 30 min in supine position. Methods: Hydration (Corneometer® CM 825), redness (Mexameter® MX 18), elasticity (Cutometer® MPA 580) and perfusion (PeriFlux System 5000) of the skin in the sacral region of 10 healthy participants (median age: 26.9 years) were measured consecutively in the laying position by two trained examiners. Results: The assessment duration for all four parameters lasted about 15 min. Intra-class correlation coefficients were overall moderate to strong (hydration r = 0.594, redness r = 0.817, elasticity r = 0.719, perfusion r = 0.591). Hydration (median 27.7 arbitrary units (AU)) mainly indicated dry skin conditions. Redness (median 158.5 AU) was low. Elasticity (median 0.880 AU) showed similar values as in the neck region. Perfusion (median 17.1 AU) showed values in the range of results reported in the literature. Biophysical skin properties in the sacral region after supine position can be measured within periods of 15 min. Conclusion: The results provide baseline data for the skin of healthy persons as well as insights into skin-physiological variations. But it remains challenging to optimize measurement procedures and test protocols when transferring preclinical tests in a clinical application.

M. Nassiri Kashani, A. Rajabi Estarabadi, H. Zartab, P. Khoshpouri, P. Khoshpouri, H. Hosseini, A.H. Tavakoli, A. Firooz, **Evaluation of human allogeneic collagen gel for correction of nasolabial folds using non-invasive measurement techniques,** Iranian Journal of Dermatology, Vol 18, No 3, Autumn 2015

Background: With aging, the facial folds, grooves, and sagging tissue become more prominent. It is characterized by loss of the collagen mass in the dermis and an increased array of elastin whirls in the deeper dermis. The aim of this study was to determine whether correction of nasolabial folds could be achieved using an allogeneic collagen product. Methods: Nine healthy volunteers participated in this beforeafter, pilot clinical trial. Human allogeneic collagen (Collagel, Kimia Teb Rahavard Co., Tehran, Iran) was injected in both nasolabial folds of the volunteers. Skin hydration was measured using the Corneometer® 580 device (CK GmbH, Cologne, Germany). Ultrasonic dermal changes were measured using an ultrasonography device (22 MHz, TPM, Germany) before and 24 weeks after the injection. One independent investigator assessed the efficacy using standardized photographs before and 24 weeks after injections. The patients' satisfaction rate was also evaluated. Results: All patients showed improvement in wrinkles and the mean satisfaction rate on a 0-10 VAS was 7.4±0.5. The hydration of the stratum corneum increased from 32.32±13.54 to 52.61±12.55 and the echo-density of the dermis increased from 8.05±3.18 to 9.55±3.36 µm 24 weeks after the injection (*P*□0.05). No treatmentrelated adverse events were reported. Conclusion: Collagel is an effective filler that can provide a safe and effective correction of the nasolabial folds. This correction lasts for at least 24 weeks on ultrasound evaluations. Further larger blind-randomized controlled clinical trials are required to pave the way for suggesting it as a possible therapeutic option.

S.-Y. Byun, S.-H. Kwon, S.-H. Heo, J.-S. Shim, M.-H. Du, J.-I. Na, **Efficacy of Slimming Cream Containing 3.5% Water-Soluble Caffeine and Xanthenes for the Treatment of Cellulite: Clinical Study and Literature Review**, Ann Dermatol Vol. 27, No. 3, 2015, p. 243-249

Background: Cellulite is a 'cottage cheese-like' cutaneous change caused by subcutaneous fat bulging into the dermis that usually leads to cosmetic problems. Slimming cream containing 3.5% water-soluble caffeine and xanthenes exhibits a lipolytic effect with penetration into the dermis. Objective: To evaluate the efficacy and safety of slimming cream for the treatment of cellulite. Methods: Fifteen subjects with cellulite applied slimming cream to the thighs and inner side of the upper arms twice daily for 6 weeks. Efficacy was assessed using a standard visual scale, changes in the circumferences of the thighs and upper arms, and patient satisfaction by a questionnaire at baseline, week 3, and week 6. Safety was assessed by inquiring about adverse events through questionnaires. Results: The standard visual scale score improved significantly by 0.49 points (19.8%) at week 6. Thigh and upper-arm circumferences decreased by 0.7 cm (1.7%) and 0.8 cm (2.3%), respectively, at week 6. Slight itching and transient flushing were commonly reported, but no serious adverse event occurred. Conclusion: The slimming cream tested appears to be effective for the treatment of cellulitis without serious adverse effects. However, additional large clinical trials are required to confirm the efficacy and safety of slimming cream for the treatment of cellulitis.

T.N. Oliphant, R.A. Harper, **Sunless tanners aided by jojoba-derived emollient,** Personal Care March 2015

Floraesters K-20W Jojoba [INCI Name: Hydrolyzed Jojoba Esters (and) Water] has been shown to enhance the efficacy and sensory properties of multiple finished cosmetic and personal care

formulations, and has been explored in various categories such as creams/lotions, hand sanitisers, nonwoven wipes, sunscreens, mascara/eyeliner, shampoos/conditioners, toners/astringents, face washes, and oil-free formulations. Its film-forming properties make it ideal for rinse-off products and products that require water resistance or an extended period of residence time on the skin.

L. Agren, E. Nilsson, **Effect of blackcurrant seed oil on atopic eczema,** Personal Care March 2015

There are many reasons why eczema develops, both hereditary and from environmental exposure. Biochemists have found that atopic eczema can develop a result of a deficiency, imbalance or an inability to covert essential fatty acids. These fatty acids are necessary for the body to be able to make use of other fatty acids and play a vital role in regulating inflammation and the immune system. The aim of the study was to investigate the following questions: What is the effect of Q for Skin's concept based on blackcurrant seed oil on atopic eczema? Is there a link between the occurrence of atopic eczema and diet? Is it possible for people diagnosed with atopic eczema to reduce the usage to topical corticosteroids?

R.C. Webb, R.M. Pielak, P. Bastien, J. Ayers, J. Niittynen, J. Kurniawan, M. Manco, A. Lin, N. Heon Cho, V. Malyrchuk, G. Balooch, J.A. Rogers, **Thermal Transport Characteristics of Human Skin Measured In Vivo Using Ultrathin Conformal Arrays of Thermal Sensors and Actuators**, PLOS ONE, February 6, 2015

Measurements of the thermal transport properties of the skin can reveal changes in physical and chemical states of relevance to dermatological health, skin structure and activity, thermoregulation and other aspects of human physiology. Existing methods for in vivo evaluations demand complex systems for laser heating and infrared thermography, or they require rigid, invasive probes; neither can apply to arbitrary regions of the body, offers modes for rapid spatial mapping, or enables continuous monitoring outside of laboratory settings. Here we describe human clinical studies using mechanically soft arrays of thermal actuators and sensors that laminate onto the skin to provide rapid, quantitative in vivo determination of both the thermal conductivity and thermal diffusivity, in a completely non-invasive manner. Comprehensive analysis of measurements on six different body locations of each of twenty-five human subjects reveal systematic variations and directional anisotropies in the characteristics, with correlations to the thicknesses of the epidermis (EP) and stratum corneum (SC) determined by optical coherence tomography, and to the water content assessed by electrical impedance based measurements. Multivariate statistical analysis establishes four distinct locations across the body that exhibit different physical properties: heel, cheek, palm, and wrist/volar forearm/dorsal forearm. The data also demonstrate that thermal transport correlates negatively with SC and EP thickness and positively with water content, with a strength of correlation that varies from region to region, e.g., stronger in the palmar than in the follicular regions.

O. Fantini, C. Zemiriline, M. Belliard, E. Lati, L. Peno-Mazzarino, E. Gontier, E. Ollivier, D. Pin, **Restructuring effect of phytosphingosine-containing shampoo and mousse on the cutaneous barrier in five atopic dogs: preliminary results of a field study**, 2015 ESVD and ACVD, Veterinary Dermatology, 26, p. 297–313

Previous studies have shown alterations in the skin lipid organization and composition in atopic dogs. The aim of this study was to evaluate the effect of a phytosphingosine-containing shampoo and mousse (Douxo Calm, Ceva Sante Animale) on the defective skin lipid barrier in such dogs. Five dogs from different breeds clinically diagnosed with atopic dermatitis according to Favrot's criteria, with a maximum Canine Atopic Dermatitis Extent and Severity Index (CADESI)-04 score of 40 on Day 0(D0) and stabilization of skin condition for at least 3 months, were included after rigorous flea control. Dogs were shampooed on D0, D8 and D15 and treated with the mousse on D3, D6, D10, D13, D17 and D20. Measurement of the skin hydration rate by a corneometer (Corneometer CM825, Courage & Khazaka; Cologne, Germany), tapestripping for chemical analysis and skin biopsies all from the lateral aspect of the thorax for structural analysis of the stratum corneum (SC) lipids by electron microscopy were performed on D0 and D21. Skin hydration rate [11.2 (5.6) to 39.4 (41.7)], total cholesterol (cholesterol and cholesterol esters) [1737 (1010) to 3957 (2074) lg/lg protein], as well as total ceramides (especially hydroxylated ceramides) [52 (15) to 75 (30) lg/lg protein] increased (no significant differences). Blind analysis of electron microscopy images revealed a slight to marked increase in SC lipid bilayer thickness together with improved ultrastructural arrangement. The results indicate the potential effect of this combination treatment with phytosphingosine-containing shampoo and mousse on the barrier function of the epidermis in canine atopic dermatitis.

W. Wigger-Alberti, R. Williams, T. Neubourg, E. Hanisch, J. Schulte-Walter, **Fußpflege bei Diabetes: Adäquate Pflege trockener und empfindlicher Haut am diabetischen Fuß,** Kosmetische Medizin

1.15

Zusammenfassung: Bei gutter hydratisierender Wirkung dreier Fußschaum-Cremes (mit Mikrosilber, mit Polyhexanid oder ohne weiteren Zusatz) in der Anwendung an Diabetikern mit Xerosis wurde keine Änderung in der Bakterienbesiedlung mit gram-positiven und keine Besiedlung mit gram-negativen Bakterien in den Zehenzwischenräumen während einer 4-wöchigen Anwendungszeit festgestellt.

T. Sakai, Y. Hatano, W.i Zhang, S. Fujiwara, **Defective maintenance of pH of stratum corneum is correlated with preferential emergence and exacerbation of atopic-dermatitis-like dermatitis in flaky-tail mice**, Journal of Dermatological Science 74 (2014), p. 222–228

Background: Neutralization of stratum corneum (SC) pH, which is induced by a variety of stimuli, such as scratching, use of soap and inflammation, can stimulate activity of serine protease (SPase). Activation ofSPase induces production of thymic stromal lymphopoietin (TSLP) through protease-activated receptor- 2. Both reduced expression of natural moisturizing factors, which are required for maintenance of SC pH, and the preferential development of atopic dermatitis (AD)-like dermatitis are found in flaky-tail mice (FTM) with a loss-of-function mutation in filaggrin. Objective: We examined possible correlations between disturbance of responses to an exogenous stimulus of SC neutralization and the preferential emergence of AD-like dermatitis in FTM. Methods: FTM and wild-type mice (C57BL/6) were subjected to an SC-neutralization stimulus via application of 1,1,3,3-tetramethylguanidine (TMG). TMG was applied to young mice at a time when FTM had not yet developed significant dermatitis, and we examined their ability to maintain SC acidity and several parameters associated with AD-like dermatitis. Results: The recovery of SC pH after the application of TMG was delayed in FTM, presumably because of unchanged expression of Na+/H+ antiporter 1, which is involved in maintenance of SC acidity. Cutaneous inflammation with elevated SPase activity and serum levels of TSLP, thymus and activation-regulated chemokine and IgE were induced only in TMG-treated FTM. Conclusion: Our results suggest that defective maintenance of pH of SC is correlated with emergence and exacerbation of AD-like dermatitis in FTM.

Y. Koyano, G. Nakagami, S. Lizaka, T. Minematsu, H. Noguchi, N. Tamai, Y. Mugita, A. Kitamura, K. Tabata, M. Abe, R. Murayama, J. Sugama, H. Sanada, **Exploring the prevalence of skin tears and skin properties related to skin tears in elderly patients at a long-term medical facility in Japan**, International Wound Journal 2014

The identifcation of appropriate skin tear prevention guidelines for the elderly requires clinicians to focus on local risk factors such as structural alterations of the epidermis and dermis related to skin tears. The aim of this cross-sectional study is to explore the prevalence of skin tears and to explore skin properties related to skin tears in elderly Japanese patients at a long-term medical facility. After doing the prevalence study, 18 participants with skin tears and 18 without were recruited and an evaluation of their skin properties using 20-MHz ultrasonography, skin blotting and also Corneometer CM-825, Skin-pH-meterPH905, VapoMeter, Moisture Meter-D and CutometerMPA580 was undertaken. A total of 410 patients were examined, the median age was 87 years and 73·2% were women. The prevalence of skin tears was 3·9%, and 50% of skin tears occurred on the dorsal forearm. The changes in skin properties associated with skin tears included increased low-echogenic pixels (LEP) by 20-MHz ultrasonography, decreased type IV collagen and matrix metalloproteinase-2, and increased tumour necrosis factor-α by skin blotting. In conclusion, this study suggests that increased dermal LEP, including solar elastosis, may represent a risk factor for skin tears; this indicates that skin tear risk factors might not only represent chronological ageing but also photoageing.

J.L. Garaud, A. Sieg, M. Le Meur, H. Baillet, I. Van Reeth, S. Massé, **Silikone als ungefährliche Stoffe und zum Erhalt des natürlichen Feuchtehaushalts und zum Schutz der Haut gegen Belastung durch Partikel,** SOFW-Journal, 140/12-2014

Abstract: In diesem Artikel warden die nicht-okklusiven Eigenschaften typischer Silikone auf der Haut sowie das Potential einiger Hybridtechnologien zum Schutz der Haut vor Belastung durch Partikel unter dem Gesichtspunkt deren positiver Wirkungen auf hyperreaktive, empflindliche Haut besprochen. Ihre Permeabilität wird mit Hilfe von auf ASTM-Standards basierenden In-vitro-Verfahren, In-vivo-Corneometrie und Untersuchungen des transepidermalen Wasserverlustes bewertet. Ihr Schutzpotential gegenüber Verunreinigungen wurde unter Anwendung eines neuen, selbstentwickelten In-vitro-Verfahrens bewertet, bei dem das Anhaften des Schmutzpartikeläquivalents an kosmetische Beschichtungen und mit Hilfe von durch Raster-Elektronenmikroskopie gewonnenen Bildern ausgewertet wird, um die Mikrorauheitsgrade der Oberfläche einzuschätzen. In den Analysen wurden die nicht-okklusiven Eigenschaften von drei häufig verwendeten Silikonen nachgewiesen, und ein

gewisses Potential spezifischer Copolymere beim Schutz gegen Verschmutzung wurde aufgezeigt. Diese Ergebnisse unterstreichen die Bedeutung von Silikonen in Anwendung für empflindliche Haut.

R. Nachat-Kappes, A. Gardarin, L- Rios, E. Ranouille, M. Favre-Mercuret, V. Jay-Debaut, J.Y. Berthon, **Probiotische Fraktionen – eine neue Lösung, die Hautgesundheit durch Stärkung der Barrierefunktion zu verbessern, indem die Hauthydrataion erhöht und Entzündungen vorgebeugt wird,** SOFW-Journal, 140/12-2014

Abstract: Unsere Haut sorgt für eine lebenswichtige Barriere zwischen Körper und Umwelt. Sie verhindert Austrocknung, begrenzt das Eindringen von körperfremden Stoffen und schützt vor mechanischer Belastung. Es ist dargelegt worden, dass Probiotika, hauptsächlich Laktobazillen und Bifidobakterien, die Barrierefunktion des Darms wiederherstellen und Entzündungen lindern. Daher haben wir einen neuen Wirkstoff aus Lactobacillus pentosus (LPCE) entwickelt, der durch Fermentation erzeugt wird. Die Wirkungen von LPCE auf Expression und Sekretion von Interleukin-8 (IL-8) wurden in rekonstruierter Epidermis, die mit Phorbol-12-myristat-13-acetat (PMA) aktiviert wurde, untersucht.

S.Y. Choi, W.G. Kim, E.J. Ko, Y.H. Lee, B.G. Kim, H.J. Shin, Y.S. Choi, J.Y. Ahn, B.J. Kim, H.J. Lee, **Effect of high advanced-collagen tripeptide on wound healing and skin recovery after fractional photothermolysis treatment**, Clin Exp Dermatol. 2014 Dec; 39(8): p. 874-80

Background: Collagens have long been used in pharmaceuticals and food supplements for the improvement of skin. Aim: We evaluated the efficacy of high advanced-collagen tripeptide (HACP) on wound healing and skin recovery. Methods: Using an in vitro model, we performed HaCaT cell migration assays and collagen gel contraction assays using HACP concentrations of 1, 10 and 100 □g/mL. In this pilot study, eight healthy volunteers were randomly divided into two groups. Both the control and experimental groups received fractional photothermolysis treatment, but in the experimental group, four subjects received 3 g/day of oral collagen peptide (CP) for 4 weeks. To assess transepidermal water loss in each patient before and after the treatment, we used a Corneometer and a Cutometer, and we also assessed the patient's Erythema Index. Results: The cell migration assay showed that HACP enhanced wound closure, but not in a dosedependent manner. The collagen gel contraction assay showed increased contractility when patients were treated with 100 □g/mL HACP, but the results were not significantly different from those of controls. We found that post-laser erythema resolved faster in the experimental group than in the control group ($P < 0.05$). In addition, the recovery of skin hydration after fractional laser treatment was greater in the experimental group than in the control group by day 3 ($P < 0.05$), and the experimental group showed significantly improved post-treatment skin elasticity compared with the controls by day 14 ($P < 0.05$). Conclusions: Collagen tripeptide treatment appears to be an effective and conservative therapy for cutaneous wound healing and skin recovery after fractional photothermolysis treatment.

K.Y. Park, E.J. Ko, I.S. Kim, K. Li, B.J. Kim, S.J. Seo, M.N. Kim, C.K. Hong, **The effect of evening primrose oil for the prevention of xerotic cheilitis in acne patients being treated with isotretinoin: a pilot study**, Ann Dermatol, 2014 Dec;26(6): p. 706-712

Background: The most common adverse effects of oral isotretinoin are cheilitis, skin dryness, dry eyes, and conjunctivitis, whereas evening primrose oil (EPO) is known to improve skin moisture and transepidermal water loss (TEWL) in healthy adults and atopic patients. Objective: To evaluate the clinical efficacy and safety of EPO in preventing xerotic cheilitis in acne patients being treated with oral isotretinoin. Methods: Forty Korean volunteers of Fitzpatrick skin types III and IV, having moderate acne, were enrolled and randomized to receive either isotretinoin with or without EPO for 8 weeks. The efficacy of treatment was evaluated on the basis of global acne grading system scores, number of inflammatory and noninflammatory lesions, TEWL, corneometry, physician's global assessment, and patient satisfaction. Results: The results after 8 weeks of treatment showed that the TEWL of the lip increased significantly during isotretinoin treatment, whereas the TEWL of the hand dorsum showed no significant change. The increase of the TEWL of the lip was more definite in the control group than in the experimental group. The number of acne lesions decreased significantly in both groups, and there were no differences between them. Conclusion: Our study suggests that the addition of EPO improved xerotic cheilitis in acne patients being treated with oral isotretinoin. However, besides TEWL and corneometry assessments, additional studies are required for a complete understanding of the role of EPO in xerotic cheilitis in acne patients being treated with oral isotretinoin.

H. Khan, N. Akhtar, A. Ali, **Effects of Cream Containing Ficus carica L. Fruit Extract on Skin Parameters: In vivo Evaluation**, Indian Journal of Pharmaceutical Sciences, November - December 2014

This study was aimed to investigate the effects of cream containing Ficus carica L. fruit (Fig) extract on various skin parameters such as skin melanin, erythema, moisture content, trans-epidermal water loss and sebum. For this purpose, formulation with 4% concentrated extract of F. carica fruit and base without extract were developed. Base served as a control. Both base and formulation were applied to the cheeks of human volunteers for 8 weeks to investigate the effects on different skin parameters using non-invasive bioengineering instruments. Formulation decreased the skin melanin, trans-epidermal water loss and skin sebum significantly. Formulation increased the skin hydration significantly and insignificant effects on skin erythema. We concluded that a stable topical cream (w/o emulsion) containing F. carica fruit extract have effects on skin melanin, trans-epidermal loss, hydration values and sebum content and possibly could be used against for hyper pigmentation, acne, freckles and wrinkle.

J. Smits, M. Weibel, N. Herbst, **Plant-derived system boosts hydration and lipid barrier,** Personal Care November 2014

Abstract: In the field of corneobiology, the skin barrier has been pointed out to play a crucial role in skin homeostasis. In the treatment of dry skin, it is important to repair and augment the skin barrier in order to achieve positive and long-lasting results. To adequately describe the hydration state of the human skin, a number of complementary measuring techniques are often employed. Therefore, besides the classic methods of corneometry and determination of the transepidermal water loss, we tested our moisturizing active Hydro-Gain and the two industry standards, glycerol and hyaluronic acid, in a PCR-array and in a study using confocal Raman spectroscopy. In the comparison to glycerol and hyaluronic acid, Hydro-Gain gave the best results regarding skin moisturisation and we also found evidence that Hydro-Gain stimulates strengthening of the skin barrier.

F. Watanabe, E. Hashizume, G.P. Chan, A. Kamimura, **Skin-whitening and skin-condition-improving effects of topical oxidized glutathione: a double-blind and placebo-controlled clinical trial in healthy women**, Clinical, Cosmetic and Investigational Dermatology 2014:7, p. 267–274

Purpose: Glutathione is a tripeptide consisting of cysteine, glycine, and glutamate and functions as a major antioxidant. It is synthesized endogenously in humans. Glutathione protects thiol protein groups from oxidation and is involved in cellular detoxification for maintenance of the cell environment. Reduced glutathione (GSH) has a skin-whitening effect in humans through its tyrosinase inhibitory activity, but in the case of oxidized glutathione (GSSG) this effect is unclear. We examined the skin-whitening and skin-condition effects of topical GSSG in healthy women. Subjects and methods: The subjects were 30 healthy adult women aged 30 to 50 years. The study design was a randomized, double-blind, matched-pair, placebo-controlled clinical trial. Subjects applied GSSG 2% (weight/weight [w/w]) lotion to one side of the face and a placebo lotion to the other side twice daily for 10 weeks. We objectively measured changes in melanin index values, moisture content of the stratum corneum, smoothness, wrinkle formation, and elasticity of the skin. The principal investigator and each subject also used subjective scores to investigate skin whitening, wrinkle reduction, and smoothness. Analysis of variance was used to evaluate differences between groups. Results: The skin melanin index was significantly lower with GSSG treatment than with placebo from the early weeks after the start of the trial through to the end of the study period (at 10 weeks, P,0.001). In addition, in the latter half of the study period GSSG-treated sites had significant increases in moisture content of the stratum corneum, suppression of wrinkle formation, and improvement in skin smoothness. There were no marked adverse effects from GSSG application. Conclusion: Topical GSSG is safe and effectively whitens the skin and improves skin condition in healthy women.

L.T. Fox, J. du Plessis, M. Gerber, S. van Zyl, B. Boneschans, J.H. Hamman, **In Vivo skin hydration and anti-erythema effects of Aloe vera, Aloe ferox and Aloe marlothii gel materials after single and multiple applications**, Phcog Mag 2014;10: p. 392-403

Objective: To investigate the skin hydrating and anti-erythema activity of gel materials from Aloe marlothii A. Berger and A. ferox Mill. in comparison to that of Aloe barbadensis Miller (Aloe vera) in healthy human volunteers. Materials and Methods: Aqueous solutions of the polisaccharidic fractions of the selected aloe leaf gel materials were applied to the volar forearm skin of female subjects. The hydration effect of the aloe gel materials were measured with a Corneometer® CM 825, Visioscan® VC 98 and Cutometer® dual MPA 580 after single and multiple applications. The Mexameter ® MX 18 was used to determine the anti-erythema effects of the aloe aterial solutions on irritated skin areas. Results: The A. vera and A. marlothii gel materials hydrated the skin after a single application, whereas the A. ferox gel material showed dehydration effects compared to the placebo. After multiple applications all the aloe materials exhibited dehydration effects on the skin. Mexameter ® readings showed that A. vera and A. ferox have anti-erythema activity similar to that of the positive control group (i.e. hydrocortisone

gel) after 6 days of treatment. Conclusion: The polysaccharide component of the gel materials from selected aloe species has a dehydrating effect on the skin after multiple applications. Both A. vera and A. ferox gel materials showed potential to reduce erythema on the skin similar to that of hydrocortisone gel.

H. Takahashi, H. Tsuji, M. MinamiI-Hori, Y. Miyauchi, H. Iizuka, **Defective barrier function accompanied by structural changes of psoriatic stratum corneum,** Journal of Dermatology 2014; 41: p. 144–148

Although barrier function of psoriatic skin is shown to be decreased by measuring transepidermal water loss (TEWL), few reports exist examining other physical skin properties and components including stratum corneum hydration, natural moisturizing factor (NMF), free fatty acids (FFA), b-sheet and a-helix ratio of structural protein(s), and sebum content. We compared the skin properties and components of normal, involved and uninvolved skin of psoriasis. Using a corneometer and attenuated total reflection-infrared spectrometer, we measured TEWL, stratum corneum hydration, NMF, FFA, b/a ratio and sebum in psoriasis vulgaris patients and healthy controls. TEWL and b/ a ratio of involved psoriatic skin were significantly increased compared with uninvolved skin and normal control skin. In contrast, stratum corneum hydration, NMF and FFA, but not sebum, are significantly decreased in the involved skin compared with uninvolved skin and normal skin. TEWL and stratum corneum hydration returned to the normal levels following clinical improvement of the lesion. Barrier function and hydration of psoriatic skin are defective and secondary structure in stratum corneum protein is altered in the involved psoriatic skin.

S.G. Lee, S. Rae Kim, H.I. Cho, M.H. Kang, D.W, Yeom, S.H. Lee, S.K. Lee, Y.W. Choi, **Hydrogel-Based Ultra-moisturizing Cream Formulation for Skin Hydration and Enhanced Dermal Drug Delivery**, Biol. Pharm. Bull., 37(10), p. 1674–1682 (2014)

To develop an external vehicle for skin hydration and enhanced dermal drug delivery, a hydrogel-based ultra-moisturizing cream (HUMC) was successfully formulated with carbopol 934P, urea, Tinocare GL, grape seed oil, and other excipients. The HUMC showed plastic flow behavior due to a gel structure with a cream base. Different types of drug-free vehicles such as a hydrogel, conventional cream (CC), and three HUMCs were prepared and subjected to an in vivo skin hydration test on a hairless mouse using a corneometer. Hydration effect (ΔAU) was in the order of HUMC2**>**HUMC1 **≥** CC**>**HUMC3**>**hydrogel. Using nile red (NR) and 5-carboxyfluorescein (5-CF) as lipophilic and hydrophilic fluorescent probes, respectively, in vitro skin permeation and accumulation studies were conducted using Franz diffusion cells. The values of steady-state flux (**J**ss, ng/h/cm2) were obtained: 74.8 (CC), 145.6 (HUMC1), and 161.9 (HUMC2) for NR delivery; 6.8 (CC), 8.3 (HUMC1), and 10.9 (HUMC2) for 5-CF delivery. The amounts retained in the skin at 12 h (Q**r,** ng/cm2) were determined: 86.4 (CC) and 102.0 (HUMC2) for NR; and 70.1 (CC) and 195.6 (HUMC2) for 5-CF. Confocal microscopy was used to visualize the distribution of the fluorescent probes. NR tended to be localized into the deeper part of the skin with adipose tissue whereas 5-CF localized in the upper layer of the skin. Thus we propose that HUMC2 is an efficacious vehicle for skin hydration and enhances dermal delivery of lipophilic and hydrophilic drugs.

C. Albèr, I. Buraczewska-Norin, V. Kocherbitov, S. Saleem, M. Lodén, J. Engblom, **Effects of water activity and low molecular weight humectants on skin permeability and hydration dynamics - a double-blind, randomized and controlled study**, Int J Cosmet Sci, 2014 Oct;36(5): p. 412-418

Objectives: The mammalian skin is a barrier that effectively separates the water-rich interior of the body from the normally dryer exterior. Changes in the external conditions, for example ambient humidity, have been shown to affect the skin barrier properties. The prime objective of this study was to evaluate the effect of water activity of a topical formulation on skin hydration and permeability. A second objective was to gain more understanding on how two commonly used humectants, urea and glycerol, affect skin barrier function in vivo. Methods: Simple aqueous formulations were applied under occlusion to the volar forearm of healthy volunteers. Following 4-h exposure, skin water loss (by transepidermal water loss measurements), skin hydration (by Corneometry) and skin permeability (by time to vasodilation due to benzyl nicotinate exposure) were monitored. Results: The results demonstrate that a relatively small change in the water activity of a topical formulation is sufficient to induce considerable effects on stratum corneum hydration and permeability to exogenous substances. Exposing the skin to high water activity leads to increased skin hydration and also increased permeability. Furthermore, urea and glycerol promote skin hydration and permeability even at reduced water activity of the applied formulation. Conclusion: These results highlight the importance of considering the water activity in topically applied formulations and the potential benefit of using humectants. The results may impact

formulation optimization in how to facilitate skin hydration and to modify skin permeability by temporarily open and close the skin barrier.

J.R. Moyano-Mendez, G. Fabbrocini, D. de Stefano, C. Mazzella, L. Mayol, I. Scognamiglio, R. Carnuccio, F. Ayala, M.I. la Rotonda, G. de Rosa, **Enhanced antioxidant effect of trans-resveratrol: potential of binary systems with polyethylene glycol and cyclodextrin,** Drug Dev Ind Pharm, 2014 Oct;40(10): p. 1300-1307

Trans-resveratrol, a polyphenol extracted from Vitis vinifera, has different beneficial effects following its administration on the skin. Here the potential use of binary systems to enhance in vitro and in vivo activity of trans-resveratrol was investigated. Thus the aqueous solubility of trans-resveratrol was investigated in the presence of growing concentrations of polyethylene glycol (PEG) or □-cyclodextrin (□CD) as solubilizing excipients. Then, the solid dispersion of trans-resveratrol with PEG or inclusion complexes trans-resveratrol/□CD were prepared and characterised by different methods. Cytotoxicity and inhibition of reactive oxygen species (ROS) following H2O2 challenge in the presence of trans-resveratrol, alone or associated to the excipients, was evaluated on human keratinocyte HaCaT cell line. Both the trans-resveratrol-containing binary systems induced significant reduction of H2O2-induced ROS production, especially in the case of □CD that was selected for the following phase of the study. Thus, the effect of a cream containing trans-resveratrol, alone or associated to □CD, on different skin parameters such as corneometry, colorimetry and elastometry, was evaluated on human volunteers. All patients showed a visible improvement of clinical conditions with a remarkable decrease of aging signs, but this effect was higher of the hemi face treated with the □CD-containing formulation versus formulation containing trans-resveratrol alone.

W. Henschel, **Prospektive Pilotstudie zum dermatologischen Nutzen der Einführung von Hautschutz- und Hautpflegecreme in ein chirurgisches Team**, Dissertation der Universitätsmedizin der Ernst-Moritz-Arndt Universität Greifswald, Germany, Oktober 2014

Das Wort Chirurgie setzt sich aus dem altgriechischen Wort □□□□ (kheir) für „Hand“ und □□□□□ (ergon) für „Arbeit“, „Werk“, „Tat“ zusammen. Das bedeutet, dass ein Chirurg im wörtlichen Sinn ein Handarbeiter ist. Diese Übersetzung aus dem Altgriechischen rückt die Tatsache in den Mittelpunkt, dass der Chirurg täglich mit seinen Händen arbeitet. Ein altes Sprichwort - „Der Mann, der zu beschäftigt ist, sich um seine Gesundheit zu kümmern, ist wie ein Handwerker, der keine Zeit hat, seine Werkzeuge zu pflegen.“ - nimmt Bezug darauf, dass man sowohl für seine Gesundheit als auch für sein Werkzeug Sorge tragen sollte. Dieses Sprichwort ist für Chirurgen von besonderer Bedeutung, da ihre Hände einerseits im Rahmen ihrer allgemeinen Gesundheit gepflegt werden müssen und ihnen ihre Hände andererseits als Werkzeug dienen. Die besondere Gewichtung, die dem Hautschutz und der Hautpflege zukommen sollte, spiegelt sich jedoch nicht nur in Volksweisheiten wider.

M.-M. Constantin, E. Poenaru, C. Poenaru, T. Constantin, **Skin Hydration Assessment through Modern Non-Invasive Bioengineering Technologies,** MAEDICA, Journal of Clinical Medicine, 2014; 9(1): p. 33-38

Non-invasive bioengineering technologies continuously discovered and developed in recent decades provide a significant input to research development and remarkably contribute to the improvement of medical education and care to our patients. Aim: Assessing skin hydration by using the capacitance method for a group of patients with allergic contact dermatitis versus healthy subjects, before and after applying a moisturiser (assessing the immediate and long-term effectiveness of hydration). Materials and methods: An experimental prospective controlled study was performed over a period of 3 years (March 2010–March 2013). 88 subjects were analysed, divided into two equal groups: patients with allergic contact dermatitis and healthy volunteers. The degree of skin hydration was determined in all the subjects with the help of a corneometer, by using the capacitance method, through the dynamic assessment of the parameter before and after applying a well-known moisturising cream. Results: For both groups, but especially for the patients with dry skin, there was a clear improvement of hydration, statistically significant after applying the moisturiser. In the case of the patients with allergic contact dermatitis, hydration was at a maximum immediately after the first application, and then maintained an increased level after 7 and 28 days, respectively. In the healthy subjects, the increase in hydration was lower, but progressive. The moisturiser determined an increase in hydration for all age groups, but those who showed the most obvious effect were the young adults (18-29 years old) with an increase of 19.9%. The maintenance effect of hydration lasted for 28 days, while the improvement was important for allergic skin (17.1%) and significant for healthy skin (10.9%). Conclusion: The assessment of epidermal hydration performed by using the corneometer showed very good hydration of the stratum corneum for both groups studied, with immediate and long-term effects. This study also showed that the degree of skin hydration was inversely proportional with age. The corneometer is easy to use, efficient

and widely utilised in international studies for measurements in healthy or pathological conditions, for quantitative assessment of the effectiveness of various preparations intended for application to the skin surface, under well-controlled and standardised conditions.

M. Qassem, P.A. Kyriacou, **Effectiveness of the DreamSkin® garment on relieving symptoms of eczema/dermatitis using electrical and spectroscopic methods: A case study**, 36th Annual International Conference of the IEEE, Engineering in Medicine and Biology Society (EMBC), 2014

Eczema, is a common skin inflammatory disorder particularly among children. The treatment of which usually consists of the application of emollients and moisturisers to maintain skin moisture and to reduce the risk of inflammation, infection and exacerbative factors. Recently, DreamSkin® Health Limited has developed a unique polymer treatment for eczema. The polymer has been applied to medical grade silk clothing as a means of delivering the therapeutic benefits to the sufferers' skin. They claim that the polymer reduces the loss of moisture caused by evaporation from damaged skin; acts as a barrier against external irritants and helps to restore the skin's natural temperature management process. The aim of this study was to assess the products effectiveness at providing symptomatic relief for a volunteer with confirmed Eczema and Atopic Dermatitis over a period of 14 days. Both skin capacitance and NIR spectra were collected during the course of the study, using the Corneometer® CM 825 and a spectrophotometer equipped with a customized reflectance probe for measurements in the Near Infrared region. The treated area showed visibly improved skin and overall results from both techniques showed a noticeable increase in skin water content after 14 days, peaking on the 7 day. However, slight differences were observed in the 7 magnitude of increase between the two instruments. Future work will focus on expanding this study to include more cases as well as performing statistical analysis to build upon our previous work in the area of skin hydration determinations using Near Infrared Spectroscopy.

M. Qassem, P.A. Kyriacou, **Investigating skin barrier function utilizing reflectance NIR Spectroscopy**, 36th Annual International Conference of the IEEE, Engineering in Medicine and Biology Society (EMBC), 2014

Near Infrared Spectroscopy is seen as a potentially valuable technique for skin analysis, and has been employed by many previous studies to measure skin hydration, since it is competent ofproviding information regarding various functional groups including OH, CH and NH bands. The aimof this study was to investigate the capability of further utilizing this method by attempting to analyzeskin barrier function as well as water content, through the evaluation of skin water uptake on two test sites, one untreated, and another treated with a high lipid moisturizer for a period of 7 days. Reflectance NIRS measurements were supported by capacitance readings obtained using the Corneometer® CM 825. Baseline recordings taken on the first day following treatment showed that more differences were observed between the treated and untreated sites in the regions belonging to, or are influenced by CH and NH groups rather than purely on the water bands. On the hand, moisture levels measured after placing a wet patch on the skin remained nearly equal for both sites but second derivative spectra showed that a clear contrast existed between absorbance heights at the water bands of the treated and untreated, suggesting that moisturizer use could have limited water uptake to a more superficial layer of the skin, whereas for the untreated site, the opposite would have been true and water was able to penetrate deeper. Overall, results here suggest that NIR spectroscopy can possibly provide valuable information not only on skin water contents but perhaps on other skin parameters such as barrier function.

D. McCamile, **Infant skin conditions-treatments and products,** Personal Care September 2014

An infant’s skin varies greatly from adult skin, the barrier it provides from the outside world continues to develop over the early years, during which time it is much more prone to developing conditions rarer in adults. Young skin is typically around 30% thinner, with a far greater tendency to irritation and dryness. Moisturisation measurements using a Corneometer instrument show a far higher absorption rates of water in babies and toddlers compared to adults but also a faster return to baseline values. Tewameter assessments also show higher values in infants, dempnstrating that the skin barrier functionality is not fully developed in infants, trans-epidermal water loss being a key indicator of barrier functionality.

N. Belhaj, M. Borel, C. Bezivin, **Phospholipid-based emulsifiers give much more,** Personal Care September 2014

The base formula of a cosmetic product contributes greatly to its success, not only in terms of the pleasure it provides upon application but also in terms of efficacy. The base must not be considered only as the sensorial part of a formula but as a key element to improve the clinical results. Used first in the cosmetic industry for their emulsifying properties and sophisticated skin feel, phospholipid-based

emulsifiers offer much more than that. Thanks to the different chemical and biological properties of phospholipids, phospholipid-based formulas can also be considered to provide active properties due to their moisturising action, and act as bioavailability enhancer due to their ability to improve the skin penetration of the active ingredients they contain.

R. Voegeli, R. Seoul, L.-A. Raaff, M. Lategan, A.V. Rawlings, B. Summers, **Facial mapping of stratum corneum capacitance of different ethnic groups,** Stratum Corneum VIII Meeting, 2014 Cardiff

Objective: Large differences in hydration of the stratum corneum (SC) have been observed on different body sites, especially on different regions of the face. The purpose of this study was to perform a detailed capacitance mapping of the face subjects of different ethnicities.

J. Polásková, J. Pavlacková, V. Tlasková, **Moisturizing effect of cosmetic emulsions with sericin,** Stratum Corneum VIII Meeting, 2014 Cardiff

Aim of study: The aim of the work was to measure and compare the hydration effect of both traditional (glycerol) and non-traditional (sericin) moisturizing agents contained in topically applied cosmetic emulsions.

B. Tyszczuk, B. Szczepanik, R.K. Mlosek, S. Malinowska, R. Debowska, K. Rogiewicz, I. Eris, **The high frequency ultrasound as a tool for the assessment of anti-cellulite treatments efficacy,** IFSCC 2014 Paris

Cellulite is nowadays a common aesthetical defect, wich affects most of women worldwide. Taking into consideration the size of this phenomenon cosmetic industry is searching a new ways of fighting against it and new diagnostic tools and methods to measure anti-cellulite therpy‘s efficacy. Unfortunatelly reliable monitoring of anti-cellulite treatment still remains a problem. However, new diagnostic techniques such as high frequency ultrasound (HFultrasound) imaging can be usefull tool for the assesment of cellulite-reducing efficacy of cosmetics therapy.

J. Wada, L. Paula, M. Spina, T. Takeda, **Elixir of oils from the Amazonian biodiversity for application in cosmetics for hands and nails,** IFSCC 2014 Paris

Summary: The Amazon region has numerous oleaginous vegetable species which features promising potential in Cosmetic Industry as Murumuru butter, Ucuuba butter and Brazil nut oil. The fatty acid composition of these ingredients is really unique: murumuru butter, Astroc ryum murumuru, has lauric acid as the main fatty acid; ucuuba butter, Virola surinamensis, is composed predominantly by myristic acid; and Brazil nut oil, Bertholletia excelsa seed oil, is rich in acids as oleic and linoleic. The combination of these 3 renewable resources (Elixir) demonstrated benefits of treatment for skin and nails as skin film formation, fortification of cutaneous barrier, skin moisturization and strengthening for nails. It was possible to add technological resources which were quite valuable for these renewable raw materials through the Elixir by its effectiveness in cosmetics and environment preservation.

G. Fabbrocini, N. Cameli, S. Lorenzi, M.P. De Padova, C. Marasca, R. Izzo, G. Monfrecola, **A dietary supplement to reduce side effects of oral isotretinoin therapy in acne patients,** G Ital Dermatol Venereol. 2014 Aug, 149(4): p. 441-5

Aim: The purpose of the study was to analyze the potential capacity of a dietary supplement, based on gamma linolenic acid, vitamin E, vitamin C, beta-carotene, coenzyme Q10 and Vitis Vitifera, to reduce side effects, in particular the dry skin, erythema and desquamation, due to treatment with oral isotretinoin, and evaluate the ability of the product to increase adherence to therapy in patients with acne. Methods: Forty-eight patients with nodular acne (32 females and 16 males) were randomly divided into 2 groups: 24 received isotretinoin therapy (20-30 mg/day) for 6 months associated to dietary supplement (twice a day), while the other 24 patients received only isotretinoin (20-30 mg/day) for 6 months. For all patients the degree of acne severity, through GAGS (Global Acne Grading System), the sebum production by Sebutape, the hydration by Corneometer and the erythema by Mexameter, were measured. We have also evaluated the adherence to treatment, asking to patients how many days a week they follow the therapy. Results: Patients treated with dietary supplement had lower side effects, with a less degree of erythema and dryness, and greater degree of hydration; a greater adherence to therapy was also reported. Conclusion: Thanks to antioxidant and moisturizing properties, the dietary supplement containing gamma linolenic acid, vitamin E, vitamin C, betacarotene, coenzyme Q10 and Vitis Vitifera, can be considered a useful supplement in the treatment and prevention of dry skin associated with the use of oral isotretinoin.

M.V. Velasco, R.P. Vieira, A.R. Fernandes, M.F. Dario, C.A. Pinto, C.A. Pedriali, T.M. Kaneko, A.R. Baby, **Short-term clinical of peel-off facial mask moisturizers**, Int J Cosmet Sci. 2014 Aug;36(4): p.

355-60

Objective: This study aimed to compare the efficacy of a peel-off facial mask based on polyvinyl alcohol (PVA) with an oil-in-water (o/w) emulsion and the effect of a soybean extract fermented by Bifidobacterium animale incorporated in those formulations (5% w/w). Methods: The formulations were submitted to randomized clinical studies in volunteers to evaluate the measurement effects as (a) tensor by Cutometer®, (b) moisturizing by Corneometer® and transepidermal water loss (TEWL) by Tewameter®. These effects were determined in a short-term study (3 h) in a controlled-temperature room. Results: The tensor effect and TEWL values indicated no significant difference between the use of facial mask and emulsion. On the other hand, the moisturizing effect of the facial mask on the stratum corneum was more significant than that of the emulsion according to Corneometer® measurements. P. Conclusions: Biometric cutaneous evaluation of peel-off facial masks (short-term study) showed that the masks promoted moisturizing effect of the stratum corneum more effectively than the oil-in-water emulsions. Thus, the facial masks were more efficient than emulsions in relation to moisturizing effects, but this efficiency is not related to the presence of fermented soybean extract. The results indicated that peel-off facial masks increase skin hydration in a process related to the occlusive effect.

S. Rösler, **Hautphysiologie im Säuglingsalter: Einfluss von Babyschwimmen mit und ohne anschließender Anwendung einer Pflegelotion auf die Hautbarriere von Säuglingen im Alter von 3 bis 6 Lebensmonaten**, Dissertation zur Erlangung der Doktorwürde der Charité Universitätsklinik Berlin, 2014

J. Kottner, L. Ludriksone, N.G. Bartels, U. Blume-Peytavi, **Do Repeated Skin Barrier Measurements Influece Each Other's Results? An Explorative Study,** Skin Pharmacology and Physiology 2014; 27:90-96

Abstract: Background: Biophysical skin measurement techniques are widely used to quantify the skin barrier function. In clinical research usually several parameters are subsequently measured in the same skin areas. In this study, possible interfering effects of subsequent measurement procedures on transepidermal water loss (TEWL), stratum corneum hydration (SCH) and skin surface pH were investigated. Methods: An exploratory study was conducted. Twelve young (mean age 32.9 ± 7.2 years) and 12 elderly (mean age 68.3 ± 2.5 years) subjects without any skin diseases were enrolled. The parameters TEWL, skin surface pH, SCH, sebum content, and surface evaluation of living skin were obtained successively in pairs from 4 contralateral volar forearm skin areas.

C. Soica, C. Oprean, F. Borcan, C. Danciu, C. Trandafirescu, D. Coricovac, Z. Cr□iniceanu, C. A. Dehelean, M. Munteanu, **The Synergistic Biologic Activity of Oleanolic and Ursolic Acids in Complex with Hydroxypropyl-□-Cyclodextrin,** Molecules 2014, 19, 4924-4940

Abstract: Oleanolic and ursolic acids are natural triterpenic compounds with pentacyclic cholesterol-like structures which gives them very low water solubility, a significant disadvantage in terms of bioavailability. We previously reported the synthesis of inclusion complexes between these acids and cyclodextrins, as well as their in vivo evaluation on chemically induced skin cancer experimental models. In this study the synergistic activity of the acid mixture included inside hydroxypropyl-gamma-cyclodextrin (HPGCD) was monitored using in vitro tests and in vivo skin cancer models. The coefficient of drug interaction (CDI) was used to characterize the interactions as synergism, additivity or antagonism. Our results revealed an increased antitumor activity for the mixture of the two triterpenic acids, both single and in complex with cyclodextrin, thus proving their complementary biologic activities.

A.O. Barel, P. Clarys, **Skin Capacitance,** Non Invasive Diagnostic Techniques in Clinical Dermatology; Springer Berlin Heidelberg 2014; ISBN 978-3-642-32108-5

General Introduction: The presence of an adequate amount of water in the stratum corneum is important for the following properties of the skin: general appearance of a soft, smooth, well-moisturized skin in contrast to a rough and dry skin and a flexible skin in contrast to a brittle and scaly skin and of an intacr barrier fundtion [1-27]. There is no universally accepted theory for explaining the situation of dry skin. Some consider dry skin related to disorders of corneocyte adhesion and desquamation (rough and scaly surface), modifications in the composition of certain epidermal lipids, or disorders of the water-retaining properties of the horny layer.

K. Heinrich, U. Heinrich, H. Tronnier, **Influence of Different Cosmetic - Formulations on the Human Skin Barrier,** Skin Pharmacology and Physiology 2014; 27: p. 141-147

Abstract: The human skin barrier is an important part of the skin's intactness and its functionality is a precondition for healthy skin. Ingredients in cosmetic formulations, especially penetration enhancers, can influence this barrier function as they transport active agents into deeper skin layers. In

this study different cosmetic formulations were tested by 60 healthy female volunteers over a period of 4 weeks. The skin hydration and barrier function before and during the application were measured. Significant changes in both parameters were determined. A negative influence on the barrier function by penetration enhancers could be observed, but it was also found that lamellar lipid structures (Derma-MembranSysteme®, DMS®) are able to enhance the skin barrier. Both penetration enhancers as well as DMS can increase skin hydration.

X. Li, C. Galzote, X. Yan, L. Li, X. Wang, **Characterization of Chinese body skin through in vivo instrument assessments, visual evaluations, and questionnaire: influences of body area, inter-generation, season, sex, and skin care habits,** Skin Research and Technology 2014; 20: p. 14-22

Background/Purpose: The varying influence of mutiple factors (e.g., aging, sex, season, skin care habits) on skin structure and function necessitates study within ethnic groups to fully characterize their skin. Methods: Men and women aged 40-50 years (n=43) and their consanguineous same sex-children, aged 18-25 years (n=43), living in Chengdu, China were enrolled in this single center, non-interventional study. Volunteers attended two study visits (summer, 2010 and winter, 2011) at which dermatologists measured transepidermal water loss (TEWL), skin hydration, sebum secretion, fine lines/roughness, melanin/erythema, termperature, and color, and clinically graded participants‘ skin.

M. Schario, L. Lünnemann; A. Stroux, A. Reisshauer, T. Zuberbier, U. Blume-Peytavi, N. G. Bartels, **Children with dry skin and atopic predisposition: daily use of emollients in a participant-blinded randomized, prospective trial**, Skin Pharmacology and Physiology 2014; 27; 208-216

Abstract: Background: Dry skin reflects a skin barrier defect which can lead to atopic dermatitis. Little is known about the distinct effects of emollient use in children with dry skin and atopic predisposition. Objectives: We investigated the effects of daily application of pressed ice plant juice (PIPJ)- based emollients and petrolatum-based emollients. Methods: Children aged 2-6 years with dry skin and atopic predisposition were randomized into 2 groups: group 1 received emollients containing PIPJ and natural lipids, while group 2 received petrolatum-based emollients. Skin condition and biophysical properties of the skin barrier were assessed at inclusion and weeks 4, 12 and 16.

S. Kirkham, S. Lam, C. Nester, F. Hashmi, **The effect of hydration on the risk of friction blister formation on the heel of the foot,** Skin Research and Technology 2014; 20: p. 246-253

Background: Friction blister research has focused on prevention and treatment approaches rather than exploring the pathophysiology of the friction blister. Increased skin hydration has been purported to be a key risk factor in friction blister development. This studay aimed to test the effect of increased skin surface hydration on the risk of friction blister creation. Methods: The skin on one foot was hydrated by soaking the foot in water. Intermittent loading was carried out until an observable change of 3°C was evident using infrared thermography. The contra latreal foot acted as a control. Skin hydration and elasticity was measured using electrical capacitance and negative pressure respectively.

S. Luebberding, N. Krueger, M. Kerscher, **Age-Related Changes in Male Skin: Quantitative Evaluation of One Hundred and Fifty Male Subjects,** Skin Pharmacol Physiol 2014; 27: p. 9–17

Background/Purpose: Modern men have changed their beauty and grooming habits, which has resulted in an increasing demand for cosmetics for men. However, very little information is available about the dermatological needs of male skin. Therefore, the aim of this present clinical study was to conduct the first systematic assessment of the skin physiology of men with special attention to lifetime changes. *Methods:* A total of 150 healthy male subjects (aged 20– 70 years) were selected following strict criteria, including age, sun behavior and smoking habits. Transepidermal water loss (TEWL), hydration level, sebum production and pH values were measured with worldwide-acknowledged biophysical measuring methods at the forehead, cheek, neck, volar forearm and dorsum of hand. *Results:* TEWL and sebum production vary by localization, but generally not with increasing age, whereas stratum corneum (SC) hydration decreases significantly at the face and neck. The greatest decrease was assessed at the f rehead. Skin surface pH significantly increases with aging in the face.

M. Streker, L. Kleine-Börger, M. Kerscher, **Efficacy of a novel formulation for eyelashes revitalization – results of a pilot study,** University of Hamburg

Background: Long lashes are associated with attractiviness. Lash grow has been reported following an accumulation of prostaglandin after application of eye drops. The aim of this single-center, randomized trial was to determine the revitalizing effect of a new lash serum by using a clinical score, a patients‘ satisfaction questionnaire and biophysical measurementsover a study period of 12 weeks (figure 1). Material and methods: 30 adult healthy volunteers (26 woman, 4 men) wishing longer and fuller lashes were enrolled. Study specific exclusion criteria were lash extensions and colored lashes.

Primary endpoint was to evaluate the effects of the lashes serum by using a five-point rating scale (figure 2). Both patients and blinded evaluator were asked to rate the effect according to standardized clinical photographs (Fotofinder Systems, Teachscreen Software GmbH, Bad Birnbach, Germany).To evaluate skin tolerance, pH-value, corneometry and lacrimal fluid's lipid content were measured (all Courage+Khazaka,Cologne, Germany).

E. Rubio, B. Martinez-Teipel, R. Armengol, **Von einer in silico Prognose zum realen kosmetischen Wirkstoff zur Verbesserung der Hautbarriere Funktion,** SOFW Journal 8-2014

Unsere Idee war es, einen neuartigen natürlichen PPAR ◘ Agonisten zu entwickeln, der die Hautdurchfeuchtung sowie die Funktion der Hautbarriere verbessern sollte. Mittels einer in silico Energiebindungsstudie konnten wir die Fähigkeit von Rhaponticin, als Vollagonist für PPAR ◘ zu fungieren, vorhersagen und die Hypothese später mit verschiedenen in vitro Tests bestätigen. Zuerst zeigte der Wirkstoff seine Bindungsaffinität zu PPAR ◘. In Zellkulturen demonstrierte Rhaponticin seine Fähigkeit, die Keratinozyten Differenzierungs zu verbessern, indem er die Produktion von Involucrin, Filaggrin und Stratum corneum Barrierelipiden förderte.

E. Rubio, B. Martinez-Teipel, R. Armengol, **From in silico PredIction to a Real Cosmetic Active for an Improved Skin Barrier Function,** SOFW Journal 8-2014

We were interested in developing a novel natural PPAR ◘ agonist intended to improve epidermal moisturization and skin barrier function. By means of an in silico energetic binding study, we predicted the capacity of rhaponticin to acta s a PPAR ◘ full agonist, and we later confirmed this by several in vitro tests. First, the active showed ist binding affinity to PPAR ◘. In cell cultures, rhaponticin demonstrated its capacity to enhance keratinocyte differentiation, increasing the production of involucrin, filaggrin and stratum corneum barrier lipids. In agreement with this activity profile, rhaponticin also improved cell cohesion.

E.J. Kim, J.Y. Han, H.K. Lee, Q.Q. He, J.C. Cho, L. Wei, X. Wang, L. Li, L. Wei, H. Liang, X. Gao, B.J. Kim, G.W. Nam, **Effect of the regional environment on the skin properties and the early wrinkles in young Chinese women,** Skin Research and Technology 2014; 20: 498-502

Background: There are ethnic differences in the skin characteristics, also the skin is susceptible to be influenced by the external environment such as UV radiation and the climates. It can be shown that the skin in same race or twins varies by the enviroment. Objectives: This study was designed to investigate the skin characteristics and the early wrinkles of young Chinese women from four different regions, and to identify the correlation among the wrinkles, the other skin characteristics, and environmental conditions. Methods: A total of 441 healthy Chinese women aged between 20 and 35 years participated in the study: 110 from Beijing, 110 from Shanghai, 111 from Wuhan, and 110 from Guangzhou. The skin hydration, sebum contents, TEWL, pH, elasticity, and wrinkles were measured on the cow's feet area.

R.A. Harper, M. Rencenberger, **Benefits of hydrolysed jojoba esters in face masks,** Personal Care July 2014

In a series of double-blind, vehicle-controlled, randomised clinical studies, Floraesters K-20W Jojoba [INCI: Hydrolyzed Jojoba Esters (and) Water (aqua)] was shown to increase skin elasticity, firmness, and hydration; decrease the number of enlarged pores and fine lines; and increase consumer preference when incorporated into nonwoven facemask solution. These data support previous findings, demonstrating the effictiveness of Floraesters K-20W Jojoba in non-woven wipe applications for skin hydration, redness reduction, and enhanced consumer preference.

E. Proksch, D. Segger, J. Degwert, M. Schunck, V. Zague, S. Oesser, **Oral supplementation of specific collagen peptides has beneficial effects on human skin physiology: a double-blind, placebo-controlled study**, Skin Pharmacol Physiol 2014; 27; 47-55

Abstract: Various dietary supplements are claimed to have cutaneous anti-aging properties; however, there are a limited number of research studies supporting these claims. The objective of this research was to study the effectiveness of collagen hydrolysate (CH) composed of specific collagen peptides on skin biophysical parameters related to cutaneous aging. In this double-blind, placebo-controlled trial, 69 women aged 35-55 years were randomized to receive 2.5 g or 5.0 g of CH or placebo once daily for 8 weeks, with 23 subjects being allocated to each treatment group. Skin elasticity, skin moisture, transepidermal water loss and skin roughness were objectively measured before the first oral product application (t0) and after 4 (t1) and 8 weeks (t2) of regular intake. Skin elasticity (primary interest) was also assessed at follow-up 4 weeks after the last intake of CH (t3, 4-week regression phase). At the end of the study, skin elasticity in both CH dosage groups showed a statistically significant

improvement in comparison to placebo. After 4 weeks of follow-up treatment, a statistically significantly higher skin elasticity level was determined in elderly women. With regard to skin moisture and skin evaporation, a positive influence of CH treatment could be observed in a subgroup analysis, but data failed to reach a level of statistical significance. No side effects were noted throughout the study.

S.M. Jegasothy, V. Zablotniaia, S. Bielfeldt, **Efficacy of a New Topical Nano-hyaluronic Acid in Humans, The Journal of Clinical and Aestical Dermatology,** 2014;7(3): p. 27–29

Background: The aim of this study was to evaluate the efficacy of a new topical low molecular nano-hyaluronic acid preparation in treating wrinkles, skin hydration, and skin elasticity in humans. Methods: Thirty-three women with an average age of 45.2 were studied for a period of eight weeks to measure the anti-wrinkle efficacy of a new nanohyaluronic acid. The measurements were performed in the periorbital regions by investigating the three-dimensional structure using a DermaTOP for wrinkles, Corneometer for skin hydration, Cutometer for skin elasticity, and a Chroma Meter for erythema. Thereafter, standardized images were taken and evaluated by six selected and trained raters at the end of the study for reduction of visible wrinkles as well as skin color uniformity and pigmentation. Results: The results of the study showed a statistically significant moisturizing effect of the product range (lotion, serum, and cream, after 2,4, and 8 weeks of treatment. Measurement of skin roughness showed a significantly finer skin structure after two weeks of treatment, and skin elasticity showed a significant improvement after 2 and 8 weeks of treatment. Conclusion: The new nano-hyaluronic acid clearly demonstrated a significant benefit in decreasing the depth of wrinkles (up to 40%), and skin hydration (up to 96%) and skin firmness and elasticity were significantly enhanced (up to 55%) at the end of eight weeks.

H. Kimoto-Nira, Y. Nagakura, C. Kodama, T. Shimizu, M. Okuta, K. Sasaki, N. Koikawa, K. Sakuraba, C. Suzuki, Y. Suzuki, **Effects of ingesting milk fermented by *Lactococcus lactis* H61 on skin health in young women: A randomized double-blind study**, J. Dairy Sci. 97, 2014: p. 5898–5903

We conducted a randomized double-blind trial to evaluate the effects of fermented milk produced using only *Lactococcus lactis* strain H61 as a starter bacterium (H61-fermented milk) on the general health and various skin properties of young women. Healthy female volunteers (n = 23; age = 19–21 yr) received H61-fermented milk (1010 cfu of strain H61/d) or conventional yogurt (1010 cfu of both *Lactobacillus delbrueckii* ssp. *Bulgaricus* and *Streptococcus thermophilus* per day), as a reference food, daily for 4 wk. Before and at the end of 4 wk, blood samples were taken, and skin hydration (inner forearms and cheek) and melanin content, elasticity, and sebum content (cheek only) were measured. Skin hydration at the inner forearm was higher at wk 4 than at wk 0 in both groups. Sebum content in cheek rose significantly after intervention in the H61-fermented milk group, but not the conventional yogurt group. Other skin parameters did not differ in either group. Serum analysis showed that total protein concentration and platelet count were elevated and reactive oxygenspecies decreased in both groups after the intervention. Although H61-fermented milk and conventional yogurt had similar effects on skin status and some blood characteristics of participants, an increase of sebum content in cheek is preferable to H61-fermented milk. As skin lipids contribute to maintaining the skin barrier, H61-fermented milk would provide beneficial effects on skin for young women.

P. Blanchemaison, E. Presse, R. Clement, A. Lethi, **Un nouveau traitement pour améliorer l'esthétique de la peau: les infrarouges longs,** GENESIS, N° 179, Juin 2014

Au Japon, les bains chauds dans une eau volcanique (« onsen-thérapie ») sont réputés rajeunir la peau. Un appareil à infrarouge longs utilisé dans les Spas ou en milieu médical peut-il prétendre à des résultats similaires ou supérieurs? Le vieillissement cutané du visage est un processus naturel inéluctable qui se traduit par l'apparition de rides et de ridules, de taches pigmentaires, d'une perte de fermeté et d'élasticité de la peau et d'une diminution de l'éclat du teint. Les facteurs de vieillissement peuvent être intrinsèques (génétiques, hormonaux,…) et extrinsèques (stress, agressions climatiques, pollution, tabac…). En dehors de la cosmétique, il existe aujourd'hui d'autres méthodes non invasives pour lutter contre les méfaits du temps sur la peau.

J.H. Min, I.S. Yun, D.H. Lew, T.S. Roh, W.J. Lee, **The Use of Matriderm and Autologous Skin Graft in the Treatment of Full Thickness Skin Defects**, Arch Plast Surg 2014;41: p. 330-336

Background: For patients with full thickness skin defects, autologous Split-thickness skin grafts (STSG) are generally regarded as the mainstay of treatment. However, skin grafts have some limitations, including undesirable outcomes resulting from scars, poor elasticity, and limitations in joint movement due to contractures. In this study, we present outcomes of Matriderm grafts used for various skin tissue defects whether it improves on these drawbacks. Methods: From January 2010 to March 2012, a retrospective review of patients who had undergone autologous STSG with Matriderm was

performed. We assessed graft survival to evaluate the effectiveness of Matriderm. We also evaluated skin quality using a Cutometer, Corneometer, Tewameter, or Mexameter, approximately 12 months after surgery. Results: A total of 31 patients underwent STSG with Matriderm during the study period. The success rate of skin grafting was 96.7%. The elasticity value of the portion on which Matriderm was applied was 0.765 (range, 0.635–0.800), the value of the trans-epidermal water loss (TEWL) was 10.0 (range, 8.15–11.00) g/hr/m2, and the humidification value was 24.0 (range, 15.5– 30.0). The levels of erythema and melanin were 352.0 arbitrary unit (AU) (range, 299.25– 402.75 AU) and 211.0 AU (range, 158.25–297.00 AU), respectively. When comparing the values of elasticity and TEWL of the skin treated with Matriderm to the values of the surrounding skin, there was no statistically significant difference between the groups. Conclusions: The results of this study demonstrate that a dermal substitute (Matriderm) with STSG was adopted stably and with minimal complications. Furthermore, comparing Matriderm grafted skin to normal skin using Cutometer, Matriderm proved valuable in restoring skin elasticity and the skin barrier.

C. Raaka, F. Molsberger, U. Heinrich, M. Bertram,T. Ostermann, **Mesembryanthemum crystallinum L. als dermatologisch wirksame Heilpflanze – erste Ergebnisse aus 3 Pilotstudien,** Forsch Komplementmed 2014; 21: p. 366–373

Hintergrund: Neben vielen bekannten Heilpflanzen der rationalen Phytotherapie gibt es eine Vielzahl von Pflanzen, deren Wirkung nur unzureichend erforscht oder deren Wirkpotential in Vergessenheit geraten ist. Zu diesen Pflanzen gehört die Kristall-Mittagsblume (*Mesembryanthemum crystallinum* L.). In der vorliegenden Arbeit werden 3 Pilotstudien vorgestellt, die die dermatologische Wirkung des Mittagsblumenextrakts (Mesem-Creme) näher untersuchen. Material und Methoden: In 2 Anwendungsbeobachtungen wurde zunächst das Wirkprofil der Mesem-Creme näher untersucht. Neben einer retrospektiven Anwenderbefragung wurde außerdem bei 6 Rollstuhlfahrern eine prospektive Befragung zur Veränderung des Hautstatus im Prä-post-Design durchgeführt. In einer dritten placebokontrollierten Pilotstudie wurde die Hautfeuchtigkeitsveränderung mittels Corneometermessung an 6 Probanden mit trockener Haut analysiert. Ergebnisse: Im Vergleich zur unbehandelten Haut konnte in der Corneometer-Studie eine signifikante Steigerung der Hautfeuchtigkeit mit der Mesem-Creme erzielt werden (25,8 ± 5,8 vorher zu 46,6 ± 9,2 nachher vs. 26,3 ± 6,0 vorher zu 33,8 ± 6,0 nachher) sowie ein statistischer Trend (p = 0,11; t-Test) im Vergleich zur Basiscreme ohne Mesem-Zusatz (25,1 ± 4,7 vorher zu 41,9 ± 7,3 nachher). Dieser Effekt der Steigerung der Hautfeuchtigkeit wurde auch in den Anwendungsbeobachtungen verifiziert. Die Hauttrockenheit hatte sich bei 17 von 29 Probanden «sehr verbessert» oder «verbessert». Auch die Anwendungsbeobachtung bei einer Kohorte von 6 Rollstuhlfahrern ergab signifikante Verbesserungen des Hautzustands in Bezug auf die Weichheit und Trockenheit der Haut im Vorher-nachher-Vergleich. Schlussfolgerung: In dieser Arbeit wurde die Mesem-Creme durch 2 Anwendungsbeobachtungen im Hinblick auf Wirkung, Produkteigenschaften und Verträglichkeit und durch den etablierten Corneometertest auch in Hinblick auf objektivierbare Hautfeuchtigkeitsveränderungen evaluiert. Aufgrund der geringen Fallzahlen gibt es trotz der ermutigenden Ergebnisse Limitationen in der Ergebnisinterpretation. Zudem sollte das Design künftiger Studien klarer sein und den hautfeuchtigkeitsverbessernden Effekt der Mesem-Creme besser fokussieren.

A. McDougall, **Skin barrier function study highlights oatmeal efficacy,** Cosmetics Design Europe, Juni 2014

Newly published results of an in-vivo clinical trial for Oat Cosmetics' multifunctional ingredient Oat COM have highlighted its skin repair properties are 'significant'. The ingredient is extruded colloidal oatmeal, and the independent investigation carried out aimed to assess the skin barrier damage repair properties of Oat COM with an occlusive skin patch. As such, the study showed that the UK firm's ingredient supported the increased repair rate of the skin.

W. Almeida Ciancaglio Garbossa, D. Garcia Mercurio, P.M.B.G. Maia Campos, **Shikimic acid: a potential active principle for skin exfoliation**, Surg Cosmet Dermatol 2014; 6(3): p. 239-47

Introduction: Organic acids are widely used in cosmeceutic-based skincare due to their exfoliation and cell renewal related effects. A star anise derivative known as shikimic acid is an example. Objectives: To evaluate the antioxidant activity of shikimic acid and the clinical efficacy of dermocosmetic preparations containing 3% of this active principle. Methods: The antioxidant activity was assessed through an in vitro method. Formulations of gel, gel cream, and a 3% solution of the acid were sequentially dispensed and preliminarily subjected to stability and sensory analysis. The clinical study was performed through non-invasive biophysical and skin imaging techniques. Results: The shikimic acid showed antioxidant potential. All formulations were found to be stable and the addition of shikimic acid improved the sensory analysis of the gel and gel cream. In the clinical assessment, the gel

and the solution showed significant alterations in microrelief and in the parameters linked to skin exfoliation. However, the gel cream formulation did not show such an effect, suggesting the importance of the vehicle for the effectiveness of the cosmeceutics. Conclusions: Shikimic acid can be considered an active principle with good potential for application in dermocosmetic formulations aimed at exfoliation and improvement of the skin's microrelief.

S.Y. Choi, E.J. Ko, Y.H. Lee, B.G. Kim, H.J. Shin, D.B. Seo, S.J. Lee, B.J. Kim, M.N. Kim, **Effects of collagen tripeptide supplement on skin properties: a prospective, randomized, controlled study**, J Cosmet Laser Ther. 2014 Jun; 16(3): p. 132-7

Background: Experimental and clinical trials have indicated that dietary supplements can have beneficial effects on skin health. Objective: We investigated to evaluate the effect of daily collagen peptide (CP) supplement on skin properties. Methods: Thirty-two healthy volunteers were randomized to receive either no supplement (Group A), CP 3 g (Group B), CP 3 g, and vitamin C 500 mg (Group C), or vitamin C 500 mg (Group D) daily for 12 weeks. Skin properties evaluated included hydration, transepidermal water loss (TEWL), and elasticity using a corneometer, tewameter, and cutometer, respectively. Results: Changes from baseline in the corneometer were statistically significant between Groups A and B ($p = 0.011$) and Groups A and C ($p = 0.004$). There were statistically significant differences in cutometer from baseline between Groups A and B ($p = 0.005$) and Groups A and C ($p = 0.015$). Conclusions: There was no significant difference from baseline in the corneometer and cutometer between Groups B and C. The greatest changes in TEWL from baseline were seen in Group B, and the second greatest changes were seen in Group C. Daily CP supplementation may improve skin hydration and elasticity, but concomitant intake of low-dose vitamin C did not enhance the effect of CP on skin properties.

R. Kuswahyuning, M.S. Roberts, **Concentration dependency in nicotine skin penetration flux from aqueous solutions reflects vehicle induced changes in nicotine stratum corneum retention**, Pharm Res. 2014 Jun;31(6): p. 1501-11

Purpose: This study sought to understand the mechanism by which the steady state flux of nicotine across the human skin from aqueous solutions is markedly decreased at higher nicotine concentrations. Methods: Nicotine's steady state flux through human epidermis and its amount in the stratum corneum for a range of aqueous nicotine solutions was determined using Franz diffusion cells, with the nicotine analysed by high performance liquid chromatography (HPLC). Nicotine's thermodynamic activity in the various solutions was estimated from its partial vapour pressure and stratum corneum hydration was determined using a corneometer. The amount of nicotine retained in the stratum corneum was estimated from the nicotine amount found in individual stratum corneum tape strips and a D-Squame determined weight for each strip. Results: The observed steady state flux of nicotine across human epidermis was found to show a parabolic dependence on nicotine concentration, with the flux proportional to its thermodynamic activity up to a concentration of 48% w/w. The nicotine retention in the stratum corneum showed a similar dependency on concentration whereas the diffusivity of nicotine in the stratum corneum appeared to be concentration independent. This retention, in turn, could be estimated from the extent of stratum corneum hydration and the nicotine concentration in the applied solution and volume of water in the skin. Conclusions: Nonlinear dependency of nicotine skin flux on its concentration results from a dehydration induced decrease in its stratum corneum retention at higher concentration and not dehydration induced changes nicotine diffusivity in the stratum corneum.

M. Kie□-□wicrczy□ska, D. Chomiczewska-Skóra, D. □wierczy□ska-Machura, B. Kr□cisz, **Impact of wet work on epidermal barrier (tewl and stratum corneum hydration) and skin viscoelasticity in nurses** (Abstract – Full article in Polish), Med Pr. 2014; 65(5): p. 609-19

Background: Nurses are prone to develop hand eczema due to occupational exposure to irritants, including wet work. The aim of the study was to evaluate the impact of wet work on selected skin properties, reflecting epidermal barrier function--transepidermal water loss (TEWL) and stratum corneum hydration--and additionally skin viscoelasticity, in nurses. Materials and Methods: Study subjects included 90 nurses employed in hospital wards. Measurements were carried out within the dorsal aspect of the dominant hand, using a Cutometer MPA 580 equipped with Tewameter TM 300 and Corneometer CM 825 (Courage & Khazaka, Germany) probes. Examinations took place on hospital premises. Similar measurements were performed in the control group of females non-exposed to irritants. Results: In the examined group of nurses, mean TEWL was 15.5 g/h/m2 and was higher than in the control group (12.99 g/h/m2). After rejecting the extreme results, the difference between the groups proved to be statistically significant ($p < 0.05$). The mean value of stratum corneum hydration was lower in the examined group (37.915) compared with the control group (40.05), but the difference was not sta tistically significant. Also results of viscoelasticity assessment showed no significant

differences between studied groups. Conclusions: The results of the assessment of skin biophysical properties show that wet work exerts a moderately adverse impact on skin condition. A higher TEWL value and a lower stratum corneum hydration in workers exposed to irritants reflect an adverse impact of these factors on the epidermal barrier function.

G.W. Nam, E.J. Kim, Y.C. Jung, C.B. Jeong, K.H. Shin, H. K. Lee, **Differences in Skin Properties of Korean Women at the Initial Aging Phase,** Journal of Cosmetics, Dermatological Sciences and Applications, 2014, 4, p. 44-52

Many studies on aging have focused on evaluating differences between older and younger people, but only a few have focused on differences in skin properties among subjects from the same age group according to their skin aging status. In this study, we evaluated the facial skin condition and life style factors in 110 Korean women aged 25 to 35 in an attempt to evaluate factors which may affect the skin aging status in the initial aging phase. The facial skin condition of 110 healthy Korean women was assessed over two successive 6-month periods, summer and winter. Using clinical assessments including aging, wrinkles and skin's elasticity values, the subjects were divided into 7 groups. Then, various facial skin conditions and life style factors were examined between a severe aging group and mild aging group. In the severe aging group, the mean value pH was lower and the mean value of water content was slightly lower than that of women in the mild aging group. Also, the seasonal site variation in water content and sebum secretion level were significantly higher in the severe aging group than in the mild aging group. Topical sunscreen using percentage was not significantly different between the two groups. However, the number of cosmetic subject use was slightly higher in the mild aging group than in the severe aging group. The study suggested that there were several differences in skin characteristics between women in the severe aging group and in the mild aging group at the initial aging phase. Seasonal site variation between cheek and forehead was the most dominant differences. We also considered that life style factors such as cosmetic use could affect skin aging status.

U. Amon, R. Yaguboglu, **Kosmetische Akzeptanz und klinische Effektivität einer Pflegelotion mit Filaggrin-Spaltprodukten und Hydroxypalmitoyl-Sphinganin bei Patienten mit atopischer Dermatitis,** Kosmetische Medizin 4.14

Zusammenfassung: Ein aktueller Forschungsschwerpunkt bei der Aufklärung der Pathophysiologie der atopischen Dermatitis (AD) ist die Untersuchung möglicher genetischer Ursachen. Neben einer Senkung der epidermalen Ceramid-Fraktionen 1 und 3 ist mittlerweile ein Zusammenhang zwischen einer Filaggrin-Synthesestörung und der Schädigung der Haut vielfach beschrieben worden. Vor diesem Hintergrund wurde eine innovative Pflegelotion (Cetaphil® Restoraderm Pflegelotion) mit Filaggrin-Spaltprodukten (Natrium-Pyrrolidon-Carboxylsäure und Arginin) sowie Hydroxypalmitoyl-Sphinganin (Pseudoceramid 5 [N-(2-Hydroxyhexadecanoyl)-Sphinganin]), einer synthetischen Ceramid-Vorstufe, bei 107 ambulanten Patienten mit AD (darunter 27 Kinder bis zum 6. Lebensjahr) untersucht. Die anonymisierte Befragung nach 14-tägiger Anwendung erzielte sowohl bei verschiedenen pflegenden als auch hautkosmetischen Eigenschaften sehr gute Ergebnisse.

S. Bänziger, B. Suter, B. Obermayer, **Bring me to life,** SPC April 2014

The demand for natural products is steadily increasing and plants with unusual metabolic capabilities are particularly noteworthy because they have the ability to produce potentially sensational chemical compounds. The desiccation tolerant resurrection plants are included amongst those with exceptional characteristics. They can be almost completely dried out and then continue their lives after re-watering. This property allows them to survive long periods of drought undamaged. In contrast, most other plants die if they lose 20% - 30% of their water.

D. Schmid, E. Belser, F. Zülli, **Rejuvenating effect of snow algae analysed,** Personal Care April 2014

Abstract: Snow algae powder is a novel anti-ageing ingredient based on an extract of biotechnologically produced snow algae. In cell culture assays, the snow algae extract was found to induce a calorie restriction-mimetic effect by stimulating the expression of the Klotho gene and the activity of the AMPK protein. The extract reduced the loss in collagen expression in aged fibroblasts and counteracted the increase in matrix metalloproteinases in senescent fibroblasts. In clinical studies, the snow algae powder was shown to improve the papillary structure of the dermal epidermal junction, significantly enhanced skin hdydration and smoothed crow's feet.

M. Rull, C. Davi, E. Canadas, A. Soley, R. Delgado, **Searching for youth in marine environments,** Personal Care April 2014

A healthy and young appearance is nowadays a commom wish, as is protecting and respecting nature while achieving it. Marine biotechnology offers the possibility to accomplish both objectives by

using aquatic sources to develop effective and specific active ingredients for skin care concerns.

A. Mitarotonda, L. Koch, F. Johnson, F. Courbès, **Collaboration delivers novel green emulsifier,** Personal Care April 2014

The natural and organic cosmetic market has been steadily growing in the past few years and according to market research this trend will continue for many years to come. This is a major driving force for both the raw material industry and for cosmetic manufacturers: this article shows that joining forces resulted in the creation of a novel palm-free emulsifier that has the prerequisites to be organic certified.

A.M. Motta, R. Variati, M. Langenauer, **Intense moisturising power restores skin balance.** Personal Care April 2014

The transport of water and solutes in a highly organised structure such as the skin plays an essential role in maintaining its homeostasis and a healthy appearance. Skin moisturisation involves the entire skin structure through active and passive mechanisms. The horny layer acts as a defensive barrier, limiting an excessive evaporation of water (TEWL), while the presence of specific channels and the natural moisturising factor (NMF) retains the water and transports it through the multilayered skin structure.

M.P. Szczepanik, P.M. Wilkoł ek, M. Pluta, Ł.R. Adamek1, M. Goł y□ski, Z.J.H. Pomorski, W. Sitkowski, **The examination of biophysical skin parameters (transepidermal water loss, skin hydration and pH value) in different body regions in Polish ponies**, Polish Journal of Veterinary Sciences Vol. 16, No. 4 (2013), p. 741–747

The purpose of this study was to evaluate transepidermal water loss, skin hydration and skin pH in normal polish ponies. Twelve ponies of both sexes were examined in the study. Measurements were taken from seven different sites: the neck region, the shoulder, thorax, lumbar, inguinal, lip region and the pinna. In each of the regions transepidermal water loss (TEWL), skin hydration and skin pH were measured. For transepidermal water loss, the lowest values were observed in the pinna (10.54 g/hm2), while the highest values were observed in the lip region (30.98 g/hm2). In the case of skin hydration the lowest values were observed for the thorax region (1.96 CU), and the highest for the lip region (48.28 CU). For skin pH, the lowest results were obtained in the pinna (7.03), and the highest in the lumbar region (8.05).

B. Eberlein, J. Huss-Marp, F. Pfab, R. Fischer, R. Franz, M. Schlich, M. Leibl, V. Allertseder, J. Liptak, M. Kriegisch, R. Hennico, J. Latotski, C. Ebner von Eschenbach, U. Darsow, J. Buters, H. Behrendt, R. Huber, J. Ring, **Influence of alpine mountain climate of Bavaria on patients with atopic diseases: studies at the Environmental Research Station Schneefernerhaus (UFS - Zugspitze) – a pilot study**, Clinical and Translational Allergy 2014, 4:17

Mountain and maritime climate therapy takes advantage of specific climatic conditions to treat chronic allergic diseases. It was the aim of the study to investigate effects of a 5 day sojourn on atopic diseases at the highest German mountain. In this pilot study 18 patients with grass pollen-induced rhinoconjunctivitis, atopic ezcema or asthma and 11 non-allergic controls were included. Skin physiology parameters, changes of the respiratory and nasal functions, subjective symptoms and blood parameters were measured during a 5-day observation period in the Environmental Research Station Schneefernerhaus (UFS) at the moderate altitude mountain region (Zugspitze; 2650 m alt.) compared to a low altitude area (Munich; 519 m alt.). Several of the skin physiology parameters changed significantly during the observation period (decrease of skin hydration, increase of skin smoothness, skin roughness, skin scaliness and pH-value). In patients with atopic eczema, the SCORAD (Severity Scoring of Atopic Dermatitis) and the scores of the DIELH (Deutsches Instrument zur Erfassung der Lebensqualität bei Hauterkrankungen) did not change significantly. Histamine induced itch decreased significantly. Parameters of nasal function did not change significantly. Several lung parameters showed a slight, but statistically significant improvement (forced expiratory volume in one second/volume capacity [FEV1/VC], peak expiratory flow [PEF], maximum expiratory flow at 50% of vital capacity [MEF 50], maximal mid-expiratory flow between 25% and 75% of vital capacity [MMFEF 25/75]), whereas the vital capacity (VC) decreased significantly. ECP (eosinophil cationic protein) in the serum and parameters of blood count changed significantly. These results show that the benefit of a moderate altitude mountain climate sojourn over a period of 5 days differs in depending on the atopic disease. Especially asthma parameters and itching of the skin improved. It would be interesting to assess the parameters during longer observation periods in alpine climate.

D.L. Young, D. Chakravarthy, **A controlled laboratory comparison of 4 topical skin creams**

moisturizing capability on human subjects, J Wound Ostomy Continence Nurs., 2014 Mar-Apr; 41(2): p. 168-74

Purpose: This study compares human skin capacitance (moisture) readings after the application of 4 different, commercially available, topical skin creams. Sunjects and Settings: Twenty-one subjects (15 women and 6 men) aged 49.38 ± 11.02) years (mean ± SD) participated. This study was conducted in a climate-controlled laboratory on healthy human subjects. Design: Randomized experimental study comparing 4 topical skin creams for their effect on humanskin capacitance (moisture). Methods: Subject forearm skin was conditioned for 7 days prior to testing by washing with a standardsoap and application of no other products. Each subject was marked with 5 test sites on the forearms. Sites on the volar surface of each subject's forearms were randomly assigned for application of 1 of 4 product pairs, consisting of a cleanser and a topical skin cream or a control site. A Corneometer was used to measure skin capacitance. Each site on the arms was cleaned and dried, tested again for moisture content, subjected to topical skin cream application, and finally tested again for moisture content. Changes were measured by subtracting the capacitance readings at baseline from values measured following topical skin cream application for each test site. The mean change in capacitance was 13.9 for product 1, 10.3 for product 3, 8.7 for product 2, 1.6 for product 4, and 0.8 for the control site. Results: The mean capacitance change in sites treated with product 1 (13.9 ± 8.0, mean ± SD) was significantly greater than all others. There was no difference between the change in capacitance of product 2 (mean = 8.7, SD = 4.9) and product 3 (10.3 ± 7.1) $t(20) = 1.081$, $P = .293$, nor between product 4 (1.6 ± 3.9) and the control site (0.3, ± 2.2) $t(20) = 0.779$, $P = .445$. The capacitance change of products 2 and 3 was greater than that of product 4 and the control site. Conclusion: Commercially available topical skin creams vary in their impact on human skin capacitance. In this study, sites tested with product 1 had a greater skin capacitance reading than the other tested products; products 2 and 3 had similar capacitance readings. The results of this study provide an initial evaluation of topical skin creams that have varying impacts on skin capacitance.

P. Elsner, F. Seyfarth, D. Antonov, S.M. John, T. Diepgen, S. Schliemann, **Development of a standardized testing procedure for assessing the irritation potential of occupational skin cleansers**, Contact Dermatitis. 2014 Mar; 70(3): p. 151-157

Background: Frequent skin cleaning fulfils the definition of occupational 'wet work'. Standardized methods are required to assess the irritation potential of workplace cleansers. Objectives: To develop a standardized procedure for testing the irritation potential of occupational skin cleansers. Methods: In this single-blind, single-centre trial in 25 healthy volunteers, the irritation potential of five generic reference cleansers was tested by three-times-daily washing with an automated skin cleaning device for 4 days, and quantification of cumulative skin barrier damage was performed by visual scoring, chromametry, transepidermal water loss TEWL, and corneometry. For two cleansers, reproducibility of the irritancy assessment was assessed. Furthermore, the irritation induced by four commercial workplace skin cleansers was studied. Results: Whereas no significant changes were observed for any of the tested cleansers by either visual scoring or chromametry, significant increases in TEWL and significant decreases in stratum corneum hydration were found for all cleansers. Cleansers differed significantly in their irritation potential. On retesting of two cleansers, the first results were confirmed. Among the four commercial cleansers, one that was claimed to be mild was found to be disproportionally irritant. Conclusions: The presented model for testing cleansing preparations allows a highly controlled, practically relevant and reproducible irritancy assessment of occupational skin cleansers.

A. M. Motta, R. Variati, M. Langenauer, **Hydroveg® – A moisturizing Synergetic Power Blend**, Euro Cosmetics 3-2014

The skin plays a fundamental role both as a reservoir and as a barrier to balance the water regulation of the body. The water content in the horny layer of the skin may range from a maximum of 20% in the inner and more compact area, to a minimum of 7-10% in the external part. Values superior to 20% can lead to an excessive proliferation of cutaneous microorganisms and cause weakness of the keratin substrates; values inferior to 7% can cause excessive flaking and hyperkeratosis, an abnormal stratification of the epidermis with a consequent increase of skin roughness.

K. Sugimoto; K. Nomura, H. Sambe, T. Kurki, **Phosphoryl Oligosaccharides of Calcium: Its effect on skin barrier function,** SOFW-Journal 140, 3-2014

Introduction: Phosphoryl oligosaccharides of calcium (POs-Ca) is a complex with Ca and phosphoryl oligosaccharides (Fig. 1) prepared from potato starch by hydrolysis of amylolytic enzymes (1,2). POs-Ca contains calcium approximately 5% and can be a useful calcium supplement because of its high solubility in water. Effects of phosphoryl oligosaccharides (POs) on the formation of calcium phosphate precipitate (1), calcium absorption from intestine (3) and remineralization of tooth enamel

lesions (4) have been examined in detail. Particularly, POs-Ca has already been put to practical use in chewing gum for prevention of dental caries for years. Further application of POs-Ca as a superior calcium carrier substance was expected.

R. Burgo, Y. He, L. Lampe, E. Mustafa, **Natural polymer for modern colour applications,** Personal Care February 2014

Abstract: Colour cosmetic formulations continue to seek new, novel ingredients that can allow brands to create differentiated products that meet the requirements of that latest trends in the marketplace. Inolex has created and introduces LipFeel Natural, a new, patented polymer suitable for many colour cosmetic applications, particularly lip products. LipFeel Natural is completely derived from renewable and sustainable plant sources, and is produced using green chemistry principles. In this article, Inolex shows the results of various testing to demonstrate how LipFeel Natural can confer many of the benefits sought in modern colour cosmetic applications.

K. Shirai, Y. Yamamoto, **Changes in the Water Content of the Corneal Layer of Newborn Infants Using a Corneometer**, Proceedings of the 15th International Conference on Biomedical Engineering, Vietnam 2014, p. 821-824

This study measured serial changes in the water content of newborn infants to investigate the characteristics of newborn skin and obtain basic information to provide effective cleansing care and create the perfect environment to promote the formation of the corneal layer of newborn infants. The subjects were 73 term infants who had an appropriatefor- date (AFD) birth weight (□ 2,500 g) consisting of 39 infants born between October and December 2007 (fall) and 34 infants born between April and March 2011 (spring). The water content of the corneal layer of the epidermis was measured using a corneometer (CM825). Using this corneometer, the water content of the skin from the skin surface to areas 30- 40mm below is measured by the electrostatic capacity method, and measurement values are expressed as values from 0 to 120 that are proportional to the skin water content. Before bathing from the 1st to 5th day after birth in the following 6 areas of the body: (1) between the eyebrows, (2) left corner of the mouth, (3) the middle of the left forearm, (4) left area of the abdomen (between the anterior superior iliac spine and navel), (5) infrascapular area (at the nipple level), and (6) the lateral side of the thigh. The water content of newborn skin was the lowest on the 1st day after birth, and increased with days. The water content of the skin differed among the areas of the body, being highest in the corner of the mouth and lowest on the forearms. The temperature and humidity of the neonatal intensive care unit was higher in the spring than fall, and the water content on the 1st day after birth was higher in infants born in the spring than those born in the fall.

M. Goł y□ski, M. Szczepanik, K. Lutnicki, Ł. Adamek, M. Goł y□ska, P. Wilkoł ek, W. Sitkowski, Ł. Kurek, P. D□biak, **Biophysical parameters of rats' skin after the administration of methimazole**, Bull Vet Inst Pulawy 58, p. 315-319, 2014

The paper describes the influence of oral administration of methimazole on biophysical skin parameters. Wistar rats of different sex (220–260 g) were used in the experiment. Biophysical skin parameters, such as transepidermal water loss (TEWL), corneometry, and pH were examined at seven-day intervals. Significant changes in the parameters were observed on the 7th d of methimazole administration. The changes were observed in both sex but males appeared to be less sensitive in that respect. Changes in the parameters in the females showed rapid mechanisms, which normalised transepidermal water loss and skin hydration, as well as restored skin barrier functions. TEWL, skin hydration, and skin pH measurements allow an early assessment of skin barrier dysfunction after administration of this drug.

S. Schliemann, M. Petri, P. Elsner, **Preventing irritant contact dermatitis with protective creams: influence of the application dose,** Contact Dermatitis. 2014 Jan; 70(1): p. 19-26

Background: Skin protection creams (PC)s are used in the occupational setting to help prevent irritant hand dermatitis. The actual amounts of PC applied and the resulting dose per unit area on hands at work are lower than recommended. Objectives: To assess the influence of the applied dose on the efficacy of PCs in the prevention of irritant contact dermatitis. Methods: Experimental cumulative irritant contact dermatitis was induced by twice daily application of 0.5% NaOH or sodium lauryl sulfate (SLS) for 4 days on the backs of 20 healthy volunteers. Test areas were left unprotected or were pretreated with three different PCs applied at a low dose (2 mg/cm(2)) or a high dose (20 mg/cm(2)) before irritation. Irritant responses were assessed by visual scoring and measurement of transepidermal water loss, chromametry, and corneometry. Results: Although cumulative irritant dermatitis developed in all unprotected test sites, irritation was significantly reduced in a dose-dependent manner on PC-protected sites. The higher doses of all PCs provided significant protection against irritation. However, the lower

dose of one product did not significantly protect against SLS-induced irritation. Conclusions: The protective efficacy of PCs depends on the amount of product applied per unit skin surface area. Some products may show no protective efficacy when used at doses close to those practically applied at workplaces. Future efficacy studies of PCs should be performed with doses not higher than 2 mg/cm(2), to avoid overestimation of their protective efficacy.

J.Y. Park, T.G. Lee, J.Y. Kim, M.C. Lee, Y.K. Chung, W.J. Lee, **Acellular Dermal Matrix to Treat Full Thickness Skin Defects: Follow-Up Subjective and Objective Skin Quality Assessments**, Arch Craniofac Surg Vol.15 No.1, 2014, p. 14-21

Background: There are several options for replacement of the dermal layer in fullthickness skin defects. In this study, we present the surgical outcomes of reconstruction using acellular dermal substitutes by means of objective and subjective scar assessment tools. Methods: We retrospectively reviewed the medical records of 78 patients who had undergone autologous split-thickness skin graft with or without concomitant acellular dermal matrix (CGDerm or AlloDerm) graft. We examined graft survival rate and evaluated postoperative functional skin values. Individual comparisons were performed between the area of skin graft and the surrounding normal skin. Nine months after surgery, we compared the skin qualities of CGDerm graft group (n=25), AlloDerm graft group (n=8) with skin graft only group (n=23) each other using the objective and subjective measurements. Results: The average of graft survival rate was 93% for CGDerm group, 92% for AlloDerm group and 86% for skin graft only group. Comparing CGDerm grafted skin to the surrounding normal skin, mean elasticity, hydration, and skin barrier values were 87%, 86%, and 82%, respectively. AlloDerm grafted skin values were 84%, 85%, and 84%, respectively. There were no statistical differences between the CGDerm and AlloDerm groups with regard to graft survival rate and skin functional analysis values. However, both groups showed more improvement of skin quality than skin graft only group. Conclusion: The new dermal substitute (CGDerm) demonstrated comparable results with regard to elasticity, humidification, and skin barrier effect when compared with conventional dermal substitute (AlloDerm).

M. Farwicka, T. Köhlera, J. Schilda, M. Mentela, U. Maczkiewitza, V. Paganic, A. Bonfiglic, L. Riganoc, D. Bureikb, G.G. Gauglitz, **Pentacyclic Triterpenes from *Terminalia arjuna* Show Multiple Benefits on Aged and Dry Skin**, Skin Pharmacol Physiol 2014;27: p. 71–81

Background: Pentacyclic triterpenoids improve epidermal barrier function and induce collagen production. Here, their effects on cutaneous aging by means of objective instrumental measurements were elucidated. Methods: Reconstituted human epidermis, cultivated keratinocytes and fibroblasts were incubated with *Terminalia arjuna triterpenes* (*T. arjuna* bark extract), and mRNA and protein expression of various genes was determined using microarray analysis, qRT-PCR and ELISA techniques. Clinical efficacy of *T. arjuna* bark extract versus vehicle control cream was elucidated in 30 patients and transepidermal water loss (TEWL), skin hydration and elasticity were measured. Another 30 female patients in their postmenopausal phase were treated with a similar regime, and skin sebum content, cutaneous blood microcirculation and skin density/echogenicity were assessed. Results: Incubation with T. arjuna triterpenes increased FGF-2, TSP-1, TGF-β and CTGF expression, and VEGF secretion in vitro. Elevated lactate dehydrogenase release upon sodium dodecyl sulphate challenge was reversed by the application of *T. arjuna* bark extract. *T. arjuna* bark extract decreased TEWL, improved skin moisturization, reduced scaliness and led to significantly improved skin elasticity. Also, increases in blood microflow and skin sebum contentas well as improved skin thickness/echogenicity were noted on postmenopausal skin, resulting in visible reduction of sagging skin on the jowls as demonstrated by digital photography. Conclusion: *T. arjuna* bark extract appears as an innovative active ingredient that exerts versatile antiaging properties in vitro and in vivo.

Hand- und Hautschutz, Publikation der Berufsgenossenschaft Rohstoffe und Chemische Industrie, Januar 2014

E.J. Ko, S.K. Mun, I.Y. Oh T.R. Kwon, B.J. Kim, M.N. Kim, **Comparison of efficacy and diffusion of three formulations of botulinum toxin type A in two patients with forehead hyperhidrosis,** Clinical and Experimental Dermatology (2014) 39, p. 673–675

A number of studies have shown botulinum toxin type A (BoNTA) to be a very effective treatment for focal hyperhidrosis. However, the different formulations of BoNTA are not identical. They may differ in terms of both their electrophysiological and clinical behaviour, and results obtained with one formulation cannot therefore be extrapolated to another. As a result, different formulations may have different efficacy and tolerability profiles. The literature contains few reports of direct comparisons of different formulations of BoNTA.1–3 Some studies have suggested that the diffusion of BoNTA2 (Dysport; Ipsen Ltd., Slough, UK) is greater than that of BoNTA1 (BOTOX; Allergan, Inc., Irvine, CA,

USA).3,4 In this study, we directly compared the efficacy and diffusion characteristics of three different formulations in two patients with forehead hyperhidrosis, including the new BoNTA3 (NABOTA, Daewoong, Co. Ltd., Seoul, Korea). We also investigated the diffusion area of the products to assess the area of effective action at the target site and to allow minimization of adverse effects.

M.S.B Kriegisch, **Einflüsse des alpinen Hochgebirgsklimas auf Parameter allergischer Erkrankungen: Untersuchungen an der Umweltforschungsstation Schneefernerhaus (UFS - Zugspitze),** Dissertation am ZAUM – Zentrum Allergie und Umwelt der Technischen Universität München, Germany, 2013

Definitionsgemäß wird die Atopie als familiär auftretende Überempfindlichkeit von Haut und Schleimhaut gegenüber Umweltstoffen beschrieben, die mit einer erhöhten Immunglobulin E-Bildung und/oder einer veränderten unspezifischen Reaktivität assoziiert ist. Sie stellt ein heterogenes Syndrom dar und manifestiert sich in unterschiedlichsten Organen, wobei die allergische Rhinokonjunktivitis, das atopische Ekzem und das Bronchialasthma die häufigsten Manifestationen darstellen. Diese drei Erkrankungen, die auch als atopische Trias bezeichnet werden, treten sowohl gleichzeitig als auch nach einander auf, wobei das atopische Ekzem als Erstmanifestation im Kindesalter überwiegt. Im Rahmen des „Etagenwechsels" kann sich aus dem atopischen Ekzem sowohl ein Bronchialasthma als auch eine allergische Rhinokonjunktivitis entwickeln.

G. Moro, P.-Y. Morvan, R. Vallée, **Epidermal hyaluronic acid: a new look at hydration,** Personal Care November 2013 and January 2014

Even though it is famous for its hydrating and skin-filling properties, hyaluronic acid is not as well known as it may appear. Although present to a higher degree in the extracellular matrix of the dermis, it is also found in the epidermis where its function presents an unused potential for hydration and overall skin restructuring strategies. By developing Hydranov, a high technological furcellaran concentrate, Codif Recherche et Nature is targeting epidermal hyaluronic acid to generate an overall hydra-restructuring effect and a greatly enhanced hyaluronic-like result.

A. Elkhyat, **Skin Wettability and Friction**, Handbook of Cosmetic Science and Technology (p. 337-344), 4th Edition, Chapter 40, Editors: A.O. Barel, M. Paye, and H.I. Maibach, 2013

Wetting refers to the contact between a solid surface and a liquid; it depends on intermolecular interactions. The degree of surface wetting is evaluated through the measurement of the contact angle. The smaller the contact angle manifests, the better the wetting of the surface. When the contact angle $\theta = 0°$, the surface wets completely; the opposite corresponds to $\theta = 180°$ (dewetting), and partial wetting refers to θ ranging from 0° to 180

M. Rull, C. Davi, E. Canadas, J. Cebrián, R. Delgado, **Drink up,** SPC Asia November 2013

It is a fact that if we want a youthful and attractive appearance, the skin needs to be flexible, soft, smooth, and free of wrinkles; all features directly related to hydration. Constant external environmental aggressors such as cold temperatures, wind, air conditioning and habits including using harsh soaps, can leave the skin suffering a lack of water or insufficient levels to function properly. The skin changes from being supple, flexible, soft and smooth – a healthy look – to looking dry, flaky and scaly, which is clearly undesired.

C. Perez, C. Stoltz, S. Dumont, L. Cattuzzato, **Cosmetogenomics decodes hydrating action in cells,** Personal Care, November 2013

Abstract: Hydration is composed of two distinct but complementary domains. On one side we have the regulation of hydric reserves and their circulation within different layers of the skin, and on the other the synthesis of lipidic substances and essential proteins, as well as their organisation to avoid excessive water loss. Polyvalent hydrating active ingredients are rare. Most often, active ingredients are combined to provide this dual functionality. Aquaxyl (three Seppic patents) is able to meet both these needs, by supplying both humectant and a restructuring effect. Furthermore, through cosmetogenomics, we have been able to demonstrate at molecular level, its intimate mechanism of action in the epidermis.

A. Mitarotonda, F. Johnson, L. Koch, **Clinically proven benefits of organic certified products,** Personal Care, November 2013

Abstract: There is a general belief that natural and organic cosmetic products cannot deliver strong benefits and only basic clamis can be achieved. This is due to the limited number of ingredients available to those who are formulating certified products. When transposed to skin care claims, it usually means hydration and moisturisation derived benefits. When it comes to makeup, the absence of truly performing colour cosmetics can lead „green consumers" to look at more standard brands in order to

get their favourite look. With this article the authors would like to demonstrate that it is possible to develop organic certified products that are clinically proven to be effective.

C.S. Quintana Seguil, **Delivering High Moisturization from Lipstick**, Cosmetics & Toiletries Vol. 128, No. 10/October 2013

Lips are perhaps the most sensual part of the face and play a major role in perceived beauty.1, 2 They are also in constant motion and exposed to physical and chemical changes that alter and impact their normal form, as evidenced by wrinkles and dryness.The histology of the lips is well-described, and the vermilion area where the lips end and facial skin begins is covered by a thin stratum corneum made up of orthokeratotic cells that have a shorter turnover rate than the normal stratum corneum.3 Unlike other skin, the lips lack epidermis, and with a thickness of just three to five cellular layers, they are very thin compared with typical facial skin, which has up to 16 layers.4 Lighter colored lip skin also contains fewer melanocytes, which protect lips and impart color—as do blood vessels, as they appear through the thin lip skin.

J. Polaskova, J. Pavlackova, P. Vltavska, P. Mokrejs, J. Rahula, **Moisturizing effect of topical cosmetic products applied to dry skin**, J. Cosmet. Sci., 64, p. 1–12 (September/October 2013)

One of the complications of “diabetes mellitus” is termed diabetic foot syndrome, the fi rst symptoms of which include changes in the skin’s condition and properties. The skin becomes dehydrated, dry, and prone to excessive formation of the horny layer, its barrier function becoming weakened. This function can be restored by applying suitable cosmetic excipients containing active substances. The aim of this study was to evaluate and compare the effects of commercially available cosmetic products (CPs) designed for the care of diabetic foot, through a group of selected volunteers using noninvasive bioengineering methods. Statistical surveys ($p < 0.05$) evaluated these CPs as regards to their hydration effect and barrier properties. Special attention was devoted to CPs with the declared content of 10% urea, and that the infl uence of this preparation’s ability to hydrate and maintain epidermal water in the epidermis was confirmed.

R. di Franco, E. Sammarco, Maria G. Calvanese, F. de Natale, S. Falivene, A. di Lecce, F.M. Giugliano, P. Murino, R. Manzo, S. Cappabianca, P. Muto, V. Ravo, **Preventing the acute skin side effects in patients treated with radiotherapy for breast cancer: the use of corneometry in order to evaluate the protective effect of moisturizing creams**, Radiation Oncology 2013, 8:57

Background and purpose: The purpose of this study was to add, to the objective evaluation, an instrumental assessment of the skin damage induced by radiation therapy. Materials and methods: A group of 100 patients affected by breast cancer was recruited in the study over one year. Patients were divided into five groups of 20 patients. For each group it was prescribed a different topical treatment. The following products were used: Betaglucan, sodium hyaluronate (NeovidermW), Vitis vinifera A. s-I-M.tO.dij (IxodermW), Alga Atlantica plus Ethylbisiminomethylguaicolo and Manganese Cloruro (Radioskin1W) and Metal Esculetina plus Ginko Biloba and Aloe vera (Radioskin 2W); Natural triglycerides-fitosterols (XderitW); Selectiose plus thermal water of Avene (Trixera+W). All hydrating creams were applied twice a day starting 15 days before and one month after treatment with radiations. Before and during treatment patients underwent weekly skin assessments and corneometry to evaluate the symptoms related to skin toxicity and state of hydration. Evaluation of acute cutaneous toxicity was defined according to the RTOG scale. Results: All patients completed radiotherapy; 72% of patients presented a G1 cutaneous toxicity, 18% developed a G2 cutaneous toxicity, 10% developed a G3 toxicity, no one presented G4 toxicity. The corneometry study confirmed the protective role of effective creams used in radiation therapy of breast cancer and showed its usefulness to identify radiation-induced dermatitis in a very early stage. Conclusions: The preventive use of topic products reduces the incidence of skin side effects in patients treated with radiotherapy for breast cancer. An instrumental evaluation of skin hydration can help the radiation oncologist to use strategies that prevent the onset of toxicity of high degree. All moisturizing creams used in this study wereequally valid in the treatment of skin damage induced by radiotherapy.

K. Miyamoto, H. Kudoh, **Quantification and visualization of cellular NAD(P)H in young and aged female facial skin with in vivo two-photon tomography**, Br J Dermatol. 2013 July; 169 Suppl 2: p. 25-31

Background: In vivo two-photon tomography is a novel noninvasive three-dimensional optical skin imaging technology with subcellular resolution which enables the sensitive detection of endogenousfluorophores. One of these fluorophores, NAD(P)H (a coenzyme which plays an important role in the release of free energy during glycolysis, and influences filaggrin and lipid synthesis), can be selectively detected in keratinocytes (granular cells) with two-photon tomography. Objectives: To

quantify NAD(P)H levels in subsurface human facial skin in vivo as a measure to determine if there are changes with age. Methods: A total of 80 healthy Asian females were enrolled in this study, aged 21-68 years. Measurements were performed on facial skin using in vivo two-photon tomography (DermaInspect/MPTflex™, JenLab GmbH, Jena, Germany). The laser beam scans a skin field of interest in pulses, focused at a depth to reach the granular layer. The near-infrared laser pulses excite the endogenous fluorophores NAD(P)H. Image processing was performed to obtain high-resolution autofluorescence images (optical biopsies) and to quantify the fluorescent grey scale to determine NAD (P)H levels. Additional skin surface measures taken were hydration (corneometer), elasticity (cutometer) and wrinkles (image capture and analysis). Results: Statistically significant changes in all measured parameters as a function of age were observed. Most importantly, the mean fluorescent grey scale values for NAD(P)H in the youngest group studied (women in their 20s) was 38.8 (SD ± 12.39), while that of the oldest group studied (women in their 60s) was 32.7 (SD ± 12.47). These NAD(P)H levels are statistically significantly different (P = 0.0078). Conclusions: The level of NAD(P)H in the epidermis is significantly greater in younger vs. older skin in vivo. This likely reflects decreased production and/or increased degradation of NAD(P)H in older skin, possibly as a result of chronological ageing and environmental damage (e.g. photodamage). NAD(P)H levels in epidermal skin may be a useful biomarker of skin ageing in vivo. It is also likely that maintaining NAD(P)H production is a useful approach to maintaining good skin condition and caring for ageing skin.

C.B. Jeong, J.Y. Han, J.C. Cho, K.D. Suh, G.W. Nam, **Analysis of electrical property changes of skin by oil-in-water emulsion components,** International Journal of Cosmetic Science, 2013, 35, p. 402–410

Objectives: As the 'Dry Skin Cycle' produces continuous deterioration, cosmetic xerosis (flaky, dry skin) is one of the major concerns to most consumers. The purpose of this study was to investigate the moisturizing effect of oil-in-water (O/W) emulsion components. There are numerous types of oils, waxes, polyols and surfactants used as ingredients in skincare products. However, the moisturizing effect of each ingredient and understanding each use to make an effective moisturizing products are still not well understood. Methods: To provide answers to these questions, we investigated the moisturizing effect of widely used 41 components (four different classes) in a simple O/W emulsion using capacitance methods. 106 different single oils, and combinations of oil with oil, wax, humectants, and surfactant were formulated and tested. Results: In this study, we found that most of the O/W emulsion components had hydration effects on the skin. (i) The average relative water content increase (RWCI) rate of a single oil-based emulsion was 11.8 5.2% (SE) and 7.9 6.0% (SE) at 3 and 6 h, respectively. (ii) An oil combination emulsion showed an average RWCI rate similar to that of a single oil-based emulsion, 12.6 6.0% (SE) and 12.1 6.4% (SE) at 3 and 6 h, respectively (iii) A combination of waxes with oil showed an average RWCI rate of 16 5.6% (SE) and 12.4 4.5% (SE) at 3 and 6 h, respectively. (iv) Humectant combinations showed the highest average RWCI rate 28 7.3% (SE) and 22.2 7.5% (SE) at 3 and 6 h, respectively (v) Surfactant combinations had an average RWCI of 10.8 4.5% (SE) and 6.0 4.0% (SE) at 3 and 6 h, respectively. Conclusion: Interestingly, it was difficult to find moisturizing power differences among samples in the same group. Only the humectants group showed significant differences among samples. Glycerine and urea showed significant skin hydration effects compared with other humectants. We also found a significant moisturizing effect by analysing the chemical functional groups; amide class had a higher hydration effect than betaines and disaccharides in humectants combination.

J. Bhat on behalf of S. Lanigan, C. Whitehurst, J. Birch, **A Single -Blinded Randomised Controlled Study to Determine the Efficacy of Omnilux Revive Facial Treatment in Skin Rejuvenation**, Lasercare clinics, Birmingham, UK

The use of light technology in dermatology has grown rapidly in the last decade. There have been many developments in the use of light for the treatment of a wide variety of skin conditions from nonmelanoma skin cancers1, 2,3,4 to facial resurfacing for crows feet and photo damaged skin.5, 6,7 Historically the use of CO2 lasers has been the mainstay for facial resurfacing and skin rejuvenation since the mid 1990s. It is accepted that photoageing and the subsequent visible effects is in part due to the breakdown of collagen by metalloprotinases and oxidative damage induced by exposure to UV light.8 Subsequent treatment with CO2 lasers improves these visible signs through tissue remodelling after cutaneous injury. However the effectiveness of this technique is limited by prolonged healing times, discomfort during the procedure (requiring local anaesthesia) and the risk of complications such as pigmentary disorders.8 The popularity of laser resurfacing has therefore decreased, while the demand for new procedures that provide optimum results with minimal side effects has continued regardless. Light Emitting Diode (LED) technology has been at the forefront of new light source development in recent years. LED technology offers a new vehicle for the delivery of non-coherent light in arrays of

varying shape, suitable for the treatment of large surface areas. Whelan H et al have repeatedly proven the effectiveness of LED technology in delivering an optimum light dose consistently demonstrating the efficacy of LED therapy in tissue regeneration.9, 10.

A.B. Stefaniak, J. du Plessis, S.M. John, F. Eloff, T. Agner, T.-C. Chou, R. Nixon, M.F.C. Steiner, I. Kudla, D.L. Holness, **International guidelines for the in vivo assessment of skin properties in non-clinical settings: part 1. pH,** Skin Research and Technology 2013, 19: 59-68

Background: Skin surface pH is known to influence the dissolution and partitioning of chemicals and may influence exposures that lead to skin diseases. Non-clinical environments (e.g. workplaces) are highly variable, thereby presenting unique measurements challenges that are not typically encountered in clinical settings. Hence, guidelines are needed for consistent measurement of skin surface pH in environments that are difficult to control. Methods: An expert workshop was convened at the 5th International Conference on Occupational and Environmental Exposure of Skin to Chemicals to review available data on factors that could influence the determination of skin surface pH in non-clinical settings with emphasis on the workplace as a worst case scenario.

R.K. Mlosek, S. Malinowksa, M. Sikora, R. Debowska, A. Stepien, K. Czekaj, A. Dabrowska, **The use of high frequency ultrasound imaging in skin moisturization measurement,** Skin Research and Technology 2013; 19: 169-175

Introduction: The appropriate skin hydration level enables its normal function and healthy apperarance. Purpose: The purpose of present research was to assess the applicability of high frequency ultrasound (HFU) to the monitoring of skin moisturization treatments. Material and Methods: The study sample encompassed 27 women, aged 20-67 y.o. (mean age of 45.48 y.o.) with dry skin. All women applied a strong moisturizing cream on their facial skin for 14 days. The course of treatment was monitored using the HFU. The following parameters were subjected to the ultrasound evaluation: epidermal echo thickness, dermis thickness, and separately the thickness of the superior and inferior layer of dermis. The measurements were taken on the participants' chins and cheeks. In addition, skin hydration and transepidermal water loss (TEWL) were determined.

H. Hoeksema, M. de Vos, J. Verbelen, A. Pirayesh, S. Monstrey, **Scar management by means of occlusion and hydration: A comparative study of silicones versus a hydrating gel-cream,** Burns 2013

Abstract: Despite the worldwide use of silicones in scar management, its exact working mechanism based on a balanced occlusion and hydration, is still not completely elucidated. Moreover, it seems peculiar that silicones with completely different occlusive and hydrating properties still could provide a similar therapeutic effect. The objective of the first part of this study was to compare the occlusive and hydrating properties of three fluid silicone gels and a hydrating gel-cream. In a second part of the study these results were compared with those of silicone gel sheets. Tape stripped skin was used as a standardized scar like model on both forearms of 40 healthy volunteers. At specific times, transepidermal water loss (TEWL) and the hydration state of the stratum corneum were measured and compared with intact skin and a scar-like control over a 3–4 h period. Our study clearly demonstrated that fluid silicone gels and a hydrating gel-cream have comparable occlusive and hydrating properties while silicone gel sheets are much more occlusive, reducing TEWL values far below those of normal skin. A well-balanced, hydrating gel-cream can provide the same occlusive and hydrating properties as fluid silicone gels, suggesting that it could eventually replace silicones in scar treatment.

M. Brock, P. Padtorelli, **Cosmacol ELI – A Multifunctional Additive for Rinse-off Products**, Cosmetic Science Technology 2013

This article illustarates the multi functionality of the latic acid carrier named Cosmacol ELI (INCI-name: C12-13 Alkyl Lactate) in rinse-off products. This material is mild to the skin, exhibits superior skin re-fatting action and thickens Sodium Alkylethersulphate based formulations. Furthermore, if affects neither foaming ability nor foam stability and enables the creation of transparent rinse-off products with very low clear melting points.

R.H. Müller, P.Sinambela, C.M. Keck, **NLC – the invisible dermal patch for moisturizing & skin protection**, Euro Cosmetics, 6-2013

Skin is the natural barrier that protects the body from hazardous materials surrounding it and keeps the water balance inside. Straum corneum (SC), the outermost layer of skin, plays an important role for this barrier function. Being totally renewed every approximately 14 days, the SC has about 15 layers of flat corneocytes, the proteinriched cells, embedded in the continuous lipid-riched layers. Corneocytes allow the transportation of water and water soluble materials through skin. However, the

continuous lipig layers work adversely. Combination of these cells with lipid in a condensed structure not only enables water excretion through skin, but also prevents excessive water loss.

E. Kim, G. Cho, N.G. Won, J. Cho, **Age-related changes in skin bio-mechanical properties: the neck skin compared with the cheek and forearm skin in Korean females**, Skin Research and Technology 2013; 19; 236-241

Background: There are many reports on regional variations in skin bio-mechanical properties, but few studies have been performed on the neck. The neck is sun-exposed and continues to move so the neck skin can be more apt to aging. Methods: The skin porperties oft he neck, cheek, and ventral forearm of 58 Korean female volunteers in good health (25-64 years old, 42.3 ± 11.7) were assessed non-invasively with skin measuring devices, and the correlation with age and wrinkles was analyzed. Results: Neck skin was more extensible, elastic and viscoelastic than the cheek. The dermal layer fort he neck skin was thinner and more intense than the cheek, but the results were opposite when compared with the skin oft he forearm. We could observe that the subcutaneous layer was divided by the fascia with regard tot he neck skin, and this thickness increased BMI-dependently.

J. du Plessis, A. Stefaniak, F. Eloff; S. John, T. Agner, T.-C. Chou, R. Nixon, M. Steiner, A. Franken, I. Kudla, L. Holmes, **International guidelines for the in vivo assessment of skin properties in non-clinical settings: Part 2. Transepidermal water loss and skin hydration,** Skin Research and Technology 2013; 19; 265-278

Background: There is an emerging perspective that is not sufficient to just assess skin exposure to physical and chemical stressors in workplaces, but that it is also important to assess the condition, i.e. skin barrier function of the exposed skin at the time of exposure. The workplace environment, representing a non-clinical enviroment, can be highly variable and difficult to control, thereby presenting unique measurement challenges not typically encountered in clinical settings. Methods: An expert working group convened a workshop a spart of the 5th International Conference on Occupational and Environmental Exposure of Skin Chemicals (OEESC) to develop basic guidelines and best practices (based on existing clinical guidelines, published data, an down experiences) for the in-vivo measurement of transepidermal water loss (TEWL) and skin hydration in non-clinical settings with specific reference to the workplace as a worst-case scenario.

M. Manfredini, G. Mazzaglia, S. Ciardo, S. Simonazzi, F. Farnetani, C. Longo, G. Pellacani, **Does skin hydration influence keratinocyte biology? In vivo evaluation of microscopic skin changes induced by moisturizers by means of Reflectance Confocal Microscopy,** Skin Research and Technology 2013; 19; 299-307

Background: Skin hydration is defined as the water content oft he epidermis and the dermis. In vivo reflectance confocal microscopy offers the oppurtunity to determine in vivo the kinetics of the skin after the application of topical products. Objective: To define confocal features associated with dry skin and assess the microscopic effects of different moisturizers. Methods: Ten healthy volunteers were enrolled for the study. Two different formulations were tested: petrolatumand commercially available emulsion. Measurements were performed from baseline to 3 h after removal of the occlusion at regular time points. Nine confocal features were assessed: furrows‘ size, overall interkeratinocyte reflectance, furrows‘ morphology, scales, skin surface irregularity, non-rimmed dermal papillae, exocytosis, dermal inlammation and collagen type. Furrows‘ size and interkeratinocyte reflectance were also quantitated using a digital analysis. Stratum corneum capacitance was recorded.

J.W. Jung, Y.W. Lee, Y.B. Choe, K.J. Ahn, **An 8-week face-split study to evaluate the efficacy of cosmeceuticals using non-invasive bioengineering devices**, Skin Research and Technology 2013; 19; 324-329

Background/aims: Even with the increasing demand for functional cosmeceuticals in the recent years, objective standard criteria for assessing their efficacy are currently incomplete at best. In this 8-week face-split study, in which we topically applied high-priced cosmeceuticals on one side and more affordable cosmeceuticals on the other side of face, we compared the efficacy of these two products using non-invasive bioengineering technology. Methods: We assessed the efficacy of a skin-whitening and an anti-wrinkle cosmeceutical product on 25 and 19 healthy female volunteers, respectively. In a single blind split setting, each participant received an 8-week topical application of high-priced cosmeceuticals to the left side of face, and cheaper cosmeceuticals to the right side. Then, the subjects‘ biophysical parameters were measured for an objective evaluation of the results. This was followed by a questionnaire to obtain a subjective assessment.

Y. Hara, Y. Masuda, T. Hirao, N. Yoshikawa, **The relationship between the Young’s moduls of the**

stratum corneum and age: a pilot study, Skin Research and Technology 2013; 19; 339-345

Background/purpose: The mechanical porperties of the strum corneum play an important role in protecting the body from external physical stimuli and excessive sensitivity. However, it is difficult to analyze these mechanical properties in vivo. To resolve this problem, we carried out a numerical analysis to calculate the Young's modulus of the stratum corneum. We then investigated the relationship between the Young's modulus of the stratum corneum and age. Methods: We used a Cutometer and a Dermal Torque Meter for measuring skin mechanical parameters, and optical coherence tomography and an ultrasonic imaging system for measuring skin thickness. Based on these non-invasive results, liner elastic analysis was performed by the finite element method, and the Young's moduli of the stratum corneum and the dermis were calculated by solving an inverse problem. Using these techniques, we analyzed the correlation between the Young's modulus of the stratum corneum for the cheeks of seventy-eight Japanese aged from 20 to 68 years.

K.Q. Boucetta, Z. Charrouf, H. Aguenaou, A. Derouiche, Y. Bensouda, **Does Argan oil have a moisturizing effect on the skin of postmenopausal women?,** Skin Research and Technology 2013; 19; 356-357

During menopause, the decrease in endogenous estrogen level affects negatively the homeostasis of the estrogen target organs including the skin, which becomes more predisposed to develop the skin dryness (1), characterized by increase in the transepidermal water loss (TEWL) and a decrease in the water content of the epidermis (WCE).

M. Bayer, G. Schlippe, W. Voss, **Tests on Cosmetics: Requirements and Successful Implementations**, Cosmetic Science Technology 2013

Abstract: Dermatological tests in accordance with scientific criteria are of decisive value for the safety and efficacy of cosmetics. The latest alterations to European legislation emphasise this fact. Whether a cosmetic product is well tolerated or causes irritations or allergic reactions must be proven by dermatological tests. The range of test methods starts with simple questionnaires and ends with complex physiological measurements. The quality of dermatological reports directly depends on the seriousness of the commissioned dermatologists. Pitfalls occur whenever non qualified scientific results are generously used for advertising campaigns such as 'dermatologically tested', 'allergy tested', 'hypo-allergenic' etc. Additionally many reports on cosmetics therefore must be valid in scientific methods and practical execution.

M. Schweitzer, *K. Stang,* **A Physiological Experiment for Skin Research on ISS,** Kayser-Threde GmbH 2013 & DLR

SKIN-B is an experiment set for non-invasive investigation of changes of skin hydration, skin barrier function and skin surface structure of astronauts before, after, and during space flight. Professor Dr. Heinrich and Dr. Nicole Gerlach from Derma Tronnier, Institute for Experimental Dermatology at Witten-Herdecke University, hope to derive conclusions from the data on the effects of weightlessness on the astronaut's skin, inner organs, and on physiological changes to the skin to be expected during long-term missions. In comparison to the precursor experiment SkinCare (2006) the experiment set has been substantially improved by Kayser-Threde: An enhanced ultra-violet camera was chosen to obtain sharper images. Operation was made easier since the experiment can now be operated from a space station laptop via USB ports and with a software adapted for this specific purpose. Use of the ISS board laptop also allows experiment data to be transferred to Earth directly.

R.S. Teixeira, L.A. Araújo, D.G. Mercúrio, P.M.B.G. Maia Campos, **Application of biophysical techniques to evaluate the efficacy of a gel with zinc pca,** University of Sao Paulo, 2013

The biophysical and skin imaging techniques are effective tools to help characterize the skin type and to evaluate the'clinical efficacy of products cosmetics because they are non-invasive methods and enable to evaluate die products directly in human skin.

F. Pouradier, C. Cornillon, M.F. D'arras, F. Flament, S. Panhard, S. Diridollou, G. Loussouarn, **Functional and structural age-related changes in the scalp skin of Caucasian women,** Skin Research and Technology 2013;19;384-393

Background: Ageing of the skin, being chronological or sun induced is highly documented. Scalp, as a specific skin site, has, however, received little attention. This work attempted to describe functional and structural alterations that occur in scalp skin with ageing. Methods: Two different age groups (N=15 each; 30 ± 3 and 62 ± 2 y.o. respectively) of Caucasian women perticipated in the study. Some functional parameters (TEWL, Sebum level, Hydration, T°) were recorded on the vertex part of the scalp, after having cut the hair flat on the scalp surface. Imaging of some structural criteria was

carried out using high-frequency ultrasound technique and optical coherence tomography on the same scalp site and on the mid-forehead, as a close control skin site.

M.L. Kmie□, A. Pajor, G. Broniarczyk-Dył a, **Evaluation of biophysical skin parameters and assessment of hair growth in patients with acne treated with isotretinoin,** Postep Derm Alergol 2013; XXX, 6: p. 343–349

Introduction: Treatment of the severe forms of acne vulgaris remains a challenge. Isotretinoin is a drug often used in these cases. Retinoids a□ect the mechanisms that play a role in the pathogenesis of acne, reduce the production of sebum and sizes of the sebaceous glands. However, isotretinoin appears to have undesirable side e□ects in the skin, mucous membranes and hair. Aim: The aim of this study was to assess the e□ect of acne vulgaris treatment with isotretinoin on biophysical skin parameters: skin sebum and stratum corneum hydration levels, transepidermal water loss values, pH, erythema and hair growth parameters: total number, density and proportion of anagen hair. Material and methods: The study included thirty patients with acne types: papulopustular, conglobata and phlegmonosa. Patients were treated with isotretinoin at a dose of 0.5–1.0 mg/kg/day for a period of 4–7 months. The measurements of skin biophysical parameters were performed before and after the treatment using Sebumeter SM815, Corneometer CM825, Tewameter TM300, MX Mexameter MX18 and Skin-pH-Meter PH908. Hair growth parameters were evaluated with FotoFinder Dermoscope using the TrichoScan Professional V3.0.8.76 software. Results: The results of biophysical skin parameter measurements after the treatment showed a reduction in the severity of seborrhea. However, the skin was dry, which confrmed a lowered degree of stratum corneum hydration and an increase in transepidermal water loss values. Moreover, severity of erythema, an increase in pH value, and variations in selected hair growth parameters: decrease in total count, density and proportion of anagen hair were demonstrated. Conclusions: The reduction in the skin sebum levels was observed after the treatment. There was dryness of the skin, which was confrmed by biophysical skin parameter measurements. Changes in the hair growth parameters showed telogen efuvium hair loss.

J.S. Choi, W.S. Moon, J.N. Choi, K.H. Do, S.H. Moon, K.K. Cho, C.J. Han, I.S. Choi, **Effects of seaweed Laminaria japonica extracts on skin moisturizing activity in vivo**, Journal Cosmetic Sciences, 2013 May-Jun, 64(3): p. 193-205

Twelve species of edible seaweed from the coast of Korea were screened for skin moisturizing activity. We placed the lead of a Corneometer on an approximately 6-cm2 test area of the forearm and measured both untreated skin (control) and skin treated with test moisturizing creams either containing or not containing 5% water:propylene glycol (50:50) extracts of seaweeds. Over the 8-h observation period, the strongest activity of the Laminaria japonica extracts occurred at the 2-h period. For the 10% extract, hydration with the L. japonica extract increased by 14.44% compared with a placebo. Transepidermal water loss (TEWL) was also measured using a test cream with 10% L. japonica extract. For up to 8 h after applying the creams, TEWL was decreased to 4.01 g/cm2, which was approximately 20% of that seen with the control. We suggest that the L. japonica extract hydrates skin via the humectants and hydrocolloids that it contains. To confirm the safety of L. japonica extracts, we performed a patch test on human skin. The results suggested that at moderate doses humans can safely use the extracts. For commercial applications, we evaluated the physicochemical characteristics of the test cream products, including Hunter L, a, and b values; pH; refractive index; and coefficient of viscosity. L. japonica extract did not affect overall formulations of the test cream product in any of the tested aspects. These results suggest that L. japonica extract is a promising ingredient in moisturizing formulations.

C. McLeod, **Testing Moisturizing Claims for Skin**, Cosmetics & Toiletries online, May 2013

Consumer product testing, along with procedures for implementing claims substantiation protocols, is increasingly becoming one of the most talked about topics in the product development process. Whether a company produces cosmetic products for small, independent boutique brands or for large multinational corporations, the race to enhance (or at the very least, match) a product's onpackage claims to its competitors' is of paramount importance to gain a crucial foothold in the relevant market and target demographic. One of the main claim substantiation areas in modern cosmetics—although one of the least verbosely exhilarating for marketing departments—is moisturization in skin. As with the majority of cosmetic products and claims in the 21st century, marketing, research, development and formulation departments within companies aim to differentiate their product from competitors in one way or another, to create a successful brand and generate profit.

Wirksamkeit und Verträglichkeit von Nasenbalsam bei Hautirritationen, Birken AG, Ästhetische Dermatologie 5, 2013

In einer im April und Mai 2012 vom proDerm Institut für Angewandte Dermatologische Forschung durchgeführten Anwendungsstudie verwendeten 52 freiwillige Probanden über einen Zeitraum von 4 Wochen den Nasenbalsam (Imlan Nasenbalsam Plus, Birken AG) mindestens einmal täglich. Alle Probanden hatten laut eigenen Angaben eine Pollenallergie auf Frühblüher und im Testzeitraum daher Symptome von Heuschnupfen mit Begleiterscheinungen wie trockener und geröteter Haut im Nasenumfeld. Vor und nach der Anwendungsphase wurde der Status der Haut im relevanten Areal durch einen Dermatologen sowie durch die Probanden selbst beurteilt.

S. Nefkens, **Clinical study proves exeptional performance of PURASAL NH/COS on extremely dry skin**, Euro Cosmetics 5-2013

Purac today announced that a clinical study with PURSAL NH/COS for extremely dry skin concluded with positive outcome. The study demonstrated that a lotion with PURSAL NH/COS, significantly reduced visible skin dryness, roughness and desquamation or flaking.

S. Luebberding, N. Krueger, M. Kerscher, **Skin physiology in men and women: in vivo evaluation of 300 people including TEWL, SC hydration, sebum content and skin surface pH,** IFSCC Magazine Volume 16, Number 4 2013

Objectives: Evidence is given that differences in skin physiological properties exist between men and women. However, despite an assessable number of available publications, the results are still inconsistent. Therefore, the aim of this clinical study is the first systematic assessment of gender-related differences in skin physiology in men and women, with a special focus on changed over lifetime.

H. Aksamitova, S. Holcova, M. Hladicova, **Anti-Aging Effekt und Hautverträglichkeit einer multivalenten Wirkstoffkombination in einer W/O Emulsion**, Kosmetische Medizin 4.13

In zwei klinischen Modellen wurde der Effekt der zweimal täglichen Anweundung einer Hautcreme mit antioxidativen und biologisch hautaktiven kosmetischen Inhaltsstoffen dokumentiert. In beiden Teilstudien betrug die Anwendungsdauer 25-35 Tage, mit einer Zwischenauswertung nach 12-16 Tagen. Im ersten Teil der Studie wurden die Effekte der Creme auf Hauttrockenheit und Hautrötung an 50 Patienten (88% weiblich) mit allergischer Diathese klinisch dokumentiert. Beide Parameter verbesserten sich hochsignifikant, bei gleichzeitig ausgezeichneter Verträglichkeit und dem Fehlen unerwünschter Effekte. Im zweiten Teil Studie wurde an 20 Probandinnen mittels physikalischer Messverfahren der Effekt auf die Hauthydratation und Hautelastizität objektiviert. Beide Parameter verbesserten sich hochsignifikant und bestätigten damit eindrucksvoll die ärztliche Beobachtung.

C. Uhl, D. Khazaka, **Techniques for globally approved skin testing,** Personal Care April 2013

In efficacy testing and claim support for cosmetic products, objective measurement systems became indispensable long ago, especially since subjective clinical assessments are often prone to bias and inter-observer variation. Without suitable instrumentation it is close to impossible to determine what a product is really doing for the skin. Those objective measurement methods and subjective evaluations are mutually dependent. No measurement can be performed without the subjective evaluation of the results by the user of such instrumentation. However, a pure subjective evaluation of the skin without appropriate measurement techniques is not able to achieve accurate results either. This relationship becomes clearer when looking for example at skin colour measurements. Subjectively, the human brain cannot process slight changes in colour, especially when the colours are not viewed side by side, but at different points in time. Instrumental measurement however will clearly detect such slight changes. The achieved result must then be interpreted in context with the expected outcome or the hypothesis. For this, you will always need a knowledgeable and experienced person because ‘a fool with a tool is still a fool’, as the late Albert Kligman used to say. This relationship between objective measurement and subjective evaluation is not only true for the determination of differences in skin colour, but also for all other skin measurement parameters important for the cosmetic industry.

C. Montastier, S. Mac-Mary, L. Atallah, M. Pfulg, J.M. Sainthillier, N. Bizouard, E. Sandager, P. Humbert, **Complementarity of replasty pro filler and hyaluronic acid injections,** Anti-aging congress Monaco 04/2013

Few data are available to compare the cutaneous effects of aesthetic dermatology treatments on the face with those resulting from repeated application of “cosmeceutic” products highly concentrated in active molecules. The aim of this study was to demonstrate the benefit of repeated application of a serum versus an injection of hyaluronic acid as well as to compare the benefit of the association of this injection with repeated application of a serum versus injection with a reference cream.

*P. Larmo, V.-P.D.Tech, A. Bonfigli***, Lingonberry boosts hydration with anti-ageing benefits**,

Personal Care, April 2013

Lingonberry (Vaccinium vitis-idaea) is a nutritious berry that is widely abundant and harvested in wild form in the Nordic countries. In recent years, it has gained a reputation as a health-promoting superfruit. Lingonberries are used in several ways in Scandinavian cuisine: as a side dish, garnish or components of desserts. Lingonberries are rich in vitamin C and E in polyphenols including anthocyanins, proanthocyanidins and flavonols. Seeds containing ¤30% oil by dry weight, represent about 1.5% of lingonberries' fresh weight.

A. Mondelli, G.F. Secchi, **Plant's native proteins for hair conditioning and skin protection**, Poster In-cosmetics, Paris 2013

Corneometer CM skin hydration was evaluated before and after application of test items twice a day on 6 female volunteers; the study was continued over a period of one week and test items were applied undiluted with standardized procedure and then rinsed.

Increased Skin Hydration with Floraesters K-20W Jojoba / **Hand Sanitizer**, Poster Floratech, In-Cosmetics, Paris 2013

Skin hydration was determined by measuring capacitance with a Corneometer CM 825. The data from the study are illustrated in the graph below. Ten minutes following application of the test articles, the sites treated with the test article containing 1% K-20W increased skin hydration 39% while the marketed product, Purell Instant Hand Sanitizer, did not increase skin hydration ($p<0.05$). All formulations contained 62% ethanol.

Increased skin hydration with Floraesters K-20W & Floraesters K-100/Hydro-Alcoholic Nonwoven Wipes, Poster Floratech, In-Cosmetics, Paris 2013

Skin hydration was determined by Corneometer CM825 measurements. The data from the study are illustrated in the graph on the left. All formulations contained 65% ethanol, 1% glycerin, and water. Nonwoven wipes (45g/m² spunlace) were soaked in the 2.5g of test formulation for 72 hours.

T. Mahmood, N. Akhtar, **Short term study of human skin irritation by single application closed patch test: assessment of four multiple emulsion formulations loaded with botanical extracts,** Cutan Ocul Toxicol, 2013 Mar;32(1): p. 35-40

Background: Assessment of skin irritation potential is a major concern in safety assessment of cosmetics, when long-term use of these products are expected. Non-invasive bioengineering probes have been used previously to measure skin irritation potential of cosmetic ingredients. Objectives: Experimentation carried out to weigh up the skin irritation potential of four multiple emulsion formulations via visual and non-invasive measurements. Immediate effects of formulations and comparison of two assessment techniques were also tried to establish. Methods: Four multiple emulsion formulations one control (without botanical active) and three containing the functional botanical actives plus additives were tested in this study using the following techniques: transepidermal water loss (TEWL), COLIPA visual scoring method (CVSM), Mexameter MPA 5 (Courage + Khazaka, Germany) and capacitance [Corneometer MPA 5 (Courage + Khazaka, Germany)]. Visual examination and non-invasive measurements were performed at baseline and after 24 h. The formulations were applied on the forearm of 12 healthy volunteers of same sexes aged 20-25 years. Results: We found that none of the formulation produced irritation both on visual and instrumental evaluation. However, formulations MeB and MeC have comparable immediate effects on dryness, erythema, melanin and TEWL. Formulation MeC produced more effective results on different parameters, may be due to synergistic effect of two extracts, while MeA failed to produce any immediate effects on skin parameters. Moreover results of both assessment methods are parallel to each other. Conclusion: None of the formulation produce irritant effects, barrier impairment effects or immediate effects except for the formulation MeC which produced appreciable results than other formulations but statistically these results were insignificant ($p > 0.05$). Based on these results, it could be concluded that formulations may be implied safely as skin rejuvenating candidates.

L. Rigano, G. Baratto, A. Portolan, A. Semenzato, M. Meloni, A. Bonfigli, M. Sironi, S. Pieraccini, N. Lionetti, **Development of a Powerful Tool for Investigation of the Structure and Functionality of the Aqueous Phase of Cosmetics**, IFSCC Magazine 3, 2013

Introduction: Among other problems, skin aging is associated with a loss of the capability of skin cells to answer and react to internal and environmental changes. Osmotic pressure and its equilibrium, involving the extracellular matrix and the cell inside, are key factors in maintenance of the homeostasis of living cells. Moreover, osmotic pressure differences between cells and their enviroment lead to the production/release of molecules (osmoprotectants) aimed at keeping the functional equilibrium of cells.

Indeed, nature uses mainly such molecular structures for protecting cells, both vegetal and animal, from uncontrolled development of pressure differences between the inside and outside of cell membranes [1, 2]. This economy in the creativity of nature is due to the fact that such protection is exerted on the hydrophilic peptide bonds while different substituents which are lipophilic are not easily exposed to the hydrolytic action of water.

M. Mateu, C. Davi, E. Canadas, N. Alminana, R. Delgado, **360° hydration approach for moisturising treatment,** Personal Care März 2013

Dry skin is a common problem that influences the ability to cope with the constant external environmental aggessions of the modern world. Hydrated skin is supple, flexible, soft and smooth, and appears young and healthy. Water is essential for the normal functioning of the skin, especially for the stratum corneum (SC), which is a selectively permeable, heterogeneous, composite outer layer of the skin. The SC provides a highly efficient barrier against water loss. Everyday conditions like cold, wind, airconditioning, the use of soap, and other factors are the main cause of hydration disruption in the SC resulting in noticeable scaling, itching, damaged skin, and a general unhealthy look.

G. Neudahl, **Rating of butters on TEWL, moisturisation and elasticity,** Personal Care February 2013

Butyrospermum Parkii (Shea) Butter (shea butter) is widely used in personal care and cosmetics as a moisturiser and emollient. While shea butter has grown in importance within the industry, there is little in the way of clinical studies showing its efficacy in skin care. Much of the information is based upon its composition or anecdotal in nature. Nonetheless, most cosmetic chemists are convinced that shea butter works, and works very well, as a moisturiser, improving the lipid barrier function. We believe that many other naturally occurring butters, such as Garcinia Indica Seed Butter (kokum butter), Mangifera Indica (Mango) Seed Butter (mango butter) and Theobroma Cacao (Cocoa) Seed Butter (cocoa butter), may be equal to, or better than, shea butter for reduction in transepidermal water loss (TEWL). A study was therefore undertaken to explore the effects of these butters for cosmetic use on transepidermal water loss, skin moisturisation and skin elasticity. The primary objective of the study was to determine the efficacy of these butters in skin care applications when incorporated in a standard formulation.

S. Luebberding, N. Krueger, M. Kerscher, **Age-related changes in skin barrier function – Quantitative evaluation of 150 female subjects,** International Journal of Cosmetic Science, 2013, 35, 183–190

Synopsis: The protection against water loss and the prevention of substances and bacteria penetrating into the body rank as the most important functions of the skin. This so-called ‘skin barrier function’ is the natural frontier between the inner organism and the environment, and is primarily formed by the epidermis. An impairment of the skin barrier function is often found in diseased and damaged skin. An influence of ageing on skin barrier function is widely accepted, but has not been conclusively evaluated yet. Therefore, the aim of this clinical study was to assess the potential influence of ageing on skin barrier function, including transepidermal water loss (TEWL), stratum corneum hydration, sebum content and pH value. One hundred and fifty healthy women aged 18–80, divided into five age groups with 30 subjects each, were evaluated in this study. TEWL, hydration level, sebum secretion and pH value of hydro-lipid acid film were measured with worldwide acknowledged biophysical measuring methods at cheek, neck, d_ecollet_e, volar forearm and dorsum of hand. Whereas TEWL and stratum corneum hydration showed only very low correlation with subject’s age, the sebum production decreased significantly with age, resulting in the lowest skin surface lipids levels measured in subjects older than 70 years. The highest skin surface pH was measured in subjects between 50 and 60 years, whereas the eldest age group had the lowest mean pH. The dorsum of the hand was the location with the highest TEWL and lowest stratum corneum hydration in all age groups. The results show that only some parameters related to skin barrier function are influenced by ageing. Whereas sebum production decreases significantly over lifetime and skin surface pH is significantly increased in menopausal woman, TEWL and stratum corneum hydration show only minor variations with ageing.

C. Adomat, W. Gehring, **Protektiver Effekt von Betulin-Emulsionen/Protective Effect of Betulin-Emulsions,** Aktuelle Dermatologie 2013; 39; 499-503

Zusammenfassung: In zwei voneinander unabhängigen Studien wurde die protektive Wirkung von Betulin-Emulsionen allein (Imlan®-Creme Pur und Imlan®-Creme Plus, Birken AG, Niefern-Öschelbronn, Deutschland) und im Vergleich zu dem Hautschutz-Produkt Excipial Protect® (Spirig Pharma AG, Egerkingen, Schweiz) im repetitiven Waschtest mit Natriumlaurylsulfat (SLS) untersucht. Dabei konnte für alle Präparate eine vergleichbare Schutzwirkung gegenüber SLS nachgewiesen werden.

Abstract: In two independent studies the protective effect of two betulin-emulsions (Imlan® Creme Pur und Imlan® Creme Plus, Birken AG, Niefern-Öschelbronn, Germany) and of a betulin-emulsion in comparison to the skin protection creme Excipial Protect® was tested in a repetitive washing test with sodium dodecylsulfate (SLS). The effect concerning protection against SLS was found to be comparable for all three products.

A.L. Vazquez Villa, M.R. Senrra Aragão, E. Pereira dos Santos, A.M. Mazotto, R.B. Zingali, E. Paraguai de Souza, A.B. Vermelho, **Feather keratin hydrolysates obtained from microbial keratinases: effect on hair fiber,** BMC Biotechnology 2013, 13:15

Background: Hair is composed mainly of keratin protein and a small amount of lipid. Protein hydrolysates, in particular those with low molecular weight distribution have been known to protect hair against chemical and environmental damage. Many types of protein hydrolysates from plants and animals have been used in hair and personal care such as keratin hydrolysates obtained from nails, horns and wool. Most of these hydrolysates are obtained by chemical hydrolysis and hydrothermal methods, but recently hydrolyzed hair keratin, feather keratin peptides, and feather meal peptides have been obtained by enzymatic hydrolysis using *Bacillus* spp in submerged fermentation. Results: Keratin peptides were obtained by enzymatic hydrolysis of keratinases using *Bacillus subtilis* AMR. The microorganism was grown on a feather medium, pH 8.0 (1% feathers) and supplemented with 0.01% of yeast extract, for 5 days, at 28°C with agitation. The supernatant containing the hydrolysates was colleted by centrifugation and ultra filtered in an AMICON system using nano–membranes (Millipore – YC05). The Proteins and peptides were analyzed using HPTLC and MALDI-TOF-MS. Commercial preparations of keratin hydrolysates were used as a comparative standard. After five days the feather had been degraded (90-95%) by the peptidases and keratinases of the microorganism. MALDI-TOF mass spectrometry showed multiple peaks that correspond to peptides in the range of 800 to 1079 Daltons and the commercial hydrolysate was in the range of 900 to 1400 Da. HPTLC showed lower molecular mass peptides and amino acids in the enzymatic hydrolysate when compared with the commercial hydrolysate. A mild shampoo and a rinse off conditioner were formulated with the enzymatic hydrolysate and applied to hair fibers to evaluate the hydration, with and without heat, using a CorneometerW CM 825. The hydration was more efficient with heat, suggesting a more complete incorporation of hydrolysates into the fibers. Scanning Electron Microscopy showed deposits of organic matter in the junction of the cuticles that probably collaborates to the sealing of the cuticles, increasing the brightness and softness. Conclusions: These results show that the enzymatic method to produce keratin peptides for hair care products is an attractive and eco- friendly method with a great potential in the cosmetic industry.

J.-Y. Jung, E.-H. Nam, S.-H. Park, S.-H. Han, C.-Y. Hwang, **Clinical use of a ceramide-based moisturizer for treating dogs with atopic dermatitis**, J. Vet. Sci. (2013), 14(2), p. 199-205

In humans, skin barrier dysfunction is thought to be responsible for enhanced penetration of allergens. Similar to conditions seen in humans, canine atopic dermatitis (CAD) is characterized by derangement of corneocytes and disorganization of intercellular lipids in the stratum corenum (SC) with decreased ceramide levels. This study was designed to evaluate the effects of a moisturizer containing ceramide on dogs with CAD. Dogs (n = 20, 3~8 years old) with mild to moderate clinical signs were recruited and applied a moisturizer containing ceramide for 4 weeks. Transepidermal water loss (TEWL), skin hydration, pruritus index for canine atopic dermatitis (PICAD) scores, and canine atopic dermatitis extent and severity index (CADESI) scores of all dogs were evaluated. Skin samples from five dogs were also examined with transmission electron microscopy (TEM) using ruthenium tetroxide. TEWL, PICAD, and CADESI values decreased ($p < 0.05$) and skin hydration increased dramatically over time ($p < 0.05$). Electron micrographs showed that the skin barrier of all five dogs was partially restored ($p < 0.05$). In conclusion, these results demonstrated that moisturizer containing ceramide was effective for treating skin barrier dysfunction and CAD symptoms.

J.W. Choi, S.H. Kwon, C.H. Huh, K.C. Park, S.W. Youn, **The influences of skin visco-elasticity, hydration level and aging on the formation of wrinkles: a comprehensive and objective approach,** Skin Research & Technologie, 2013 Feb;19(1): p. 349-55

Background: Various skin parameters including skin visco-elasticity and hydration level affect the formation of wrinkles. Objective: The aim of this study was to investigate the comprehensive and objective relationship between age, skin visco-elasticity, hydration level, and the occurrence of wrinkles using bioengineering equipments for the first time. Methods: A total number of 97 healthy women were included in this study. Age, Fitzpatrick skin type, skin mechanical parameters obtained with Cutometer(R0~R9), hydration level measured with Corneometer, as well as wrinkle parameters (SEsm, SEr, SEsc, and SEw) assessed with Visioscan, were analyzed with the Pearson's correlation test.

Results: The skin fluidity (R6) increased while the elastic recovery ratio (R7) decreased with the age. The wrinkle parameter (SEw) also increased with the age. The higher skin hysteresis values (R4 and R9) coincided with the higher SEw values. Skin hydration significantly lowered the hysteresis (R9), the wrinkles (SEw), and the depth of wrinkle furrows (R3mr). Conclusion: The elderly have less elastic skin and more wrinkles. Skin hysteresis most closely related with the degree of wrinkles. Drier skin showed more wrinkles and deeper furrows, with wider intervals. On the basis of these objective findings, we propose several skin parameters associated with wrinkles, and hypothesize the mechanism of wrinkle generation.

J. du Plessis, A. Stefaniak, F. Eloff, S. John, T. Agner, T.-C. Chou, R. Nixon, M. Steiner, A. Franken, I. Kudla, L. Holness, **International guidelines for the in vivo assessment of skin properties in non-clinical settings: Part 2. transepidermal water loss and skin hydration**, Skin Research and Technology 2013; 0:1-10

Background: There is an emerging perspective that it is not sufficient to just assess skin exposure to physical and chemical stressors in workplaces, but that it is also important to assess the condition, i.e. skin barrier function of the exposed skin at the time of exposure. The workplace environment, representing a non-clinical environment, can be highly variable and difficult to control, thereby presenting unique measurement challenges not typically encountered in clinical settings. Methods: An expert working group convened a workshop as part of the 5th International Conference on Occupational and Environmental Exposure of Skin to Chemicals (OEESC) to develop basic guidelines and best practices (based on existing clinical guidelines, published data, and own experiences) for the in vivo measurement of transepidermal water loss (TEWL) and skin hydration in non-clinical settings with specific reference to the workplace as a worst-case scenario.

M. Riedel, **Einfluss des Silikongels DERMATIX™ auf standarddiesierte, operative Narbenbildung am Thorax,** Disseration der Klinik für Hals-, Nasen- und Ohrenheilkunde und Plastische Operationen der Universität zu Lübeck, Januar 2013

Jeder invasive Eingriff, bei dem ein Hautschnitt durchgeführt wird, ist mit einer anschließenden Wundheilung und Narbenbildung verbunden. Nach wie vor stellt die minimalste Ausbildung und Ausprägung von Narben nach Eingriffen in der plastischrekonstruktiven Chirurgie eines der entscheidenden Erfolgskriterien, sowohl für den Patienten, als auch für den behandelnden Arzt dar. In diesem Teilbereich der Chirurgie steht für Patienten in vielen Fällen eine kosmetische Korrektur der als störend empfundenen Narbe im Vordergrund. Die Prävention und Therapie hypertropher, keloider oder kosmetisch unbefriedigender Narben ist eine aufwendige, langwierige und nicht selten unbefriedigende Prozedur.

G. Moro, P.-Y. Morvan, R. Vallée, **Perfecting properties of a marine exopolysaccharide**, Personal Care January 2013

Perfect skin – new skin – skin as fresh and radiant as a baby's is achieved through a multi-faceted approach. Skin colour, shine, surface condition and texture are all factors which play a role. To respond effectively, a comprehensive strategy is needed; the three major skin functions must be rebooted: physical barrier function, chemical barrier function, and hydra memory function. This reboot involves readjustment of the four parameters of "good" skin health as innate immunity, skin renewal, chronic inflammation and rehydration.

M. Farwick, S. Klee-Laquai, **Skin-identical ceramide for enhanced skin care,** Personal Care January 2013

Skin is a highly complex tissue acting as a protector against physical, chemical and biological attack. It plays a crucial role in the protection against dehydration and the control of body temperature. This barricade is provided by the „horny layer" (stratum corneum [SC]), representing the outermost layer of epidermis. The horny layer is a thin inert, water-retaining barrier which both regulates the moisture content of the skin and protects it aganist external influences. Due to ist structure it is often compared to a brick wall in which the non-viable corneocytes are embedded like bricks in a matrix of lipids („mortar").

D. Scharpenack, **Einfluss eines Pflegetuchs auf die Haut mit begleitender Fragebogenerhebung zur Anwendung in der Pflege**, Dissertation Universitätsmedizin der Ernst-Moritz-Arndt Universität Greifswald, Institut für Hygiene und Umweltmedizin, Germany, 2012

Die Körperwaschung ist ein wesentlicher Bestandteil der Körperhygiene und wird im stationären Setting in Form der Teilkörperwaschung/Ganzkörperwaschung von der Pflegekraft für Patienten übernommen, die sich nicht selbständig waschen können. Neben Körperpflegeutensilien und

Waschschüssel mit Waschwasser kommen Handtücher und Waschlappen zum Einsatz.Der Waschlappen wird mit Seife bzw. Waschlotion sowie mit dem Wasser aus der Waschschüssel getränkt. Dabei sollte flüssige Seife gewählt werden, da es durch Verwendung von Seifenstücken eventuell zur Übertragung von Krankheitserregerndurch ein kontaminiertes Seifenstück kommen kann (Kabara u. Brady 1984, Mc Bride 1984, Hegde et al. 2006). Tägliches Duschen oder Körperwaschung mit anschließendem Eincremen der Haut sind aktuelle Empfehlungen zur Körperhygieneund leiten sich aus Untersuchungen von Bergler (1973, 1989) und Kramer et al. (1993)ab. Das Waschen und analog das Abtrocknen wird vom Kopf beginnend abwärtsdurchgeführt und mit dem Genitalbereich mit separatem Waschlappen beendet, wobei jede Waschung unter Berücksichtigung der hygienischen Grundsätze den individuellen Bedürfnissen der Patienten angepasst werden kann (Kramer et al. 2011).Um eine Verschleppung von Krankheitserregern zu vermeiden, ist die Verwendung sauberer Waschlappen und Handtücher angezeigt. Für Waschlappen werden schnell trocknende Materialien (z. B. Frottee) empfohlen, wobei Handschuhwaschlappen wegen ihrer langsamen Trocknung ungeeignet sind. Nach Benutzung sollten Waschlappen in der Sanitärzelle oder am Waschplatz ausgebreitet aufgehängt werden, idealerweise erfolgt die Aufbereitung in einem eigenen Wasch- und Trockenraum.

H.-B. Pyun, M. Kim, J. Park, Y. Sakai, N. Numata, J.-Y. Shin, H.-J. Shin, D.-U. Kim, J.-K. Hwang, **Effects of Collagen Tripeptide Supplement on Photoaging and Epidermal Skin Barrier in UVB-exposed Hairless Mice**, Prev Nutr Food Sci, Vol 17, p. 245–253 (2012)

Collagen tripeptide (CTP) is a functional food material with several biological effects such as improving dry skin and wound and bone fracture healing. This study focused on the anti-photoaging effects of CTP on a hairless mouse model. To evaluate the effects of CTP on UVB-induced skin wrinkle formation *in vivo*, the hairless mice were exposed to UVB radiation with oral administration of CTP for 14 weeks. Compared with the untreated UVB control group, mice treated with CTP showed significantly reduced wrinkle formation, skin thickening, and transepidermal water loss (TEWL). Skin hydration and hydroxyproline were increased in the CTP-treated group. Moreover, oral administration of CTP prevented UVB-induced MMP-3 and -13 activities as well as MMP-2 and -9 expressions. Oral administration of CTP increased skin elasticity and decreased abnormal elastic fiber formation. Erythema was also decreased in the CTP-treated group. Taken together, these results strongly suggest that CTP has potential as an anti-photoaging agent.

Jojoba Emollient Base, Floratech Product News, Cosmetics & Toiletries Vol. 127, No. 12/ December 2012

Floratech has introduced a botanically derived emollient base that delivers the human skin lipid profile of a healthy 22-year-old. L22 (INCI: Jojoba Oil/Macadamia Seed Oil Esters (and) Squalene (and) Phytosterols (and) Phytosteryl Macadamiate (and) Tocopherol) was shown to hydrate the skin. The company conducted a doubleblind, randomized clinical study of the emollient at 3% compared to olive oil and caprylic/capric triglyeride, all incorporated into different test lotions and applied on a panel of 12 healthy women ranging from 36 to 59 with dry lower legs.

Increased Skin Hydration with FLORAESTERS® 30 and FLORAESTERS K-100® Jojoba in a Shaving Cream, Poster Floratech 2012

Floraesters 30 and Floraesters K-100 Jojoba, alone and in combination, increased skin hydration over the vehicle which only included 1% aloe vera.

M. Estanqueiro, G. Bossolani, M.H. Amaral, J. Conceicao, D. Santos, J.M. Sousa Lobo, J.B. Silva, C.S.F. Gomes, **Characterizing and Evaluating the Effectiveness of Volcanic Pumice Exfoliants,** Cosmetics & Toiletries magazine Vol. 127, No. 11 November 2012

Human skin, more specifically facial skin, periodically needs a deep cleansing to remove not only the oily particles resulting from secretions, but also dead skin caused by desquamation of the epidermis. Cleansers are designed to remove dirt, sewat, sebum and oils from the skin, which helps to promote normal exfoliation and thereby rejuvenates the skin. However, the use of cleansers can lead to a reduction in the level of the natural moisturizing factor (NMF) of skin. Factors that reduce the water content can lead to changes in skin's viscoelasticity. Further, harsh cleansers such as soaps can induce dryness, leading to scaly and rough skin. These effects may be much more severe during winter months when the air is cold and dry.

L. Granato, **Modulator from fractions of vegetable unsaponifiables**, Personal Care, November 2012

Filagrinol is a clear Liposoluble active ingredient, composed of fractions of vegetable unsaponifiables, modulating filaggrin production, and carrying out a specific epidermal moisturizing action. Chemically, it is a combination predominantly existing of polyions from vegetable oil

unsaponifiables (wheat germ, olives and soybean) and the lipid fraction of entomophilous pollen. Filagrinol is a clear yellow-amber liquid (T=20°C), with characteristic odour, soluble in lipid systems. It does not contain any preservative. Its INCI Name is: Pollen Extract, Glycine Soja (Soybean) Oil Unsaponifiables, Olea Europaea (Olive) Oil Unsaponifiable, Triticum Vulgare (Wheat) Germ Oil Unsaponifiables. In particular, referring to pollen, the one used in Filagrinol is not anemophilous but exclusively entomophilous; entomophilous Acacia Farnesiana (Real Acacia) Pollen Extract. Therefore, it has no allergy risk.

N. Waranuch, S. Maphanta, W. Wisuitiprot, **Effect of microparticles containing green tea extract on facial skin improvement,** ISBS Copenhagen 2012

To clinically evaluate an effectiveness of skin cream containing green tea extract loaded chitosan microparticles for facial wrikle treatment. Method: Tewnty-nine volunteers were randomly assigned to aplly skin cream containing 1% green tea extract loaded chitosan microparticles (GT-Cs) and a placebo cream on each of their half faces for 8 weeks. Skin elasticity was evaluated by using Cutometer and the photographs of each half faces were also compared. Skin moisture and skin irritation were determined by Corneometer and transepidermal water loss (TEWL) respectively.

L. Palma, L. Tavares, C. Monteiro, M.J. Bujan, L.M .Rodrigues, **Diet water seems to influence skin hydration and biomechanics,** ISBS Copenhagen 2012

The feeding habits of a given population were studied, specially regarding its daily regular water intake (dient and beverages) and tried to relate with those skin biometrical variables. This transversal study involved forty healthy volunteers, female, (mean 26,45 ◘ 7,95 y.o.), after informed written consent. All procedures respected Helsinky principles and respective amendments. A Feeding Frequency Questionnaire (FFQ) previously validated for the Portuguese population was applied. Transepidermal water loss (TEWL, Tewameter TM300), epidermal hydration (Corneometer CM825) and skin's biomechanics (Cutometer SEM575) were the cutaneous variables chosen.

L. Tavares, L. Palma, O. Santos, M.A. Almeida, M.J. Bujan, L.M. Rodrigues, **Looking for a global indicator of obese skin function,** ISBS Copenhagen 2012

The impairment of water balance and biomechanical behaviour of the skin seems to be consistently present in obesity, and probably related with most frequent signs and symptoms. The present work aimed to search for a global body mass index (BMI) related indicator for this functions. 51 female patients, aged between 20 and 46 (mean 29 ±7) years old, with no relevant pathologies except the overweight or obesity were involved. All procedures respected Helsinky principles and respective amendments. The Quetelet index (BMI) was calculated for each volunteer. Measurements took place under controlled conditions, in different anatomical areas (face; breast; and abdomen) and included skin hydration (Corneometer CM825), barrier function (Tewameter TM300) and biomechanical descriptors (Cutometer MPA580 and Reviscometer).

S. Mac-Mary, A. Elkhyat, J.M. Sainthillier, A. Jeudy, K. Perrot, S. Lafond, O. Predine, P. Mermet, C. Tarrit, P. Humbert, **Specific cosmetic for children: an in vivo randomized single-blind study of efficacy in 7- to 12-year-old children**, IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

Few cosmetics are dedicated to the skin of children: most of them have been developed for babies or the acneic skin of adolescents. However, literature seems to indicate that the children's sebum levels are very low. The aim of this study was to assess the acceptability and efficacy of a cosmetic specifically formulated for the skin of prepubertal children.

D. Tamburic, I. Macijauskaite, R. Parton, S. Williams, **Assessing the efficacy of high-flavanol cocoa extract: does higher concentration work better?**, IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

It is well documented that antioxidants have a range of positive effects on human skin. However, there is a problem with their delivery to the site of action, an issue shared with most topical actives. Due to their chemical nature, antioxidants are also inherently unstable ingredients.

P. Msika, W. Fluhr, N. Lachmann, C. Baudouin, C. de Belilovsky, **What are the differences in skin physiology in neonates and children of different age groups compared to adults? A randomized in vivo study**, IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

The skin of neonates and children has anatomical and physiological differences to adults with respect to water content, and perspiration, light sensibility, percutaneous permeability, susceptibility to infections and irritants and topical treatments. The aim of the present study was to investigate non-invasivley physiologic skin paramenters (transepidermal water loss (TEWL), stratum corneum (SC)

hydration, surface pH and the biochemical skin composition (water profile and bulk NMF) to characterize neonatal skin in comparison to different children age groups and adults.

C. Barba, L. Coderch, E. Fernandez, A. Semenzato, G. Baratto, J.L. Parra, **Protection and repairing skin effects of ceramide containing formulations,** IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

Intercellular lipids of stratum corneum (SC) play a crucial role in keeping an optimal skin barrier function, regulating the water-holding capacity. Recent studies suggest that supplementing intercellular lipids of SC can stimulate the functioning of the skin. This work lends support to the reinforcement capacity and the repairing effect of different formulations, with the presence in all of them of the three main lipid families present in the SC, free fatty acids (FFA) cholesterol and ceramides. In particular, we compared the protection and repairing effects of the lipid mixture (creamide: cholesterol: FFA) solubilised in the oily phase of oil in water emulsions, dispersed as solid microparticles in a gel formulation, and as liposome solution.

M.V. Velasco, R. Vieira, F. Fialho-Pereira, A. Ferandes, I. Salgado-Santos, C. Pinto, C. Moraes, T. Kaneko, A. Baby, **Short-term clinical of peel-off facial mask moisturizers**, IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

Facial masks have been used as cosmetic prepartations since antiquity. Today, their popular use is related their multifunctional characteristics. Peel-off facial masks, based on polyvinyl alcohol (PVA), are formulations that, after the application and drying, form an occlusive film over the face. Their effects may include cleaning and moisturizing of the skin; providing tautness; and removing dead cells, residues and other materials that was deposited on the stratum corneum. The soybean extract fermented by Bifidobacterium animalis has sugars, amino acids, peptides, proteins and free isoflavonoids in high concentrations, when compared to the unfermented extract, and it may provide benefits to the cosmetic formulations including anti-aging, moisturizing and tensor effects. Therefore, the aims of this study is: compare the efficacy of a peel-off facial mask, after its application and removal from the skin, with an oil-in-water (O/A) emulsion. The study was designed as a one-sided blind and randomized trial using three sites for application on each arm of the volunteers.

B. Martínez-Teipel, R. Armengol, E. Rubio, **Natural ppar$_\gamma$ agonist: from silico prediction to a real cosmetic active,** IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

Peroxisome proliferator-activated receptors (PPARs) are ligand activated transcription factors that belong to the nuclear hormone superfamily. Three isoforms have been identified, PPAR □, - □/ □ and – □. PPAR □ is mainly expressed in adipose tissue and is a mediator of adipocyte differentiation and lipid metabolism. More recently, PPARs have been shown to regulate cell proliferation, differentiation and inflammatory responses in skin. In keratinocytes, PPAR □/ □ is the predominant subtype, whereas PPAR □ is induced during epidermal differentation. PPAR □ activators show promise for the treatment of inflammatory skin disease, such as atopic dermatits and psoriasis and have also been shown to increment involucrin and trans-glutaminase 1 levels in human keratinocyte cultures and loricrin, involucrin and filaggrin in vivo.

W. Voss, I. Bunge, **Dermatological Reports on Cosmetics: Intensions and Possibilities**, IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

Dermatological reports and claims in accordance with scientific criteria are of decisive value for the safety and efficacy of cosmetics. Whether a cosmetic product is well tolerated or causes irritations or allergic reactions must be proven by dermatological tests. The value of dermatological reports directly depends on the respectability of the commissioned dermatologists. Pitfalls occur, whenever non qualified scientific results are generously used for advertising campains like “dermatologically tested”, “allergy tested”, “hypo-allergen” etc. Additionally a lot of reports are scientifically insufficient. Dermatological reports on cosmetics therefore must be valid in methodology and practical execution. With Dermatest you benefit from more than 30 years of testing experience and dermatological expertise.

O. Schlappack, **Einmal wohlfühlen, bitte!,** Beauty Forum 10/2012

Bei Frauen tritt ein bösartiger Tumor am häufigsten in der Brust auf. Etwa 50.000 erkranken jedes Jahr in Deutschland neu daran. Bei der Behandlung werden u.a. Chriurgie, Chemo-, Hormon- und Strahlentherapie eingesetzt. Sie als Hautpflegeexpertin können durch bedürfnisgerechte Behandlungen und hilfreiche Beratung dazu beitragen, die Nebenwirkungen der Krebstherapie abzumildern.

S. Schliemann, P. Elsner, **Entwicklung eines standardisierten Testverfahrens zur Wirksamkeitstestung von Schutzpräparaten gegen beruflich relevante lipophile Hautirritantien**, Universität zu Jena, DGVU Abschlussbericht FP 243, September 2012

Zielsetzung: Hautschutzprodukte sind Kosmetika, die an Arbeitsplätzen zur Prävention irritativer Kontaktekzeme eingesetzt werden, wenn eine Verwendung von Schutzhandschuhen nicht angezeigt oder unmöglich ist. Ihre prinzipielle Wirksamkeit ist zwischenzeitlich im Zusammenhang mit Feuchtarbeit und Kontakt zu wässrigen Irritantien, speziell Tensiden wie SLS, wissenschaftlich positiv belegt worden. Hautschutzprodukte werden aber auch bei multiplen Expositionen und Umgang mit lipophilen Arbeitsstoffen von Herstellern empfohlen. Insbesondere bei Auslobung zum Schutz gegen lipophile Arbeitsstoffe, zu denen auch organische Lösemittel zählen, fehlen jedoch bisher positive Wirksamkeitsnachweise, zumindest was Ergebnisse aus repetitiven in vivo-Testverfahren angeht, die von berufsdermatologischer Seite empfohlen werden. Aktivitäten/Methoden: Im Rahmen des vorgelegten Forschungsprojektes wurden an einem berufsdermatologischen Zentrum wesentliche Entwicklungsarbeiten für ein transferfähiges Testverfahren zur Wirksamkeitstestung für berufliche Hautschutzmittel gegen lipophile Substanzen geleistet. Das in vivo-Irritationsmodell ermöglicht einen parallelen, intraindividuellen Vergleich von Wirksamkeiten mehrerer Hautschutzexterna an der Rückenhaut. Zwei beruflich relevante Lösemittel, darunter ein aliphatischer Kohlenwasserstoff (KW) (n-Octan, CAS-Nr. 111-65-9) und ein aromatischer KW (Cumol, Isopropylbenzol, CAS-Nr. 89-82-8), wurden als Modellirritantien implementiert. Der induzierte Irritationsgrad wird anhand der Zielparameter "klinischer Grad der kumulativen Irritation im Summenscore" und "Dehydratation des Stratum corneums" quantifiziert. Statistische Methoden wurden zur Absicherung der Produktwirkung entwickelt. Ergebnisse: In zwei aufeinanderfolgenden, verblindeten Studien zeigten sich bei zwei von sechs untersuchten Produkten nicht nur eine fehlende Schutzwirkung, sondern signifikant irritationsverstärkende Effekte. Eine isolierte Schutzwirkung vor Cumol-bedingter Dehydratation konnte im Modell für zwei von sechs Produkten nachgewiesen werden. Keines der untersuchten Externa wirkte ausreichend gegen Octan-bedingte Irritation. Aufgrund neuer Erkenntnisse zum toxikologischen Profil von Cumol wird die Substanz zwischenzeitlich nicht mehr uneingeschränkt als Modellsubstanz empfohlen. Das Projekt wurde daraufhin vor einer optionalen Multicentervalidierung des Testmodells beendet. Anschlussarbeiten auf dem Gebiet außerhalb des Projektrahmens sind notwendig.

C. Try, R. Messikh, A. Elkhyat, F. Aubin, P. Humbert, **Utilisation de oxybutynine a la posologie de 7,5 mg par jours dans le traitement des hyperhidroses primitives**, Rev Med Liège 2012; 67: 10: p. 520-526

Oxybutynin is being increasingly being prescribed in the treatment of hyperhidrosis but currently, there is no precise dosage for this treatment. Nine patients were treated for primary hyperhidrosis resistant to conventional therapies with oxybutynin between January to May 2010. The treatment was progressively increased at 7.5 mg per day. Oxybutynin efficacy was evaluated by iodine starch test and biometrological measurements at 2 and 4 weeks of treatment. Hyperhidrosis Disease Severity Scale (HDSS) and Dermatology Life Quality Index (DLQI) were obtained for each patient. The means of HDSS and DLQI were respectively 3.2 ± 0.7 and 17.0 ± 5.1 before treatment and were 1.8 ± 0.4 and 4.6 ± 4.4 at 4 weeks of treatment. Oxybutynin at 7.5 mg per day significantly decreased intensity and area of sweat for palms but not for soles. Trans Epidermal Water Loss, conductance, pH and Skin temperature were modified with treatment. Oxybutynin at 7.5 mg per day has improved patient's quality of life. Efficiency of oxybutynin in primary palmar hyperhidrosis was proved by biometrological measurements and iodine starch test. *(Article in French)*

L. Tavares, L. Palma, O. Santos, M.A. Almeida, M.J. Bujan, L.M. Rodrigues, **Relationship between skin hydration and elasticity in normal weighted subjects and the influence of age**, Biomed Biopharm Res. , 2012; (9) 2: 191-198

Skin is the largest organ of the human body. It is a protective organ and of all its known functions, the most significant is the capacity to adapt itself to the contours of the body. The current study aims to determine the extent to which hydration influences or is influenced by elasticity, by comparing the parameters of hydration and elasticity. A convenience sample of 42 volunteers was selected all of whom were female, healthy and with normal BMI according to WHO. The "barrier" function was characterized by the transepidermal water loss (Tewameter TM300); the superficial epidermal hydration was measured by Moisturemeter SC and Corneometer and the "envelope" function was assessed by the Cutometer MPA580 and by the reviscometer RV600. Measurements were taken on the face (zygomatic and frontal areas), in the breast and in the abdominal areas. The most significant results show that almost all hydration and elasticity parameters fluctuate with age, which corresponds to previous studies. Moreover, there is some interaction between hydration parameters and some elasticity descriptors that should be investigated in future studies.

Y.S. Shin, H.J. Kim, N.K. Moon, Y.H. Ahn, K.O. Kim, **The effects of uncoated paper on skin moisture and transepidermal water loss in bedridden patients**, J Clin Nurs. 2012 Sep; 21 (17-18): p. 2469-76

Aims and Objectives: The aims of this study were to measure skin moisture and transepidermal water loss after application of uncoated paper and to compare skin moisture and transepidermal water loss after use of uncoated paper and disposable underpads. Study Design: The study was a cross-over, prospective, open-labeled, randomized trial. Sample and Settings: Bedridden patients aged ≥ 18 years at a medical center in Korea were included. Treatment order was randomly assigned using block randomization, with a block size of 4 and an assignment rate of one-by-one. Methods: Skin moisture was measured using a Corneometer 825 and transepidermal water loss was measured using a Tewameter 300. Results: Skin moisture after application of an uncoated paper was significantly lower than observed after application of a disposable underpad (mean 40.6 and SD 13.1 vs. mean 64.6 and SD 23.7, $p<0.001$). Transepidermal water loss also showed greater health scores after using uncoated paper (mean 11.1 and SD 5.7 g/m2/hour) than after applying a disposable underpad (mean 23.2 and SD 11.1 g/m2 /hour, $p<0.001$). There were no statistical between-group differences in room temperature, relative humidity, and body temperature. Conclusion: We found that uncoated paper was helpful in avoiding excessive moisture without adverse effects. Relevance to Clinical Practice: As indicated by the results of this study, uncoated paper can be applied to bed-ridden patients who required incontinence care. Nurses may consider using uncoated paper as one of nursing methods in the routine care of bed-ridden patients for moisture control.

C. Schrammek-Drusio, **Fachfrau in Sachen Haut – die Kosmetikerin als Hautpflegetherapeutin,** natur & kosmetik, service, S. 39

Die Kosmetikerin von heute muss sich in Theorie und Praxis rund um das Thema Haut auskennen. Dafür spielt die fundierte und theorie- sowie fachorientierte Ausbildung und eine stetige Weiterbildung die größte Rolle. Ohne berufliche Fortbildung ist es auf Dauer unmöglich, zeitgerecht und marktorientiert zu arbeiten. Um die Haut der Kundinnen und Kunden für die kosmetische Kabinenbehandlung spezifisch zu bestimmen, liegt ein Schwerpunkt im richtigen erkennen der Hautgrundbilder und Hautzustände – die so genannte Profi-Hautanalyse. Noch immer werden Hauttypen und Hautgrundbilder häufig verwechselt.

C. Schrammek-Drusio, **Haut- und Gesichtsdiagnosen – eine Kernkompetenz jeder Kosmetikerin,** dermatologie, S. 32-33

Neben dem Dermatologen ist eine kompetente Kosmetikerin die Expertin in Sachen Hautpflege. Doch wodurch zeichnet sie sich aus? Selbstverständlich ist ein umfassendes theoretisches und praktisches Fachwissen erforderlich, komplettiert durch stetige Weiterbildung. Doch wenn Kunden ins Institut kommen, möchten sie auch schnelle Analyseergebnisse und Behandlungspläne erfahren. Grundlage hierfür ist die professionelle Hautdiagnose. Denn alle sich anschliessenden Fragen, etwa welche Produkte und Behandlungen in der Kabine angewendet werden, wie das individuelle Pflegekonzept aussehen soll und welche Präparate sich für die Heimpflege empfehlen, hängen von dem Ergebnis der Hautanalyse ab. Für die kosmetische Praxis bedeutet dies das Erkennen und Einordnen des Hautgrundbildes, des Hautzustandes und der Anomalien bzw. unerwünschten Hautveränderungen.

P. Kleesz, R. Darlenski, J.W. Fluhr, **Full-Body Skin Mapping for Six Biophysical Parameters: Baseline Values at 16 Anatomical Sites in 125 Human Subjects,** Skin Pharmacol Physiol 2012; 25; p. 25-33

The skin, as the outermost organ, protects against exogenous hazards (outside-in barrier) and prevents the loss of essential parts of the body (inside-out barrier). The epidermal barrier exerts several functions with specific morphological elements. Regional differences in skin functions are well known. The aim of the present study was to assess and compare skin physiological parameters in vivo at 16 anatomical sites: Barrier function in terms of transepidermal water loss (TEWL), stratum corneum (SC) hydration (assessed by capacitace), skin surface pH, skin surface temperature, erythema index and skin pigmentation were quantified at 16 anatomical sites under basal conditions.

S. de Spirt, H. Sies, H. Tronnier, U. Heinrich, **An Encapsulated Fruit and Vegetable Juice Concentrate Increases Skin Microcirculation in Healthy Women,** Skin Pharmacol Physiol 2012; 25: p. 2-8

Background/Aim: Microcirculation in the dermis of the skin is important for nutrient delivery to this tissue. In this study, the effects of a micronutrient concentrate (Juice Plus+; 'active group'), composed primarily of fruit and vegetable juice powder, on skin microcirculation and structure were compared to placebo. Study Design/Methods: This 12-week study had a monocentric, double-blind

placebo and randomized controlled design with two treatment groups consisting of 26 healthy middle-aged women each. The 'oxygen to see' device was used to evaluate microcirculation. Skin density and thickness were measured using ultrasound. Measurements for skin hydration (Corneometer), transepidermal water loss and serum analysis for carotenoids and ◘-tocopherol were also performed. Results: By 12 weeks, microcirculation of the superficial plexus increased by 39%. Furthermore, skin hydration increased by 9% while skin thickness increased by 6% and skin density by 16% in the active group. In the placebo group, microcirculation decreased, and a slight increase in skin density was observed. Conclusion: Ingestion of a fruit- and vegetable-based concentrate increases microcirculation of the skin at 12 weeks of intervention and positively affects skin hydration, density and thickness.

A. Matsubara, **Differences in the surface and subsurface reflection characteristics of facial skin by age group,** Skin Research and Technology 2012, 18; p. 29-35

The Appearance of facial skin changes with age in various ways, and in most cases, it deteriorates as more imperfections, such as hyperpigmented spots, wrinkles, enlarged pores, or skin with a roughened texture, appear on the face. Changes in these skin attributes are obvisous and have been measured technically using objective methods, particularly those involving two- or three-dimensional imaging techniques. In Comparison with such obvious skin features, optical attributes of the skin such as radiance, glow, and shine are less tangible. The definitions of these consumer terminologies are not as clear as those for typical skin imperfections, and their connection to physical parameters is not fully established.

T.H. Sakuma, H.I. Maibach, **Oily Skin: An overview,** Skin Pharmacology and Physiology 2012, 25: p. 227-235

Abstract: Oily skin (seborrhea) is a common cosmetic problem that occurs when oversized sebaceous glands produce excessive amounts of sebum giving the appearance shiny and greasy skin. This paper overviews the main concepts of sebaceous gland anatomy and physiology, including the biosynthesis, storage and release of sebum, as well as its relationship to skin hydration and water barrier function. We also address how skin oiliness may vary according to diet, age, gender, ethnicity and hot humid climates. The deeper understanding of this skin type provides the opportunity to better guide patients regaring skin care and also assist in the development of sebosuppressive agents.

Z. Liu, S. Song, W. Luo, P.M. Elias, M.-Q. Man, **Sun-induced changes of stratum corneum hydration vary with age and gender in a normal Chinese population,** Skin Research and Technology 2012, 18: p. 22-28

Both Age and gender are determinants of cutaneous function. Besides the gender difference in the prevalence of some dermatoses cutaneous biophysical properties also vary with gender. Previsous studies have shown that stratum corneum hydration on the forehead is higher in males aged 13-35 than in age matched females. Regarding the gender difference in skin surface pH, the results are controversial. It have been reported that skin surface pH on the forearm and axilla is lower in females than in males while a higher skin surface pH is also observed in females. Nevertheless, these results suggest that skin surface pH varies with gender.

Hydromanil to improve skin moisture and anti-aging effect – clinical information, Créme de Vie Product Information, www.cremedevie.com/hydromanil-clinical.htm

Hydromanil is composed of galactomannan hydrating molecules arranged in a three-dimensional matrix that retains galacto-manno-oligosaccharides. Galactomannans: They are large, high molecular weight polysaccharides selected on the basis of their natural hydrating function in the seed. They prevent the embryo from dehydration due to their high capacity to incorporate and retain water. Actually, they can incorporate up to 60% of the total water absorbed by the seed during the germination process. This is an adaptive response to its natural semi-arid environment. Their structure is composed of lineal mannose chains connected by glycosidic bonds with randomly distributed side chains consisting of galactose residues.

S. Ingeburg, A. Grieshaber, **Vergleichender Barrierefunktionstest mit Natrium-Laurylsulfat zur Einschätzung des Ekzemrisikos am Arbeitsplatz**, Klinik für Dermatologie, Venerologie und Allergologie

Berufskrankheiten im Bereich der Haut haben jährlich Kosten in Millionen Höhe zur Folge. Als Hauptrisiko für das Auftreten einer Hauterkrankung am Arbeitsplatz gilt eine anlagebedingte Bereitschaft gegen von außen einwirkende Substanzen eine Überempfindlichkeitsreaktion zu entwickeln. Ziel dieser Untersuchung war es, bei Atopikern und Nichtatopikern an klinisch gesunder Haut zwei unterschiedliche Testmethoden zur Einschätzung des individuellen Ekzemrisikos im

Feuchtberuf zu vergleichen. Zur Barrierefunktionstestung wurden zum einen der repetitive Waschtest und zum anderen der Okklusivtest herangezogen. Bei beiden Testverfahren wurde Natrium-Laurylsulfat als Waschlösung verwendet. Der repetitive Waschtest, welcher derzeit das Standardverfahren zur Testung des individuellen Ekzemrisikos darstellt, erfolgte mehrfach täglich am Unterarm unter definierten Bedingungen über vierzehn Tage. Für den Okklusivtest wurde Natrium-Laurylsulfat am Oberarm in fünf verschiedenen Konzentrationen sowie destilliertes Wasser als Kontrollfeld über achtundvierzig Stunden aufgetragen.

K. Fritz, **Skin physiologic changes before and after laser treatment**, IMCAS, Congress of Plastic Surgery and Dermatoloy, Lecture number: 5462

The aim of the study was to compare the changes of the biophysical properties and to objectify the effects of treatments with various lasers on skin phsiology. Few studies have been reported to compare the effects of various lasers on the skin physiology wich could result in a customized skin care post treatment recommendation. The recent development of various biophysical devices has made it possible to have more accurate and objective assessment methods. The functional properties of the skin are measured by utilizing non invasive techniques, including the assessments for, skin color, trans-epidermal water loss (TEWL) and skin hydration and ph (Courage and Khazaka).

A. Firooz, B. Sadr, S. Babakoohi, M. Sarraf-Yazdy, F. Fanian, A. Kazerouni-Timsar, M. Nassiri-Kashani, M.M. Naghizadeh, Y. Dowlati, **Variation of Biophysical Parameters of the Skin with Age, Gender, and Body Region,** The Scientific World Journal, Volume 2012

Background: Understanding the physiological, chemical, and biophysical characteristics of the skin helps us to arrange a proper approach to the management of skin diseases. Objective: The aim of this study was to measure 6 biophysical characteristics of normal skin (sebum content, hydration, transepidermal water loss (TEWL), erythema index, melanin index, and elasticity) in a normal population and assess the effect of sex, age, and body location on them. Methods: Fifty healthy volunteers in 5 age groups (5 males and females in each) were enrolled in this study. A multifunctional skin physiology monitor (Courage & Khazaka electronic GmbH, Germany) was used to measure skin sebum content, hydration, TEWL, erythema index, melanin index, and elasticity in 8 different locations of the body. Results: There were significant differences between the hydration, melanin index, and elasticity of different age groups. Regarding the locations, forehead had the highest melanin index, where as palm had the lowest value. The mean values of erythema index and melanin index and TEWL were significantly higher in males and anatomic location was a significant independent factor for all of 6 measured parameters. Conclusion: Several biophysical properties of the skin vary among different gender, age groups, and body locations.

I. Ibrahiin, W.S. Khan, S. Dheerendra, P. Smitham, N. Goddard, **A Novel Method of Diagnosing Autonomic Dysfunction in Carpal Tunnel Syndrome: Measuring Skin Capacitance**, TraumMologia Rehabilltacja, 2012. 5(6); Vol. 14, p. 429-433

Background: Carpal Tunnel Syndrome (CTS) is normally diagnosed via its sensory' and motor manifestations. The associated autonomic dysfunction has not been exploited to its Full potential as a diagnostic tool due to the difficulties in quantifying it. We aim to demonstrate that autonomic dysfunction of CTS can be quantified by measuring skin capacitance. Material and methods: Fifty-one patients with clinical signs and elcctrophysiological evidence of C I S in 89 hands were recruited. Skin capacitance was measured using Comeometer CM 825 (C&K Electronic, GmbH) from the palmar aspect of the distal phalanx of the index and little linger of the affected hand. Healthy genderand age-matched individuals were recruited as controls. Results. The mean ratio of hydration of the index to the little linger was 0.82. The mean difference was 10.98 arbitrary units. The control group consisted of 151 subjects (80 Male & 71 Fctnalc) and 302 hands with an average age of 40.1 years (18-81 years). The mean ratio of hydration of the index to the little linger was 0 87. The mean difference was 8.67 arbitrary units. The measurement ratios (index to little linger skin hydration) between the two groups was compared directly and gave a significant mean difference of 0.05 arbitrary units. Conclusions: 1. Statistically significant differences in skin capacitance between CTS patients and controls have been demonstrated and quantified using a rapid and simple method. 2. This can be used in clinic to reduce the reliance on Nerve Conduction Studies for diagnosing CTS.

C. Lv, S. Song, W. Luo, P.M. Elias, M.Q. Man, **Cutaneous resonance running time is decreased in psoriatic lesions,** Skin Research & Technology, 2012 May;18(2): p. 232-7

Background: Psoriasis is characterized by lower stratum corneum (SC) hydration and dermal inflammation. Both SC hydration and cutaneous inflammation influence cutaneous resonance running time (CRRT). However, the characteristics of CRRT in psoriatic lesions are largely unknown.

Methods: In the present study, we assessed whether changes in CRRT occur in psoriatic lesions in Chinese. A Reviscometer RVM600 and Corneometer CM 825 were used to measure CRRTs and SC hydration, respectively, in psoriatic lesions (psoriasis vulgaris) on the extensor of forearm in 111 subjects (58 men, 53 women), aged 23-80 years (50.42 ± 1.23 years). The contralateral uninvolved sites served as control. Results: In comparison with contralateral uninvolved sites, CRRTs in psoriatic lesions were reduced significantly in all directions. There was neither gender nor age difference in the extent of reduction in CRRTs. However, the reduction of CRRTs varied with measurement directions. Positive correlations of SC hydration with CRRTs were found at some directions in uninvolved and involved sites in young men whereas CRRTs in psoriatic lesions were not correlated with SC hydration in either aged or young women. Moreover, CRRT at 0-6 o'clock direction was positively correlated with SC hydration in involved sites of aged men. Conclusion: Cutaneous resonance running times are decreased in psoriatic lesions. Reduction of CRRTs varies with measurement directions, but not gender or age. Measurement of CRRTs could be another valuable approach to assess the severity of psoriasis and the efficacy of its treatment.

J. Djokic-Gallagher, P. Rosher, J. Walker, V. Hart, **Objective and subjective in vivo comparison of two emollient products,** Clinical, Cosmetic and Investigational Dermatology 2012:5 p. 85–91

Background: Few studies have directly compared the effectiveness of different emollients in vivo, and the important matter of patient preference is generally overlooked. Methods: We report the results of an assessor-blinded, bilateral, concurrent comparison of two emollient pharmaceutical presentations, ie, Doublebase gel (DB) and Aqueous cream BP (AC), applied by 20 participants three times daily for 7 consecutive days. The primaryeffcacy endpoint was cumulative improvement in skin hydration measured by corneometry on days 1, 3, and 5 immediately before the frst application and approximately 2 hours after the third application of the day. Secondary endpoints were investigator assessment of skin condition at these time points and participant assessment of product acceptability at the end of the study. Results: Both products increased skin hydration, but the effect of AC was relatively modest, with morning values readily returning to pretreatment levels. Hydration levels were higher for DB gel, maintained at all time points, and showed stepwise, cumulative increases over the 7 days of use. Overall patient satisfaction scores were higher for DB gel, and especially for “consistency,” “ease of use,” and “ease of absorption into the skin.” Eighty-fve percent of participants expressed a desire to use DB gel again as compared with 40% for AC.

SARISE BIO – Eine 100% natürliche Anti-Aging-Innovation, impag Produkt Information**,** COSSMA 4/2012

SARISE BIO ist ein innovativer, 100% natürlicher Anti-Aging-Wirkstoff, ECOCERT-zertifiziert und frei von Konservierungsmitteln. Der Phytokomplex wird aus den Stielen der Sauerkirsche und den Blättern des Sommerbohnenkrautes gewonnen. Reduzierter Zellmetabolismus und oxidativer Stress sind die beiden Hauptursachen der Zellalterung. SARISE BIO ist in der Lage, gegen diese beiden Auslöser anzukämpfen. Die Wirkung wurde in klinischen Studien bestätigt. Durch eine spezielle Produktionsmethode enthält SARISE BIO einen hohen Gehalt an aktiven Molekülen wie Triterpenoide (Ursolsäure), Rosmarinsäure und Flavonoide (Quercetin). SARISE BIO neutralisiert direkt reaktive Sauerstoffspezies (ROS). Durch die Stimulation der mitochondrialen Aktivität und die dadurch bedingte Reduktion von intrazellulärem oxidativem Strss, besitzt der Wirkstoff einen zusätzlichen positivien Effekt.

M. Borlu, Z. Karaca, H. Yildiz, F. Tanriverdi, B. Demirel, G. Elbuken, I. Cakir, H.S. Dokmetas, R. Colak, K. Unluhizarci, F. Kelestimur, **Acromegaly is associated with decreased skin transepidermal water loss and temperature, and increased skin pH and sebum secretion partially reversible after treatment,** Growth Horm IGF Res. 2012 Apr;22(2): p. 82-6

Background: Acromegaly is characterized by an acquired progressive somatic disfigurement, mainly involving the face and extremities, besides many other organ involvement. Wet and oily skin was described in acromegaly patients and it was attributed to hyperhidrosis and increased sebum production but this suggestion has not been evaluated with reliable methods. Objective: The aim of this study was to examine the skin parameters of patients with acromegaly using measurements of skin hydration, sebum content, transepidermal water loss, pH and temperature and particularly the effects of 12 months of treatment on these parameters. Methods: 52 patients with acromegaly and 24 healthy control subjects were included in this two blinded prospective study. Skin properties were measured on forehead and forearm by Corneometer CM825, Sebumeter SM810, Tewameter TM210 and Phmeter PH900 as non-invasive reliable measuring methods. Serum GH, IGF-1 and all measurements of skin properties on forehead and forearm were repeated at the end of the 3, and 6 months of therapy in 20 cases. Patients were treated with appropriate replacement therapy for deficient pituitary hormones. Results: The sebum

content and pH of the skin of acromegalic patients were significantly higher and transepidermal water loss and skin temperature were found to be significantly lower in acromegalic patients when compared to the control group both on forehead and forearm. GH and IGF-1 levels were positively correlated with sebum levels and negatively correlated with skin temperature on both forehead and forearm. The sebum levels of the patients were significantly decreased both on forehead and forearm at 3rd and 6th months of treatment. Conclusion: The present study demonstrated increased sebum secretion, decreased transepidermal water loss, alkali and hypothermic skin surface in patients with acromegaly by reliable methods for the first time. These data suggest that GH and/or IGF-I may have a modulatory role on several skin characteristics which can be at least partially reversible with treatment.

S.H. Kim, S.H. Hwang, S.K. Hong, J.K. Seo, H.S. Sung, S.W. Park, J.H. Shin, **The Clinical Efficacy, Safety and Functionality of Anion Textile in the Treatment of Atopic Dermatitis,** Ann Dermatol, Vol. 24, No. 4, 2012 p. 438**-**443

Background: Several previous studies have suggested the improvement of atopic dermatitis (AD) in response to special fabrics. In particular, beneficial effects have been reported, following the use of anion textiles. Objective: The purpose of this study is to evaluate the effectiveness and safety of an anion textile in patients suffering from AD. Methods: We compared an anion textile with a pure cotton textile. Fifty-two atopic patients (n=52) were enrolled and divided into two groups. The patients in the test (n=25) and control (n=19) groups wore undergarments made of an anion textile or pure cotton over a period of 4 weeks. The overall severity of disease was evaluated using the SCORing atopic dermatitis (SCORAD) index, whereas, the treatment efficacy was measured using a Tewameter® (Courage & Khazaka, Cologne, Germany), Mexameter® (Courage & Khazaka) and Corneometer® (Courage & Khazaka). Results: At the end of the study, a significant decrease in the SCORAD index was observed among the patients with AD in the test group (mean SCORAD decreased from 47.2 to 36.1). Similarly, improvements in the mean transepidermal water loss, skin erythema and stratum corneum hydration were significantly greater among the patients with AD in the test group than in the control group. Conclusion: Anion textiles may be used to significantly improve the objective and subjective symptoms of AD, and are similar in terms of comfort to cotton textiles. The use of anion textiles may be beneficial in the management of patients with AD.

H.J. Park, Y.W. Lee, Y.B. Choe, K.J. Ahn, **Skin Characteristics in Patients with Pityriasis Versicolor Using Non-Invasive Method, MPA5**, Ann Dermatol Vol. 24, No. 4, 2012

Background: Skin pigmentary changes of pityriasis versicolor may occur as either hyperpigmented or hypopigmented lesions, depending on the outcome of interactions between *Malassezia* yeasts and the skin, such as lipoperoxidation process, stimulus of inflammatory cell to melanocytes, and increased thickness of keratin layer. Objective: To investigate skin characteristic factors that enhance the susceptibility to *Malassezia* yeasts and provoke different color changes of pityriasis versicolor patients. Methods: To clarify these factors, we investigated the skin characteristics of pityriasis versicolor patients, using a non-invasive method known as MPA 5® (Courage and Khazaka, Germany). A total of 90 normal healthy subjects and 30 pityriasis versicolor patients were included in this study. Results: Both hyperpigmented and hypopigmented pityriasis versicolor skin lesions showed higher humidity, increased sebum excretion rate and increased transepidermal water loss (TEWL) values than normal healthy subjects. But no significant difference of specific *Malassezia* yeasts species between hyperpigmented and hypopigmented skin lesions was evident. Conclusion: These results indicate that higher humidity and increased sebum level provide a better growing environment of *Malassezia* yeasts in the skin, leading to the assumption that interaction between *Malassezia* yeasts and skin barrier materials makes disruption of skin barrier causing increased TEWL.

J. Gallagher, J. Walker, P. Rosher, V. Hart, **An in vivo comparison of two commercially available topical emollients in the UK, DELP gel and DIPC cream**, JAAD, April 2012, Volume 66, Issue 4, Supplement 1, p. AB68

Prevailing expert medical advice is that dermatology patients should apply their emmolients frequently.

Marine ingredients focus: a look at marine products, Personal Care, April 2012

The sea holds a huge amount of power and influence in the minds of humans. At once mysterious, alluring and terrifying, Earth's oceans also represent the birthplace of all life, both plant and animal, and are increasingly becoming a rich source of medical and personal care ingredients. In personal care, the popularity of marine-derived cosmetic ingredients is not only due to their efficacy, but also the connotations they come with. Consumers associate the sea with purity and freshness, two extremely important characteristics for personal care products, and skin care in particular. This is a

deeply-ingrained association that has lead people to use sea flora as a skin care ingredient for many centuries as well as in soap, cleansers, and more recently shaving foams and shampoos.

C.P. Bogerd, R. Niedermann, P.A. Brühwiler, R.M. Rossi, **The Effect of Two Sock Fabrics on Perception and Physiological Parameters Associated with Blister Incidence: A Field Study,** Ann. Occup. Hyg., Vol. 56, No. 4, p. 481–488, 2012

The goal of the present study was to investigate differences in perception and skin hydration at the foot of two sock fabrics with distinct moisture properties in a realistic military setting. Thirty-seven military recruits wore two different socks (PP: 99.6% polypropylene and 0.4% elastane, and BLEND: 50% Merino-wool, 33% polypropylene, and 17% polyamide), one on each foot. Measurements were carried out after a daily 6.5-km march on 4 days. Each participant rated temperature, dampness, friction, and comfort for each foot. On a daily selection of participants, skin hydration was measured on three sites of both feet using a corneometer, and moisture content of the socks was determined. BLEND was rated to be cooler, less damp, and more comfortable ($P < 0.05$). Two out of three skin sites were drier for BLEND than PP ($P < 0.05$). Moreover, BLEND stored 2.9 *6* 0.3 times more moisture compared to PP. Thus, under the present conditions, socks such as BLEND are to be preferred over polypropylene socks.

M. Mateu, C. Davi, E. Canadas, A. Soley, R. Delgado, **Effective ingredients from marine biotechnology,** Personal Care, April 2012, p. 53-57

Cosmetic scientists are developing new ways to identify new natural sources, which enable innovative compounds with excellent cosmetic properties such as firming, restructuring, moisturising or anti-wrinkles. Biotechnology encompasses the use of microoranisms to come up with novel active ingredients that fulfil two of the demands that are leading trends in the cosmetic industry: natural and sustainable. Besides, complex molecules can be obtained, which otherwise would be impossible due to technical or economic limitations. Our approach is to take advantage of biotechnology to develop cosmetic ingredients which are naturally occurring in non-genetically modified organisms, through sustainable production while preserving the invironment, since there is no harvesting nor extracting from nature.

N. Gerlach, M. Herling, U. Heinrich, H. Tronnier, **Kosmetisch-dermatologische Wirksamkeit und Verträglichkeit einer Dexpanthenol-haltigen Fußcreme,** Kosmetische Medizin 3.12

Mit der Dexpanthenol-haltigen Fußcreme steht eine Fußpflege zur Verfügung, die zur Pflege der trockenen und empfindlichen Haut entwickelt worden ist. Sie zeichnet sich durch eine sehr gute feuchtigkeitsanreichernde Wirkung aus und trägt gleichzeitig zu einer Stabilisierung der Hautbarriere bei. Durch die pflegenden Eigenschaften konnten die Hautrauigkeit und Hautschuppigkeit deutlich gemildert werden und eine übermäßige Hornhaut wurde reduziert. Die pflegenden Eigenschaften, die gute Wirksamkeit und sehr gute Verträglichekeit der Dexpanthenol-haltigen Fußcreme spiegelten sich in der hohen Zufriedenheit und Akzeptanz der Probanden wieder.

J. Viladot, A. Fernández-Botello, S. Méndez, N. Alminana, J. Cebrián, **New delivery system for fast release of cosmetic actives from fabrics to the skin,** IFSCC Magazine, No. 3, 2012

We live in a period of increasing consumer demand for textile products with improved performance and new properties, both in the “traditional” clothing and home textile areas. Accordingly, research on functional textiles has experienced a significant increase [2-4], for example, in the medical [4], personal protection [5] and anti-microbial activity areas [6]. The result of this research has been the appearance of a “cosmetotextile” concept that entails imparting cosmetic properties to textile materials [7] by anchoring actives to fabric. Typically, actives are not anchored as such but vectorized by microcapsules obtained by different techniques such as in situ polymerization reactions. However, reaction conditions for polymerization may eventually modify the chemical structure of the active, causing a loss efficacy.

T. Oliphant, R.A. Harper, **Advantages of jojoba esters in nonwovens,** Personal Care, February 2012, p. 94–96

Jojoba (Simmondsia chinensis) is a perennial shrub most commonly found in Arizona, California, and Northwestern Mexico. Jojoba seed oil, the oil produced by this plant, is a wax ester that has been used in the past as a folk remedy for renal colic, sunburn, chaffed skin, hair loss, headache, wounds, sore throats, prosiasis, and acne (e.g., sulfurised jojoba) The ester is composed of long-chain linear fatty alcohols, 20 to 24 carbons in length and long-chain linear fatty acids, 18 to 22 carbons in length. Nearly all of the acid and alcohol moieties are 9-mono-unsaturated. Hydrolysis of this wax ester

produces a very unique ingredient that can be used in various commercial cosmetic and personal care formulations such as creams, body washes, hand sanitisers, and multiple nonwoven wipe applications.

Y. Matsunaga, S. Fujiwara, Y. Mori, A. Miyake, H. Yamanishi, M. Kage, Y. Tokudome, F. Hashimoto, T. Hariya, **Development of Self-dissolving Microneedles Consisting of Hyaluronic Acid as an Anti-Wrinkle Treatment,** IFSCC Magazine 2, 2012

Microneedle technology has recently attracted considerable attention in the medical field as a means of facilitating effective transdermal delivery of vaccines and other pharmaceutical compounds with minimal invasiveness, little pain and a high degree of safety. Generally, microneedles typically consist of multiple micro-projections made of silicon, metal or polymeric materials through which a drug can diffuse in to the skin. Delivery using solid or hollow microneedles can be accomplished by piercing the skin and then applying active agents to the permeabilized skin, coating or encapsulating agents on microneedles for rapid dissolution and release in the skin.

Y. Lee, Y.-J. Je, S.-S. Lee, Z.J. Li, D.-K. Choi, Y.-B. Kwon, K.-C. Sohn, M. Im, Y.J. Seo, J.H. Lee, **Changes in Transepidermal Water Loss and Skin Hydration according to Expression of Aquaporin-3 in Psoriasis,** Ann. Dermatol. Vol. 24, No. 2, 2012, p. 168-174

Background: Aquaporins (AQPs) are a family of water transporting proteins present in many mammalian epithelial and endothelial cell types. Among the AQPs, AQP3 is known to be a water/glycerol transporter expressed in human skin. Objective: The relationship between the expression level of AQP3 and transpidermal water loss (TEWL) in the lesional and peri-lesional skin of psoriasis-affected patients, and skin hydration in the lesional and peri-lesional skin of psoriasis patients, was investigated. Methods: The expression of AQP3 in psoriasis-affected and healthy control skin was determined using immunohistochemical and immunofluroscence staining. TEWL and skin hydration were measured using a Tewameter® TM210 (Courage & Khazaka, Cologne, Germany) and a Corneometer® CM 820 (Courage & Khazaka), respectively. Results: AQP3 was mainly expressed in the plasma membrane of stratum corneum and the stratum spinosum in normal epidermis. Unlike the normal epidermis, AQP3 showed decreased expression in the lesional and peri-lesional epidermis of psoriasis. TEWL was increased, and skin hydration was decreased, in the lesional and peri-lesional skin of psoriasis patients, compared with the healthy control sample. Conclusion: Although various fac tors contribute to reduced skin hydration in the lesional and peri-lesional skin of psoriasis, AQP3 appears to be a key factor in the skin dehydration of psoriasis-affected skin.

L.H. Kircik, **Transepidermal water loss (TEWL) and corneometry with hydrogel vehicle in the treatment of atopic dermatitis: a randomized, investigator-blind pilot study,** J Drugs Dermatol, 2012 Feb;11(2): p. 180-184

Disruption of the epidermal barrier, as indicated by a reduction in skin hydration and an increase in transepidermal water loss (TEWL) is a feature of atopic dermatitis (AD). Novel formulations of dermatologic therapies may enhance patient satisfaction and adherence and may possibly preserve and enhance epidermal barrier function. A single-center, investigator-blinded, randomized, split-body exploratory study was undertaken to assess the hydrating and barrier preserving effects of a water-based hydrogel vehicle. Subjects (n=20) with mild to moderate disease at baseline applied hydrogel vehicle or a moisturizing lotion (Eucerin Lotion®, Beiersdorf, Inc.) in a split-body fashion for two weeks. Corneometry and TEWL measurements were taken at baseline and week 2. Hydrogel vehicle produced a statistically significant improvement in skin hydration from baseline, as compared to a moisturizing lotion control. Hydrogel produced no statistically significant change in TEWL, while comparator lotion increased TEWL. Data from this pilot study indicate that the water-based hydrogel vehicle improves skin hydration and does not further impair epidermal barrier function, suggesting that it is an appropriate vehicle choice for patients with mild-to-moderate atopic dermatitis.

A.M. Hug, T Schmidts, J. Kuhlmann, D. Segger, G. Fotopoulos, J. Heinzerling, **Skin hydration and cooling effect produced by the Voltaren® vehicle gel**, Skin Research and Technology 2012; 18: p. 199–206

Background: Voltaren vehicle gel is the carrier substance of the topical Voltaren products. This vehicle gel is especially formulated to be easily applied on the skin, while providing some sensory benefits. The present study aims to substantiate the widely perceived hydrating and cooling effect of Voltaren vehicle gel. Methods: Volar forearm skin hydration and transepidermal water loss (TEWL) were measured and user satisfaction was evaluated by questionnaires, after application in 31 healthy, female volunteers. The cooling effect was investigated for 40 min with thermal imaging on 12 forearm sites of six healthy subjects. Results: Voltaren vehicle gel application increased skin hydration by 13.1% ($P = 0.0002$) when compared with the untreated site, 8 h after the final treatment after 2 weeks. TEWL

decreased on both treated (0.37 g/m2/h) and untreated (0.74 g/m2/h) forearm sites after 2 weeks (8 h after last treatment), demonstrating a relative increase of 6.5% in water loss. Voltaren vehicle gel application resulted in a rapid reduction of skin surface temperature by 5.1°C after only 3 min with an average maximum reduction of 5.8°C after 10 min. The cooling effect was experienced by 94% subjects, while 74% felt that their skin became softer. No adverse events, including skin irritation, were reported during the study and by the 37 participants. Conclusion: This study showed a statistically significant increase in skin hydration as well as a rapid cooling effect lasting approximately 30 min, after application of Voltaren vehicle gel. The small relative increase in water loss may be attributed to an additional skin surface water loss secondary to the increased water content brought into the skin by the Voltaren vehicle gel. The use did not induce any skin irritation and was found acceptable to use by the majority of participants.

A. Manosroi, R. Chutoprapat, M. Abe, W. Manosroi, J. Manosroi, **Anti-aging efficacy of topical formulations containing niosomes entrapped with rice bran bioactive compounds**, Pharm Biol. 2012 Feb;50(2): p. 208-224

Context: Rice [Oryza sativa L. (Gramineae)] bran is a rich source of phytochemicals. Its oil also contains several bioactive components that exhibit antioxidative properties such as ferulic acid (F), □-oryzanol (O), and phytic acid (P) which can be a new source of cosmetic raw materials. Objective: To evaluate the anti-aging effects of the gel and cream containing niosomes entrapped with the rice bran bioactive compounds. Materials and Methods: The semi-purified rice bran extracts containing F, O, and P which indicated the growth stimulation of human fibroblasts and the inhibition of MMP-2 by sulforhodamine B and gelatin zymography, respectively, were entrapped in niosomes by supercritical carbon dioxide fluid (scCO(2)) and incorporated in gel and cream formulations. The skin hydration, elasticity, thickness and roughness, and pigmentation in human volunteers after treated with these gel and creams were investigated by corneometer, cutometer, visiometer, and mexameter, respectively. Results: Gel and cream containing the semi-purified rice bran extracts entrapped in niosomes gave no sign of erythema and edema detected within 72□h on the shaved rabbit skin by the closed patch test investigated by mexameter and visual observation, respectively. These formulations also demonstrated higher hydration enhancement and improvement of skin lightening, thickness, roughness, and elasticity on the skin of 30 human volunteers within the 28-day treatment not more than 9, 27, 7, 3, and 3 times, respectively. Discussion and Conclusions: The formulations containing niosomes entrapped with the rice bran bioactive compounds gave superior clinical anti-aging activity which can be applied as a novel skin product.

J.W. Fluhr, S. Sassning, O. Lademann, M.E. Darvin, S. Schanzer, A. Kramer, H. Richter, W. Sterry, J. Lademann, **In vivo skin treatment with tissue-tolerable plasma influences skin physiology and antioxidant profile in human stratum corneum**, Exp Dermatol. 2012 Feb; 21(2): p. 130-4

The antimicrobial treatment of wounds is still a major problem. Tissue-tolerable electrical plasma (TTP) is a new approach for topical microbial disinfection of the skin surface. The aim of the present study was to investigate the influence of TTP on a carotenoid profile in relation to skin physiology parameters (epidermal barrier function, stratum corneum (SC) hydration, surface temperature and irritation parameters). We were interested in the interaction of TTP and the antioxidative network, as well as the consequences for skin physiology parameters. These parameters are also indicative of TTP safety in vivo. For plasma application, 'Kinpen 09' was used (surface exposure 30-43°C) for 3 s. Beta-carotene and water profiles were assessed by in vivo Raman microspectroscopy (skin composition analyzer 3510). Skin physiology parameters were measured with Tewameter TM 300, Corneometer CM 825, skin thermometer and Chromameter CR 300. All parameters were assessed non-invasively on seven healthy volunteers before and after plasma application in vivo. We could show that TTP application leads to a decrease in beta-carotene especially in the superficial SC. Skin-surface temperature increased by 1.74°C, while the transepidermal water loss (TEWL) increase indicated an impaired barrier function. SC hydration decreased as seen in water profile especially in the superficial layers and capacitance values. A slight increase in skin redness was measurable. The induction of reactive oxygen species is probably the major contributor of TTP efficacy in skin disinfection. Skin physiology parameters were influenced without damaging the skin or skin functions, indicating the safety of TTP under in vivo conditions.

S.H. Bailey, G. Oni, S.A. Brown, N. Kashefi, S. Cheriyan, M. Max-ted, C. Stewart, C. Jones, P. Maluso, A.M. Kenkel, M.M. Kenkel, J. Hoopman, F. Barton Jr, J. M. Kenkel, **The use of non-invasive instruments in characterizing human facial and abdominal skin**, Lasers Surg Med. 2012 Feb;44(2): p. 131-142

Background and objective: The skin is highly variable. This variation, although helpful for

function, causes inconsistencies when assessed using subjective scales. The purpose of this study is to measure differences in skin on the face and abdomen using non-invasive, objective devices as a method to eliminate subjective error and help reduce intra- and inter-observer variability in clinical analysis. Study design/materials and methods: Eighty-eight subjects between the ages of 18 and 61 were enrolled in this study. These subjects varied in age, ethnicity, and Fitzpatrick score. Facial analysis was performed by clinical evaluation and utilizing non-invasive objective devices which included the DermaScan C 20 MHz HFUS (Cyberderm, Broomall, PA), Tru Vu (Johnson and Johnson), BTC 2000 (SRLI Technologies, Nashville, TN), Derma Unit SSC3 (CK Electronic, Köln, Germany), and the Chromometer. Results: Non-invasive devices were shown to be consistent and accurate through repeated measurement at each of the anatomical points with error rates of less than 5%. Chromometer measurements were able to categorize patients into Fitzpatrick level. DermaScan measurements demonstrated decreasing skin thicknesses associated with increasing age, smoking, and female gender. Derma Unit SSC 3 showed gender and sun exposure related differences in sebum concentration, pH, and moisture content. The Derma Unit SSC 3 sebum concentration also showed correlation with Tru Vu readings for clogged pores and bacterial activity.Conclusion: The skin assessment scales that are in use today are often prone to variability and inaccuracy due to their subjectivity. Use of the described objective non-invasive facial analysis method provides an accurate, objective analysis of human skin which can be used to measure changes preand post-operatively, or even screen patients prior to procedure to identify non-responders or those prone to adverse events. Utilization of these devices introduces a foundation on which a strong evidence-based approach to aesthetic medicine can be built.

Y. Haruta-Ono, H. Ueno, N. Ueda, K. Kato, T. Yoshioka, **Investigation into the dosage of dietary sphingomyelin concentrate in relation to the improvement of epidermal function in hairless mice**, Anim Sci J. 2012 Feb;83(2): p. 178-83

We previously found that dietary sphingomyelin (SPM) concentrate from bovine milk improved epidermalfunction. In this study, we investigated the dosage of dietary SPM concentrate from bovine milk in relation to the improvement of epidermal function. Thirteen-week-old hairless male mice were separated into four experimental groups, each fed one of four types of experimental diet: the control group, the low SPM group, the medium SPM group and the high SPM group. The mice were each fed the experimental diet for 6 weeks. The stratum corneum hydration and the transepidermal water loss (TEWL) were measured using a Corneometer and a Tewameter at 3 weeks and 6 weeks. After the feeding period, ceramides in the stratum corneum were analyzed. We found that the stratum corneum hydration in all the SPM groups was significantly higher than that in the control group, whereas TEWL in all the SPM groups was significantly lower than that in the control group. Ceramides increased significantly in mice fed the medium SPM diet and statistically tended to increase in mice fed the high SPM diet. Our results indicate that a daily intake of 17 mg SPM concentrate is enough to improve epidermal function in hairless mice.

A. Marini, S. Grether-Beck, T. Jaenicke, M. Weber, C. Burki, P. Formann, H. Brenden, F. Schönlau, J. Krutmann, **Pycnogenol® effects on skin elasticity and hydration coincide with increased gene expressions of collagen type I and hyaluronic acid synthase in women**, Skin Pharmacol Physiol., 2012;25(2): p. 86-92

Introduction and objectives: In recent years there has been an increasing interest in the use of nutritional supplements to benefit human skin. Molecular evidence substantiating such effects, however, is scarce. In the present study we investigated whether nutritional supplementation of women with the standardized pine bark extract Pycnogenol® will improve their cosmetic appearance and relate these effects to expression of corresponding molecular markers of their skin. Materials and methods: For this purpose 20 healthy postmenopausal women were supplemented with Pycnogenol for 12 weeks. Before, during and after supplementation, their skin condition was assessed (i) by employing non-invasive, biophysical methods including corneometry, cutometry, visioscan and ultrasound analyses and (ii) by taking biopsies and subsequent PCR for gene expression analyses related to extracellular matrix homeostasis. Results: Pycnogenol supplementation was well tolerated in all volunteers. Pycnogenol significantly improved hydration and elasticity of skin. These effects were most pronounced in women presenting with dry skin conditions prior to the start of supplementation. The skin-physiological improvement was accompanied by a significant increase in the mRNA expression of hyaluronic acid synthase-1 (HAS-1), an enzyme critically involved in the synthesis of hyaluronic acid, and a noticeable increase in gene expression involved in collagen de novo synthesis. Conclusions: This study provides skin-physiological and for the first time molecular evidence that Pycnogenol supplementation benefits human skin by increasing skin hydration and skin elasticity. These effects are most likely due to an

increased synthesis of extracellular matrix molecules such as hyaluronic acid and possibly collagen. Pycnogenol supplementation may thus be useful to counteract the clinical signs of skin aging.

A.-E. Craciun, M. Moldovan, A. Rusu, C. Nita, C. Craciun, A. Tataru, **Predictors of changes in physical properties of skin in patients with diabetes mellitus,** Rom J Diabetes Nutr Metab Dis. 19(1):33-40; 2012

Introduction: The skin, the largest human organ, is often affected by diabetes mellitus (DM). We know that DM affects the hydration of stratum corneum (SC), the sebum content of the skin and to some extent, the barrier function of the epidermis and elasticity, but we do not know the factors leading to these changes. Objectives: The objectives of this study were to determine the factors associated with changes in physical properties of the skin (skin hydration degree, sebumetry, transepidermal water loss and skin elasticity) in patients with diabetes. Materials and methods: The physical properties of the skin were assessed using the Multi Probe Adapter Systems MPA (Courage-Khazaka, Germany) in 57 patients with diabetes and 46 non-diabetic.

M. Yamaguchi, H. Nishimiya, **Noninvasive Evaluation of the Chronic Influence of Local Air Velocity from an Air Conditioner Using Salivary Cortisol and Skin Caspase-14 as Biomarkers of Psychosomatic and Environmental Stress**, The Journal of International Medical Research, 2012; 40: p. 1429 – 1437

Objective: To demonstrate the possibility of evaluating the chronic influence oflocal air velocity from an air conditionerusing noninvasive biomarkers. Methods: Over a consecutive 5-day period, 16 healthy young male adults were exposed to air flow from a whole ceilingtype air conditioner (low local air velocity) and from a commercial concentrated exhaust air conditioner (high local air velocity). Salivary cortisol was used as an index of the psychological effects and caspase-14, collected from the stratum corneum, was used as a marker of environmental stress on the skin. Results: Local air velocity generated from the whole ceiling-type air conditioner where the subject's head was positioned was one-seventh that of the exhaust air conditioner. After exposure to the exhaust air conditioner for 5 days, salivary cortisol decreased significantly from morning to evening and skin caspase-14 gradually increased during the day. A significant increase in hydration index from the morning to the evening was found with the whole ceiling-type air conditioner. Conclusion: The effects of chronic exposure to air movement generated by an air conditioner may be quantified by measurement of salivary cortisol and skin caspase-14.

B.A. Khan, N. Akhtar, K. Waseem, T. Mahmood, A. Rasul, M. Iqbal, S.-U. Zaman, **Visio Scan® VC98, Corneometer MPA 5 and Tewameter MPA 5**, African Journal of Pharmacie and Pharmatologie Vol. 6(3), p. 225-227, 22 January, 2012

Human skin is the largest exposed area of our body. There are number of physiological changes which may occur in response to internal or external sources. Biophysical techniques have been extensively employed to study any changes in human skin physiology. Usually these bioengineering techniques are equipped with non-invasive probes. Visioscan, Corneometer and Tewameter are the most widely used techniques in the characterization parameters of skin physiology, like skin hydration, transepidermal water loss and skin wrinkles. This research covers all aspects of these parameters, in skin analysis.

A. Costa, L. Lindmark, L.H. Fávaro Arruda, E. Cancio Assumpção, F. Sayuri Ota, M. de Oliveira Pereira, S.S. Barros Langen, **Clinical, biometric and ultrasound assessment of the effects of daily use of a nutraceutical composed of lycopene, acerola extract, grape seed extract and Biomarine Complex in photoaged human skin,** An Bras Dermatol. 2012; 87(1): p. 52-61

Background: The use of nutraceuticals has become frequent in the cutaneous approach to photoaging. Objectives: To assess the clinical efficacy of a nutraceutical product composed of lycopene, acerola extract, grape seed extract and Biomarine ComplexT in photoaged human skin. Methods: 50 women, from 35 to 60 years of age, phototypes I to III, were assessed. For 120 days, they associated the nutraceutical product with the use of a sunscreen FPS15. On days 0 (D0), 30 (D30), 60 (D60), 90 (D90) and 120 (D120) they were evaluated and underwent Medical Assessments and Self-Assessment and cutaneous biometric analyses (corneometry, sebumetry and pH-metry) in the skin of the left zygomatic region and the upper medial side region of the left arm; on days 0 (D0), 30 (D30) and 120 (D120) the skin of the same regions was analyzed by ultrasound. On days 0 (D0) and 120 (D120) skin biopsies were performed in the areas where instrumental evaluation was performed (to evaluate collagen and elastic fibers). Results: There was an improvement of the general status of the skin of all volunteers by the Medical and Volunteer Self- Assessments; increased parameters of cutaneous hydration, reduction of pH, increasing of ultrasound density and a histological increment of collagen and

elastic fibers (both on the face and arm); there was a reduction of seborrhea (only on the face). Conclusions: The daily use of a nutraceutical product containing lycopene, acerola extract, grape seed extract and Biomarine ComplexT showed an important adjuvant effect to counteract skin photoaging.

R. Darlenski, J.W. Fluhr, **Moisturizers and Emollients,** J. Fluhr (ed.), Practical Aspects of Cosmetic Testing, Springer-Verlag Berlin Heidelberg 2011

The formation of skin hydration is a complex and multifactor process including the natural sources of skin moisturization and the effect of exogenously applied substances on the skin. An objective evidence for the claimed effect of a moisturizer/emollient is required. A variety of non-invasive methods for the evaluation of skin hydration exist, however none discloses the complete interactions between a moisturizer and the skin. A multiparametric approach is useful in the assessment of moisturizers efficacy. Evaluation of the cutaneous electrical properties (capacitance, resistance, impedance) is the most commonly used method in proving the efficacy of moisturizers.

M. Mateu, **Aknehaut – Ein Tripeptid für die Abwehrkräfte der Haut,** COSSMA 12/2011; S. 14-15

Die Haut ist ständig Verletzungsrisiken und Mikroorganismen der Umwelt ausgesetzt und das Stratum Corneum (SC) stellt die erste Schutzbarriere der Haut gegen externe Aggressionen dar. Normale Humanhaut ist von einer grossen Zahl von Mikroorganismen besiedelt, von denen die meisten harmlose Kommensalen sind, die keine Krankheiten verursachen. Physiologische, biochemische, mechanische, immunologische und Umweltvariablen tragen zu einer gesunden Balance zwischen der Haut und ihrer normalen Flora bei. Die Haut ist ständig pathogenen Keimen ausgesetzt. Die physikalische Barriere der Epidermis ist essenziell, aber viele Mikroben haben effektive Strategien entwickelt, die Epidermis zu überwinden. Dennoch wird gesunde Haut nur selten infiziert.

H. Riebe, **Einfluss medizinischer Kompressionsstrümpfe auf die Barrierefunktion der Haut bei Patienten mit Chronischer Venöser Insuffizienz (CVI)**, Dissertation aus der Klinik und Poliklinik für Hautkrankheiten der Universitätsmedizin der Ernst-Moritz-Arndt-Universität Greifswald, Dezember 2011

Bei steigender Prävalenz der Chronischen Venösen Insuffizienz (CVI) ist eine kontinuierliche Auseinandersetzung mit aktuellen Diagnostik- und Therapieoptionen für eine effektive und symptomorientierte Patentenversorgung notwendig. Unter Berücksichtigung der Variabilität von Studienpopulationen hinsichtlich Rasse, Alter und Geschlecht, sowie der Definition und Diagnostik der CVI werden in der Literatur Prävalenzen zwischen 15 – 50 % angegeben (28;38;105). In der Bonner Venenstudie aus den Jahren 2000 - 2002 konnten bei einer Fallzahl von 3072 Probanden im Alter von 18 – 79 Jahren bei 59 % der Probanden isolierte Teleangiektasien und retikuläre Varizen nachgewiesen werden. Varikosen, allein im Stadium C2 der CEAP-Klassifikation, wurden bei 14,3 % der Probanden detektiert. Die Häufigkeit einer fortgeschrittenen CVI belief sich auf 3,3 %, die eines floriden oder abgeheilten Ulcus cruris venosum auf 0,7 % (100). Umfangreiche epidemiologische Studien machen gleichwohl auch die große sozioökonomische Bedeutung von Venenerkrankungen deutlich. So betrugen etwa Behandlungs- und Folgekosten durch Arbeitsunfähigkeit und Berentung entsprechend der Tübinger Studie im Jahr 1980 circa 1,3 Mrd. DM (38). Neben der medizinischen Interventionspflicht sind somit auch die Aspekte Lebensqualität, Arbeitsbelastung und finanzieller Ressourcenverbrauch Grundlage für die Notwendigkeit einer frühzeitigen sowie konsequenten Diagnostik und Therapie der CVI (23;104). Das Krankheitsbild beinhaltet eine Vielzahl klinischer Erscheinungsbilder. Neben asymptomatischen Verläufen beschreiben viele Patienten eine Reihe unspezifischer Symptome wie Schwellung und Schweregefühl der Beine, deren Ausprägung nicht immer mit dem Schweregrad einer Insuffizienz korrelieren muss. Hingegen bedingen spezifische Symptome wie trophische Hautveränderungen und Ulzerationen immer eine schwerwiegende hämodynamisch relevante venöse Insuffizienz und stellen somit den Endbefund einer Makro- und Mikrozirkulationsstörung dar.

K. Miyamoto, Y. Inoue, K. Hsueh, Z. Liang, X. Yan, T. Yoshii, M. Furue, **Characterization of comprehensive appearances of skin ageing: an 11-year longitudinal study on facial skin ageing in Japanese females at Akita,** J Dermatol Sci. 2011 Dec;64(3): p. 229-36

Background: Facial appearance is regarded as a typical index of ageing. However, people of the same age do not necessarily show the same degree of the facial appearance. The ageing of facial skin proceeds relatively slowly and therefore requires long-term follow-up to elucidate the mechanism of ageing changes. Objectives: The purpose of this study was to identify facial skin parameters contributing the subjective impression of the overall ageing and characterize the degree of skin ageing by a 11 year longitudinal skin monitoring. Methods: One-hundred-eight healthy Japanese females excluded outside workers aged 5-64 at 1999, and lived in Akita, Japan till 2010 were enrolled. Facial images were collected to quantify various skin optical parameters. Skin colour, hydration and barrier function were measured with Chromameter, Corneometer and TEWAmeter, respectively. Results: The

visual evaluation of the overall facial skin ageing impression was also carried out. The skin parameters contributing visible impression of skin ageing were identified by variable importance in projection analysis, and the degree of facial skin ageing over 11 years was statistically classified by a cluster analysis. Facial skin parameters that comprehensively influenced visible skin ageing, including hyperpigmented spots, wrinkles and texture were studied. The Skin Ageing Score calculated from these three skin factors was used to classify the subjects into a mild, age-appropriate, and severe skin ageing group. Conclusions: The mild skin ageing group maintained significant better both skin optical and physical conditions. Variability and classification of the degree of facial skin ageing appearance were studied from this longitudinal research.

S. Golmohammadzadeh, F. Imani, H. Hosseinzadeh, M.R. Jaafari, **Preparation, Characterization and Evaluation of Sun Protective and Moisturizing Effects of Nanoliposomes Containing Safranal,** Iranian Journal of Basic Medical Sciences, Vol. 14, No. 6, Nov-Dec 2011, 521-533

Objective(s): The objective of this study was to prepare, characterize and evaluate the nanoliposomes containing safranal as a natural sunscreen and moisturizer factor. Materials and Methods: The experimental formulations included homosalate reference, nanoliposomes containing 0.25, 0.5, 1, 2, 4 and 8% safranal and empty liposomes. The liposomes were prepared using fusion method and homogenization. Homosalate reference was prepared according to FDA standard. Sun protection factors (SPF) of the formulations were determined by two *in vitro* methods; diluted solution transmittance method and transpore tape method. Studies of *in vitro* penetration of the formulations across mouse skin were carried out with diffusion cells. The percentage of safranal penetrated and retained in the skin was determined for the formulations up to 24 hr. The amount of the moisture contents of the skin before application and after 30- minute, 1, 3 and 5 hr post-application of the formulations were measured in human volunteers using Corneometer. Results: The results indicated that, the SPF of liposomes containing 8% safranal (Lip-Safranal 8%) was significantly higher than 8% homosalate reference. The proportion of Lip-Safranal 1% that penetrated the skin was low. There was no significant difference between the skin moisture contents after application of Lip-Safranal 1 and 4% and empty liposomes during the 7 hr post-application period. Conclusion: These results showed that in equal concentrations, Lip-Safranal could act as a better antisolar agent compared to homosalate and have no moisturizing effect in 1 and 4% concentrations.

G. Maramaldi, **A highly moisturising active from tamarind seed,** Personal Care November 2011, p. 101-103

Tamarind is considered as one of the most beautiful trees growing in the South-East of Asia, and is also an edible plant; its young pods are used both for nutrition and to manufacture spices. Traditionally used in the Ayurvedic medicine even today, its use as a laxative dates back to the 1500s even in Western Coutnries. The seed of tamarind has a high content of polysaccharides among which the most abundant is a branched polysaccharide of a cellulose-type backbone carrying xylose and galactoxylose substituents. This polysaccharide has been extremely well characterised (the polydispersion index being very limited, i.e. the number of molecules largely differing from the fixed molecular weight), and its use in cosmetic formulations has been assessed in terms of skin hydration, elasticity, roughness and densitiy on healthy volunteers.

F. Herrmann, **Klinische Studie zur Validierung der barriere-protektiven Wirksamkeit bipolarer Lipide,** Dissertation am Universitätsklinikums Halle (Saale), Germany, November 2011

Das Stratum corneum stellt mit seinen drei Hauptkomponenten: dem Korneozyten, der interzellulären Lipidmatrix und dem „cornified envelope“ ein hochgeordnetes multilamellares System dar. Die Schicht ist durch ihre außergewöhnliche Lipidzusammensetzung charakterisiert und repräsentiert damit die Hauptpenetrationsbarriere der menschlichen Haut. Die vorliegende Arbeit befasst sich mit der Untersuchung der Wirksamkeit von bilayerbildenden Lipiden (DMS®) in Form des Physiogels® A.I. mit und ohne Lichtschutz nach topischer Applikation auf die Hydratation und Barrierefunktion des Stratum corneum.

N.S. Trookman, R.L. Rizer, **Randomized Controlled Trial of Desonide Hydrogel 0.05% versus Desonide Ointment 0.05% in the Treatment of Mild-to-moderate Atopic Dermatitis**, J Clin Aesthet Dermatol. 2011; 4(11):34–38

Objective: Desonide hydrogel 0.05%, an effective treatment for mild-to-moderate atopic dermatitis, is United States Food and Drug Administration approved as a treatment for patients as young as three months of age. Previous studies have also demonstrated that this hydrogel formulation of desonide 0.05% improved moisturization and reduced transepidermal water loss. Increased skin hydration has been correlated with improved and sustained integrity of the epidermal barrier in patients

with atopic dermatitis. The objective of this clinical noninferiority study was to compare the efficacy of desonide hydrogel 0.05% with desonide ointment 0.05%, the clinical standard for the treatment of mild-to-moderate atopic dermatitis. Design and setting: Randomized, investigator-blinded, parallel-group, noninferiority study in an outpatient setting. Participants: Individuals 12 years of age and older with atopic dermatitis. Measurements: Outcome measures included disease severity, body surface area involvement, subjective assessments of symptoms, corneometry, transepidermal water loss, and the patient's preference for vehicle attributes. Patients were assessed at Baseline, Week 2, and Week 4. Results: Desonide hydrogel 0.05% was shown, through visual grading assessments and noninvasive instrumentation measurements, to be as effective as generic desonide ointment 0.05% in reducing the signs and symptoms of mild-to-moderate atopic dermatitis in patients aged 12 to 65 years during a four-week period. In addition, patients rated desonide hydrogel significantly better than desonide ointment for absorbability and (lack of) greasiness. Conclusion: Desonide hydrogel, which uses a hydrogel vehicle, was preferred by patients and shown to restore the skin barrier, thus offering an efficacious alternative to desonide ointment.

E. Tanaka, H. Yamazaki, K. Yoshida, T. Takenaka, N. Masuda, T. Kotsuma, Y. Yoshioka, T. Inoue, **Objective and longitudinal assessment of dermatitis after postoperative accelerated partial breast irradiation using high-dose-rate interstitial brachytherapy in patients with breast cancer treated with breast conserving therapy: reduction of moisture deterioration by APBI**, Int J Radiat Oncol Biol Phys. 2011 Nov 15;81(4): p. 1098-104

Purpose: To objectively evaluate the radiation dermatitis caused by accelerated partial breast irradiation (APBI) using high-dose-rate interstitial brachytherapy. Patients and Methods: The skin color and moisture changes were examined using a newly installed spectrophotometer and corneometer in 22 patients who had undergone APBI using open cavity implant high-dose-rate interstitial brachytherapy (36 Gy in six fractions) and compared with the corresponding values for 44 patients in an external beam radiotherapy (EBRT) control group (50-60 Gy in 25-30 fractions within 5-6 weeks) after breast conserving surgery. Results: All values changed significantly as a result of APBI. The extent of elevation in a∗ (reddish) and reduction in L∗ (black) values caused by APBI were similar to those for EBRT, with slightly delayed recovery for 6-12 months after treatment owing to the surgical procedure. In contrast, only APBI caused a change in the b∗ values, and EBRT did not, demonstrating that the reduction in b∗ values (yellowish) depends largely on the surgical procedure. The changes in moisture were less severe after APBI than after EBRT, and the recovery was more rapid. The toxicity assessment using the Common Toxicity Criteria, version 3, showed that all dermatitis caused by APBI was Grade 2 or less. Conclusion: An objective analysis can quantify the effects of APBI procedures on color and moisture cosmesis. The radiation dermatitis caused by APBI using the present schedule showed an equivalent effect on skin color and a less severe effect on moisture than the effects caused by standard EBRT.

T. André, V. Lévesque, V. Hayward, P. Lefèvre, J.L. Thonnard, **Effect of skin hydration on the dynamics of fingertip gripping contact**, J R Soc Interface. 2011 Nov 7; 8(64): p. 1574-1583

The dynamics of fingertip contact manifest themselves in the complex skin movements observed during the transition from a stuck state to a fully developed slip. While investigating this transition, we found that it depended on skin hydration. To quantify this dependency, we asked subjects to slide their index fingertip on a glass surface while keeping the normal component of the interaction force constant with the help of visual feedback. Skin deformation inside the contact region was imaged with an optical apparatus that allowed us to quantify the relative sizes of the slipping and sticking regions. The ratio of the stuck skin area to the total contact area decreased linearly from 1 to 0 when the tangential force component increased from 0 to a maximum. The slope of this relationship was inversely correlated to the normal force component. The skin hydration level dramatically affected the dynamics of the contact encapsulated in the course of evolution from sticking to slipping. The specific effect was to reduce the tendency of a contact to slip, regardless of the variations of the coefficient of friction. Since grips were more unstable under dry skin conditions, our results suggest that the nervous system responds to dry skin by exaggerated grip forces that cannot be simply explained by a change in the coefficient of friction.

L. Massoudy, **Klinische Untersuchung zu postnatalen Adaptionsprozessen der Hautphysiologie und zum Einfluss von Pflegeprodukten auf die Hautbarriere in der Windelregion bei reifen Neugeborenen**, Dissertation zur Erlangung der Doktorwürde der Charité Universitätsklinik Berlin, November 2011

Die Hautbarriere reifer Neugeborener: Die Haut eines reifen Neugeborenen mit einem Gestationsalter von mindestens 37 vollendeten Schwangerschaftswochen zeigt in anatomischer Hinsicht eine vollständige Entwicklung. Lediglich die epidermodermale Vernetzung, die Papillen und

Reteleisten, die ein Ineinandergreifen der Dermis und Epidermis bewirkt, ist im Vergleich zum Erwachsenen vermindert.

Y.H. Zhu, S.P. Song, W. Lou, P.M. Elias, M.Q. Man, **Characterization of Skin Friction Coefficient, and Relationship to Stratum Corneum Hydration in a Normal Chinese Population,** Skin Pharmacol Physiol 2011; 24:81-86

Background and Objectives: Studies have demonstrated that some cutaneous biophysical properties vary with age, gender and body sites. However, the characteristics of the skin friction coefficient in different genders and age groups have not yet been well established. In the present study, we assess the skin friction coefficient in a larger Chinese population. Methods: A total of 633 subjects (300 males and 333 females) aged 0.15-79 years were enrolled. A Frictiometer FR770 and Corneometer CM825 (C&K MPA5) were used to measure the skin friction coefficient and stratum corneum hydration, respectively, on the dorsal surface of the hand, the forehead and the canthus.

I. Rossmann, **Hydrolisierte Jojobaestzer für verbesserte Hautfeuchtigkeit,** COSSMA 10/2011, p. 14-15

Für den Einsatz in verschiedenen Formulierungen für Kosmetik- und Körperpflegeprodukte hat Floratech Jojobasamenöl hydrolysiert. Bei gleichzeitiger Verwendung mit Glycerin erhöht und verlängert hydrolisiertes Jojobaöl nachweislich das feuchtigkeitsspendende Potenzial in Lotionen, Handdesinfektionsmitteln und Duschgelen. In kleinen kontrollierten klinischen Studien erwiesen sich die hydrolisierten Wachsester als sehr effektiv in Hautpflegeformulierungen. Natürliche Rohstoffe auf dem Vormarsch. Da viele Konsumenten Pflegeprodukte mit natürlichen Rohstoffen wählen, wenn der Preis nicht relevant ist, bieten Rohstoffhersteller vermehrt „grüne“ Alternativen für gängige Rohstoffe an, oder Rohstoffe, die sich in Verbindung mit akzeptierten synthetischen Rohstoffen verwenden lassen.

K.R. Kumthekar, J.M. Nagarkar, **Properties of Vegetal Oil-based Creams in Skin Care,** Cosmetics & Toiletries, Vol. 126, No. 10/October 2011

The bioactivity of a product can be quantitatively measured and analyzed by assessing its ability to protect, retain normal moisture and delay the aging process of skin. O/W emulsions are commonly used cosmetic delivery systems that supply moisture to skin and improve its condition by forming an occlusive barrier on the skin surface. In recent years, scientists have been looking and utilizing natural resources in cosmetic products, as natural vegetal oils are readily available at affordable costs and have excellent cosmetic and skin care application properties such as soothing, moisturizing and skin penetrating. Vegetal oils such as soybean oil, corn oil, safflower oil and linseed oil are used for cosmeceutical purposes as w/o emulsions using single or mixed surfactants.

J. Herfs, **Sinn und Zweck der kosmetischen Hautanalyse; Manuell oder apparativ?,** Beauty Forum 09/2011 p. 68-70

Was ist Diagnose? Aus dem Griechischen übersetzt, bedeutet das Wort „Beurteilung“. Der ebenfalls griechische Begriff Analyse bedeutet: Bestimmung, Untersuchung, Zergliederung und Auflösung – man möchte also den Dingen auf den Grund gehen. Der sich daraus ergebende Befund ist die Arbeitsgrundlage für die Kosmetikerin. Doch was ist für eine erfolgreiche und nutzbringende Hautanalyse wichtig? Sind es die vielen kostspieligen Geräte, die notwendig sind, um eine professionelle Beurteilung durchzuführen? Oder ist es das geschulte Auge oder gar die feinfühlige Hand der Kosmetikerin, die vieles über das Hautgeschehen wahrnimmt? Auf keinen Fall fehlen dürfen Erfahrung und kompetentes Wissen, um negative Hautveränderungen detektivisch aufzuspüren.

D.S. Bernardi, T.A. Pereira, N.R. Maciel, J. Bortoloto, G.S. Viera, G.C. Oliveira, P.A. Rocha-Filho, **Formation and stability of oil-in-water nanoemulsions containing rice bran oil: in vitro and in vivo assessments**, Journal of Nanobiotechnology 2011, 9:44

Background: Nanoemulsions have practical application in a multitude of commercial areas, such as the chemical, pharmaceutical and cosmetic industries. Cosmetic industries use rice bran oil in sunscreen formulations, anti ageing products and in treatments for skin diseases. The aim of this study was to create rice bran oil nanoemulsions using low energy emulsification methods and to evaluate their physical stability, irritation potential and moisturizing activity on volunteers with normal and diseased skin types. Results: The nanoemulsion developed by this phase diagram method was composed of 10% rice bran oil, 10% surfactants sorbitan oleate/PEG-30 castor oil, 0.05% antioxidant and 0.50% preservatives formulated in distilled water. The nanoemulsion was stable over the time course of this study. In vitro assays showed that this formulation has a low irritation potential, and when applied to human skin during in vivo studies, the nanoemulsion improved the skin’s moisture and maintained normal skin pH values. Conclusion: The results of irritation potential studies and in vivo assessments

indicate that this nanoemulsion has potential to be a useful tool to treat skin diseases, such as atopic dermatitis and psoriasis.

A. Mehling, U. Griesbach, V. Pian, **Sensible solutions for sensitive faces,** September 2011, Personal Care, p. 41-45

The term “sensitive skin” is commonly used to describe a number of unpleasant sensations of varying intensity and which are transient in nature. People have different sensitive skin types but typically complain about skin tightness, burning, prickling or itchy sensations. These complaints can be accompanied by transient redness or skin dryness. Although these symptoms usually do not involve visible or predictable signs of irritation or immunological reactions, they can cause significant discomfort. Due to the wide variety of possible causes and the subjective nature of the responses associated with sensitive skin, it is extremely difficult to quantify.

E. Lee, S. An, M.-W. Im, H.-K. Kim, T.-R. Lee, **An improved method for measurement of change in skin roughness caused by cleansing products under mild application conditions,** Skin Research and Technology 2011; 17; p. 320-325

Surfactants in detergents and various skin cleaning products can damage the skin and are considered an important risk factor for irritant contact dermatitis. Cleansing products will always remove fat from the skin, simply because the soil to be removed is embedded in the sebum of the skin. Therefore the repetitive use of cleaning products may lead to skin intolerance reactions, stratum corneum dehydration, and increased transepidermal water loss and roughness of the skin resulting from damage to skin barrier function. Skin irritation could be evaluated using visual scoring. SC dehydration could be reflected by the measurement of skin capacitance, and the integrity of the barrier function of the SC could be estimated by TEWL.

J. Levin, R. Miller, **A Guide to the Ingredients and Potential Benefits of Over-The-Counter Cleansers and Moisturizers for Rosacea Patients**, J Clin Aesthet Dermatol. 2011;4(8): p. 31–49

It is difficult for rosacea patients to discern which products and ingredients will be beneficial to their skin and which products will lead to an exacerbation of the signs and symptoms of rosacea. In this paper, the authors provide a brief overview of rosacea, its pathogenesis, signs and symptoms, and the management of the two major rosacea subtypes - erythematotelangiectatic rosacea and papular pustular rosacea. Reviewed in greater detail are the common ingredients used in over-the-counter cleansers and moisturizers with discussion of how these ingredients potentially benefit or harm the skin of patients with rosacea. Clinical studies investigating the benefits of using certain over-the-counter cleansers and moisturizers in patients with erythematotelangiectatic rosacea and papular pustular rosacea with or without topical prescription therapy are also reviewed. The specific formulas used in the clinical studies include a sensitive skin synthetic detergent bar, a nonalkaline cleanser and moisturizer, polyhydroxy acid containing cleanser and moisturizer, and a ceramide-based cleanser and moisturizer formulated in a multivesicular emulsion. Based on review of available data, the authors conclude that the use of mild over-the-counter cleansers and moisturizers is beneficial for patients with erythematotelangiectatic rosacea and papular pustular rosacea. The properties of over-the-counter cleansers and moisturizers that contribute to their mildness include an acidic-neutral pH to minimize the flux in skin pH; surfactants or emulsifiers that will not strip the skin of its moisture or strip the lipids and proteins of the stratum corneum; moisturizing ingredients such as emollients, humectants, and occlusives; and formulas without potential irritants and allergens. The mostconsistent clinical benefits demonstrated in the reviewed studies were a subjectively perceived improvement in subjective symptoms of dryness and irritation as well as an objective improvement in dryness.

M. Spiegel, **Moderne Tenside, Mild + biologisch abbaubar zugleich,** COSSMA 7-8/2011

Es gibt zwar viele moderne Tenside, doch gerade bei sensibler Haut können Produkte wie Sodium Laureth Sulfate (SLS) zu Problemen führen. Aminosäurebasierte Tenside dagegen erweisen sich selbst bei täglicher Anwendung als hautfreundlich. Martina Spiegel präsentiert Hautirritations-, Wirksamkeits- sowie Anwendungsuntersuchungen für Sodium Cocoyl Glutamate und Sodium Lauroyl Sarcosinate von Schill & Seilacher. Die Tenside erzielten bei Galenik und Reinigungswirkung, aber auch bei vollständig aerober und bei anaerober biologischer Abbaubarkeit gute Ergebnisse.

E. Xhauflaire-Uhoda, G. Mayeux, P. Quatresooz, A. Scheen, G.E. Piérard, **Facing up to the imperceptible perspiration. Modulatory influences by diabetic neuropathy, physical exercise and antiperspirant,** Skin Research and Technology 2011; 17: p. 487-493

Eccrine Sweating is under the control of the cholinergic sympathetic innervation. It plays an essential role in regulating body temperature in physiologic and pathologic conditions. This function is

altered by some systemic diseases including diabetic neuropathy, which commonly involves the distal sensorimotor innervation. The resulting peripheral sweating deficit is often responsible for unequivocal abnormalities of length-dependent thermoregulatory sweating. Hence, the legs affected by diagetic neuropathy most often present hypohidrosis that has been though to be compensated by hyperhidrosis on the upper body regions. Other sweating changes in diabetes include segmental hypohidrosis and more rarely isolated dermatome involvement.

P.M. Campos, D.G. Mercurio, M.D. Gianeti, A.T. Nobrega, **In vitro antioxidant activity and clinical efficacy of cosmetic formulation containing chamomile extract,** FAPESP

Botanical extracts have attracted great interest in the cosmetic area due to its rich composition and medicinal properties. Among these extracts, it can be mentioned the Matricaria chamomilla L. extract, which has been commonly used in cosmetics. Chamomile extract has being well studied once it presents therapeutic properties in terms of pharmacological applications. Various studies showed that chamomile have soothing, antiallergic, antioxidant and antiinflamatory effects. All of these properties are given by chamomile richest composition of organic components. It es added to the cosmetic formulations to provide skin moisturizing and smoothness.

T. Oliphant, C. Dubbelde, R.A. Harper, **Moringa butter: ancient botanical in modern form,** Personal Care June 2011, p. 73-75

What was this mystery plant with over 100 different names in multiple languages around the world? Moringa Oleifera – “the miracle tree” whose leaves alone contain seven times the vitamin C of oranges, four times the vitamin A of carrots, four times the calcium of milk, more iron thatn spinach, three times the potassium of bananas, and twice the protein of yogurt. In addition, this vitamin –rich plant contains a variety of amino acids, as well as antioxidants and trace elements. The positive attributes of the moringa tree do not end with its nutritional benefits In fact, the seed oil from Moringa oleifera has the highest oxidative stability of any vegetable oil available.

N. Papanas, D. Papazoglou, K. Papatheodorou, E. Maltezos, **Evaluation of a new foam to increase skin hydration of the foot in type 2 diabetes: a pilot study,** Int Wound J. 2011 Jun;8(3): p. 297-300

The aim of the present study was to evaluate the efficacy of a new product (Neuropad repair foam(®)) in promoting skin hydration of the foot in type 2 diabetes. Included in this study were 20 type 2 diabetic patients (10 men, mean age 61·40 ± 2·44 years). Patients applied Neuropad repair foam(®) on the plantar aspect of the right foot twice daily. No agent was applied on the left foot. Patients were examined at baseline, after 7 treatment days and after 14 treatment days. Evaluation of skin dryness was performed by means of the Multi Skin test Corneometer MC 900. In the right foot, skin capacitance was 26·55 ± 4·14 arbitrary units (a.u.) at baseline, 28·90 ± 4·53 a.u. after 7 days of treatment and 32·05 ± 4·54 a.u. after 14 days of treatment. There was a significant increase in skin capacitance from baseline to 7 days of treatment ($P < 0·001$), from baseline to 14 treatment days ($P < 0·001$), as well as from 7 to 14 days of treatment ($P < 0·001$). The same significant ($P < 0·001$) increases were observed both in men and in women. No changes were noted in the left foot. At baseline, there was no difference in skin capacitance between right and left foot ($P = 0·186$). However, skin capacitance was significantly higher on the right versus left foot, both after 7 days ($P < 0·001$) and after 14 days of treatment ($P < 0·001$). In conclusion, results with the new foam appear encouraging in ameliorating skin dryness in the diabetic foot and further investigation is warranted.

U. Wehler, **Hautphysiologische Untersuchungen zu repetitiven Handschuhokklusionen**, Osnabrück, Mai 2011

EINLEITUNG: Berufsbedingte Hauterkrankungen nehmen in Deutschland die führende Position unter den gemeldeten berufsbedingten Krankheiten ein (DGUV 2009). Als ein Risikofaktor für chronische, irritative Kontaktdermatitiden werden repetitive Handschuhokklusionen mit hautphysiologischen Auswirkungen auf die Epidermale Barriere (z.B. Exsikkationseffekte, Barriereschädigungen und Verschiebungen des HautoberflächenpH- Wertes) angeführt (FLUHR et al. 2005; FROSCH/JOHN 2006; GRAVES et al. 1995; JUNGBAUER et al. 2004a, 2004b und 2004c; RAMSING/AGNER 1996b; TSAI/MAIBACH 1999; WULFHORST et al. 2010; ZHAI/MAIBACH 2002). In der einschlägigen Literatur wird der hautschädigende Einfluss von Langzeit-Okklusionen jedoch kritisch diskutiert, da widersprüchliche Studienergebnisse vorliegen (FLUHR et al. 1999b; RAMSING/AGNER 1996a und 1996b; WETZKY et al. 2009a). Hardening-Effekte werden als ein Erklärungsansatz für die Kompensation hautschädigender Okklusionseffekte angegeben, die auch im Kontext von Spontanremissionen irritativer Dermatitiden trotz konstanter äußerer Risikofaktoren diskutiert werden (ELIAS et al. 2001; LAMMINTAUSTA/MAIBACH 1990; WATKINS/MAIBACH 2009; WULFHORST 1996a, 1996b, 1996c und 2000).

E. Berardesca, M. Iorizzo, E. Abril, G. Guglielmini, M. Caserini, R. Palmieri, G.E. Piérard, **Clinical and instrumental assessment of the effects of a new product based on hydroxypropyl chitosan and potassium azeloyl diglycinate in the management of rosacea,** Journal of Cosmetic Dermatology, 2011, p. 37–41

Background Rosacea is a chronic inflammatory skin disease affecting mostly facial skin. Its origin is multifactorial. Important steps in its treatment are avoidance of any triggering factor and control of skin inflammation. Aim To assess the benefit of topical applications of a new product (P-3075). Patients / Methods A randomized, multicenter, double-blind, placebo-controlled, parallelgroup, pilot study was carried out to evaluate the efficacy and tolerability of a cream (P-3075) based on 5% potassium azeloyl diglycinate (PAD, Azeloglicina) and 1% hydroxypropyl chitosan (HPCH). Forty-two patients (rosacea stages I and II) were enrolled and randomized, 28 in the P-3075 group and 14 in the placebo group. They were asked to apply the cream twice daily for 4 weeks. The main assessments were the objective quantification of erythema and skin hydration using the Mexameter and Corneometer devices, respectively. Clinical signs and symptoms were evaluated on a four-point scale. Results The P-3075 cream applied for 28 days was effective in skin protection by reducing erythema, evaluated both instrumentally and clinically. In addition, the clinical assessments of other symptoms such as flushing, stinging, and burning supported the beneficial effect of the P-3075 cream. Conclusions The anti-inflammatory and moisturizing effects of potassium azeloyl diglycinate combined with the protective properties of HPCH allow the new product to be a good candidate for controlling signs and symptoms of rosacea.

J.W. Shin, D.H. Lee, S.Y. Choi, J.I. Na, K.C. Park, S.W. Youn, C.H. Huh, **Objective and non-invasive evaluation of photorejuvenation effect with intense pulsed light treatment in Asian skin**, J Eur Acad Dermatol Venereol. 2011 May; 25(5): p. 516-22

Background: Intense pulsed light (IPL) has been widely used for photorejuvenation. Although previous literature has shown clinical effectiveness of IPL treatments on cutaneous photoaging, the associated changes in the biophysical properties of the skin following IPL treatments have not been fully elucidated. Objective: The aim of this study was to evaluate changes in skin biophysical properties in patients with photoaging after IPL treatments, using non-invasive, objective skin measuring devices. Patients and Methods: A total of 26 Korean women with facial dyschromias underwent three sessions of IPL treatment at 4-week intervals. Outcome assessments included standardized photography, global evaluation by blinded investigators, patients' self-assessment and objective measurements of colour (Mexameter MX18, Chromatometer), elasticity (Cutometer), roughness (Visiometer), sebum (Sebumeter) and skin hydration (Corneometer). Results Intense pulsed light treatments produced a 15% decrease in the size of representative pigmented lesions ($P < 0.05$). Conclusions: Patients' self-assessment revealed that 84% and 58% of subjects considered their pigmented lesions and wrinkles were improved respectively. Objective colorimetric measurement demonstrated significant improvements following IPL treatments that were most remarkable after one session of IPL. Moreover, skin elasticity showed significant improvements at the end of the study. Skin wrinkles as measured using Visiometer showed a mild improvement without statistical significance. Sebum secretion and water content of skin remained unchanged. Intense pulsed light provided significant improvement in the appearance of facial pigmented lesions in Korean patients. These effects appeared to be more remarkable in improving pigmentation, skin tone and elasticity.

A. Rasul, N. Akhtar, **Formulation and in vivo evaluation for anti-aging effects of an emulsion containing basil extract using non- invasive biophysical techniques**, DARU 2011 19 (5), p. 344-350

Background and the purpose of study: Skin aging is a complex process induced by constant exposure to ultraviolet (UV) irradiation and damages human skin. UV generates reactive oxygen species leading to collagen deficiency and eventually skin wrinkling. Basil contains a number of phenolics and favonoids which possess antioxidant properties. The aim of this study was to formulate and investigate the antiaging potential of a cream containing Basil extract. Methods: A single blinded study was conducted using non-invasive methods. Formulation containing 3% of the concentrated extract of Basil was developed by entrapping in the inner aqueous phase of w/o emulsion and base contained no extract. Both creams were stored at different storage conditions of 8°C, 25°C, 40°C and 40°C+ 75% relative humidity to predict their stabilities. The formulation and base were evaluated for their effects on various skin parameters i.e., moisture and transepidermal water loss (TEWL), volume, energy and surface evaluation of the living skin (SELS). Results: Significant effects (p□0.05) were observed for both creams in the case of TEWL. The base showed insignificant (p□0.05) while formulation showed significant effects on skin moisture. Volume, SELS SEr (skin roughness), SEsc (skin scaliness), SEsm

(skin smoothness), SEw (skin wrinkles) parameter showed significant decline while texture parameter of 'Energy' showed significant increase. Conclusion: The results statistically indicated that the active formulation containing extract of Basil exert antiaging effects when applied topically.

Y.H. Zhu, S.P. Song, W. Luo, P.M. Elias, M.Q. Man, **Characterization of Skin Friction Coefficient, and Relationship to Stratum Corneum Hydration in a Normal Chinese Population**, Skin Pharmacol Physiol 2011;2 4: p. 81–86

Background and Objectives: Studies have demonstrated that some cutaneous biophysical properties vary with age, gender and body sites. However, the characteristics of the skin friction coefficient in different genders and age groups have not yet been well established. In the present study, we assess the skin friction coefficient in a larger Chinese population. Methods: A total of 633 subjects (300 males and 333 females) aged 0.15–79 years were enrolled. A Frictiometer FR 770 and Corneometer CM 825 (C&K MPA 5) were used to measure the skin friction coefficient and stratum corneum hydration, respectively, on the dorsal surface of the hand, the forehead and the canthus. Results: In the females, the maximum skin friction coefficients on both the canthus and the dorsal hand skin were observed around the age of 40 years. In the males, the skin friction coefficient on the dorsal hand skin gradually increased from 0 to 40 years of age, and changed little afterward. Skin friction coefficients on some body sites were higher in females than in age-matched males in some age groups. On the canthus and the dorsal hand skin of females, a positive correlation was found between skin friction coefficient and stratum corneum hydration ($p < 0.001$ and $p < 0.0001$, respectively). In contrast, in males, the skin friction coefficient was positively correlated with stratum corneum hydration on the forehead and the dorsal hand skin ($p < 0.05$ and $p < 0.0001$, respectively). Conclusion: The skin friction coefficient varies with age, gender and body site, and positively correlates with stratum corneum hydration on some body sites.

T. Knor, A. Meholjić-Fetahović, A. Mehmedagić, **Stratum corneum hydration and skin surface pH in patients with atopic dermatitis,** Acta Dermatovenerol Croat. 2011;19(4): p. 242-247

Atopic dermatitis (AD) is a chronically relapsing skin disease with genetic predisposition, which occurs most frequently in preschool children. It is considered that dryness and pruritus, which are always present in AD, are in correlation with degradation of the skin barrier function. Measurement of hydration and pH value of the stratum corneum is one of the noninvasive methods for evaluation of skin barrier function. The aim of the study was to assess skin barrier function by measuring stratum corneum hydration and skin surface pH of the skin with lesions, perilesional skin and uninvolved skin in AD patients, and skin in a healthy control group. Forty-two patients were included in the study: 21 young and adult AD patients and 21 age-matched healthy controls. Capacitance, which is correlated with hydration of stratum corneum and skin surface pH were measured on the forearm in the above areas by SM810/CM820/pH900 combined units (Courage AND Khazaka, Germany). The mean value of water capacitance measured in AD patients was 44.1 ± 11.6 AU (arbitrary units) on the lesions, 60.2 ± 12.4 AU on perilesional skin and 67.2 ± 8.8 AU on uninvolved skin. In healthy controls, the mean value was 74.1 ± 9.2 AU. The mean pH value measured in AD patients was 6.13 ± 0.52 on the lesions, 5.80 ± 0.41 on perilesional skin, and 5.54 ± 0.49 on uninvolved skin. In control group, the mean pH of the skin surface was 5.24 ± 0.40. The values of both parameters measured on lesional skin were significantly different (capacitance decreased and pH increased) from the values recorded on perilesional skin and uninvolved skin. The same held for the relation between perilesional and uninvolved skin. According to study results, the uninvolved skin of AD patients had significantly worse values of the measured parameters as compared with control group. The results of this study suggested the skin barrier function to be degraded in AD patients, which is specifically expressed in lesional skin.

U. Heinrich, B. Garbe, M. Wiebusch, H. Tronnier, A. Boddie, **Supplementation with encapsulated vegetable and fruit juice concentrate improves microcirculation and ultrastructure in skin,** Annals of Nutrition and Metabolism 58(1): p. 55-56, April 2011

The objective of the study was to determine changes in skin parameters during the intake of an encapsulated vegetable and fruit juice concentrate. Skin hydratation properties, skin barrier function (TEWL), skin thickness and density as well as microcirculation (capillary blood flow) were determined during the study.

C. Deep Kaur, S. Sasraf, **Skin care assessment on the basis of skin hydration, melanin, erythema and sebum at various body sites**, Academic Science, International Journal of Pharmacy and Pharmaceutical Sciences, Vol 3, Suppl 4, 2011

The aim of this work was to study skin parameters like melanin, erythema, skin hydration, and sebum score of six body sites namely volar forearm, cheek, chin, forehead, neck and post auricular skin

of Asian (Indian) population with different skin colour and types to depict the formulation to be used for taking care. Initially skin colour of various volunteers was assessed by the reference of colour chart numbers and three groups each of 80 human volunteers were made. Group I was named fair which corresponded with Colour chart number 19, 20, 21; group II (medium) (22, 23, 24); group III (dark) (25, 26, 27). The measurements were taken using Mexameter (erythema and melanin), Corneometer (skin hydration) and Sebumeter (sebum score). Results depicted that facial skin had more melanin content than volar forearm; the sebum score was highest in the forehead and lowest at volar forearm, skin hydration was more in periauricular space and forehead and lowest in cheek. The volunteers of group I had high sebum and skin hydration values than group II and III. In the face, cheeks need more care and are more prone to dryness. People with darker skin, require formulations having more humectants, while people with fairer skin need to protect more from tanning and redness. Hence these studies will be helpful for deciding the criteria for type of skin and selection of formulation to people of various skin types at various body sites.

A. Thibodeau, P. Jacobs, S. Amari, **Biomimetic ingredient offers formulation benefits,** Personal Care, March 2011, p. 115-118

The hydrolipidic film covers the surface of the skin and actively contributes to the skin surface smoothness and the skin barrier function. We have developed a biomimetic ingredient of the hydrolipidic film as per its fatty acid profile. Ethylhexyl olivate (INCI nomenclature) brings clinical benefits for numerous parameters and rheology advantages to the formulation. One single application of a formulation containing 3% ethylhexyl olivate was shown to significantly increase skin hydration (+12.2%, $p<0.05$), barrier function (+16.7%, $p<0.05$), visco-elastic properties (+6.7%, $p<0.05$) and skin surface profilometry (+11.2%, $p<0.05$) for up to eight hours. In another experiment, ethylhexyl olivate was compared to 10 different oil/emollients and ranked third for the viscosity enhancement and second for spreadability index on skin. Thanks to its molecular composition, ethylhexyl olivate creates a subtle veil naturally integrating itself within the hydrolipidic film and significantly improving skin sensorial properties. Ethylhexyl olivate stands as a key tool for formulation chemists while positively acting on skin physiological features as well as on sensorial properties.

A. Thibodeau, P. Jacobs, S. Amari, **Olive oil fatty acids: positive effects for the skin,** Personal Care, March 2011, p. 51-57

From the activity of B&T over the last 20 years we have collected vast knowledge of the effects of olive oil fatty acids on the skin showing positive benefits by reinforcing the effectiveness of the hydrolipidic film supporting the skin barrier function. In this paper we take three olive oil derivatives (Olivem 1000, Sensolene and Olivem 900) having different formulation functions and show how the olive oil fatty acids can provide positive effects on the skin in cosmetic applications.

N. Arnejo, O. Carballo, F. Svarc, A. Branca, **A renewable, biodegradable substitute for petrolatum,** Personal Care, March 2011, p. 120-122

The usage of petrolatum in cosmetics has been under scrutiny recently, particularly within the EC, due to the potential carcinogen and mutagenic effects attributed to traces of impurities generated during its manufacturing process. Even though these questions have been around for a while, its unsurpassable properties as an occlusive have made difficult its replacement in hydrating and moisturising products. But the enforcement of REACH in Europa has accelerated the process, which is the reason why we have focused on searching for (and finding) a viable substitute. The objective of this study was to test a possible substitute to solid Vaseline (petrolatum) to replace it advantageously in treatment creams with a natural, renewable non-toxic and ecologically sound product.

A. Thibodeau, **Anti-aging Skin Care Benefits of Saccharina longicruris Extract,** Cosmetics & Toiletries, Vol. 126, No. 3/March 2011

Skin appearance and functionality are affected by a complex combination of factors including both genetic, i.e. intrinsic, and actinic, i.e. extrinsic or environmental. Indeed, genetic and actinic factors act together to modulate the expression of key genes involved in skin homeostasis. Intrinsic aging is genetically regulated and follows a chronological clock inside of cells, while environmental factors such as UV exposure, humidity and air pollutants are responsible for actinic aging. Together, genetic and actinic aging target important metabolic pathways in skin cells that trigger the signs of aging such as skin roughness and wrinkling. At a molecular level, it has been demonstrated that collagen synthesis is reduced in aged skin cells and in cells damaged by UV radiation.

G.E. Piérard, L. Preudhomme, P. Quatresooz, **Predictive methods exploring sensory irritation to surfactant-based products,** Household and Personal Care TODAY, No. 2/2011, p. 23-26

The concept of sensitive skin is subject of rife controversies. Some authors consider sensitive skin as a sensory irritation without any visible clinical signs. Others extend this definition to some environmentally-induced dermatoses. This latter concept is at risk of introducing much confusion and overlapping with allergic and irritant contact dermatitis. The present review focuses on the restricted definition of invisible sensitive skin, and particularly on sensory irritation to surfactants. A series of biometrological assessments may reveal some aspects linked to sensory irritation.

L. Rigano, C. Andolfatto, L. Stucchi, M. Bosco, **Hyaluronic Acid Butyric Esters for the Improvement of Skin Functionality,** Cosmetic & Toiletries Vol. 126, No. 2/February 2011, p. 104-111

The word hyaluronic is derived from the Greek hyalos meaning “glass” or “transparent” and refers to the vitreous humor, the ocular tissue from which it was first isolated by Karl Meyer and colleagues in 1934. It was later located in many other animal tissues, i.e. synovial fluid, cartilage and the umbilical cord, where it has the same structure and biological activities, described in this article. Hyaluronic acid (HA) is a linear polysaccharide of thigh molecular weight that belongs to the fmily of mucopolysaccharides or glycosaminoglycans (GAGs), the physiological constituents of the dermal connective tissue in the extracellular matrix. In adult humans, the total amount of HA is equal to approximately 15g, half of which is found in the skin.

T.N. Oliphant, D.W. Gilmore, R.A. Harper, **Hydrolyzed Jojoba Esters to Potentiate Glycerin Moisturization,** Cosmetics &Toiletries, Vol. 126, No. 2, February 2011, p. 96-103

Hydrolyzed jojoba esters are derived from jojobal oil, a unique natural oil expressed from the seed of the jojoba plant. Jojoba oil (INCI: Simmondsia Chinensis (Jojoba) Seed Oil) is unlike other “fixed”, i.e. botanically derived, oils in that it is a true wax ester, in contrast to the triglyceride oils often founded in the seed of other botanical species. It is the only known botanical wax ester that remains liquid at room temperature. In addition its chemical structure is similar to the large wax ester component of human skin sebum, making jojoba oil well-suited to augment skin moisturization and barrier repair.

K.G. Lee, S.W. Son, **Efficacy of Korean Red Ginseng in the Treatment of Atopic Dermatitis,** J. Ginseng Res. Vol. 35, No. 2, p. 149-154 (2011)

In order to determine the effcacy of functional foods, objective measurement of the severity of atopic dermatitis (AD) after taking foods is important. The aim of this study was to conduct an objective evaluation of whether Korean red ginseng (KRG) might be helpful for improvement of skin condition and serum IgE in patients with AD. Thirty atopic patients (18 females and 12 males) participated in this study. Patients took KRG for 16 weeks. Bioengineering methods, including the corneometer and evaporimeter, were used at the start of the study and after 8 weeks and 16 weeks. In addition, we assessed serum IgE levels and the severity scoring of the atopic dermatitis (SCORAD) index. Transepidermal water loss and skin hydration showed signifcant improvement after 16 weeks. A signifcant decrease in the SCORAD index, as well as in serum IgE level, was observed after 16 weeks. Our results demonstrated that KRG may be helpful as a functional food for patients with AD.

Interview mit der Haut – Haut, was sagen Sie zu Ihrer Hautfeuchtigkeit?-, Jugend forscht Januar 2011

Die Haut ist das grösste Organ des Menschen und schützt ihn nicht nur vor Umwelteinflüssen, sondern dient auch der Energiespeicherung und Sinnesempfindungen wie Tasten und Schmerz. Um eine Vorstellung zu bekommen, wie sich die Hautfeuchtigkeit bei Jugendlichen verhält, wollten wir möglichst viele Daten zur Hautfeuchtigkeit von Schülern unserer Schule erhalten. Wir wollten diese Daten zu Hautfeuchtigkeitswerten von Schülern in Abhängigkeit vom Alter und Geschlecht bestimmen und zusätzlich untersuchen, ob der rechte Handrücken bei Rechtshändern und der linke Handrücken bei Linkshändern andere Hautfeuchtigketiswerte zeigt als der andere Handrücken. Diese Grundwerte zur Hautfeuchtigkeit haben wir ermittelt, um einen besseren Überblick über die Hautfeuchtigkeit in unterschiedlichen Ältersgruppen zu bekommen.

J. Blaak, R. Wohlfart, N.Y. Schürer, **Treatment of Aged Skin with a pH 4 Skin Care Product Normalizes Increased Skin Surface pH and Improves Barrier Function: Results of a Pilot Study,** Journal of Cosmetics, Dermatological Sciences and Applications, 2011,1, p. 50-58

Abstract: The physiological skin surface pH is just below 5. With age the skin surface pH increases up to 6. An increased pH correlates with reduced barrier integrity/cohesion. The present pilot study assesses possible normalization of an increased skin surface pH of the elderly and improvement of barrier function via application of pH 4.0 skin care products. Baseline skin surface pH was determined in elderly (80+ years old; n = 15) compared to middle aged adults (31 - 50 years old; n = 15). The effect of o/w emulsions at pH-values of 3.5, 4.0, 4.5 and 5.5 on the skin surface pH was

determined in both groups. Further, the effect of a 4-week treatment with a pH 4.0 skin care product on the skin surface pH, skin hydration and barrier integrity was assessed. Thirteen elderly females were involved in this home-in-use test. Increased baseline skin surface pH of the elderly normalizes to the physiological pH of 4.5 - 5.0 over 7 hours after single application of o/w-emulsions with a given pH of 3.5 or 4.0. A 4 week treatment employing the pH 4.0 skin care product improves the epidermal barrier integrity of the elderly significantly ($p = 0.005$). Reduction of the increased baseline skin surface pH of the elderly is accompanied by improved epidermal barrier integrity. Skin care products for the elderly have to be adjusted in the pH range of 3.5 to 4.0.

Y. Shigeta, G. Nakagami, H. Sanada, C. Konya, J. Sugama, **Factors Influencing Intact Skin in Women with Incontinence Using Absorbent Products: Results of a Cross-sectional, Comparative Study**, Ostomy Wound Management 2010;56(12): p. 26–33

Incontinence-associated dermatitis (IAD) is a common problem in elderly incontinent people. A comparative cross-sectional study was conducted to examine and compare properties of intact skin on the buttocks and subumbilicus area in elderly people wearing absorbent products and to identify pad environment factors that affect skin properties. Study participants included 45 elderly (age range: 68 to 103 years) female residents of one nursing home who were incontinent of feces and urine (dual incontinence group — DIG, n = 35) or feces only (fecal incontinence group – FIG, n= 10). Skin pH and hydration were measured and factors believed to affect the perineal environment and contribute to the development of IAD were assessed. In both DIG and FIG, skin hydration levels and pH were higher in the coccygeal than in the subumbilical area. Skin hydration of the sacral region in the DIG was significantly higher than in the FIG ($P = 0.019$) and skin pH on the coccygeal region and sacral region in the DIG was significantly higher than in the FIG (coccygeal region, $P = 0.013$; sacral region, $P = 0.023$). Absorbent pad surface pH ($P < 0.01$) and excessive sweating ($P = 0.006$) were significantly related to skin pH. Results show that properties of perineal skin in elderly women with incontinence are affected by occlusion with pads, increasing the risk of IAD. Studies comparing the effect of various types of pads and pad-change frequencies on skin properties are needed.

M. Flach, **Untersuchung von Einflußfaktoren auf den Stratum corneum-Klebestreifenabrißtest und deren Auswirkungen auf die hervorgerufene Stratum corneum-Barriere-Schädigung**, Dissertation an der Medical Faculty of the Friedrich-Schiller-University Jena, Germany, December 2010

Der Klebestreifenabrißtest (tape stripping) ist ein etabliertes hautphysiologisches Untersuchungsverfahren. Seine Hauptanwendungsgebiete sind Untersuchungen zur Barrierefunktion des Stratum corneum (SC) und pharmakokinetische Studien zur Penetration von Lokaltherapeutika und Fremdstoffen. Trotz oder gerade wegen seiner breiten Anwendung ist der Test nicht standardisiert und es existieren unterschiedliche Protokolle. Ziel dieser Arbeit war es, unterschiedliche Einflußfaktoren auf den Klebestreifenabrißtest und die hervorgerufene Barriereschädigung zu untersuchen und basierend auf diesen Ergebnissen einen Vorschlag für ein standardisiertes Protokoll für den Klebestreifenabrißtest zu entwerfen. Dazu wurden bei zwölf hautgesunden Probanden in vier unterschiedlichen Körperregionen (Unterarm, Oberarm, Rücken, Wange) Klebestreifenabrisse durchgeführt. Die Klebestreifen wurden mit verschiedenen Anpreßdrücken (2 N, 7 N) und Anpreßzeiten (2 sec, 10 sec) auf die Hautoberfläche aufgebracht. Zum Ausgleich der durch die Hautfelderung entstehenden Furchen innerhalb des SC kamen verschiedene Methoden zum Anpressen der Klebestreifen zur Anwendung (Stempel bei gleichzeitigem Straffen der Haut, Roller, Andrücken mit dem Daumen). Neben einem Haushaltsklebeband wurden zwei speziell für den Klebestreifenabrißtest entwickelte Klebescheiben (D-Squame®, Corneofix®) getestet. Das Ausmaß der SCBarriereschädigung wurde durch Messungen des transepidermalen Wasserverlustes (TEWL) zu definierten Zeitpunkten vor, während und nach den Klebestreifenabrissen bestimmt. Zusätzlich erfolgten Messungen der Hautfarbe, Hornhautfeuchte sowie des pH-Wertes auf der Hautoberfläche vor und nach den Klebestreifenabrissen.

J. Viyoch, I. Tengamnuay, K. Phetdee, P. Tuntijarukorn, N. Waranuch, **Effects of Trans-4-(Aminomethyl) Cyclohexanecarboxylic Acid/Potassium Azeloyl Diglycinate/Niacinamide Topical Emulsion in Thai Adults With Melasma: A Single-Center, Randomized, Double-Blind, Controlled Study**, Current Therapeutic Research, Volume 71, Number 6, December 2010; p. 345–359

Background: Melasma is an acquired hyperpigmentary disorder characterized by dark patches or macules located on the cheeks, forehead, upper lip, chin, and neck. Treatment of melasma involves the use of topical hypopigmenting agents such as hydroquinone, tretinoin, and azelaic acid and its derivatives. Objective: The purpose of this study was to assess the efficacy of a formulation containing a combination of trans-4-(aminomethyl) cyclohexanecarboxylic acid/potassium azeloyl diglycinate/niacinamide compared with an emulsion-based control in the treatment of melasma in Thai adults. Methods: In this single-center, randomized, double-blind, controlled study, Thai patients with mild

to moderate facial melasma (relative melanin value [RMV] in range of 20–120) were randomized for the application of either the test or the emulsionbased (control) product in the morning and before bedtime for 8 weeks. The supplemental sunscreen product with sun protection factor 30 was distributed to all patients. Subjects were assessed for the intensity of their hyperpigmented skin area by measuring the difference in the absolute melanin value between hyperpigmented skin and normal skin (RMV). This parameter was used as a primary outcome of this study. Additionally, the severity of melasma was determined visually using the Melasma Area and Severity Index (MASI) scored independently by 3 investigators. The assessments of melasma intensity and other skin properties were performed before administration (week 0) and every 2 weeks thereafter for up to 8 weeks. Other skin properties, including moisture content, pH, and redness (erythema value), were measured. Adverse events (AEs), including erythema, scaling, and edema, were also assessed by a dermatologist using the visual grading scale of Frosch and Kligman and COLIPA. Results: The resulting primary intent-to-treat (ITT) population included 33 patients in the test group and 34 patients in the control group. Sixty patients completed all 8 weeks of the study (on-treatment [OT] population): 91% (30) of the 33 patients in the test group, and 88% (30) of the 34 patients in the control group. Betweengroup differences in mean RMV were statistically significant at week 6 in both the primary ITT (P = 0.005) and OT (P = 0.006) populations. The significant differences in mean MASI scores between the test and the control groups were initially observed at weeks 4 (P = 0.005) and 8 (P = 0.027) in the OT and primary ITT populations, respectively. Other parameters, including skin pH, erythema, and moisture content did not significantly change from baseline at any time point of study. The incidence of AEs was not different between the test (4/33 [12%]) and control (5/34 [15%]) groups. Conclusions: The significant differences in RMVs between the test and control groups were observed after 6 weeks of treatment, both in the primary ITT and OT populations. The incidence of patients with AEs was not significantly different between the test and control groups.

Oestro Cream – Firmer and Beautiful Breast Cream, www.Oestrocream.com, 2010

Oestro cream is a natural breast enhancement cream scientifically engineered with Transdermal Technology to naturally enhance the size, shape and firmness of women's breats.

E.S. Abrutyn, **Skin Care Moisturizers,** Cosmetics & Toiletries Vol. 125, No. 12/December 2010, p. 18-25

Moisturizers are an important category of personal care products, and such formulas are designed to add moisture to the skin. Developing a good moisturizer requires carefully balancing the ingredients in a formula so that, upon application, the product maintains proper water content in the skin, i.e. 10-30%, to maintain its plasticity and barrier integrity. Insufficient water content can lead to the thickening or thinning of skin; fissure development, which produces chapped, rough and cracked skin; and the loss of pleasing skin aesthetics. Therefore, choosing the right moisturizer requires knowledge of its chemical, physical and performance properties and how to best utilize it against the targeted performance claims and consumer expectations. In addition, it requires knowledge of the skin to which it will be applied.

T. Ilknur, M.Ü. Biçak, P. Eker, H. Ellidokuz, S. Özkan, **Effects of the 810-nm diode laser on hair and on the biophysical properties of skin,** Journal of Cosmetic and Laser Therapy, 2010; 12: 269–275

Introduction: Laser therapy is clinically effective in hair removal; however, despite the development of various strategies, laser procedures still present a risk of adverse effects due to the overheating of the skin. *Objective* : To investigate the effects of 810-nm diode laser treatment on hair and on the biophysical properties of skin by using various non-invasive techniques on various parameters, including hair analysis, surface color changes, integrity of skin barrier, sebum production rate and pH level. Methods: In this randomized, right – left comparison study, 35 women with axillary hair received single-session diode laser therapy. Hair analysis and biophysical properties of the skin were assessed before treatment and at weeks 2, 4 and 6 after the therapy. Results: Hair density and thicknesses statistically signifi cantly decreased after the fi rst post-treatment evaluation. Regarding comparison of the biophysical properties of the skin, there was no statistically signifi cant difference in the assessments, except for the increase determined during the second week in the erythema index in the laser-treated areas. Conclusion: The fi ndings of this study showed that the diode laser can perform a signifi cant reduction in the hair amount without signifi cant epidermal damage, at least for a short period.

M. Trinh Luu, M. Mercier, **Sucrose Eser Multilamellar Emulsifiers for Skin Moisturization,** Cosmetics & Toiletries; Vol. 125, No. 10/October 2010, p. 48-52

Sucrose esters are well-known natural emulsifiers and while they are desired for their mildness and safety, they also are reltively expensive when compared with other emulsifiers. Accordingly, they

have not been used as widely as they might at lower costs. In response, the authors have developed an emulsifier system comprising a mixture of ethylene oxide-free sucrose esters used at low levels to improve their cost-efficiency. This blend is shown to form multi-lamellar liquid crystalline networks that impart various benefits including skin moisturization, assessed here. Further, most cosmetic compositions prepared with the blend can be formulated with minimal regard to HLB due to the emulsion stabilization provided by multilamellar liquid crystals, which minimize emulsion coalescence

S. Buchwald-Werner, **Abgrenzung kosmetische und pharmazeutische kosmetische und pharmazeutische Zubereitungen,** Presentation at Interpharm, Frankfurt, October 2010

A.-M. Beguin, E. Malaquin-Pavan, C. Guihaire, A.-M. Hallet-Lezy, S. Souchon, V. Homann, P. Zöllner, M. Swerev, R. Kesselmeier, F. Hornung, H. Smola, **Improving diaper design to address incontinence associated dermatitis**, Geriatrics 2010, 10:86

Background: Incontinence associated dermatitis (IAD) is an inflammatory skin disease mainly triggered by prolonged skin contact with urine, feces but also liberal detergent use when cleansing the skin. To minimize the epidermal barrier challenge we optimized the design of adult incontinence briefs. In the fluid absorption area we interposed a special type of acidic, curled-type of cellulose between the top sheet in contact with the skin and the absorption core beneath containing the polyacrylate superabsorber. The intention was to minimize disturbance of the already weak acid mantle of aged skin. We also employed air-permeable side panels to minimize skin occlusion and swelling of the stratum corneum. Methods: The surface pH of diapers was measured after repeated wetting with a urine substitute fluid at the level of the top sheet. Occlusive effects and hydration of the stratum corneum were measured after a 4 hour application of different side panel materials by corneometry on human volunteers. Finally, we evaluated skin symptoms in 12 patients with preexisting IAD for 21 days following the institutional switch to the optimized diaper design. Local skin care protocols remained in place unchanged. Results: The improved design created a surface pH of 4.6 which was stable even after repeated wetting throughout a 5 hour period. The “standard design” briefs had values of 7.1, which is alkaline compared to the acidic surface of normal skin. Side panels made from non-woven material with an air-permeability of more than 1200 l/m2/s avoided excessive hydration of the stratum corneum when compared to the commonly employed airimpermeable plastic films. Resolution of pre-existing IAD skin lesions was noted in 8 out of 12 patients after the switch to the optimized brief design. Conclusions: An improved design of adult-type briefs can create an acidic pH on the surface and breathable side panels avoid over-hydration of the stratum corneum and occlusion. This may support the epidermal barrier function and may help to reduce the occurrence of IAD.

R.F. Durham, R. Miller, J. W. DeSalvo, **Natural glycol replacement for hair and skin care,** Personal Care, September 2010, p.73-76

Global consumer demand for natural and organic cosmetics and personal care products continues to grow at double digit rates. Cosmetic chemists are challanged to find innovative, natural alternatives to synthetic and petroleum-based chemicals that have similar or better performance. Once they have identified a new ingredient, evaluation of its safety, efficacy and performance atrributes is critical prior to adoption in new formulations. Certification agencies such as ECOCERT, COSMOS, BDIH, Natrue and the Natural Products Assiciation (NPA) have been evaluating and approving ingredients as being safe and/or natural. Products that are on the “do not use” lists from these agencies as well as information on the internet are driving various “free from” marketing claims.

S. Golmohammadzadeh, M.R. Jaafari, H. Hosseinzadeh, **Does Saffron Have Antisolar and Moisturizing Effects?,** Iranian Journal of Pharmaceutical Research (2010), 9 (2): p. 133-140

The objective of this study was to investigate the effects of saffron as a natural sunscreen and moisturizer. The pollens of the saffron were dried and powdered in a grinder. The experimental formulations included a homosalate (8%) lotion reference, lotions with 2, 4 and 8% of grinded saffron, and the control lotion base without saffron. The lotions containing saffron were prepared like homosalate lotion reference according to FDA. The sun protection factors (SPFs) of the formulations were determined by an *in vitro* spectrophotometry method. The moisture contents of the skin before application and after 30 min and 3, 5 and 7 h post-application of the formulations were measured in human volunteers using Corneometer. The results indicated that, there was no signifcant difference between the SPF values of the 4% saffron lotion and the homosalate lotion reference. However, the SPF of 8% saffron lotion was signifcantly more than that of homosalate lotion reference. These results showed that in equal concentrations saffron lotion could act as a better antisolar agent compared to homosalate. Furthermore, there were no signifcant differences in skin moisture saffron lotions and the control lotion without saffron during the 7 h post-application period. Saffron can be used as a natural UV

absorbing agent. The 4% saffron lotion showed an SPF value equivalent to the 8% homosalate lotion reference by an *in vitro* method. There were no signifcant differences of skin moisture contents after application of the saffron lotions and the control base lotion without saffron**.**

J. Woodruff, **Testing - backing up the claims,** Cosmetic Business, August 2010

Instrumental methods for efficacy testing of cosmetic producs have long been of interest. The first Journal of the Society of Cosmetic Chemists published in 1947 contained an article on cosmetic efficacy testing although the only instrumenal method quoted was the use of a spectrophotometer to measure UV absorbance of sunscreen agents. It is interesting to note that the need to determine if these were subject to photodegradation was mentioned. Papers on efficacy testing have appeared in almost every issue of the journal since that first edition but most methods are subjective. Instrumental methods other than those to measure physical parameters or analytical ones to measure ingredient concentrations of the cosmetic composition were sadly lacking until 1956 when a paper describing the measurements of percutaneous absorption using radioisotopes to measure absorption journal during 1956 was an in-vitro method using radioisotopes to measure absorption by hair.

M. Choi, J.-W. Choi, S.-Y. Lee, S.-Y. Choi, H.-J. Park, **Low-dose 1064-nm Q-switched Nd: YAG laser for the treatment of melisma,** Volume 21 (4) Informa Healthcare, Jul. 1, 2010

Background: Melasma is a common acquired pigmentary disorder which is sometimes hard to treat with conventional methods. Various kinds of modalities have been applied for the treatment of melasma but none shows constantly good results. Objectives: In this study, we would like to know the effect of low-dose 1064 -nm Q-switched Nd:YAG laser (QSNYL) on melasma and want to evaluate the changes of skin after laser treatment. Methods: Twenty melasma patients were enrolled. Two regions were evaluated from each patient; a total of 40 sites. The 1064-nm QSNYL at fluences of 2.0–3.5 J/cm 2 was used to treat the whole face, including the melasma lesions. The fluence was adjusted individually and increased until erythema was developed on the laser-treated area. The treatment was performed five times with a 1-week interval. Non-invasive measuring methods, including a chromatometer, mexameter, cutometer, visioscan and a corneometer, were used before and after treatment.

A. Mieczko, **Investigation of skin physiological parameters in term neonates and evaluation of the influence of bathing on skin barrier function in newborns during the first four weeks of life,** 2010 Universitäsbibliothek der Freien Universität Berlin

Ultrastructural studies have shown that the epidermis of full-term infants born after 40 weeks of gestation is morphologically indistinguishable from that of adults. It was therefore assumed that the biophysical properties are similar as well. The present study investigated skin physiology in neonates, especially the barrier function during the first 4 weeks of life and the influence of bathing and washing.

J.L. du Plessis, F.C. Elofff, C.J Badenhorst, J. Olivier, P.J. Laubscher, M.N. van Aarde, A. Franken, **Assessment of Dermal Exposure and Skin Condition of Workers Exposed to Nickel at a South African Base Metal Refinery**, Ann. Occup. Hyg. Vol. 54, 2010

The objectives of this study were to assess dermal exposure of cell workers to nickel at a South African base metal refinery and to characterize their skin conditions by measuring skin hydration and and trans epidermal water loss (TEWL) indices.

Hylactive, Scientific Dossier Laboratory F. Bouffard, Dermatological Division Barcelona, Spain, www.pro-medic.com

The skin covers our entire body, and through it we project our image to other people. It reflects our age and the state or our health. Healthy skin is the organism's first defence barrier, and as such it is subject to constant aggressions that can succeed in upsetting its structural balance.

Die neue frei® Bio+Pflegeserie: sanfte Hautpflege aus der Natur, Produktinformation, 2010

Seit 40 Jahren steht die Marke frei für wirksame und gut verträgliche Hautpflege – exklusivaus der Apotheke. Mit der frei® Bio+ Pflegeserie mit Heilpflanzen gibt es jetzt eine Hautpflege, die besonders natürlich und hautverträglich ist. Wie alle Produkte von frei® wurde auch die frei® Bio+ Pflegeserie in enger Zusammenarbeit mit Dermatologen entwickelt, klinisch getestet und zeichnet sich durch eine wissenschaftlich nachgewiesene Wirksamkeit aus. Das frei® Bio-Siegel garantiert wertvolle Wirkstoffe auf natürlicher Basis, u. a. Öle und ätherische Öle, Kräuter- und Blütenextrakte, die soweit möglich aus kontrolliert biologischem Anbau stammen. Die komplette frei® Bio+ Pflegeserie ist frei von synthetischen Duft- und Farbstoffen und enthält keine Paraffine. Sie wird nach dem frei® Bio-Reinheitsgebot hergestellt. Dies beinhaltet neben der sorgfältigen Auswahl natürlicher Rohstoffe auch umweltfreundliche und ressourcenschonende Herstellungsverfahren sowie den sparsamen Einsatz von

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Neu von Eucerin®: AQUAporin Active, www2.eucerin.com, Produktinformation 2010

Wie ein Nobelpreis die Feuchtigkeitspflege revolutioniert. Eucerin® hat den „magischen Schlüssel" gefunden – für eine strahlend- schöne Haut, die durch und durch mit Feuchtigkeit versorgt ist. Inspiriert von der mit dem Nobelpreis ausgezeichneten ntdeckung der Aquaporine hat Eucerin® jetzt eine hoch-innovative Feuchtigkeitspflege entwickelt: AQUAporin ACTIVE**.** Eucerin® AQUAporin ACTIVE aktiviert das hauteigene Feuchtigkeitsnetzwerk, indem es die Bildung neuer Aquaporine (Wasserkanäle) fördert, die die Feuchtigkeitsversorgung der Hautzellen regulieren. Das Ergebnis: Die Feuchtigkeit kann optimal in die Haut gelangen, sogar in die tieferen Schichten der Epidermis. Die innovative Feuchtigkeitspflege-Serie Eucerin® AQUAporin ACTIVE für feuchtigkeitsarme Haut besteht aus vier Produkten, die die Haut intensiv mit Feuchtigkeit ersorgen – und die optimal auf die individuellen Hautbedürfnisse abgestimmt sind. Eucerin® AQUAporin ACTIVE stimuliert die Bildung mikroskopisch kleiner Kanäle (sogenannter quaporine), die sich in den Zellmembranen befinden und den Transport von Wassermolekülen regulieren. Je besser dieses Netzwerk ausgebaut ist, desto mehr Feuchtigkeit kann an die Haut abgegeben und verteilt werden. Von Zelle zu Zelle – auch in den tieferen epidermalen Schichten. Eucerin®. AQUAporin ACTIVE wirkt wie ein magischer Schlüssel, der neue Türen in den Zellen „aufschließt" und so mehr Feuchtigkeit hineinlässt – für eine taufrische, optimal hydratisierte Haut.

Seba med Flüssig Wasch – Emulsion, **Erfahrungsbericht,** www.ciao.de

welche eine sanfte ph - hautneutrale Reinigung verspricht und für problematische und empfindliche Haut geeignet sein soll. Zudem soll eine biologische Desodorierung garantiert sein. Gekauft habe ich das Produkt im örtlichen DM - Drogeriemarkt zu einem Preis von 4,95. Man bekommt einen Beutel mit 400 ml Inhalt. Sebamed Produkte gibt es meines Wissens auch nur bei DM und in der Apotheke. Aussehen der Verpackung . Die Emulsion befindet sich in einem knapp 18 cm hohen Beutel an dem links oben ein Drehverschluss angebracht ist. Der Hintergrund ist in einem schlichten weiss gehalten. Ganz oben rechts befinden sich Informationen zu der Verpackung, welche die Umwelt wohl nicht belastet und darunter befindet sich der Aufdruck über den ph - Wert und und noch weiter unten das Logo des Herstellers. Mittig findet man die Produktbezeichnung und darunter kann man nachlesen für welche Haut es geeignet ist. Ganz unten stehen noch etwas uninteressante Dinge und auf der Rückseite die Verpechen des Herstellers, die Inhaltsstoffe, der Inhalt, Anwendungsempfehlung und die Haltbarkeit sowie Kontakt - und Herstellerdaten. Das Design ist relativ unspektakulär und wirkt medizinisch. Hässlich finde ich es aber keinesfalls! Ein neuartiger Reinigungskomplex mit besonders milden Waschaktivsubstanzen reinigt die empfindliche Haut ohne Reizung und Austrocknung. Ein wertvoller Pflegekomplex mit Pentavitin®, Vitaminen, Aminosäuren, Glycerin und Panthenol spendet Feuchtigkeit und pflegt die Haut. Dadurch wird die Haut schon beim Waschen spürbar glatt und geschmeidig. Der pH Wert 5,5 stärkt den natürlichen Säureschutzmantel der Haut und schützt vor Austrocknung, schädlichen Umwelteinflüssen und Krankheitserregern. Hervorragende Eignung für empfindliche und problematische Haut dermatologisch-klinisch getestet. Bei Hauterkrankungen und Seifenverbot nach Rücksprache mit dem Arzt.

J. Jiménez, A.L. Valenzuela, P. Alfonso, L. Bonilla, **Estudio sobre el Potencial Sostenible en Cosmetica del Aceite de Seje, Caracterizacion y Desarollo de una Propuesta como nuevo Activo Antienvejecimiento,** Enfoque Cosmético, p. 5-12

El aceite de seje es un producto obtenido de forma artesanal por comunidades indigenas en el departamento del chocó en Colombia, su uso popular y sus propiedades representan un alto valor para la comunidad. En busca de ofrecer nuevas alternativas para el creciente mercado mundial de productos sostenibles se planteó una estrategia para la evaluación del aceite de seje como nuevo activo cosmético enfocada en cumplir los tres pilares de sostenibilidad. A nivel social se establecieron los antecendentes y su importancia para la comunidad. Posteriomente se realizaron la caracterización química, física y biológica lo cual unido al proceso de extracción. 100% física contribuye a la responsabilidad ambiental Estos resultados proponen su aplicación como nuevo activo cosmético antiedad sustentado a partir de evaluaciones de su eficacia in vivo.

T. Zioni, N. Perkas, Y. Wolfus, Y. Soroka, I. Popov, M. Oron, I. Perelshtein, Y. Bruckental, F.M. Brégégère, Z. Ma'or, A. Gedanken, Y. Yeshurum, R. Neuman, Y. Milner, **Strontium hexaferrite nanomagnets suspended in a cosmetic preparation: a convenient tool to evaluate the biological effects of surface magnetism on human skin,** Skin Research and Technology 2010, 16, p. 316-324

Magnetic therapy has been popular for ages, but its therapeutic abilities remain to be demonstrated.

S. Mac-Mary, J.-M. Sainthillier, A. Jeudy, C. Sladen, C. Williams, M. Bell, P. Humbert, **Study of Asymmetrical Facial Damage due to Cumulative UVA Exposure***,* ISBS 2010 Buenos Aires, Argentina

Published studies assessing whether asymmetrical facial UV exposure leads to any underlying differences in skin physiology and morphology are only observational. These studies demonstrate that visible signs of photot ageing are more evident on the window exposed side of the face suggesting a role for UVA in photo ageing. Aim: To assess the physiological skin changes associated with visible asymmetrical photo ageing. Methods: 10 subjects were enrolled in the study (age 64 ± 6, 8 women and 2 men), presenting with asymmetrical signs of photoageing due to overexposure of one side of their face to the sun through a window over a long period of time. Split-face biometrological assessments were performed (clinical scoring, hydration with Corneometer®, mechanical properties with Cutometer®, transepidermal water loss with Aquaflux®, skin relief with fringe projection, photography). Results: significant differences ($P<0.05$) were observed on clinical scores of wrinkles which were greater on the window exposed side, skin roughness assessed with fringe projection on the cheek and skin heterogeneity assessed with spectrocolorimetry on the cheekbone (the skin was less heterogeneous) and differences which tend to be significant ($p<0.1$) were observed on skin hydration (skin was dryer) as well as skin laxity (skin was laxer).

*T. Lihoreau, C. Vidal, A. Jeudy, A. Elkhyat, S. Mac-Mary, J.M. Sainthillier, J. Iung, H. Bourdin, P. Humbert***, Skin Sebum Excretion and Sleep Apnea**, ISBS 2010 Buenos Aires, Argentina

The sleeping apnea syndrome is a common disorder that affects 5% of the population, but its diagnosis is underestimated because physicians forget to ask key questions, and the establishment of polysomnography is cumbersome. But given the relationship between excretion of sweat and some brain dysfunctions (eg Parkinson's disease ...), we wanted to evaluate sebaceous excretion in a population suffering from sleeping troubles, particularly sleep apnea, compared to a control group. Methodology: A preliminary study was then carried out on 26 volunteers (11 women, 15 men, average age = 46.2 years +/-14.8, average Body Mass Index (BMI) = 26.4 kg/m^3+/-5.6); they were sorted in two different populations (apnea versus, n=14, and no apnea syndrom, n=12). Skin and apnea parameters were compared between both groups: a polysomnographic record was done during the night; concerning the skin parameters, the records -realized on the wakening of the patient- concerned sebum excretion (Sebumeter SM 810, Courage & Khazaka), hydration index (Corneometer CM820, Courage & Khazaka), pH (Skin-pH-meter pH900, Courage & Khazaka).

C. Try, R. Messikh, A. Elkhyat, J.M. Sainthillier, C. Vidal, T. Lihoreau, S. Mac-Mary, A. Jeudy, P. Humbert, **Biometrological Assessment of Sweat Secretion. Clinical Study of Oral Oxybutynin in Primary Hyperhidrosis**, ISBS 2010 Buenos Aires, Argentina

Primary hyperhidrosis may be a disabling condition causing emotional stress and negative impact on a patient's quality of life. Oral anticholinergics are some of the treatments available. There are few published data on the use of the anticholinergic drug oxybutynin given orally in the treatment of hyperhidrosis. To evaluate the efficacy and the safety of oral oxybutynin in the treatment of primary hyperhidrosis. From January to June 2010, patients with primary hyperhidrosis were treated with oral oxybutynin in the Department of Dermatology, Besançon, France, and attended follow-up. Treatment was started with oxybutynin 2.5 mg three times daily during 3 days. The 3 following days, the dose of oxybutynin was increased at 5 mg per day. Patients then took 7.5 mg of oxybutynin per day during 24 days. The study lasted 1 month from the first day of oxybutynin treatment. Patients were evaluated every two weeks by clinical and biometrologic methods. The following parameters were assessed on the palm and plant: degree of sweating was determined by measuring Trans Epidermal Water Loss (TEWL) using a double-probe Tewameter (TM 300; Courage+Khazaka), skin temperature (Thermometer® ST500), skin pH (pH-meter, PH 900) and skin hydration (Corneometer®, CM 825).

P.M.B.G. Maia Campos, M.D. Gianeti, D.G. Mercurio, L.R. Gaspar, **Assessment of Protective Effects of Cosmetics with UV-Filters, Vitamins, Ginkgo Biloba and Red Alga Extracts using Biophysical and Skin Image Techniques,** ISBS 2010 Bueno Aires, Argentina

The combination of UV filters with antioxidant substances and natural extracts with biological activity in terms of photoprotection can provide unique benefits to the skin, by increasing its protection against UV radiation and also by improving skin conditions. Thus, the aim of this study was the assessment of protective effects of cosmetic formulations containing UV-filters, vitamins, *Ginkgo biloba* and red alga *Porphyra umbilicalis* extracts by biophysical and skin image techniques. For this purpose,

an emulsion was supplemented or not (F) with *Ginkgo biloba* extract (FG), or red alga *Porphyra umbilicalis* extract (FA), or the combination of these extracts and vitamins A, E and C (FGAV). These formulations were submitted to preliminary studies for the evaluation of Sun Protection Factor (SPF), which were carried out on a group of human volunteers according to the COLIPA methodology After that, the formulations were applied on 10 human volunteers' forearm skin, followed by the analysis of their effects using biophysical and skin image techniques. This evaluation was done in terms of transepidermal water loss (TEWL) (Tewameter® TM 210), water content of the stratum corneum (Corneometer® CM 825), viscoelastic properties (Cutometer® SEM575), skin microrelief (Visioscan® VC 98) and the dermal thickness (Dermascan C®). The measurements were done before and after a 30 day-period of daily applications.

A. Sirvent, L. Roussel, T. Thu Hang Ngo, P. Buche, S. Fontaine, M. Renner, F. Girard, **Skin Softness Evaluation – Description of skin suface state thanks to an innovative tribological device,** IFSCC 2010 Buenos Aires, Argentina

We describe a new measurement device that has been designed in order to approach skin softness thanks to the evaluation of skin surface state. This device uses an innovative approach: the analysis of the vibrating effect measured by extensometric gauges fixed on a vibrating slide that rubs on the skin. The energy of two specific peaks (mode 1 at 30Hz and mode 3 at 230Hz) was analyzed afterwards. The aim of this study was to check the repeatability of measurements and to correlate the results obtained on cosmetic products with both sensorial analysis and biometrological measurements (hydration, roughness and friction) to those obtained with this new device. In view of the results obtained, we can conclude that our measuring method seems to quantify: - on one hand, the smoothness and softness of the skin. A smooth surface, as observed on normal hydrated skin or after application of a cream penetrating rapidly, increases mode 1 whereas the presence of a sticky film on skin surface limits or decreases mode 1.

L.-A. Raaff, B. Summers, M. Lategan, **An Exploratory Study of Skin Dryness in South African Negroid Pre and Post-Menopausal Women,** IFSCC 2010 Buenos Aires, Argentina

The aim of the study was to assess differences in natural skin dry-down rates on selected body areas (face, arm, leg, heel) of pre- and post- menopausal South African Negroid women. The Photobiology Laboratory of Medunsa Campus has conducted skin clinical studies for over 20 years in various ethnic groups. Normally these studies involve induced dry-down via soap challenges or active re-moisturising. We have not studied the natural dry-down process. In addition, the natural process of skin drying on various body sites in ethnic negroid skin is not well reported in the literature (Rawlings, 2006. Int J Cos Sci). Hence we decided to investigate the process in negroid South African women. Twenty pre-menopausal (aged 20-40) and twenty post-menopausal (aged 40-55) negroid South African women were enrolled in the study. The areas of assessment were the face, volar forearms, outer calf and the back of the heel. Volunteers were briefed and completed consent forms. The study was conducted according to GCP guidelines. All volunteers stopped all facial creams for the first three days and all moisturisers and bath oils for the duration of the study (seven days).

E. Kim, G. Cho, S. Yu, H. Rho, D. Min, D. Kim, H. Kim, **The elasticity, depth of wrinkles, and skin color on the neck determine your neck age and shape,** IFSCC 2010 Buenos Aires, Argentina

There are many reports on regional variations in skin properties, but few physiological studies have been performed on the neck. The neck is sun-exposed and we stretch or shrink our neck constantly, so the neck skin can be more apt to be aged. The purpose of this study was to find out the biomechanical and physiological parameter on the neck to change age-dependently and make the photographic scale for the neck age or neck shape. The skin properties on the neck of 56 Korean female volunteers in good health (25-64 years old, 43.1±10.5yr) were assessed non-invasively with the skin measuring devices. And we analyzed the correlation of skin physiological parameters with age. The neck skin was changed age-dependently. The elasticity, skin lightness was reduced. The depth of wrinkles and TEWL were increased. Based on the correlation parameter to age, we chose the skin color, winkles and elasticity for the key parameters to determine the neck age or neck shape. As the elasticity was reduced, the sagging of the neck skin increased. The neck wrinkles increased age-dependently and changed to "U" shape because the neck skin was sagged.

M.D. Gianeti, P.M.B.G Maia Campos, **Effects in tactile sensitivity and in skin moisturizing of cosmetic formulations containing vitamins and botanical extracts,** IFSCC 2010 Buenos Aires, Argentina

Skin is a sense organ with sensory nerve endings and receptors, which behaves like a body wrap with its protection and regulation functions. Sensorial informations are originated at the sensory

receptors and it makes possible body representation, mediating physical world exploration. Experimental studies have shown that many factors may affect tactile sensations. For this purpose it was measured the current perception threshold (CPT) sensory nerve fibers by using an electric current sine wave stimulator (NeurometerTM) in 20 healthy women volunteers, aged from 25 to 35 years, before and after 2 hours of a single application of a formulation containing an association of vitamins A, C, E, *Ginkgo biloba* and *Phorphyra umbilicalis* extracts. The CPT for 5Hz, 250Hz and 2000Hz frequency current are reported to enable a selective quantification of the sensory thresholds of C, Ad, and Ab fibers respectively. In parallel, the stratum corneum hydration, the sebum content and the TEWL were measured using Corneometer™ CM285, Sebumeter™ SM810 and Tewameter™ TM210, respectively. Skin water and sebum content were significantly increased after 2 hours of the formulation application. The test group showed significantly decreased in the TEWL and in the CPT of 2000Hz, while the control group did not demonstrate any change on those parameters.

S.M. Bertucci, L.S. Freitas, L.R. Gaspar, D.G. Mercurio, M.D. Gianeti, P.M. Maia Campos, **Efficacy of Cosmetic Formulations Containing Green Tea and Ginkgo Biloba Extracts-Pre-Clincal and Clinical Studies,** IFSCC 2010 Buenos Aires, Argentina

This research aims to evaluate the effects of cosmetic formulations containing green tea (*Camellia sinensis*) and/or *Ginkgo biloba* glycolic extracts by histopathological and histometric studies and also to evaluate the immediate and long-term effects on human skin using biophysical techniques and skin image analyses. The pre-clinical efficacy evaluation was performed by the application of the formulations on the dorsum of hairless mice once a day for 5 days. For the clinical studies, formulations under study were applied to the forearm skin of 48 volunteers, which was evaluated by biophysical techniques and skin image analyses according to the following parameters: stratum corneum water content, transepidermal water loss (TEWL), skin elasticity and viscoelastic-to-elastic ratio and skin micro-relief, before (basal values) and after 3 hours (immediate effects), 15 and 30 days (long term effects). The histological analysis showed the formulations containing green tea extract, alone or in combination with the *Ginkgo biloba* extract, provoked significant enhancement in viable epidermis thickness and in the number of cell layers, suggesting a moisturizing effect and an induction of cell renewal. The clinical efficacy studies showed that the extracts under study had a moisturizing effect and also acted synergistically on skin viscoelastic-to-elastic ratio, related to hydration of deeper epidermal layers.

P. Clarys, R. Clijsen, A.O. Barel, **Influence of probe application pressure on in vitro and in vivo capacitance (Corneometer CM 825®) and conductance (Skicon 200 EX®) measurements**, IFSCC 2010, Buenos Aires, Argentina

The measuring probe of the electrical hydration instruments are equipped with a spring system aiming to assure a constant and reproducible pressure of probe application on the skin surface. However with the capacitance (Corneometer) and conductance (Skicon) instruments it is possible to trigger the measurement at respectively low and high force of probe application on the skin. This provokes a different contact of the electrodes with the skin surface, which may influence measurement values. For both methods, limited information is available concerning the systematic influence of probe application pressure on the obtained hydration values.

S.N. Park, J.E. Kim, M. J. Kim, M. K. Kang, **Antioxidative and Antimicrobial Activities of Onion (*Allium Cepa*) Peel Extracts and Antimicrobial Activity of the Extract-Containing Emulsion,** IFSCC 2010 Buenos Aires, Argentina

We investigated antioxidant activity and inhibitory effect on tyrosinase and elastase of the xtract/fractions of Onion (*Allium cepa*) Peel. Besides the cream containing the ethyl acetate fraction of Onion (*Allium cepa*) Peel extracts was formulated. The skin hydration and transepidermal waterloss were investigated after topically application of the cream on skin. These results indicate that Onion (*Allium cepa*) Peel extract/fractions could be applicable to new functional cosmetics for antiaging. the skin is sensitive to stress by various environment factor (UV, pollution or oxidants). The major factor of oxidative stress is exposure of UVA or UVB on skin, it is occurred when there is ROS (reactive oxygen species) more than antioxidants in skin[1-2]. ROS includes singlet oxygen (1O2), superoxide anion radical (O2 -), hydroxyl radical (·OH) and hydrogen peroxide (H2O2). These can be produced significantly in cells by a variety of processes including high energy irradiation, photosensitization, phagocytosis and several enzymatic reactions[3]. Excessive production of ROS may accelerate skin aging by inducing mutations, inflammation, degradation of collagen or elastin, carcinogenesis and protein denaturation[4-7]. Besides, the flavonoids widely used as therapeutic agents are known to act as strong scavengers of ROS, and react with peroxyl radicals involving termination of radical chain reactions during the autoxidation of polyunsaturated fatty acids[8].

R. Gopaul, H.E. Knaggs, J.F. Lephart, K.C. Holley, E.M. Gibson, **An evaluation of the effect of a topical product containing salicin on the visible signs of human skin aging**, J Cosmet Dermatol 2010 Sep;9(3): p. 196-201

Background: There are many different visible signs of skin aging. These include wrinkles, hyperpigmentation, lack of firmness, poor texture, enlarged pores, and dryness. While there are many topical agents that claim to deliver wide-spectrum anti-aging benefits, few target all of the signs of skin aging to the same extent. Salicin, an extract from white willow bark, has been researched as a potent anti-inflammatory agent when taken orally. Based on unpublished in-house comprehensive consumer clinical studies, it is believed salicin may have anti-aging capabilities when applied topically to human skin. Aim: This research evaluated the effect of a topical serum formulation containing salicin at 0.5% on the visible signs of skin aging. Materials and methods: This single-center study enrolled 30 female subjects, showing mild to moderate signs of aging, between the ages of 35 and 70 having Fitzpatrick skin types ranging between I and IV. Subjects used the study serum product containing 0.5% salicin on their face twice daily for 12 weeks. Ordinal grading on a nine-point scale (0 = none, 1-3 = mild, 4-6 = moderate, 7- 9 = severe) of facial fine lines, molted pigmentation, uneven skin tone, tactile roughness, global firmness appearance, jaw-line contour, radiance, and overall appearance was performed by investigator at baseline, week 1, week 4, week 8, and week 12. Digital photography, ultrasound, cutometry, and corneometry measurements were also performed at each time point. Background: There are many different visible signs of skin aging. These include wrinkles, hyperpigmentation, lack of firmness, poor texture, enlarged pores, and dryness. While there are many topical agents that claim to deliver wide-spectrum anti-aging benefits, few target all of the signs of skin aging to the same extent. Salicin, an extract from white willow bark, has been researched as a potent anti-inflammatory agent when taken orally. Based on unpublished in-house comprehensive consumer clinical studies, it is believed salicin may have anti-aging capabilities when applied topically to human skin. Aim: This research evaluated the effect of a topical serum formulation containing salicin at 0.5% on the visible signs of skin aging. Materials and methods: This single-center study enrolled 30 female subjects, showing mild to moderate signs of aging, between the ages of 35 and 70 having Fitzpatrick skin types ranging between I and IV. Subjects used the study serum product containing 0.5% salicin on their face twice daily for 12 weeks. Ordinal grading on a nine-point scale (0 = none, 1-3 = mild, 4-6 = moderate, 7- 9 = severe) of facial fine lines, molted pigmentation, uneven skin tone, tactile roughness, global firmness appearance, jaw-line contour, radiance, and overall appearance was performed by investigator at baseline, week 1, week 4, week 8, and week 12. Digital photography, ultrasound, cutometry, and corneometry measurements were also performed at each time point.

H.-U. Jabs, **Aquaporation – ein neues Verfahren zur Verbesserung der Elastizität und Feuchtigkeit der Haut,** Ästhet. Dermatologie 5/2010; p. 6-12

Als Aquaporine (AQP) werden Proteine bezeichnet, die Kanäle in der Zellmembran – auch in der Haut – bilden, um den Durchtritt von Wasser und einigen weiteren Molekülen zu erleichtern (Membrantransport). Sie werden daher auch Wasserkanäle genannt. Bei der Aquaporation gelingt der Transport von dermato-kosmetischen Substanzen, z.B. Natürlicher Feuchtigkeitsfaktor (NMF) und Hyaluronsäure in liposomaler Formulierung (Koko GmbH & Co.KG, Leichlingen) durch die Barriere der Haut mit Hilfe von hochfrequenten Strömen (radioSURG 2200, Fa. Meyer-Haake GmbH), wodurch die Feuchtigkeit und Elastizität der Haut erhöht wird. Es wird angenommen, dass die Radiowellen die Transportkapazität der Aquaporine für Wasser durch Konformationsänderungen der Proteine im Kanal und durch Lockerung der Wasserstoffbrückenbindungen vergrössern.

Eine Akne-Pflege, multifaktorielle Wirksamkeit, Produkt Information La Roche Posay, Ästhetische Dermatologie 5/2010

Für Akne-Patienten ist die Wahl der Hautpflege von besonderer Bedeutung. Eine ungeeignete Galenik kann bei Akne zu einer Stimulation der Komedonenbildung und so zu einem erneuten Auftreten von Akne-Effloreszenzen führen, heisst es in der aktuellen Leitlinie der Deutschen Dermatologischen Gesellschaft. Weil die Haut durch medikamentöse Massnahmen häufig gereizt und empfindlich ist, muss in der Hautpflege auf jede physikalische und chemische Irritation verzichtet werden. Für eine zur Akne neigende Haut sind hydrophile, wasserhaltige Systeme, leichte Öl-in-Wasser (Ö/W)-Emulsionen und Hydrogele laut Leitlinie besonders geeignet.

J.-M. Sainthillier, S. Mac-Mary, D. Monnier, P. Mermet, C.T. Zarrit, M. Mudry, C. Mudry, P. Humbert, **Exploratory study of the typology of mature skin at different stages,** and Skin Research and Technology 2010; 16

Post-menopausal skin aging has intrinsic and extrinsic origins that induce considerable

appearance and feeling disparition within a class of age. The aim of this study was to try and identify different stages of maturity of skin of the face of menopausal women.

G. Fahrgruber, **Biophysical Characterization of Lesions of Acute and Subchronic Allergic Contact Dermatitis in Domestic Pigs**, Dissertation at the University of Veterinary Medicine of Vienna, Austria, May, 2010

Allergic contact dermatitis (ACD) or contact hypersensitivity is a common eczematous skin reaction in sensitized individuals (WEEDON and STRUTTON, 2002; BAKER(a),2006; NOSBAUM et al., 2009). Very familiar are contact allergic reactions to nickel sulfate containing jewelry or occupational diseases of hair dressers, health care persons or construction workers who experience cutaneous hypersensitivity reactions after repeated contact with particular ingredients of hair dyes or chemicals in latex gloves or in building materials (MOWARD and MARKS, 2003; GERAUT et al., 2009). Urushiol is a very potent allergen in leaves of genus Toxicodendron, a plant native in North America. Farmers, workers in forestry or hikers suffer from ACD after incidental repeated contacts with these plants (GLADMAN, 2006). They are, therefore, named poison ivy, poison oak or poison sumac.

S. Mac-Mary, J.M. Sainthillier, A. Jeudy, C. Sladen, C. Williams, M. Bell, P. Humbert, **Assessment of cumulative exposure to UVA through the study of asymmetrical facial skin aging**, Clinical Interventions in aging; Volume 5, 2010 open access

Background: Published studies assessing whether asymmetrical facial ultraviolet light exposure leads to underlying differences in skin physiology and morphology report only clinical observations. The aim of this study was to assess the visual impact oft he skin of repeated ultraviolet-A (UVA) exposure through a window. Methods: Eight women and two men presenting with asymmetrical signs of photoaging due to overexposure of one side of their face tot he sun through a window over a long period of time were enrolled in the study. Split-face biometrologic assessments were performed (clinical scoring, hydration whit Corneometer, mechanical properties with Cutometer, transepidermal water loss with AquaFlux, skin relief with fringe projection, photography, stripping, and then lipid peroxidation analysis).

P. López-Jornet, F. Camacho-Alonso, A. Rodríguez-Espin, **Study of lip hydration with application of photoprotective lipstick: Influence of skin phototype, size of lips, age, sex and smoking habits**, Med Oral Patol Oral Cir Bucal. 2010 May 1;15 (3):e p. 445-50

Objectives: To study lip hydration levels when applying a lipstick sunscreen for 3 months and to evaluate the influence of size of lips, age, sex, smoking and skin phototype. Study design: The study group was formed by 140 volunteer subjects, one group consisting of 70 patients applying a commercial lipstick sunscreen three times a day and the other group of 70 controls in which no product was applied. The age range was 20-86 years. The influence in lip hydration levels of age, sex, phototype, size of the lips and smoking habits was studied using a Corneometer 825® (Courage & Khazaka Electronic GmbH, Cologne, Germany). Results: An increase in lip hydration was found between the basal (53.49 ± 15.259) and fnal (59.34 ± 14.51) Corneometer 825® (Courage & Khazaka Electronic GmbH, Cologne, Germany) measurements over the three months of treatment, with statistically signifcant differences with respect to the control (p=0.002). However, no statistically signifcant differences in lip hydration were observed with regard to age, (p=0.48), gender (p=0.876), skin phototype (p=0.653), lip area (p=0.291) and smoking (p=0.178). Conclusions: Application of a lipstick sunscreen 3 times a day for 3 months increases lip hydration.

S. Hibino, U. Hamada, H. Takahashi, M. Watanabe, N. Nozato, Y. Yonei, **Effects of Dried Brewer's Yeast on Skin and QOL: A Single-Blind Placebo-Controlled Clinical Study of 8-Week Treatment**, Anti-Aging Medicine 2010

Objective: Brewer's yeast contains vitamins, minerals, amino acids and other nutrients, and has been reported to control intestinal function as well as to exert anti-ulceration, anti-tumor and anti-allergy effects. The present study evaluated the effects of oral treatment with dried brewer's yeast tablets (study product) on skin in a single-blind placebo-controlled design in humans. Methods: Thirty-two healthy volunteer women (37.0±4.8 years) were allocated as follows: Group E-30 (n=11) were treated with 30 tablets/day of the study product (containing 7,125mg/day of dried brewer's yeast), Group E-9 (n=10) were given 9 tablets/day of the study product, and the control group (n=11) were given 30 placebo tablets/day. The treatment period was 8 weeks. Two patients prematurely discontinued the study (discontinuation rate: 5.9%) and were excluded from the analyses. The study product (Ebios Tablet®) was provided by Asahi Food & Healthcare Co., Ltd. Before and at 4 and 8 weeks after the study, subjective symptoms were evaluated using the Anti-Aging QOL Common Questionnaire (AAQol) and checking skin symptoms, skin images were analyzed with SK Info (SKI, Integral Co.) and Aphrodite-III

(PSI), and skin color (CM-700d, Konica Minolta Sensing, Inc.) and elasticity (Cutometer MPA580, Courage & Khazaka electronic GmbH) were measured. Results: In Group E-30, the AAQol physical symptom "cold skin" score was significantly improved at 8 weeks (p<0.05). The skin symptoms "make-up runs easily" and "desiccated and gritty skin," as well as the physical symptom "menstruation-related troubles" were improved in a significant and dose-dependent way from the control group (p<0.01). On skin analysis, SKI demonstrated an increase in moisture content (15.4%, p=0.010), decrease in erythema (– 18.3%, p<0.001) and increase in elasticity (13.3%, p=0.003), while PSI revealed an increase in hydration (Total: 14.5%, T zone: 13.7%, U zone: 18.2%, p<0.01) and decrease in pores (–32.7%, p=0.022). Cutometer analysis showed a dose-dependent increase in skin elasticity, while analysis of skin color showed a decrease in hemoglobin (–9.5%, p=0.016), improved lightness (–0.7%, p=0.045) and decrease in redness (–8.3%, p=0.013). During the study period, no serious adverse events were noted. Conclusion: These results suggest that treatment with dried brewer's yeast is useful in improving skin condition, *e.g.* moisture content and elasticity, and also QOL.

A. Greco, **Trockenpflanze zur medizinischen Hautpflege,** Pharmazeutische Zeitung online 2010

Die Mittagsblume (Mesembryanthemum crystallinum L.), auch als Sodapflanze oder Eiskraut bekannt, stammt ursprünglich aus Südafrika. Heute kann man sie weltweit in vorwiegend trockenen und heißen Gegenden antreffen, so zum Beispiel auf den Kanarischen Inseln (Lanzarote), in Sizilien und Kalifornien. Ein Überleben ist unter den extremen Standortbedingungen nur durch einen hoch spezialisierten Stoffwechsel sowie die spezielle Morphologie der Mittagsblume möglich. Studiert man die Biologie der Pflanze und ihre charakteristischen Inhaltsstoffe, eröffnen sich Wege zu neuen Präparaten mit interessanten Indikationen.

T. Brennan Steele, **A Double blind comparative study to determine the efficacy of a 25% urea cream vs. a 10% urea cream, in treating anhydrosis,** Thesis of the Glasgow Caledonian University

The terms anhydrosis and xerosis are used interchangeably to describe a skin condition which presents as dry, rough and scaly with possible presence of reddening, cracking or itching (Flynn et al, 2001). For the purpose of this project, the term anhydrosis will be applied. Anhydrosis can affect all age groups and features regularly within the podiatrist's clinical environment. The skin may also present as less flexible than normal, contributing to the irregular feel which is usually rough and uneven to touch (Flynn et al 2001, M.Loden, 2003).

J. Liu, W.Y. Man, C.Z. Lv, S.P. Song, Y.J. Shi, P.M. Elias, M.Q. Man, **Epidermal Permeability Barrier Recovery Is Delayed in Vitiligo-Involved Sites,** Skin Pharmacol Physiol, 2010; 23: p. 193–200

Background/Objectives: Prior studies have demonstrated that both the skin surface pH and epidermal permeability barrier function vary with skin pigmentation types. Although melanin deficiency is the main feature of vitiligo, alterations in cutaneous biophysical properties in vitiligo have not yet been well defined. In the present study, stratum corneum (SC) hydration, the skin surface pH and epidermal permeability barrier function in vitiligo were evaluated. Methods: A total of 30 volunteers with vitiligo comprising 19 males and 11 females aged 13–51 years (mean age: 27.91 8 2.06 years) were enrolled in this study. The skin surface pH, SC hydration, melanin/erythema index and transepidermal water loss (TEWL) were measured by respective probes connected to a Courage-Khazaka MPA5. SC integrity was determined by measuring the TEWL following each D-Squame application. The barrier recovery rate was assessed at 5 h following barrier disruption by repeated tape stripping. Results: In addition to SC hydration, both melanin and erythema index were significantly lower in vitiligo lesions than in contralateral, nonlesional sites, while no difference in skin surface pH between vitiligo-involved and uninvolved areas was observed. In addition, neither the basal TEWL nor SC integrity in the involved areas differed significantly from that in the unin volved areas. However, barrier recovery in vitiligo-involved sites was significantly delayed in comparison with uninvolved sites (40.83 8 5.39% vs. 58.30 8 4.71%; t = 2.441; p < 0.02). Conclusion: Barrier recovery following tape stripping of the SC is delayed in vitiligo. Therefore, improvement in epidermal permeability barrier function may be an important unrecognized factor to be considered in treating patients with vitiligo.

S. Zimmermann, **Entwicklung der Hautphysiologie in der postnatalen Periode und deren Beeinflussung durch die Anwendung einer sauren Pflegecreme - Eine prospektive randomisierte kontrollierte Doppelblind-Studie in vivo**, Dissertation an der Medizinischen Fakultät der Friedrich-Schiller-Universität Jena, 2010

Probanden in einem annähernd neutralen Bereich. Im Verlauf der vier Wochen kam es zu einem Abfall des pH-Wertes auf der Hautoberfläche. Klinisch erschien die Haut zu Studienbeginn bei den Probanden unterschiedlich gerötet und trocken (teilweise mit Fissuren). Im Studienverlauf verbesserte sich das klinische Hautbild, was wissenschaftlich durch eine Abnahme der Gesamtpunktwerte des

klinischen Irritationsscores innerhalb der vier Wochen gestützt wird. Das saure Pflegeprodukt führte zu einer verstärkten Zunahme der Stratum-corneum-Hydratation, einer Stabilisierung der epidermalen Barrierefunktion und zu keiner Erhöhung des klinischen Irritationsscores. Bei den Messungen mit dem Multiphotonen-Lasertomograph zeigte sich im Studienverlauf eine Zunahme des dermalen Kollagen- und Elastingehaltes. Basierend auf den Ergebnissen der Neugeborenenstudie lässt sich schlussfolgern, dass infolge der Anwendung eines sauren Pflegeproduktes die physiologische Entwicklung des Säureschutzmantels innerhalb der Neugeborenenperiode unterstützt wird. Die antimikrobielle Funktion des Säureschutzmantels und seine Bedeutung für das Gleichgewicht der Permeabilitätsbarriere für eine normale Stratum-corneum-Integrität kann durch ein derartiges Pflegeprodukt nicht negativ beeinflusst werden. Abweichungen oder Störungen pH-abhängiger epidermaler Funktionen können bei Neugeborenen pathologische Veränderungen hervorrufen. Die Zunahme der Stratumcorneum-Hydratation sowie die Tatsache, dass die Anwendung der Pflegeprodukte keine irritativen Hautveränderungen induzierte, lassen die Schlussfolgerung zu, dass esempfehlenswert ist, derartige Produkte in der postnatalen Periode zu verwenden. Es ist die erste Studie dieser Art, die bisher an Neugeborenen durchgeführt wurde. Die vorliegende Studie repräsentiert einen Ansatz in der Prävention und Therapie dermatologischer Erkrankungen von Neugeborenen. Die Messungen mit demMultiphotonen-Lasertomograph sollen im Rahmen dieser Studie lediglich als Pilotuntersuchungen für Folgestudien dienen, da eine zu geringe Probandenanzahl untersucht wurde.

S.W. Hwang, J.H. Kang, J.E. Seol J.K. Seo, D. Lee, H.S. Sung, **The Correlation between SCORAD Index and Instrumental Assessment in Evaluation of Atopic Dermatitis Severity**, Korean J Dermatol., 2010 Apr;48(4): p. 266-271

Background: Atopic dermatitis is a chronic relapsing inflammatory skin disease characterized by dry skin, pruritus, and typical distribution of the lesions. Because an objective tool for the assessment of disease severity of atopic dermatitis has yet to be agreed upon, many dermatologists are dependent on subjective history and clinical scoring. Recently, instrumental measurements have been used for the assessment of skin barrier function. Objective: The purpose of this study was to assess the correlation between SCORAD (scoring of atopic Dermatitis) index and the results of instrumental assessments of disease severity in atopic dermatitis. Additionally, we compared the values of instrumental measurements on normal and lesional skin. METHODS: From February to April 2007, 44 patients with atopic dermatitis were treated with topical steroids, topical calcineurine inhibitors, oral antihistamine agents and systemic steroids. At initial visit, and after 1, 2, 3, and 4 weeks of treatment, the SCORAD index was measured, and instrumental measurements of skin surface hydration (SSH), transepidermal water loss (TEWL), and pH were performed on the antecubital fossa (lesional skin) and flank (normal skin) of the patients by Corneometer(R), Tewameter(R), and skin-pH-meter(R). Results: Significant correlation was found between SCORAD index and SSH ($p<0.0001$), TEWL ($p<0.0001$), and pH ($p=0.1680$). SSH and TEWL improved within 1 week of treatment but pH improved after 2 weeks of treatment. Instrumental assessments showed lesional skin had lower SSH, higher TEWL, and more alkaline pH than normal skin. Conclusion: Instrumental measurements showed correlation with SCORAD index. Therefore, we can use instrumental assessments as well as SCORAD index in the assessment of disease severity of AD.

E. Dupont, J. Gomez, C. Léveillé, D. Bilodeau, **From Hydration to Cell Turnover: An Integral Approach to Antiaging,** Cosmetics & Toiletries magazine, Vol. 125, No. 3/March 2010

The speed at which information now travels has favored the advancement of science and technology like never before. This is true for all aspects of life, including personal care. The industry's understanding of skin physiological processes has progressed in recent years, and with deeper knowledge more sophisticated cosmetic products have emerged. Over the past 50 years, cosmetics have evolved from camouflage makeup to the combined health and beauty products that currently predominate the market. In addition, cosmetic products now contain actives that modulate defined physiological processes. The frontier between cosmetic avtives and drugs is is thinning. In fact, the industry has been flirting so much with pharmaceutical science that their union has been celebrated with a new word, cosmeceutical. What can be learned from this association?

Y. Gozu, M. Moriyama, K. Sakai, S.-I. Haze, **Elucidation of Menstrual Cycle-Related Discomfort in Everyday Life and Efficacy of a "Rescue Fragrance",** IFSCC Magaine 2/2010

The body maintains homeostasis in the face of environmental changes through its endocrine system and autonomic nervous system. The autonomic nervous system can operate at a subconscious level and controls many functions of the internal organs. The endocrine system includes eight major endocrine glands that secrete hormones. After delivery through the bloodstream, hormones reach different parts of the body and help to regulate cellular function. Therefore hormones are though to be

a regulatory system that complements the nervous system. In women, the secretion of sex hormones fluctuates dramatically over the course of the menstrual cycle, causing psychosomatic changes.

A.-L. Rodrigues, O. Freis, L. Danoux, C. Jeanmaire, P. Moussou, M. Sabadotto, A. Rathjens, **Functional moisturiser raises skin barrier function,** Personal Care, January 2010, p. 40-43

One of the skin's primary functions is to protect our body from external aggressions such as allergens, dirt, irritants, chemicals, as well as from water loss from the inside. Stressful environmental conditions, including weather (cold, wind, sun) and pollution in addition to daily-used products, such as soap and surfactants, may alter the skin's natural water balance and affect its protective functions. If the skin's protective barrier is compromised, skin becomes dry and flaky and more sensitive to external stress factors, such as pollution, air-conditioning and frequent cleansing.

P. Lennon, J.-D. Rodier, **Improving Skin Moisturization with Polyglycerol-derived Plant Waxes,** Cosmetics & Toiletries, Vol. 125, No. 1 / January 2010

Moisturization remains the main objective of skin care cosmetics, coupled with secondary functions such as antiwrinkle, firming or brightening benefits. The moisturizing ability of a formulation generally is imparted by the use of polyols, mainly glycerin. Glycerin can help attract water from the formulation or the atmosphere and retain it in the epidermis Added to an emulsion at levels between 3% and 10%, glycerin ensures a good level of hydration that is maintained for several hours; the duration of this effect depends on the other components in the formulation.

G. Boyer, L. Laquièze, A. Le Bot, S. Laquièze, H. Zahouani, **Dynamic indentation on human skin in vivo: ageing effects,** Skin Research and Technology 2009, 15, p. 55-67

Knowledge of the mechanical properties of the human skin is very important for cosmetic and clinical research. Objective and quantitative measurements are essential to compare studies performed by different experimenters in different centres. The aim of this paper is to present a method to measure the visco-elastic properties of human skin in vivo using dynamic indentation. A complete device to assess the stiffness and damping of skin has been developed.

S. Gong, C. Lv, K.R. Feingold, X. Zhang, S. Xin, C. Tu, L. Dui, P.M. Elias, M. Man, **Variation of skin surface pH, sebum content and stratum corneum hydration with age and gender in Chinese population,** Journal of Investigative Dermatology (2009), Volume 129

Evidence suggests the importance of skin biophysical properties in predicting diseases and in developing appropriate skin care. The results to date of studies on skin surface pH, stratum corneum (SC) hydration, and sebum content in various gender and ages have been inconclusive in part due to small sample size. Additionally, little is known about skin physical properties of Asian, especially Chinese, subjects.

M. Yamaguchi, Y. Tahare, T. Makino, T. Shimizu, A. Date, **Comparison of Cathepsin L activity in cheek and forearm stratum corneum in young female adults,** Skin Research and Technology 2009; 15; p. 370-375

Noninvasive determination of skin surface proteolytic anctivity may be useful for the diagnosis of human disease and the potential of skin. The cathepsin family is one of the metabolizing enzymes of the skin cell and it includes aspartic protease cathepsin D and cysteine proteases cathepsin B, H, and L. Cathepsin L is a lysosomal cysteine protease with a major role in intercellular protein catabolism.

K. de Paepe, E. Houben, R. Adam, J.-P. Hachem, D. Roseeuw, V. Rogiers, **Seasonal Effects on the Nasolabial Skin Condition,** Skin Pharmacol Physiol 2009; 22: p. 8-14

In the present work, nasolabial skin condition and the influence of seasonal changes during autumn and winter were studied in 16 healthy female volunteers. Apart from visual scoring of erythema and skin scaliness, transepidermal water loss (TEWL), skin hydration, apparent skin pH, skin colour and skin desquamation were biophysically measured. The study results showed that nasolabial TEWL was significantly higher during wintertime than in autumn.

S.M. Davoudi, S. Keshavarz, B. Sadr, M. Shohrati, M.M. Naghizadeh, K. Farsinejad, M. Rashighi-Firouzabadi, H. Zartab, A. Firooz, **Skin hydration and transepidermal water loss in patients with a history of sulphur mustard contact: a case-control study,** JEADV 2009, 23, p. 940-944

Sulfur mustard is a powerful vesicant (blistering agent) and a member of the heterogeneous group of chemicals that are referred to as chemical warfare agents. This agent reacts with skin proteins, degrading structure of both cells and underlying extracellular matrix. Sulfur mustard DNA adducts are believedto be the most critical lesions.

N.S. Trookman, R.L. Rizer, **Clinical Assessment of a Combination Lip Treatment to Restore Moisturization and Fullness**, JCAD Online Editor, December 14, 2009

Objective. To evaluate the efficacy and tolerance of a topical lip-care treatment. Step one of the two-step treatment is a lip-renewal formulation containing human growth factors, hyaluronic acid and marine filling spheres, emollients, and a tripeptide palmitoyl-glycyl-histidyl-lysine complex. Step two is a lip-plumper formulation containing niacin, emollients, and essential fatty acids. Design. Four-week, single-center, open-label, clinical study with clinical assessments at Baseline, Week 2, and Week 4. Treatment. Subjects wore the lip products at least eight hours every day with a minimum of three applications per day. Participants. Thirty-two women ages 22 to 40 years with mild-to-moderate lip dryness and average size lips completed the study. Measurements. Visual grading of the condition of the lips, rating of subjective irritation, corneometry, digital caliper measurements of lower lip, and digital photography. A self-assessment questionnaire was also employed to assess patient satisfaction. Results. Clinical assessments showed statistically significant improvements (P<0.001) in key lip condition parameters after both two and four weeks of use. Key parameters included lip scaling, cupping, cracking/fissuring, fine lines due to dryness, lip texture/visual roughness, lip color/rosiness, lip definition/contour, and overall lip condition. Significant increases (P<0.001) were observed in both corneometer measurements, which confirm the moisturizing benefits, and in digital caliper measurements, which confirm the lip-plumping benefits. Self-assessment questionnaires showed a 97-percent overall satisfaction rating. No adverse events were reported during the course of the study.

W.-S. Oh, T.-H. Oh, **Mapping of the dog skin based on biophysical measurements**, Veterinary Dermatology, December 2009

Trans epidermal water loss (TEWL), skin hydration status and pH were determined in 14 skin regions of five healthy male Beagle dogs (2–4 years) both before and after anaesthesia. Transepidermal water loss was highest for the footpad and head and lowest forthe inguinal region. Skin hydration status was higher in the ear but did not vary significantly in other regions. Skin pH was usually alkaline with the highest values on the lower back and tail. Following anaesthesia, TEWL and skin hydration were significantly lower on the head, upper back and footpad, and upper back and elbow respectively, while skin pH was unaffected by this procedure. While measurement of pH would seem to be valid anywhere on the body in anaesthetized dogs, regional factors should be considered when interpreting TEWL and skin hydration values and when treating regional skin diseases in veterinary practice.

J. Alander, **Shea butter with improved moisturisatino properties,** Personal Care, September 2009, p. 31-33

Shea butter has recently become a very popular ingredient in cosmetics and personal care applications due to its good emoliency and moisturising properties. The high content of unsaponifiable lipids, especially triterpene cinnamates, contributes to skin healing and restoration by anti-inflammatory action. Shea butter in all its forms is also easy to formulate with, especially if one of the butters specifically developed for cosmetic applications is used. All in all, this indicates that shea butter is both a functional and marketable ingredient with a long history of safe use in cosmetics and explains well its popularity in modern skin care.

P. Clarys, P. Deriemaeker, R. Clijsen, J. Taeymans, A.O. Barel, **The influence of stratum corneum hydration on body fat determination by bioelectrical impedance analysis,** ISBS Besancon 2009

The use of bioelectrical impedance analysis (BIA) of the body (or parts of the body) is a modern method for the estimation of the amount of body fat. Depending on the used instrument contact between the instrument and the body is made at specific skin sites (e.g. hands or feet). It was the aim of the present study to evaluate the influence of the stratum corneum hydration at the contact points used for BIA on the body fat estimation.

H. Taylor, P. Xiao, **New techniques for occupational skin health surveillance,** ISBS Besancon 2009

Ill health due to skin exposure remains a considerable problem, particularly in the workplace. In our aim to reduce the incidence of occupational skin disease and ill health due to skin exposure we need to understand how exposure to substances and physical factors is affecting the skin and how best to identify early signs or pre-clinical signs of skin disease. This project investigated possible new techniques for occupational skin health surveillance. The project focused on techniques that would identify sub-clinical damage that could lead to irritant contact dermatitis.

N. Ismaili, Y. Afifi, B. Hassam, T. Lihoreau, A. Elkhyat, A. Jeudy, P. Humbert, **Typology of maghreb skins,** ISBS Besancon, 2009

To study the biometric characteristics of maghreb skin using common cutaneous exploration techniques and by comparing the results by age bracket and by sex. This prospective, randomised monocentre study was carried out on the forehead, the cheeks and the forearm of healthy volunteers giving informed written consent. Healthy volunteers were included of both sexes and of maghreb origin who agreed to apply nothing to the face and arms 24 hours before the study and not to participate in any other test during the study period.

W. Pratchyapruit, **Grading of improvement and relapse in melasma of Thai females after 8 weeks-treatment with a combined cream of hydroquinone, steoid and tretinoin,** ISBS Besancon, 2009

Melasma is a common skin problem in any races including Asians. It commonly occurs in Thai females, age 30-40 years and females outnumber males about 13:1. In addition to multiple etiologic factors, the environmental factor of Thailand as a tropical and sunny climate country constitutes a definite factor responsible for improvement and relapse of pigmentation after any treatments. At present, the topical treatment consisting of hydroquinone (HQ), steroid and tretinoin together with sunlight protection is a standard treatment for melasma.

A. Bigouret, F. de Oliveira, C. Gehin, **Objectivation of the individual sensory state by the assessment of specific biophysical properties of the skin in different climatic conditions,** ISBS Besancon, 2009

The CSTB in Nantes is specialized in the study on the climate effects on buildings and on human comfort. To improve human comfort in different climatic conditions, the CSTB must understand the interactions between the environment, the human body and individual perception. As the skin is a sensory organ and the first barrier between the environment and the human interior, some CSTB researchers have choice to study the biophysical properties of the skin to objectify human perception.

M: Lanctin, A. Nkengne, G. Stamtas, F. Le Goff, A. Papillon, C. Bertin, **Changes on body skin as a function of age,** ISBS Besancon, 2009

Facial skin aging has been a great concern in cosmetodermatology and many publications have documented the age-related transformations of skin. However to our knowledge, few studies have been conducted to systematically investigate the changes of skin attributes in different body sites. This study was designed to assess the link between age and skin body attributes such as hydration, firmness, color, stretch marks and cellulite. The study involved 150 healthy women Caucasian volunteers aged between 18 and 70 years of age and with a Body Mass index (BMI) between 20 and 26 kg/m².

A. Elkhyat, Y. Afifi, B. Hassam, P. Humbert, **Human skin wettability cartography,** ISBS Besancon, 2009

For decades the surface hydrophobicity has been reported to play an important role in many biological processes, such as cellular adhesion, contact inhibition, elasticity, functionality of tissue membranes, functioning of intracellular structures, and adhesion of infectious microorganisms. The skin affinity with water is estimated by measuring of its water contact angle. To establish a cartography of skin's wettablility by Ow measuring at nine sites. The hydration and lipidic index (HI, LI) and the skin pH are measured.

I. Angelova-Fisher, D. Wuthe, D. Zillikens, B. Kahle, **Non-invasive bioengineering assessment of the skin barrier function in patients with chronic venous insufficiency,** ISBS Besancon, 2009

Chronic venous insufficiency (CVI) comprises all symptome caused by permanent venous and capillary hypertension. While the clinical manifestations of the disease have been well characterized, there is little knowledge on the skin barrier function in the affected individuals. The aim of the study was to assess non-invasively the epidermal barrier function in patients with CVI stage C2 and C4 according to the CEAP classification and compare the findings to a group of healthy controls (stage C0). 30 patients with CVI without concomitant diseases and 15 healthy, aged-matched volunteers were included in the study following photopletismography and duplex sonography examination of the lower extremities.

G. Stamatas, J. Nikolovski, **Non-invasive optical methods for the study of infant skin,** ISBS Besancon, 2009

Until recently, the study of infant skin in vivo has been limited to smple non-invasive techniques focusing on skin surface properties such as stratum corneum (SC) hydration, trans-epidermal water loss, and SC pH. With this work we demonstrate the development off non-invasive optical methods adapted for measurements on infant skin and the use of such methods to document skin maturation changes during the first years of life. Optical methods can be classified into methods relating to spectroscopy, microscopy, macroimaging, or a combination of the above. Skin spectroscopy can be

achieved in vivo with the use of fiber optic probes that can come in contact with the skin site of interest.

F. Morizot, J. Latreille, S. Gardinier, L. Staner, C. Guinot, A. Porcheron, E. Tschachler, **Effects of partial sleep deprivation on face appearance and skin properties,** ISBS Besancon, 2009 and Skin Research and Technology 2010; 16; p. 473-474

A reduction of sleep time on a chronic basis is a hallmark of life in modern society ("modern 24h-society"). Sleep has important homeostatic functions and sleep deprivation has effects on brain plasticity, energy conservation, tissue restoration, immune response and thermoregulatory function.Our objective was to investigate the effect of partial sleep deprivation on facial appearance and on skin functions (skin barrier, skin hydration, skin temperature, sebaceous secretions and skin sensitivity).

K.A. Tadini, **Acetil hexapeptide-3 in a cosmetic formulation acts on skin anisotropy – clinical study,** ISBS Besancon, 2009 and Skin Research and Technology 2010; 16

Acetyl hexapeptide-3 has been used in anti-aging topical formulations since it has demonstrated effects in improving the skin appearance. However, there are few scientific studies about its effects on epidermis and dermis when vehiculated in topical formulations, mainly using objective measurements, which are an important tool in clinical efficacy studies. Thus the aim of this study was to determine the clinical efficacy of the acetyl hexapeptide-3 using biophysical techniques. Formulations with and without acetyl hexapeptide-3 were applied to the ventral forearm and the face area of human volunteers. Skin conditions were evaluated after 2 and 4-week period daily applications, by analyzing the stratum corneum water content (Corneometer SEM 575) and the skin mechanical properties, using two instruments, the cutometer SEM 575 and Reviscometer RV 600 to identify skin changes after the use of the formulations under study.

W. Siyu, L. Li, **Effect of sweating by exercise on stratum corneum hydration, skin surface sebum content and pH value,** ISBS Besancon, 2009 and Skin Research and Technology 2010, 16; p. 489

The physiological indexes of skin include stratum corneum hydration, skin surface sebum content and pH value, which could reflect physiological state of the local and systematic organism, and also could be affected by many factors from internal or external changes. Many studies have ben put on these physiological indexes, but there is no report of studying on effect of sweating by exercise on sebum, hydration and pH value of face skin. To observe the effect of sweating by exercise on stratum corneum hydration, skin surface sebum content and pH value of forehead and pars zygomatica of healthy individuals of different ages in order to collect the numerical data as the reference for exterior use drugs and before / after sports' cosmetics.

O.I. Voloschenko, O.V. Payetska, O.I. Yalovenko, T.G. Momot, **corneometry in assessing health safety of skin purification products,** ISBS Besancon, 2009 and Skin Research and Technology 2010, 16; p. 511-512

The research was done into the ability of skin to keep and restore moisture after using cosmetic products for skin purifying. The level of volunteers' skin hydratation was measured by the indicator Corneometer CM 825 made by "Courage+Khazaka electronic GmbH" under the constant values of moisture and temperature during the whole experiment. The care product subject to testing was: Shampoo and Shower gel 2 in 1, which contains aqua, sodium laureth sulphate, sodium chloride, cocamidopropil betaine, perfume etc.

J.W. Wiechers, **Orthorhombic Phase Stabilization for Internal Occlusion: a New Mechanism for Skin Moisturization,** Cosmetics & Toiletries, Vol. 124, No. 6/June 2009, p. 45–50

In 1997, Wiechers introduced the concept of relative performance measurement to compare the moisturization of several neat emollients. The capacitance of skin treated with test products was measured by a corneometer and compared with glycerine-treated skin (defined as 100%) and untreated skin (defined as 0%) at given intervals, normally 6 hr after application. As one might expect, this test showed that all emollients were not the same in their capacity to moisturize skin.

D. Boudier, N. Guichard, J. Breugnot, M. Le Guillou, B. Closs, **In vivo Quantification of Corneocyte Lipids by Image Analysis,** Cosmetics & Toiletries, Vol. 124, No. 5/May 2009, p. 84-92

The lipids of the stratum corneum (SC) are composed mainly of cholesterol, free fatty acids and ceramides that are derived from the secretion of lamellar body (LB) contents at the stratum granulosum/SC interface. This secretion process occurs immediately prior to loricrin cross-linking into the cornified envelope (CE). One of the most important events in the homeostasis of the epidermis is the acquisition of hydrophobicity by covalent attachment of these lipids of the extracellular surface of CE components.

S.E. Dal Belo, L.R. Gaspar, P.M. Maia Campos, J.P. Marty, **Skin Penetration of Epigallocatechin-3-Callate and Quercetin from Green Tea and Gingko biloba Extracts Vehiculated in Cosmetic Formulation,** NCBI 2009

Green tea (Camellia sinensis) and Ginkgo biloba extracts in cosmetic formulations have been suggested to protect the skin against UV-induced damage and skin ageing. Thus, it is very important to assess the human skin penetration of their major flavonoids to verify if they penetrage and remain in the skin to exert their proposed effects. The aim of this study was to evaluate the human skin penetration of epigallocatechin-3-gallate (EGCG) and quercetin from green tea and G. biloba extracts vehiculated in cosmetic formulations. This study was conducted with fresh dermatomed human Caucasian skin from abdominal surgery mounted on static Franz diffusion cells.

L.R. Gaspar, P.M. Campos, **Photostability and efficacy studies of topical formulations containing UV-filters combination and vitamins A, C and E,** NCBI 2009,

It is already known that the photostability of a sunscreen is important for its performance on human skin. On the other hand, there are many formulations besides sunscreens containing combinations of UV-filters and daily use active substances with other claims like hydration and anti-aging effects. Vitamins A, C and E are frequently added in these kinds of products and it is not known if the UV-filters have some influence on the hydration and antiaging effects of these vitamins on the skin as well as on their stability mainly when photounstable UV-filters like avobenzone and octoyl methoxycinnamate are present in the formulation.

S.E. Dal'Belo, L.R. Gaspar, P.M. Maia Campos, **Moisturizing effect of cosmetic formulations containing Aloe vera extract in different concentrations assessed by skin bioengineering techniques,** NCBI 2009

The polysaccharide-rich composition of Aloe vera extracts (Aloe barbadensis Miller), often used in cosmetic formulations, may impart moisturizing properties to the product. The aim of this study was to evaluate the effect of cosmetic formulations containing different concentrations of freeze-dried Aloe vera extract on skin hydration, after a single and a 1- and 2-week period of application, by using skin bioengineering techniques. Stable formulations containing 5% (w/w) of a trilaureth-4 phosphate-based blend were supplemented with 0.10%, 0.25% or 0.50% (w/w) of freeze-dried Aloe vera extract and applied to the volar forearm of 20 female subjects.

K. Bazela, A. Dzwigalowska, E. Kazmierczak, R. Debowska, K. Rogiewicz, I. Eris, **Corrective make-up cosmetics – the study of efficacy and camouflage effect,** 18th EADV Congress, Berlin, 2009

Corrective make-up can be applied to hide the skin imperfections accompanying numerous skin diseases. The aim of this study was to evaluate the efficacy and camouflage effect of corrective make-up in patients with pigmentary disorders, acne and pre-rosacea. Corrective fluid foundation efficacy was tested on 20 subjects and applied once a day for 4 weeks. The skin moisturization, oil content and elasticity were measured using Multiprobe Adapter System MPA 5 probes.

K. Bazela, R. Debowska, B. Tyszczuk, E. Kazmierczak, K. Mlosek, A. Nowicki, I. Eris, **Evaluating the efficacy of anti-cellulite cosmetic products skin ultrasonography and skin condition analysis,** 18th EADV Congress, Berlin, 2009

Cellulite is currently considered to be an endocrinemetabolic microcirculafory disorder that causes interstitial matrix alterations and structural changes in subcutaneous tissue. It affects thousands of women of any age worldwide. Our study aimed to evaluate the efficacy of an anti-cellulite cream-gel.

J. Fluhr, **Objektive Messmethoden bei dermatologischen Erkrankungen,** 18th Congress of EADV Berlin, 2009

Der Kurs unter Leitung von Priv. Doz. Dr. Fluhr, Berlin, Prof. Jemec, Kopenhagen (Dänemark) und Prof. Berardesca, Rom (Italien) ist darauf ausgelegt, das Basisverständnis für biophysiklische Messungen der Haut zu vermitteln. Diese Messungen sollen dann für die quantitative Bewertung der Schwere und Verlaufs von spezifischen Hauterkrankungen herangezogen werden. Über die letzten drei Dekaden wurden multiple nicht-invasive Instrumente für die quantitative oder semi-quantitative Erfassung von hautphysiologischen Parametern entwickelt und validiert.

C. Catala-Pétavy, L. Machet, G. Georgescdo, F. Pétavy, A. Maruani, L. Vaillant, **Contribution of skin biometrology to the diagnosis of the Ehlers-Danlos syndrome in a prospective series of 41 patients,** Skin Research and Technology 2009; 15, p. 412-417

The diagnosis of the Ehlers-Danlos syndrome (EDS) is primarly clinical. Clinical signs result

from modifications of the rheological properties of the skin: thickness, extensibility and hydration. Our main objective was to demonstrate what skin biometry can contribute to the diagnosis and evaluation of the different types of EDS. Forty-one patients clinically diagnosed with EDS were paired by age and sex to 41 healthy subjects with no known dermatologic disease, in particular connective tissue diseases.

S. Gardinier, S. Guéhenneux, J. Latreille, C. Guinot, E. Tschachler, **Variations of skin biophysical properties after recreational swimming,** Skin Research and Technology 2009; 15; pp. 427-432

Sensations of itching and skin tightness are frequently reported after recreational swimming in pool water. Our objective was to measure the potential changes occurring at the skin surface under such conditions. Nine women participated in this study, which consisted of two periods. During a 4-day control period, basal biophysical skin parameters were assessed every morning. On the first day, measurements were also performed in the afternoon. The second study period followed the same study design as for the control period, except that, on the first day, women swam for 1 h in a public pool, between the measurements performed in the morning and the afternoon.

N.M. Kienle, **Botulinumtoxin versus thorakoskopische Sympathektomie bei Patienten mit palmarer Hyperhidrose**, Dissertation, 2009 Universitätsklinik für Thorax-, Herz- und Gefäßchirurgie Tübingen

Einleitung: Die ekkrinen Schweißdrüsen werden vom sympathischen Teil des vegetativen Nervensystems versorgt [33, 75, 88]. Der Sympathikus hat eine ergotrope Wirkung auf den Körper. Er vermittelt eine allgemeine Aktivierung mit Erhöhung der Leistungsbereitschaft und passt somit den Körper an Kampf-, Angst- und Fluchtsituationen („fight, fright and flight“) an. Die in diesen Situationen gesteigerte sympathische Aktivität führt zu Pupillenerweiterung, Erhöhung der Herzfrequenz, Vasokonstriktion mit konsekutivem Blutdruckanstieg und Hautblässe und zu feuchten, kalten Handflächen. Diese Reaktion wird auch als Abwehrreaktion („Defence Reaction“) bezeichnet [38, 82]. Im zentralen Nervensystem ist der Sympathikus sehr ausgedehnt repräsentiert: es gibt mehrere für die Schweißauslösung zuständige Zentren wie Teile des Großhirns, des limbischen Systems, des Zwischenhirns mit Thalamus, Hypothalamus und Basalganglien und des Hirnstammes [7, 88].

L.-C. Gerhardt, A. Lenz, N.D. Spencer, T. Münzer, S. Derler, **Skin-textile friction and skin elasticity in young and aged persons,** Skin Research and Technology 2009; 15, p. 288-298

The mechanical properties of human skin are known to change with ageing, rendering skin less resistant to friction and shear forces, as well as more vulnerable to wounds. Until now, only few and contradictory results on the age-dependent friction properties of skin have been reported. This study has investigated in detail the influence of age on the friction of human skin against textiles. In vivo skin-friction measurements on a force plate were combined with skin analyses concerning elasticity, hydration, pH valule and sebum content.

M. Tilaar, W.L. Who, A.S. Ranti, S.M. Wasiaatmadja, M. Suryaningsih, **Hibiscus rosasinensis extract – Its whitening and moisturizing properties;** Household and Personal Care TODAY, No. 4/2009

The demands on whitening skin care products have shown tremendous growth in recent years, along with the expectation of its safety and efficacy. With the influence of back to nature trend, people prefer the products containing natural ingredients as they have perception that those kinds of products tend to be safe and compatible with their skin. As an answer for customer needs, Martha Tilaar Innovation Centre has conducted so many researches on potential plant extracts, which can deliver the whitening effect. Several aspects should be considered when utilizing botanical materials in cosmetic, such as, the quality of the plant materials, process, biological activity, and safety consideration.

G. Guglielmini, **Disaccharide plus vegetable origin fraction boosts skin,** Personal Care, March 2009, p. 79-80

Applying on the skin a functional substance containing a relevant amount of polysaccharide, vegetable origin hydrolysed proteins and amino acids, creates better protection and hydration of the skin. This is because it can allow the restoration of normal skin hydration, particularly where a physiological lack of cutaneous factors is present – in, for example, dry reddened and stressed skin with a tendency to ageing. The novel compound's capability to recreate a natural state of hydration of the skin means it can be considered as an innovative moisturising and lenitive cosmetic ingredient, particularly suitable for delicate skin and hair.

M. Lanctin, C. Bertin, F. Le Goff, P. Emilie, R. Roure, **A double-blind, placebo-controlled study to assess the efficacy of a body cream containing a combination of tetrahydroxypropyl ehtylenediamine, caffeine, carnitine and retinal,** JAAD, March 2009, San Francisco

With aging, several changes occur in the skin. Skin firmness, hydration and uniformity are some of the parameters that are modified. Moreover, cellulite is a common condition of womens's skin. Therefore, it is useful to design a formulation which can moisturize the skin and increase its firmness while reducing the brown spots and cellulite aspect.

J. Theunis, A.M. Schmitt, C. Beylot, M. Baspeyras, W. Zacaria, **Comparative evaluation of the efficacy of two treatment schedules of glycolic acid peels in facial photoaging,** JAAD, March 2009, San Francisco

Alpha-hydroxy carboxylic acids (AHAs) are widely used in cosmetics industry. At high concentrations, they reduce intercorneocyte cohesion, exfoliate the superficial layers of epidermis, and are though to exert indirect action on dermis.They are proposed for the treatment of skin aging. The aim of the study was to evaluate the efficacy of two schedules of glycolic acid peels on photoaging.

R. Wanitphakdeedecha, S. Eimpunth, W. Manuskiatti, **The effects of tetrahydrocurcumin in curmin cream on the hydration, elasticity, and color of human skin,** JAAD, March 2009, San Francisco

An antioxidant used in cosmetic applications should have the capability to efficiently quench free radicals on the surfact of the skin. Tetrahydrocurcumin (THC) plays an important role in the antioxidant mechanism resulting in the significant neutralization of free radicals in a dose-dependent manner. Recent studies revealed the superior free radical scavenging ability of THC.

M. Suero, D. Miller, M. Azriel, W. Wallo, **Evaluating the effects of a body moisturizer with glycolic acid on epidermal proliferation via flourescence excitation spectroscopy,** JAAD, March 2009

In a clinical setting, patients with dry skin often present with flakiness as a result of a disrupted desquamation process. The application of an exfoliating agent such as alfa-hydroxy acid (AHA) helps promote desquamation by breaking the bonds between dead skin cells, thereby facilitating the removal of flakes and allowing newer cells to emerge. Flourescence excitation spectroscopy allows for a noninvasive means of determining the increase in the rate of cellular turnover via monitoring the excitation band assigned to tryptophan, an established marker of epidermal proliferation.

D. Schmid, E. Belser, F. Zülli, **An Herbal Blend for Antiaging Effects: TCM in Personal Care,** Cosmetics and Toiletries, Vol. 124, No. 1/January 2009

Traditional Chinese medicine (TCM) is a holistic approach to healing that developed in China about 3,000 years ago and that typically includes therapies such as acupuncture, qigong exercises and herbal medicine. It is highly respected as a means to treat skin disorders and is especially well – perceived by European and Eastern cultures. Believing in the efficacy of TCM, the authors collaborated with expert Severin Bühlmann, PhD, to incorporate this approach into an herbal blend to treat dry, sensitive skin that is prone to psoriasis.

D. Khazaka, C. Uhl, **More than 2 decades of bioengineering for efficacy testing and product recommendation,** Household and Personal Care TODAY, No. 1/2009

Due to high competition in the cosmetic and growing customer expectations, in the past two decades there has been a continuousdevelopment of new cosmetic products with more efficient ingredients covering new effects on the skin. Simultaneously to this, there was an increasing demand for new measuring techniques to substantiate the new product claims. The field of skin bioengineering has consequently been immensely enriched in the last years by inventing new physical and optical measurement methods for all kind of skin parameters.

S. Kinderdine, T.W. Coffindaffer, M. Schnicker, J. Li, Y. Boissy, **The Evolution of Facial Cleansing: Substrate Cleansers Provide Mildness Benefits Over Leading Soap and Syndet Bars,** The Procter & Gamble Company

Over the years, facial cleansers have evolved from traditional bar soaps, to milder synthetic detergents (syndets), to more recently, substrate based cleansers that combine mild detergents with conditioning ingredients.

S. Kinderdine, T.W. Coffindaffer, M. Schnicker, J. Li, C. Rader, **The Relative Skin Irritation and Skin Improvement Potential of Several Leading Cleansers,** The Procter & Gamble Company

Facial cleansing plays an important role in the lives of many consumers; not only as a means to remove dirt and cosmetics, but also as a first step in their overall skin care routine.

Y. Cheng, Y.-Y. Dong, M.-X. Dong, C. Wang, N. Su, Y.-T. Sun, J. Liu, H.-Y. Zheng, A. Schrader, M. Rohr, W. Liu, **Protection effect of cosmetics on human skin under simulated rigorous**

environment, Skin Research and Technology 2008, 14, p. 45-52

The efficacy of cosmetics on human skin measured under normal mild laboratory environment might be discounted by exterior environment factors such as wind, UV exposure, etc. Few studies have focused on the "genuine" efficacy of cosmetics on human skin during exposure to external rigorous environment.

J. Ivosevic-Zaper, **KiOsmetine-CG 125 – natürliche Biopolymere zur Pflege der anspruchsvollen Haut,** Euro Cosmetics 11/12, 2008

Die belgische Firma Kitozyme, ein Spin-off der Universität Liège, stellt nach 8-jähriger Entwicklungszeit ein Biopolymer mit außergewöhnlichen kosmetischen Eigenschaften der Kosmetikindustrie zur Verfügung. Das Verfahren zur Produktion dieses Polymers nicht tierischen Ursprungs wurde mit dem wallonischen Innovationspreis ausgezeichnet. Der Wirkstof KiOsmetine-CG 125 ist ein natürliches Biopolymer, zusammengesetzt aus zwei kovalent gebundenen Polysaccharidketten, dem Chitin und dem Beta-Glucan.

S.H. Lim, S.M. Kim, Y.W. Lee, K.J. Ahn, Y.B. Choe, **Change of biophysical properties of the skin caused by ultraviolet radiation-induced photodamage in Koreans,** Skin Research and Technology 2008; 14, p. 93-102

Ultraviolet (UV) irradiation affects the function and complecion of the skin by inducing changes in physical properties through formation of erythema, proliferation of epithelial cells, DNA damage, activation or inactivation of various enzymes and proteins, and free radical formation. In this study, the authors intended to observe the overall course of changes in barrier function and reflectance of the skin induced by photodamage, and healing reaction in the course of time, and alteration of skin complexion

C. Oresajo, M. Yatskayer, A. Galdi, N.S. Trookman, R.L. Rizer, Z. Draelos, I. Hansenne, **Multi-Center, Clinical Evaluation of a Broad Spectrum Sunscreen Moisturizer Containing a new Photostable UVA/UVB Complex for Treatment of Photodamaged Facial Skin**, www.lorealusa.com; Poster

Photoaging is the result of chronic cumulative exposure to UV radiation. UVB radiation changes throughout the year and according to location, whreas UVA radiation is less variable. UVA rays are lower in energy than UVB, however they are twenty times more abundant. Efficient and stable broad spectrum protection is therefore needed year round for adequate protection against photoaging.

M. Jünger, **VenoTrain® micro balance - Klinische Studie,** Universität Greifswald für Bauerfeind

Die Ergebnisse einer klinischen Studie* bestätigen den positiven Einfluss und die hervorragende Verträglichkeit der aktiven Pflegesubstanzen auf wichtige Eigenschaften der Haut. Signifikante Hautverbesserung innerhalb einer Woche Abnahme der Rauigkeit der Haut bei gleichzeitiger Erhaltung der notwendigen Hautfeuchtigkeit Deutliche Reduzierung des Juckreizes Nachfolgend finden Sie eine Zusammenfassung der wichtigsten Punkte.

*B. Sommer***, Regenerationsergebnisse nach Nervenverletzungen an der oberen Extremität – Einflussfaktoren und die Optimierung klinischer Untersuchungsmethoden**, Dissertation aus der Klinik für Plastische Chirurgieder Universität zu Lübeck, Lübeck 2008

Klinik der Nervenverletzungen: In der Handchirurgie nimmt die Verletzung peripherer Nerven der oberen Extremität mit 10% aller zu versorgenden Fälle einen wesentlichen Stellenwert ein. Durch motorische und sensible Ausfälle im entsprechenden Versorgungsgebiet des Nerven kommt es zum Verlust von sensomotorischen Fertigkeiten, die zu Bewältigung von Situationen im Berufsleben als auch im häuslichen Lebensumfeld von zentraler Bedeutung sind. Der hohe Anteil der postoperativen Arbeitslosigkeit [51] hat in den letzten Jahren den wirtschaftlichen Einfluss auf das Gesundheitssystem nach Verletzungen der oberen Extremität immer mehr in den Fokus neuer Studien gerückt [34,94]. Insbesondere Nervenverletzungen haben einen nachhaltigen Einfluss auf den sozioökologischen Status des Patienten und können zu erhöhten Behandlungskosten vor allem im Bereich Rehabilitation und sekundärer Rekonstruktion führen [34]. Trotz der hohen klinischen Relevanz können Nervenverletzungen im Rahmen vermeintlicher Bagatellverletzungen leicht übersehen werden (Abb. 1).

I. Burg, **Evaluation der Corneometrie als Messmethode zur Erfassung der Hyperhidrose in Diagnostik und Therapie,** Dissertation 19.11.2008, Klinik und Poliklinik für Dermatologie und Allergologie am Biederstein des Klinikum rechts der Isar der Technischen Universität München

Definition der primären Hyperhidrose nach Leitlinien der AWMF: Der Begriff Hyperhidrose, bezeichnet ein Ubermas an Schwitzen, welches uber die Erfordernisse der Warmeregulation hinausgeht. Hyperhidrosis wird daher nicht anhand der Schweismenge, sondern aufgrund der Fehlfunktion des Schwitzens definiert. (65) Epidemiologie und Erscheinungsformen der primären

Hyperhidrosis: Die Thermoregulation des menschlichen Korpers erfolgt durch das Schwitzen und die nachfolgende Kuhlung durch Verdunstung der Feuchtigkeit. (67) Ubermasiges Schwitzen (Hyperhidrose), ist eine Erkrankung, die zu korperlichen, psychischen und sozialen Problemen fuhren kann. Schon bei einem alltaglichen Handschlag sind die Patienten durch die nass-kalten Hande stigmatisiert. Patienten mit axillarer Hyperhidrose wechseln haufig mehrmals taglich ihre Kleidung und gelten als unsicher. (86)

A. Delalleau, G.Josse, J.-M. Lagarde, H. Zahouani, J.-M. Bergheau, **A nonlinear elastic behavior to identify the mechanical Parameters of Human skin *in vivo,*** Skin Research and Technology 2008, 14

Background/purpose: Various nalyses have been performed to identify the mechanical properties of the human skin tissue *in vivo* . They generally usse different approaches and hypotheses (behavior laws as well as mechanical testes)and the obtained results are consequently difficult to analyze and compare.
In this paper , an inverse methods that can be adapted to any kind of mechanical testes and behavior laws is presented.

Y.-H. Kim, Y.-S. Kim, J.-H. Kim, **Cosmeceutical Properties of Polysaccharides from the Root Bark of *Ulmus davidiana* var. *japonica,*** Bioland Ltd., Korea

In Korea and China, *Ulmus davidiana* var. *japonica* has been used as traditional oriental medicine for the treatment of difficulty in urination, skin inflammation, etc. In order to investigate the potential of a polysaccharide extract from *Ulmus davidiana* var. *japonica* as a cosmetic ingredient, we measured its moisturizing effect, photo-induced cytotoxicity, and anti-inflammatory effect. After hydrolysis, HPLC experiments showed that the composition of polysaccharide was mainly rhamnose, galactose, and glucose.

D. Klase, H. Tronnier, **SCS (spinal cord stimulation) and the modulation of the sudomotoric output in CRPS patients: measurement of sympathetic activity by identification of skin hydration,** Poster University of Lübeck, Germany Disorders of the autonomic nervous system (ANS) are not uncommon and often result in chronic diseases refractory to usual therapeutic strategies. For example CRPS type I and II, palmar or axillary hyperhidrosis and Raynaud's syndrome are significantly caused by affected or misdirected sympathetic nerve fibres. Often the degree of impairment of the sympathetic nervous system decides on the response to medication or interventional methods. On this account, besides the clinical examination an early detection of sympathetic malfunction with a less invasive and manageable diagnostic technique would be helpful to document neuropathic disturbances and start the therapy as soon as possible. In the past some neurophysiological diagnostic tools were developed to measure sympathetic activity

S. Savi□, S. Tamburi□, S. Vesi□, G. Vuleta, C. Müller-Goymann, **Effect of Vehicle Composition on In vitro / In vivo Hydrocortisone Penetration**

Diffusion/penetration properties of locally applied drugs are affected by both the status of the stratum corneum (SC) and by the composition and colloidal structure of the vehicle. Novel sugarbased surfactants declared as mild alternatives to polyethoxy emulsifiers, can form both, the thermotropic and the lyotropic liquid crystalline phases [1]. The liquid crystalline structure of the vehicle and mode of solvent/water distribution within the system could govern both, the drug diffusion rate [2] and the moisturizing potential of formulation; the latter presumably contributes to the penetration enhancing effect of the vehicle. Hence, the state of hydration of the SC is one of the most important factors in determining of some solute penetration profile [3].

R. Debowska, K. Rogiewicz, T. Iwanenko, M. Kruszewski, I. Eris, **Folsäure (Folacin) – Neue Neue Anwendungsm□glichkeiten eines kosmetischen Wirkstoffes / Folic Acid (Folacin) – New Application of a Cosmetic Ingredient**

Viele Jahre der Versuche und Forschungstests haben bewiesen, dass zahlreiche, wohlbekannte Vitamine in der Kosmetologie erfolgreich verwendet werden konnen. Die verfugbaren Daten deuten darauf hin, dass eines von denen – Folsaure – eine wichtige Rolle im Lebensprozess der mitotisch aktiven Gewebe spielt und dessen Mangel das Hintergrundniveau der DNA-Beschadigung steigert. Folsaure scheint
uber Hautregenerationseigenschaften zu verfugen und kann die DNA-Reparatur in der UV-geschadigten Haut modulieren. In der vorliegenden Studie haben wir die Moglichkeit uberpruft, Folsaure in Korperpflegeprodukten und Kosmetika als einen Anti-Photoalterungsbestandteil zu verwenden.

R. Wanitphakdeedecha, W. Manuskiatti, S. Eimpunth, S. Hunnangkul, **The effects of**

Mucopolysaccharide Polysulphate (MPS) on hydration and elasticity of human skin, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok

Objective: To study the efficacy of 0.1% Mucopolysaccharide Polysulphate (MPS) on hydration and elasticity of human skin

Method: This was a randomized double blind placebo controlled study which included 60 female volunteers aged 30-45 years with dry skin, defined by corneometer CM 825. The volunteers were treated with either 0.1% MPS or vehicle-control. All subjects were asked to apply 1 g of cream to their face twice daily for a total period of 4 weeks. Skin hydration and elasticity were measured at baseline and week 4 with corneometer CM 825 and cutometer MPA 580 respectively, at forehead and both cheeks.

J.W. Fluhr, M. Breternitz, P. Elsner, **Glycerol-based emollient enhances stratum corneum (SC) barrier homeostasis, SC hydration and *in vivo* corneocyte morphology after acute barrier disruption in a controlled, double-blinded study,** Skin Physiology Laboratory, Department of Dermatology, Friedrich-Schiller-University, Jena, GermanyBackground and Purpose: Glycerol is known to exert barrier repairing and moisturizing properties. The underlying mechanism for the barrier repair after an acute insult is still under discussion. Furthermore, most of the studies on glycerol-based emollients are not placebo controlled. The aim of the study was to test effect of a glycerol-based emollient (V00034CR) vs. placebo on barrier homeostasis and SC hydration after acute disruption of the skin barrier. Furthermore, we investigated the effect of glycerol on corneocyte morphology assessed by *in vivo* confocal microscopy.

J. Fluhr, C. Uhl, **Autphysiologische Messungen in der täglichen Praxis: Corneometrie und Sebumetrie bei physiologischen und krankhaften hautveränderungen**

Bezeichnung der Methode: Coneometrie und Sebumetrie zur Heutanalyse (z.B. als Basis für die Hautpflegeberatung)

K. Ertel, D. Watson, Rob Bacon, K. Siereveld, **Impact of Personal Cleansing Products on Aged Skin,** The Procter & Gamble Company

IntroductionThe elderly segment of the population is growing rapidly in the United States and other parts of the world. Skin undergoes many changes as we grow older, but a common finding is that the skin becomes drier and more susceptible to drying with age. Personal cleansing products are frequently identified as a potential source of skin drying and good skin compatibility is an important consideration when recommending a cleansing product to individuals whose skin is susceptible to drying. Bars remain a popular personal cleanser form and many cleansing bars based on synthetic detergents (syndet bars) offer good skin compatibility. The more recently introduced body wash cleanser form has the potential to provide additional skin advantages since body washes provide good skincompatibility and some can deposit benefit agents such as petrolatum on the skin's surface during use.

G. Kutz, C. Bruns, S. Hennig, M. Enga, **Current ingredients in semi-solid formulations and their effects on skin hydration, transepidermal water loss and water resistance,** Pharmaceutical Engineering, FH Lippe und Höxter, University of Applied Sciences, Detmold, Germany

A series of factors like excessive treatment with detergents or organic solvents, UV irradiation as well as low humidity are known to damage skin. Frequent barrier malfunction is due to a reduced amount of lipids.Therefore pharmaceutical skin care products are often developed to enhance skin moisturization or to restore barrier function. In some cases it is useful to additionally protect skin against hydrophilic noxes because of their possible irritation potential. All abovementioned deficits can be overcome by the use of lipids in skin care formulations. In this study some current lipids are tested for their capability to increase skin hydration, to restore skin barrier function as well as for their property to remain on the skin.

C.W.L. Luk, W. Zhu, D.L. Trigg, K. Miyamoto, B. Chatterjee, L. Chen, J. Tang, **Improved Delivery of Skin Care Ingredients via Mask Treatments,** The Procter & Gamble Company

Skin fairness is the top consumer need for Asian consumers with 80 % of consumers wanting to have fair skin, more than 60 & usingwhitening products and 30 % believing more products in a regimen are better.

H. Tronnier, M. Wiebusch, U. Heinrich; **Change in Skin Physiological Parameters in Space - Report on and Results of the First Study on Man,** Skin Pharmacol Physiol 2008;21: p. 283-292

Astronauts often show skin reactions in space. Systematic tests, e.g. with noninvasive skin physiological test methods, have not yet been done. In an interdisciplinary cooperation, a test series with skin physiological measurements was carried out before, during and after a long-term mission in

the International Space Station. The hydration of the stratum corneum (Corneometer), transepidermal water loss (Tewameter), and the surface structure of the skin (SkinVisiometer) were measured. In order to record cutaneous states, the suction elasticity was measured (Cutometer), and an ultrasound measurement with 20 MHz (DermaScan) was also made. In addition, one measuring field of the two inner forearms was treated with a skin care emulsion. There were indications of a delayed epidermal proliferation of the cells, which would correspond to the clinical symptoms. Hydration and TEWL values are improved by respective skin care. On the cutaneous level, the elasticity measurements and the ultrasound picture showed results which correspond to a significant loss of elasticity of the skin. Further examinations are necessary to validate these preliminary results.

J. Lademann, J. Fluhr, **This Issue at a Glance: Skin Reactions of Astronauts in Space and Microstructures of Topically Applied Formulations,** Skin Pharmacology and Physiology 2008; 21:245

The analysis and characterization of the properties of human skin under natural conditions and under topical treatment on Earth is a topic of comprehensive investigation. In the present issue, it is demonstrated that there is also a skin physiology outside the Earth in the universe. Tronnier et al. Investigated the changes in skin physiological parameters in space. Astronauts often show skin reactions. In an interdisciplinary cooperation, a test series with skin physiological measurements was carried out before, during and after a long-term mission at the International Space station.

T. André, M. de Wan, P. Lefèvre, J.-L. Thonnard, **Moisture Evaluator: a direct measure of fingertip skin hydration during object manipulation,** Skin Research and Technology, 2008, 14 p. 385-389

The mechanical properties of the fingertip skin are very important when studying dexterous manipulation. These properties are strongly influenced by the level of skin hydration. Currently, there is no device capable of measuring skin moisture during object manipulation. Methods: Skin moisture levels during object manipulation were measured using the Moisture Evaluator, a probe consisting of gold-covered electrodes connected to a resistor-capacitor circuit. *In vivo* calibration was performed by comparison with measurements obtained using a Corneometer® at two normal force levels (0.2 and 2□N). Results: Measurements from the Moisture Evaluator were well correlated with those from the Corneometer®. Conclusion: A new device for evaluating skin moisture at the fingertip has been designed and validated.

K. de Paepe, E. de Rop, E. Houben, R. Adam, V. Rogiers, **Effects of lotioned disposable handkerchiefs on skin barrier recovery after tape stripping,** Skin Research and Technology 2008; 14, p. 440-447

Background/purpose: In the present work, it was studied whether repeated use of lotioned disposable handkerchiefs on tape-stripped forearm skin was able to improve skin barrier recovery. Methods: Skin assessments included scoring of visual erythema and dryness/scaliness; and measuring of skin redness (Chromameter® CR300), skin hydration (Corneometer® CM825), and transepidermal water loss (Tewameter® TM300). Four different lotioned paper handkerchiefs – randomly assigned to one of two subject groups (n=20) – were tested vs. the non-lotioned control handkerchief. The results were also compared with those obtained using a topically applied oil-in-water barrier cream (Dermalex®). Results: The three-day lasting protocol revealed that handkerchief wiping itself delayed skin recovery, but a significantly better performance was seen for the lotioned handkerchiefs containing fatty alcohols and mineral oils. This shows that the use of lotioned tissues helps to prevent skin damage inevitably caused by the wiping process. Conclusion: The controlled pre-damaged forearm method with tape stripping appears to be a suitable model to study the effects of repetitive wiping on irritated skin with disposable handkerchiefs of different quality. More specifically, the model seems applicable to mimic the nasolabial skin damage observed during a common cold associated with frequent use of disposable handkerchiefs.

F. Gafner, K. Schweikert, G. Dell'Acqua, **Oat-Based Complex Stimulates Skin Barrier Protein Synthesis and Reduces Skin Aging,** IFSCC Magazine, Vol. 11, No. 3, 2008

Epidermal differentiation is crucial to guarantee a physiological confication process. The cornified envelope is the final skin barrier which protects against external aggressions such as UV light and reduces water loss. Skin aging is associated with decreased functionality of this barrier and reduced epidermal differentiation. We present a new bioactive complex for the stimulation of protein synthesis associated with cornified envelope and markers of epidermal differentiation. Composed of a hydrolysed oat protein extract and particularly rich in glutamine and glutamic acid combined with ATP and niacinamide, 1% of this complex increases significantly the synthesis of proteins such as filagrin, late envelope protein and small proline-rich proteins, all markers of epidermal differentiation, in a

reconstituted human skin model as measured by DNA array chip analysis, reverse transcription-polymerase chain reaction and immunohistochemistry.

J. Staton, **Tools for anti-ageing claim support,** Personal Care, Nov. 2008; S.19-22

Anti-ageing covers a substantially broad area of claims associated with both the prevention and the treatment of chronological and environmental effects on the condition of human skin. A large number of instrumentally based clinical methods are available for the substantiation of claims related to anti-ageing. This article describes the most common of these and considers only those which are essentially non-invasive.

P.-Y. Morvan, R. Vallée, **New focus on natural moisturisation,** Personal Care, Nov. 2008; p. 29-32

The fundamental role of urea in maintaining the skin's moisturisation is well known. Concentrated in the stratum corneum, where it represents 7% of the natural moisturising factor (or NMF), it is naturally present in normal skin, but its concentration falls rapidly by 50% in dry skin and 85% in skin suffering from dermatosis. This drop in urea content is irremediably accompanied by a depletion of NMF and therefore loss of moisturisation. The skin becomes wrinkled and loses its suppleness and radiance.

M. Tilaar, W.L. Wih, A.S. Ranti, M. Suryaningsih, **Indonesian plants yield useful agents,** Personal Care, Nov. 2008; p. 25-27

The demand for naturally-derived active ingredients for cosmetics continues to increase. Our objective was to look for moisturising and antioxidative agents from Indonesian botanical resources which contain flavonoid and polyphenol. The article describes natural ingredients extracted with ethanol from Indonesian plants namly Orthosiphon aristatus (Blume) miq = OE (patent pending) and Phyllantus niuri L = PE (patent pending). The study was carried out using DPPH scavenging activity for antioxidant agent in vitro; and Corneometer and Tewameter for moisturising effect.

N. Gerlach, H. Grosch-Rafalski, M. Wiebusch, U. Heinrich, H. Tronnier, **Skin physiological experiments in space,** Poster Dermatronnier Experimental Dermaltology

Over the duration of a long-term microgravity space flight, human bodies undergo dramatic changes. Impairments due to circulatory and vestibular disturbances of the equilibrium are the prevalent medical side effects astronauts suffer from. These are followed by dermatological problems. The effects of microgravity on skin reported by crewmembers are slow healing of contusions and lacerations, dryness and cracking as wells as rashes and itchiness.

M. Tilaar, W.L. Wih, A.S. Ranti, S.M. Wasitaatmadja, **Punica granatum properties examined,** Personal Care, September 2008, p. 27 – 29

Natural cosmetic ingredients have shown tremendous growth in recent years, and studies have been conducted on botanical extracts for cosmetic use. Several aspects should be considered when utilising botanical materials in cosmetics – such as the quality of the plant materials, processes, biological activity and safety. Looked for in a study was a natural ingredient potentially having multifunctional properties for cosmetic use. Used were Punica granatum L. fruit obtained from a community plantation on a Javanese island. A taxonomical study was conducted by literature.

H. van der Hoeven, S. John, P.A. Schmidt, **Verbesserung des Hydrationsniveaus der Haut durch natürlichen Moisturizer,** Euro Cosmetics 9-2008, S.16-18

Ein ausreichendes Hydrationsniveau ist unabdingbar für die Funktionalität des Stratum Corneum (SC). Die Natural Moisturizing Factors (NMF) sind für die Aufrechterhaltung eines entsprechenden Hydrationsniveaus im SC von größter Wichtigkeit. Die Entwicklung von kosmetischen Wirkstoffen, die sowohl für eine ausreichende, als auch lang anhaltende Konzentration von NMF in der Haut sorgen, stellt heute eine große Herausforderung dar.
Ein neuentwickelter natürlicher Moisturizer – DayMoist CLR – erhöht aufgrund der enthaltenen hygroskopischen Moleküle, welche den natürlichen Feuchtigkeitsfaktoren der Haut ähneln, die Hydration der Haut; ein Effekt, der sich sowohl durch die Konfokale Raman-Mikrospektroskopie, als auch durch die konventionelle Methodik der Corneometer-Messung bestätigen lässt.

H. van der Hoeven, S. John, **Elevating NMF concentration with a natural moisturiser,** Personal Care, Sep. 2008, p. 81-83

For any living organism, presence of water at the sites where it is essential for normal functioning is crucial for survival. The outer layer of the skin provides a typical example of the human body preserving water at an essential site (in close proximity to a dry environment). It is therefore

understandable that control of the presence of water is one of the fundamental properties of the skin.

K.-H. Schrader, **Cremes auf dem Prüfstand**, Beauty Forum 09/2008, S. 100-102

Ob Anti-Aging oder UV-Schutz: Kosmetische Mittel sollten „gut" verträglich sein und eine Wikung haben. Beides sollte am Bestimmungsort der Kosmetika – auf Haut, Haaren etc. – auch nachweisbar sein. In modernen Speziallabors wird daher geprüft, was Cremes und Co tatsächlich leisten. Die fertigen Produkte werden In-vivo-Tests unterzogen, also am lebendigen Organismus auf ihre Wirksamkeit geprüft. Generell unterscheidet man dabei subjektive und objektive Prüfungen. Wird beispielsweise die Wirkung einer Anti-Aging-Creme untersucht, dienen subjektive Anwendungstests dazu, die sensorische Beurteilung und die Hautverträglichkeit zu prüfen. Mit objektiven Messungen werden dagegen z.B. die Wasserretention und das Hautoberflächenprofil bestimmt, der Sonnenschutzfaktor geprüft und das antioxidative Potenzial des Produkts ermittelt.

Z.D. Draelos, E. Baltas, **Skin barrier and desquamation in patients with mild plaque psoriasis is improved with the use of a gentle moisturizing cream,** Abstract, EADV Paris 09/2008;

Psoriasis is a disorder characterized by faster than normal skin growth and replacement. The result of this rapid skin growth and replacement is a build-up of red, thickened areas with a scaly appearance. The most commonly affected areas are the scalp, elbows, knees and back. These plaques are often dry and non-pliable areas on the skin that can be a source of pain and/or discomfort to affected individuals. Moisturization of these areas may provide some relief by increasing hydration.

S. Louth, **Physiogel Intensive - A new effective moisturizing agent,** Abstract, EADV Paris 09/2008;

Background: Studies showing an increase in transepidermal water loss (TEWL) and a decrease in water-binding properties in atopic dry skin suggest that the skin barrier function is compromised in patients with atopic dermatitis. These studies also suggest that the judicious use of effective moisturisers can improve the epidermal barrier function. Objectives: As part of an assessment program for a new and innovative moisturiser (Physiogel Intensive), the efficacy of Physiogel Intensive as a skin barrier and moisturizer was evaluated.

A. Firooz, S. Davoudi, B. Sadr, S. Keshavarz, M. Naghizadeh, **Comparative study of skin hydration and transepidermal water loss in patients with sulfur mustard-induced dermatititis and normal controls,** Abstract, EADV Paris 09/2008

Background: Skin lesions are among the most common chronic side effects of sulfur mustard intoxication. Objectives: We conducted this comparative study to evaluate skin hydration and trans-epidermal water loss (TEWL) in patients with sulfur mustard-induced dermatitis.

C. Huh, M. Choi, S. Lee, S. Kim, Y. Park, B. Kim, H. Park, S. Choi, S. Youn,K. Park, **Low dose 1064nm Q-switched Nd:YAG laser for the treatment of melisma,** Abstract; EADV Paris 09/2008

Background: Melasma is a common acquired pigmentary disorder that is known for its recalcitrance to the conventional treatment. Although Q-switched Nd: YAG laser (QSNYL) is widely used for the treatmemt of melasma, little has been published regarding its effect. Objectives: In this study, we would like to know the effect of low dose 1064nm QSNYL (MedLite C6, HOYA Conbio, CA) on the treatment of melasma objectively.

H. Tronnier, M. Wiebusch, U. Heinrich, **Skin physiological parmeters in space – results of the European long-term mission in the ISS (ASTROLAB),** Abstract, EADV Paris 09/2008

Background: Since in weightlessness many astronauts report skin problems like dryness, itching, tendency to get injured, impaired wound healing etc., a "Skin Care" program was initiated for the ASTROLAB Mission of ESA (European Space Agency). It was carried out by a consortium with different tasks.

A. Fourtanier, B. Ladan, C. Camus, N. Dami, V. Delvigne, R. Bazin, M. Hughes, A. Green, **Comparison of facial skin parameters in Caucasian Australian and European women,** Abstract, EADV Paris 09/2008

The aim of this study was to compare two Caucasian female populations aged 40 to 69 years with very different lifestyles and cosmetic habits: one (n= 67) living in a temperate climate in Europe (Paris 55° N); the other (n= 80), living in subtropical Australia (Nambour, 26° S). Using a patented proprietary skin evaluation tool (Diagnôs Expert®) in each location, we compared the skin properties of women classified into three age groups: 40 to 49, 50 to 59, 60 to 69. This tool combines several techniques including a capacitance method (Corneometer®) for hydration and a suction method (Cutometer®) for assessment of mechanical properties. The greatest wrinkle-depth, the intensity of the

darkest pigmented spot (selected clinically) and sebaceous activity were measured on images acquired by camera with an adapted magnification (x10 and x60) and analyzed by a specific software.

C. Camus, M. Isono, G. Yang, M. Daveno, D. Amar, B. Lavaud, C. Hoang Van Chu, V. Delvigne, R. Bazin, **Comparison of skin properties in various populations using a new multi-criteria measuring device,** Abstract, EADV Paris 09/2008

Purpose of the study: To assess a new testing battery device for evaluating skin condition in relation to age and skin ethnicity and skin type. Methods: Facial skin data have been recorded in female volunteers by the same operator in 5 different countries from December 2003 to April 2004. Study volunteers included various ethnic skin types i.e. Caucasian (Paris, France), Hispanic (Mexico City, Mexico), Asian (Tokyo, Japan and Hong-Kong, China) and African American (Chicago, USA). At least one hundred women per city were involved and split into 4 natures of skin (normal, dry , oily and combined) and 5 age groups (20- 29 years, 30 - 39 years, 40 -49 years, 50 -59 years and over 60 years).

U. Heinrich, B. Garbe, H. Tronnier, W. Stahl, C. Moore, M.J. Arnaud, **Supplementation with green tea extract improves skin physiological parameters,** Abstract, EADV Paris 09/2008

Background: The objective of the study was to determine changes in skin parameters during the intake of a beverage rich in green tea extract. The detection of hydration properties, transepidermal water loss (TEWL), changes of skin surface (SELS), skin elasticity, skin thickness and density as well as serum analyses were determined during the study. Methods: Hydration measurements were carried out with the Corneometer CM 825 prior to and during the study. Transepidermal water loss (barrier function of the skin) was measured with the Tewameter, skin surface (SELS) with the Visioscan and skin elasticity with the Cutometer (Courage & Khazaka Electronics, Cologne, Germany).

R.M. Debowska, A. Dzwigalowska, M. Szubert, K. Rogiewicz, I. Eris, B. Pander, **Efficacy evaluation of re-modelling face care product,** Abstract, EADV Paris 09/2008

Background: Skin ageing is an important and interesting topic of study. It results from the combination of intrinsic ageing and photoageing, which is due to the environmental influence. The cosmetic industry creates and develops for the ageing population constantly improving products. Objectives: The aim of this study was to evaluate the in vivo efficacy and beneficial effects of application of the re-modelling face cream containing an anti-wrinkle peptide, vitamin E, proteins from sweet almonds and peach oil.

B. Renault, C. Tricaud, D. Moyal, L.Q. Nguyen, B. Boussouira, M.D. Pham, A. Potter, C. Baltenneck, A. Minondo, **Effects of daily UVR on stratum corneum: Biophysical properties, morphological and biochemical markers,** Abstract, EADV Paris 09/2008

Background: Exposure to UV light induces damages in the skin and accounts for most of ageassociated changes in appearance. Most of the studies involve the UV SSR (Solar Simulated Radiation) corresponding to short term Zenithal exposure conditions. But most of the time, the skin is exposed to UV corresponding to non zenithal conditions. Objective: To evaluate the damage to the living epidermal layers induced, in a rather short term, by an exposure regimen mimicking non zenithal daily exposure, by measuring the changes in biophysical properties, morphological and biochemical markers of the stratum corneum.

A. Reich, J. Kopyra, K. Korfanty, E. Pióro, K. Postrzech, **Influence of soap on epidermis barrier,** Abstract, EADV Paris 09/2008

Background: Washing the body is the human's basic need. However, soaps, one of the most often used washing products, can damage epidermic barrier and disturb the protective function of the skin. Objective: The purpose of this study was to compare the influence of three different soaps on epidermis moisture and transepidermal water loss (TEWL).

L.E. Colón, L.A. Johnson, T.J. Stephens, R.L. Rizer, E. Baltas, **Hydration and irritation potential of a new moisrizer for use in patients with very dry skin,** Abstract, EADV Paris 09/2008

Many dermatologists maintain that good skin care is an important part of any treatment regimen and also important in maintaining good dermatological health. The gentleness of a family of products (Galderma Laboratories, L.P., Fort Worth, TX) has been a hallmark over several decades and is the primary reason why many physicians trust these products for their patients with compromised skin.

R.M. Debowska, B. Tyszczuk, J. Zielinska, K. Rogiewicz, I. Eris, B. Pander, **The effect of an anti-ageing body care product containing anti-wrinkle peptide, repairing enzymes and palnt waxes,** Abstract, EADV Paris 09/2008

Background: Aging is an inevitable process which concerns every organ of our body, including the skin. Every day our skin is exposed to external factors. They influence the skin's condition and its appearance. Many women concern themselves mainly with the skin on the face and neck. However, they forget about the rest of their body skin, which undergoes aging as well and thus also needs suitable care. Objectives: The aim of this study was to evaluate the in vivo efficacy and beneficial effects of application of the body cream containing an anti-wrinkle peptide, repair enzymes, and olive, bee, cocoa and mango wax.

F. Rippke, A. Filbry, S. Hiddemann, U. Koop, S. Jaspers, A. Knot, C. Mummert, U. Scherdin, M. Moers-Carpi, A. Buerger, **A multi-pronged topical anti-ageing approach using palnt-derives articin and oliopeptides improves signs of advanced skin ageing,** Abstract, EADV Paris 09/2008

Background: Ageing of the skin gives rise to a number of characteristic modifications of its structures and functions. Namely after menopause, atrophic alterations are accelerating due to marked hormonal changes, resulting in skin conditions affected by wrinkles, impaired skin regeneration, and loss of elasticity and density. Only recently, specific extracts from burdock seeds and anise fruits have been identified as potent active ingredients for topical anti-ageing preparations. In our studies we set out to investigate the effects of two emulsions containing these actives on parameters of skin aging employing biophysical in vivo and ex vivo techniques.

S. Gardinier, J. Latreille, C. Guinot, E. Tschachler, **The skin hydration state as determined by a score based on biophysical parameters and Raman spectrometry data,** Abstract, EADV Paris 09/2008

The skin hydration state can be assessed by various instrumental methods, including conventional measurements, e.g. capacitance, transepidermal water loss (TEWL), and more sophisticated methods like Raman spectroscopy. These techniques are considered complementary, as they investigate different aspects of skin hydration. The objective of this study was to summarize and quantify in a synthetic way the skin hydration state by a score based on biophysical parameters, as well as the content of some skin components assessed by confocal Raman spectroscopy.

G. Lembo, S. Lembo, S. La Bella, V. Lo Conte, D. Martellotta, F. Ayala, **In vivo evaluation method of barrier creams' protective effect,** Abstract, EADV Paris 09/2008

Theoretically, skin barrier creams reduce or even prevent the penetration into the skin by building up a physical barrier, like a thin film, between the skin and the toxic substance. Practically, controversial experiences concerning the effectiveness of barrier creams exist. For this, we propose an in vivo method to evaluate the efficacy of barrier creams trough clinical and instrumental analysis.

A.M. Matta, L. Lefeuvre, A. Gougerot, **Clinical benefit of an algae polyuronides rich emulsion in the management of dry to very dry sensitive skin,** Abstract, EADV Paris 09/2008

Background: Patients with sensitive skin experience a disturbance of the protective skin barrier function and develop exaggerated reactions than normal skin. The use of specific skincare products designed to restore skin barrier and to prevent neurogenic inflammation are useful to manage skin over-reactivity. Objectives: The aim of this study was to assess the efficacy, tolerance and acceptability of a O/W rich emulsion containing algae polyuronides associated with Uriage thermal water in comparison with a reference skincare product (O/W rich emulsion with low mineral water content) in subjects with sensitive skin.

A. Porcheron, R. Jdid, O. Nageotte, C. Guinot, E. Tschachler, F. Morizot, **Daily use of a skin moisturizer improves tactile sensations mediated by Abeta fibres,** Abstract, EADV Paris 09/2008

Introduction: The diminution of skin perception and skin innervation with age has been largely described. All kind of qualities are concerned: thermal sensations as well as tactile sensations. A diminution of sensory innervation also occurs with age. Our objective was to investigate whether a daily topical application of a moisturizer could modulate Abeta,, Adelta and C fibers involved in skin sensations. For the present study, we investigated the current perception thresholds (CPT) of the three types of cutaneous nerve fibers with a method commonly used in the detection of early steps of neuropathic disorders.

H. van der Hoeven, S. John, **Elevating NMF Concentration with a natural moisturiser,** Personal Care, September 2008

For any living organism, presence of water at the sites where it is essential for normal functioning is crucial for survival. The outer layer of the scin provides a typical example of the human body preserving water at an essential site (in close proximity to a dry environment). It is therefore understandable that control of the presence of water is one of the fundamental properties of the skin.

H. Hariry, **Untersuchung zum postpartalen Verlauf des Hautoberflächen-pH-Wertes von Säuglingen atopischer und nicht atopischer Familien zur Beurteilung des pH-Wertes als Prädiktor und pathogenetischen Faktors bei der atopischen Dermatitis**, Gütersloh 2008

1. Einleitung: 1.1 Defintion und Epidemiologie der atopischen Dermatitis: Der Begriff Atopie bezeichnet eine genetisch determinierte Disposition gegen harmlose exogene und auch vermutlich endogene Substanzen ohne klar ersichtlichen Grund sensibilisiert zu werden. In dessen Folge entwickeln sich die als atopische Trias bekannten Krankheitsbilder: die allergische Rhinokonjunktivitis, das allergische Asthma bronchiale und die atopische Dermatitis. Atopische Erkrankungen haben in den letzten Jahrzehnten signifikant zugenommen und betreffen gegenwärtig weltweit etwa 20% der Bevölkerung in den Industrienationen (114). Zwillingsstudien und Familienstudien haben gezeigt, dass die Disposition zu atopischen Erkrankungen erblich ist (269). Die atopische Dermatitis ist eine der wichtigsten Erkrankungen im Fachgebiet der Dermatologie und Berufsdermatologie und gilt als ein wesentlicher Kofaktor berufsbedingter Handekzeme (58,276). Die Erkrankung erfasst 15% bis 20% der Kinder in Industrieländern und stellt eine enorme Belastung für die Betroffenen und das Gesundheitssystem dar. Die atopische Dermatitis ist durch ihren besonderen Verlauf, typische klinische Merkmale wie extremen Juckreiz und weitere assoziierte Zeichen von übrigen Ekzemen unterscheidbar (276).

G. Guglielmi, **Increasing Skin Protection By A Combination Of A Disaccharide With A Vegetable Origin Fraction,** IFSCC Barcelona 2008

Applying on the skin a functional substance containing a relevant amount of polysaccharide, vegetable origin hydrolyzed proteins and amino acids, takes to a better protection and hydration of the skin, because it could permit to restore a normal skin hydration, in particular where a physiological lack of cutaneous factors is present, such as dry, reddened and stressed skin with tendency to aging.
The novel compound is so able to recreate its natural state of hydration of the skin, so to be considered an innovative moisturizing and lenitive cosmetic ingredient, particularly suitable for delicate skin and hair.

D.B.L. Terci, D. Terci, D. Terci, A. Pinheiro, **Use of Cutometer to Asses Skin Water Content,** IFSCC Barcelona 2008

Assessing the skin water content (skin hydration) is one of the first and most important measurements to test the efficacy of cosmetics on the skin surface. The quantity of literature worldwide dealing with this subject indicates the significance of this measurement.

*M.O. Ferreira, M.H. Amaral, P.C. Costa, M.F. Bahia***, Assessment of Age-Related Differences in Skin Surface, Hydration, Sebum and pH,** IFSCC Barcelona 2008

Skin is the body's largest organ and constitutes a formidable physical barrier that protects us from the environment [1]. It is composed of two main layers: the epidermis and the dermis. The stratum corneum is the outermost layer of the epidermis and is the most important in terms of protection against damage and aesthetic appearance of the skin. The hydrolipidic film of the stratum corneum, which consists mainly of sebum excreted by the sebaceous glands and moisture components excreted with sweat, protects the skin from drying out, keeps it supple and due to the natural acid protection barrier it prevents the penetration of harmful external substances.

R. Ramírez, M. Martí, C. Barba, S. Méndez, J. Luis Parra, **Internal Wool Lipids Rich in Ceramides for Skin Care,** IFSCC Barcelona 2008

Wool is a natural fibre that is mainly made up of protein. It contains external lipids (lanolin) and a small amount of internal lipids (1.5%). Internal wool lipids (IWL) are rich in cholesterol, free fatty acids, cholesteryl sulphate and ceramides, and resemble those from membranes of other keratinic tissues such as human hair or stratum corneum from skin. Intercellular lipids of skin stratum corneum, mainly ceramides, play an important role in the barrier function of the skin by preventing penetration of external agents and controlling the transepidermal water loss to maintain the physiological skin water content. Recent studies have shown that formulations containing lipids that resemble the natural components of the skin, especially ceramide supplementation, can improve disturbed skin conditions.

*A. Porcheron, R. Jdid, O. Nageotte, C. Guinot, E. Tschachler, F. Morizot***, Daily Use of a Skin Moisturizer Increases Tactile Perception Mediated by A Fibres,** IFSCC Barcelona 2008

" Je sens donc je suis" (*I feel so I am*) [1]. The touch is one of the five senses which we perceive through our whole body. Tactile sensations are perceived via the skin by tactile receptors and transmitted via both fast-conducting myelinated A fibres and unmyelinated C fibres to the central

nervous system [2]. *In vivo*, tactile sensations have been essentially investigated using psychophysical methods allowing a qualitative evaluation of touch sensitivity.

S. Long, M. Godfrey, A. Desnos, D. Whitby, S. Barton, V. Agarwal, **Variability in The Physical Properties Of The Stratum Corneum – Influences Of Chronological Age And Season,** IFSCC Barcelona

It is well known that the skin exhibits changes with chronological age. Advances in bioengineering have now allowed us to study these changes objectively and precisely [1]. In addition, the introduction of reliable, commercially available skin biophysical measurement devices has led to an increase in studies dedicated to skin ageing, though often with conflicting results [2-9]. Seasonal variation in skin condition has also been studied [9-11]. Together, changes caused by age and season may well have an influence on the effect that a product can exert on the skin, but this is, as yet, unclear. The objective of the current study was to determine the effects of age and season on skin condition and whether these factors also influence product efficacy. Here we report the results from the first summer/winter cycle of an ongoing longitudinal study.

S. Long, M. Godfrey, J. Wibawa, S, Barton, **Gender Differences in Skin Condition and Response To Product Use,** IFSCC Barcelona 2008

It is well known that the skin exhibits changes with chronological age and with season. Advances in bioengineering have now allowed us to objectively and precisely study these changes [1]. In addition, the introduction of reliable, commercially available devices has led to an increase in the number of studies assessing skin ageing and condition with season [2-11]. However, the data is often reported on female skin only. Whilst some research has been undertaken to study gender differences in certain skin biophysical properties [12–15], it is often limited to body sites other than the face. Although the market for men's skincare products is steadily expanding, there appears to be little published literature about differences between male and female facial skin and its response to product use in particular. The objective of the current study was to determine the differences in skin condition of male and female cheek and forehead skin, in terms of skin hydration, surface lipid levels, transepidermal water loss, skin stiffness and elasticity, and the response to product use, in order to better develop skincare formulations for the male skin.

T.-H. Jeong, K-Y. Jeong, S-K. Han, S.-J. Lee, S.-H. Kang, S.-G. Oh, **Development of Thermotropic Gel Patch technology improving skin moisture and resilience physiochemically: An innovative skin shielding and drug-delivering challenger,** IFSCC Barcelona 2008

Sol-Gel transition has been vigorously investigated in various chemical synthesis to manufacture powders, polymers, and encapsulating materials. Starting from pharmaceutical industries, Sol-Gel transition and its applications have been focused to enhance the time-releasing patterns of drugs such as insulin and to maintain their effective periods much longer than conventional methods. Therefore, many researchers in pharmaceutical fields have paid their attention to develop bio-compatible polymers which show Sol-Gel transitions to be transformed nearby human's body temperature, as well as bio-degradable ones.

S.-J. Kim, T.-H. Jeong, E.-A. Ko, S.-H. Kang, K.-Y. Jeong, S.-K. Han, S.- J. Lee, S.-G. Oh, **Development of a noble solid lipid emulsion technology using silicone-based waxes and its cosmetic applications improving instant skin resilience and skin protection,** IFSCC Barcelona 2008

Recently, women make more effort for their beauty. Because the entry of women in public affairs have been extended. And their appearances can affect to their social images. Moreover, many of skin problems are caused by the stress of social activities and the environmental problems. Especially, the problems with skin aging are appeared a lot by the increase in UV exposure. In these situations, many cosmetics for anti-aging are gaining popularity. The wax formulations of cosmetic are effective on skin protection and moisturization.

U. Heinrich, B. Garbe, H. Tronnier, **In Vivo Assessment Of Ectoin: A Randomized, Placebo-Controlled Clinical Trial,** IFSCC Barcelona 2008

The objective of this study was to determine the anti-aging properties of Ectoin with special regard to its compatibility and efficacy. For this purpose 104 voluntary female participants were included in a monocentric, randomized, double-blind application test. Moisturizing properties, skin surface structure and skin elasticity were tested, comparing Ectoin (2 %: Treatment B) to a reference emulsion (Treatment A) versus an untreated control. None of all treated participants showed side effects during the study.The gained results of this study display that the natural cell protection concept of Ectoin is transferable to skin care.

A. del Pozo, M. Solans, C. Fernandez, M. Dolz, Corrias, M. Herráez, O. Diez-Sales, **Efficacy evaluation and characterization of chitosan nano emulsions with Spirulina hydro-glycolic extract,** IFSCC Barcelona 2008 Presentation and Poster

Nanoemulsions represent an interesting prospect for use as vehicles in the development of formulations to deliver active ingredients to the human body. Particularly, nanoemulsion formulations have been shown to be superior for transdermal and dermal delivery of hydrophilic and lipophlic compounds, compared to conventional vehicles, such as hydrogels and emulsions. Lecithins (phosphatidylcholines) have been used in several studies as surfactants for topical nanoemulsion vehicles. These surfactants are able to form nanoemulsions without cosurfactants. In this context, less surfactant is associated with lesser irritation.

M.O. Ferreira, M.H. Amaral, P.C. Costa, M.F. Bahia, **Study of the Inter-Relations between Skin Surface Parameters, Hydration, Sebum and pH***,* IFSCC Barcelona 2008

Skin is the body's largest organ and constitutes a formidable physical barrier that protects us from the environment [1]. Several biophysical techniques are commonly used to study the skin properties and to measure the in vivo skin effects of cosmetics, topical medicaments and chemical irritants [2,3]. The Corneometer® (a capacitance method) measures skin hydration, the Sebumeter® (a photometric method) measures the sebum of the skin and the Skin-pH Meter® (a potenciometric method) measures the pH of the skin [4]. The Visioscan® VC98 connected to the software SELS (Surface Evaluation of the Living Skin) can measure several skin surface parameters [5]. This apparatus consists of a special b/w video sensor chip with very high resolution, an objective and an UVA-light source.

K.-Y. Jeong, J.-H. Choi, Y.-J. Lee, T.-H. Jeong, D.-K. Lee, **Development of the skin analogue liquid crystal in non-aqueous condition and its cosmetic application to improving atopic dermatitis: An innovative atopy care,** IFSCC Barcelona 2008

Atopic dermatitis (AD) has been issued as a serious disease and the prevalence of atopic dermatitis has been rising progressively in developed countries since the 1940's. However, the reason is not enough to explain the increasing prevalence of atopic dermatitis, and some researchers suggest that there must be crucial factors in the expression of the disease like environmentals and allergics.[5] According to recent studies, the damage of skin barrier has beeen reported as one of the main reasons which cause atopic dermatitis.

K.-F. Huang, E. Tsai, D. Chang-Chin Kwan, Y.-F. Chen, K.-C. Chen, M.-F. Wang, **Studies of Ceramide Lotion on Moisture of Skin**, IFSCC Barcelona 2008

Stratum corneum intercellular lipids such as ceramides play an important role in the regulation of skin water barrier homeostasis and water-holding capacity. The aim of the pöresent study was to evaluate the potential water retension capacity of an oil-in-water emulsion containing ceramide.

G. Lemos Anconi, P.M.B.G. Maia Campos, **Stability and Clinical Efficacy of Cosmetic Formulations Containing Different Peptides,** IFSCC Barcelona 2008

Wrinkles, as a sign of skin aging, have an important social impact, especially because of longer lifetimes and more frequent social relationships; consequently, they are an important factor influencing our way of communication. Wrinkles represent the more evident outcome of cutaneous ageing. Their onset is linked to a variety of events, resulting from both chrono- and photoageing. Both *intrinsic* (hormones, racial and genetic factors, oxidative stress, systemic disease) and *extrinsic* (temperature, air pollution, smoke, alcohol) factors worsen skin condition. However, wrinkles deriving from skin texture, or micro-relief, modification afflict women more than all other wrinkles as signs of ageing in the common mind.

A. Thibodeau, **Biomimetic Liquid Crystals as Skin Barrier Restructuring Agents,** IFSCC Barcelona

2008

The main roles of the skin are: protection from UV radiation (melanogenesis), immune defense and a barrier function preventing the penetration of foreign particles. Perhaps of greater importance, skin is dynamically involved in the management of internal water levels [1]. As an example of its interconnection with internal organs, it is interestingly to note that the skin is the site for the photoproduction of vitamin D that will be distributed through all the body, and also the site of cutaneous distribution of vitamin E (through sebum secretion) obtained from nutrition.

E. Kim, S. Kim, H. Lee, S. Moon, I. Chang, **The alkaline pH-adapted skin barrier is disrupted severely by SLS-induced irritation,** IFSCC Barcelona 2008

Human stratum corneum is a multilayer barrier composed of corneocytes and specialized intercellular lipids rendering the skin poorly permeable to water and other polar compounds. The horny layer assists in maintain a constant internal milieu with a pH of 7.4 in viable epidermis that contrasts with the pH of 4-6 found on most parts of human skin[1]. The 'acid mantle' of the stratum corneum first described by Schade & Marchionini in 1928[2], was originally thought of as a thin film composed of fatty acids, amino acids, and other organic acids deposited on the skin surface.

*P.M.B.G. Maia Campos, F. Bueno de Camargo Jr., S.M. Bertucci, E. Esteves de Oliveira, G. Lemos Anconi, L. Rigo Gaspar***, Clinical efficacy of cosmetic formulations containing *Myrtus communis* extract,** IFSCC Barcelona 2008

The Research & Development of cosmetic products that are able to act in skin ageing alterations has been a challenge in Cosmetic area. This way, a great number of botanical extracts have been proposed as active ingredients for anti-ageing cosmetic development. *Myrtus communis* is a plant rich in polysaccharides, essential oils, flavonoids, among other substances. Some studies showed that its different hydroalcoholic extracts have a potent antioxidant activity mainly due to the presence of polyphenols *Myrtus communis* leaves hydrolyzed extract has been proposed as cosmetic ingredient with anti-ageing properties because it is rich in galacturonic acid, ramnose, galactose, glucose, xylose and fructose.

*C. Heusèle, C Derome, D. Kanchankoti, R. Mohile, A. Bernois, S. Schnebert***, Clinical and Instrumental Evaluation of the Facial Photoageing on Indian Women,** IFSCC Barcelona 2008

Daily exposure to the sun leads to skin photodamage. Clinical signs of photoageing due to biological and structural alteration of the epidermis and dermis will be function of level of UV exposure and individual protection capacities. The influence of ethnic origin on skin structure and function is more and more investigated but few instrumental or clinical studies describe the characteristics of healthy skin and their evolution with age on Indian women living in India [1]. Previous clinical, instrumental or biological studies were carried on Indian subjects living in South Africa or England.

*L. Barbosa-Barros, C. Barba, L. Coderch, A. de la Maza, O. López***, Relevance of Lipid Self-Assembly in Nanostructures on the Skin Properties,** IFSCC Barcelona 2008

Phospholipid systems show high morphological diversity as a function of its structure and composition [1]. This fact plays an important role in the applications of aggregates such as micelles, bicelles and vesicles, which are extendedly used in skin research [2]. Thus, investigations that help clarifying the relation of structural parameters with the effect of the phospholipid aggregates in the skin are needed. Liposomes and micelles have often been used for skin treatment [3-4], although their application is debated due to some aspects. Liposomes seem to be too large to penetrate into the narrow interlamellar spaces of stratum corneum (SC) lipids [5]. Concerning to the micelles, the usual presence of surfactant in their composition supposes a problem due to the well known irritating effect of these solubilising agents on the skin [6]. In this line, the use of bicelles (discoidal micelles constituted by phospholipids) for skin treatment may report advantages comparing to the use of liposomes and micelles: the size of bicelles is small enough for passing through the SC lipid lamellae and their composition consists exclusively of lipids.

L.R. Gaspar, F.B. de Camargo Jr., M.D. Gianeti, P.M.B.G. Maia Campos, **Evaluation of the Safety and Efficacy of Cosmetic Formulations Containing *Saccharomyces cerevisae* Extract and Vitamins,** IFSCC Barcelona 2008

There are many substances frequently used in anti-aging products due to their moisturizing, photoprotective and skin barrier effects and among them we can point out vitamin A, C and E derivatives. Vitamin A palmitate acts on epithelization and on abnormal keratinization [1]. Vitamin E acetate is a free radical scavenger and can reduce DNA damage and keratinocytes death (sunburn cell formation) [2,3] and also can enhance stratum corneum hydration and reduce skin roughness [4]. Tetra-isopalmitoyl

ascorbic acid (VC-IP) releases vitamin C in physiological conditions and enhances cellular tolerance against UVB and reactive oxygen species as well as reduces the production of interleukin-1a and prostaglandin E2 [5].

D. Khazaka, **Useful and practical advice for measuring TEWL and skin moisture with Cornemeter® and Tewameter®,** Presentation, CHI 2008, Bitec Bangkok

The presentation gives an overview about the measurement of the barrier function and hydration of the skin with worldwide standard devices. The history of those techniques as well as the benefits and pitfalls are described. Multi centric studies which have been performed in this field to show accuracy of the instruments and between different instruments and new approaches, as the recent use of this technology in space or measurements of hydration in different depth of the skin and field devices for consumer tests for laboratories are presented. New methods to look at porphyrines on the skin surface, to measure skin color and skin gloss and methods to access the deep lines (e.g. “crow’s feet”) with a camera and oblique light are explained in the session.

D. Bürkle, **Die Haut der Astronauten- Erstes kommerzielles ISS-Experiment aus NRW,** http://www.wdr.de/themen/wissen/astronomie/blick_ins_all/raumfahrt/060701.jhtml

Auf der Raumstation ISS, zu der Thomas Reiter am 1. Juli startet, wird er viele Experimente durchführen. Mit seiner eigenen Haut wird er für den ersten Versuch herhalten, den Unternehmen aus NRW in Auftrag gegeben haben. Wie viele Falten während seines sechs Monate langen Aufenthalts auf der Internationalen Raumstation ISS dazugekommen sind, wird Thomas Reiter am Ende ganz genau wissen. Alle zwei Wochen holt der deutsche Astronaut einige Messgeräte aus den Regalen der Raumstation, testet damit den Wasserverlust seiner Haut und kontrolliert, ob neue Fältchen dazugekommen sind.

P. Humbert, **Klinische Anti-Aging-Studie mit Lubex anti-age® day und Lubex anti-age® night,** Permamed und University of Besancon 2008

In einer monozentrischen klinischen Studie wurde die Anti-Aging-Wirkung von Lubex anti-age über drei Monate bei Frauen im Alter zwischen 45 und 60 Jahren mit mittelstark lichtgealterter Haut im Gesicht und Décolleté geprüft und belegt. Als Grundlage wurden hautphysiologische Messungen durchgeführt, das Hautbild wurde fotografisch dokumentiert und durch Dermatologen im Doppelblindverfahren bewertet.

E. Proksch, **Despanthenol-haltige Externa zur Pflege trockener Haut bei Diabetikern,** Kosmetische Medizin 6/2008

Die meisten Diabetiker leiden unter einer trockenen Haut und haben daher ein erhötes Risiko für Hautinfektionen. Über Rhagaden und andere Miktrotraumen können besonders an den Füssen Bakterien in die Haut eindringen und zu einer tiefen Pyodermie und Ulzerationen führen. Eine konsequente Hautpflege hat nicht nur pflegenden Wert, sondern beugt auch ernst zu nehmenden Hautschädigungen vor.

C. Barba, S. Mendez, A.Roddick-Lanzilotta, R. Kelly, J.L. Parra, L. Coderch, **Cosmetic effectiveness of topically applied hydrolysed keratin peptides and lipidis derived from wool,** Skin and Research Technology Vol. 14, No. 2, May 2008

Wool is primarily (ca. 85%-95%) composed of keratin proteins that combine to give it desirable properties such as strength, insolubility and moisture regain. Different classes of keratin proteins are respresented in the complex macromolecular stucture, each of which has specific functions and characteristics. Protein hydrolysates from various sources have long been used in skin and hair personal care products and are known to confer improved campatitbility, feel moisturisation and help maintain the natural structure…

B. Cravello, A Ferri, **Relationships between skin properties and environmental parameters,** Skin and Research Technology Vol. 14, No. 2, May 2008

The skin represents the most superficial layer of the body, so it is constantly exposed to different environmental stimuli. Many authors have written about the influence of the environment on human skin. Egawa et al. (1) studied the effect of exposure of human skin to a dry environment: they found a decrease in the stratum corneum water content and related to this lack of water, a deterioration of the skin texture and the formation of fine wrinkles.

L. Rigano, M. Pleardo, E. Pini, R. Stradi, M. Meloni, A. Bertelli, A. Benedusi, G. Guiliani, **Novel Retinol-like Actives from Parrot Feathers,** IFSCC magazine, Vol. 11, No. 4 / 2008

Several classes of pigments are responsible for coloration in birds. Melanin pigments most

commonly appear in bird feathers and bare parts. They impart black, brown and chestnut hues. Carotenoids are a second group of coloring biochemicals in birds. These two types of pigment-based coloration are found in nearly every order of extant birds. In contrast, parrots harbor bright-colored pigments in their feathers, which have different structures.

P. Davari, F. Gorouhi, S. Jafarian, Y. Dowlati, A. Firooz, **A randomized investigator-blind trial of different passes of microdermabrasion therapy and their effects on skin biophysical characteristics,** International Journal of Dermatology 2008, 47, Number 5, May 2008, p. 508-513

Microdermabrasion (MDA) was developed in 1980s, and rapidly became a popular modality in superficial skin resurfacing. Its safety, simplicity, no need for anesthesia, prompt recovery and modest equipment costs hold a wide appeal for both physicians and patients. This non-invasive mechanical technique is used in management of fine rhytides, mottled pigmentation, clogged pores, acne, acne scars, and stretch marks.

H. Tronnier, M. Wiebusch, U. Heinrich, **Skin-Physiological Test in Weightlessness in the ISS Space Station,** IFSCC Magazine Vol. 11, No. 3/2008

A prolonged stay in weightlessness includes several medical alterations of the human body and also results in impairment of the skin. The stratum corneum, epidermal barrier as welle as other skin compartments are affected in terms of their susceptibility to dryness, desquamation and pruritus. This can lead, for example, to wound healing disorders. Skin physiological tests were performed on the skin of an astronaut during and after the the ASTROLAB-Mission within the Skin Care program initiated by the ESA.

H. van der Hoeven, S. John, **Elevating *stratum corneum's* level of hydration with a natural moisturizer,** Household and Personal Care Today No. 3/2008

The presence of sufficient amounts of water is crucial for normal functioning of the Stratum Corneum (SC). The Natural Moisturizing Factors play an enormously important role in maintaining a sufficient level of hydration in the SC. Keeping a sufficient concentration of NMF by applying cosmetic formulation onto the skin poses the cosmetic chemist to a great challenge. A new natural moisturizer containing molecules resembling the NMF wich are naturally present in human skin (BVHC Complex) has shown to be able to elevate the concentration of the NMF after 24 hours of application significantly with Confocal Raman Microspectroscopy, which showed interesting correlation with the results obtained with corneometry.

E. Esposito, M. Drechsler, R. Bozzini, L. Montesi, R. Cortesi, **Topical formulations for skin hydration,** Household and Personal Care Today No. 2/2008, p. 6-10

The design and comparison of innovative topical formulation for skin hydration are here reported. Different Nanoparticulate systems, namely cubosomes, nanovesicles, solid lipid nanoparticles and liposomes, have been produced and characterized by morphology and size distribution. Hydration power has been studied using a corneometer, measuring the skin electrical capacitance before and after the application of viscosized nanoparticulate systems. It has been demonstrated that nanovesicle gel displayed a pronounced hydration power with respect to the others nanostructured formulations, its hydration effecton skin was 3.5 fold higher after 5min from the application and 1.5 fold higher after 2 hours.

E. Houben, R. Adam, J.-P. Hachem, D. Roseeuw, V. Rogiers, K. de Paepe, **Clinical scoring and biophysical evaluation of nasolabial skin barrier damage caused by rhinorrhea,** Contact Dermatitis 2008, 59; 296-300

Suffering from an acute viral cold – caused by rhinoviruses or coronaviruses – probably is the most common illness known. A common cold usually is mild and self-limiting. Apart from an overall discomfort, cold symptoms are sneezing, serous nasal secretion, and obstruction of nasal breathing caused by the swelling and inflammation of the sinus membranes. These symptoms occur 2-3 days after the infection and usually last for 7-10 days. In acute viral rhinitis, only the symptoms can be treated and common over-the-counter medication for a cold may already be effective.

Viele Blender – Gesichtscremes mit UV-Schutz, test 1/2008, S. 28 - 31

Auf den Lichtschutz in Gesichtscremes kann man sich oft nicht verlassen. Sieben Produkte sind deshalb „mangelhaft" und nur drei insgesamt „gut". Eine gute Gesichtscreme soll die Haut in erster Linie mit zusätzlicher Feuchtigkeit versorgen, damit sie frisch, glatt und gesund bleibt. Der Trend geht allerdings dahin, diese Cremes mit Lichtschutzfiltern anzureichern, um die Haut vor vorzeitiger Alterung und Fältchenbildung zu schützen. Ein Ansatz, den viele Hautärzte unterstützen.

E. Xhauflaire-Uhoda, P. Paquet, G.E. Piérard, **Dew point effect of cooled hydrogel pads on human stratum corneum biosurface,** Dermatology. 2008;216(1): p. 37-9

Background: Cooled hydrogel pads are used to prevent overheating effects of laser therapy. They do not induce cold injuries to the skin, but their more subtle physiological effects have not been thoroughly studied. Purpose: To describe the changes in transepidermal water loss and electrometric properties of the skin surface following application of cooled hydrogel pads. Methods: Measurements were performed on normal forearm skin of 27 healthy volunteers and on freshly excised skin from abdominoplasty. LaserAid hydrogel pads cooled to 4 degrees C were placed for 15 min on the forearm skin. Measurements of transepidermal water loss (TEWL) and electrometric properties (Corneometer, Nova DPM 900) were performed before application and after removal of the cooled pads. Results: A consistent increase in corneometer units, dermal phase meter (DPM) values and TEWL were recorded at removal of the cooled hydrogel pads. Both the in vivo and in vitro assessments brought similar information. Discussion: The similar changes disclosed in vitro and in vivo suggest that a common physical process is operating in these conditions. The observed phenomenon is opposite to the predicted events given by the Arrhenius law probably because of the combination of cooling and occlusion by the pads. A dew point effect (air temperature at which relative humidity is maximal) is likely involved in the moisture content of the stratum corneum. Thus, the biological impact of using cooling hydrogel pads during laser therapy is different from the effect of a cryogenic spray cooling procedure. The better preservation of the water balance in the stratum corneum by the cooled hydrogel pads could have a beneficial esthetic effect on laser treated areas.

N. Akhtar, G. Ahmed, M. Ahmed, N. Ranjha, A. Mahmood, **Grapefruit Extract Cream: Effects on Melanin and Skin**, Cosmetics and Toiletries Magazine, Vol. 123, No. 1/January 2008, p. 55-68

Emulsions are thermodynmically unstable systems defined as microscopic dispersions of liquid droplets contained within another liquid, with a diameter ranging from 0.5 to 100 um. Emulsions usually consist of mixtures of an aqueous phase with various oils or waxes.

H. Tronnier, M. Wiebusch, U. Heinrich, **Project Skin Care of the European Long-Term Mission (Astrolab) on the ISS,** DermaTronnier Research, Poster

Impairments due to circulatory and vestibular disturbances of the equilibrium are the prevalent medical side effects astronauts suffer from. These are followed by the dermatological problems. In order to examine these skin problems and find ways to prevent them, skin-physiological measurements as a project “Skin Care” were carried out within the framework of the European long-term mission (ASTROLAB) 2005-2007.

H. Fujita, T. Hirao, M. Takahashi, **A Simple and non-invasive visualization for assessment of carbonylated protein in the stratum corneum,** Skin Research and Technology 2007, p. 84-90

Stratum corneum (SC) is the interface of body and environment and is continuously exposed to oxidative stress, resulting in oxidative modification of proteins. Consequent carbonylated proteins (CPs) have so far been labelled with 2,4-dinitrophenyl (DNP) hydrazine and subsequently detected with anti-DNP antibody.

A. Firooz, F. Gorouhi, P. Davari, M. Atarod, S. Hekmat, M. Rashighi-Firoozabadi, A. Solhpour, **Comparison of hydration, sebum and pH values in clinically normal skin of patients with atopic dermatitis and healthy controls,** 2007, Clincal and Experimental Dermatology 32, Journal compilation, p. 320-334

The water content of the stratum corneum and skin surface lipids forms a balance that is important for the appearance and function of the skin. An impaired balance may lead to the clinical manifestations known as “dry skin”, which is particularly seen in patients with atopic dermatitis (AD).

L. Ambroisine, K. Ezzedine, A. Elfakir, S. Gardinier, J. Latreille, E. Mauger, M. Tenenhaus, C. Guinot, **Relationships between visual and tactile features and biophysical parameters in human facial skin,** Skin Research and Technology 2007; 13: p. 176 – 183

Skin properties, such as colour, hydration and texture, can be studied on a qualitative basis by a clinical assessment or on a quantitative basis using techniques that measure biophysical properties of the skin. The aim of this study was to explore the links between facial skin features and a range of skin biophysical parameters using multivariate methods.

G. Betz, **In Vivo Comparison of Various Liposomal Formulations for Cosmetic Application**, IcoS, June 2007, Istanbul Türkiye, p. 14-16

Liposomal formulations have been used for skin moisturization, due to the occlusive effect of a phospholipid film deposited on the skin surface. Furthermore, interactions between liposoal lipids and Stratum corneum lipids may affect positively the structure of the Stratum corneum. Phospholipids themselves are hygroscopic and bind water.

S. Marrakchi, H.I. Maibach, **Biophysical parameters of skin: map of human face, regional, and age-related differences,** Contact Dermatitis 2007; 57, p. 28-34

The face showed anatomical variation on reaction to chemicals, which could be related to differences in biophysical parameters. 10 young human volunteers (24-34 years) and 10 old volunteers (66-83 years) were studied to prepare a map of the human face based on regional variations and age-related differences by measuring various biophysical parameters.

S.-H. Kim, M. Song, B.-S. Kim, H.-C. Ko, S.-J. Kim, M.-B. Kim, K.-S. Kwon, T.Y. Lee, Y.-N. Choi, C.-K. Oh, **Moisturizing and anti-pruritic effects of pyroligneous liquid and petrolatum cream in atopic dermatitis**, The Journal of Skin Barrier Research, p. 42-48

Atojoa cream used in this study contains active ingredients such as pyroligneous liquid and variety of minerals, in a newly-made emulsified petrolatum base. In general, petrolatum is known as an excellent moisturizer, but occlusive effect restricts ventilation. To preserve ventilation properties, we emulsified the petrolatum by an ultrasonic emulsification method without wax nor other oils.

Y.-M. Park, **Change of skin barrier function after cosmetic procedures; microdermabrasion, chemical peeling and LASER**, The Journal of Skin Barrier Research, p. 32-36

With the recent interest in aesthetics, cosmetic procedures for facial rejuvenation such as microdermabrasion, superficial chemical peeling, and LASER, are the preferred methods because they have a low morbidity and prompt recovery. These therapeutic methods offer the benefit of patient returning to a normal daily life immediately after the procedure, bnut do not have a satisfactory outcome after a single session, which means that repeated procedures are required at regular interval.

E. Kim, G.W. Nam, S. Kim, H. Lee, S. Moon, I. Chang, **Influence of polyol and oil concentration in cosmetic products on skin moisturization and skin surface roughness**, Skin Research and Technology 2007, 13; p. 417-424

Cosmetic products are used to improve the skin surface appearance. Especially, moisturizers increase the hydration of the stratum corneum and improve the physical and chemical properties of the skin surface, making it moist, smooth and soft. Smoothing of the surface can be observed immediately after application of a moisturizer as a result of the filling of spaces beween partially desquamated skin flakes.

G. Khazaka, **Useful and practical advice by measuring TEWL and skin moisture with Corneometer® CM 825 and Tewameter® TM 300**, The Journal of Skin Barrier Research

The Skin bioengineering measurement of skin hydration and transepidermal water loss is a useful tool to evaluate the physicochemical status of skin. As integrated skin barrier function is also derived from the interaction between subject and surrounding environment, the bioengineering measurement technique has been evolved to predict the dynamic aspect of skin biology.

S. An, E. Lee, S. Kim, G. Nam, H. Lee, S. Moon, I. Chang, **Comparison and correlation between stinging responses to lactic acid and bioengineering parameters**, Contact Dermatitis 2007; 57; p. 158-162

Sensitive skin has been described as a skin type showing higher reactivity than normal skin. By our consumer surveys, approximately 30% of the subjects believe that they have sensitive skin. However, consumer-perceived cutaneous reactions are usually scientifically unconfirmed.

U. Eich, **Thermische Verletzungen im Kindes- und Jugendalter,** Dissertation Universität zu Lübeck 06.06.2007

Einführung**:** Jedes Jahr verunglücken circa 7100 Kinder im Alter von 0 bis 20 Jahren durch thermische Unfälle, sodass sie stationär in einem der 44 Betten für Kinder in einem Schwerbrandverletztenzentrum in Deutschland behandelt werden müssen. Thermische Verletzungen entstehen im Kleinkind- und Vorschulalter vorwiegend (etwa 85%) in Form von Verbrühungen, d.h. bei Kontakt mit heißen Flüssigkeiten. Der Inhalt einer Tasse mit heißem Wasser genügt, um bis zu 30% der Körperoberfläche eines Säuglings- oder Kleinkindes zu verbrühen. Verbrennungen treten hingegen häufiger bei Schulkindern auf und werden vornehmlich durch Hausbrände, Grillunfälle und Experimentieren mit dem Feuer hervorgerufen. Bei circa 3000 Kindern verbleiben nach der Therapie

einschränkende Narben. Diese sind häufig hypertroph, verursachen Schmerzen und Juckreiz und können zu funktionellen Einschränkungen führen. Gut sichtbare Narben, insbesondere an Gesicht und Händen, können zudem auch psychosoziale Probleme im Leben der Kinder nach dem Unfall hervorrufen.

G. Maaß, **Anwendungsstudie der sebamed TROCKENE HAUT Produkte bei Kindern mit atopischem Ekzem**, Kosmetische Medizin 6/2007, S. 288-290

Es erfolgte in einer vierwöchigen Anwendungsuntersuchung eine klinische Überprüfung der sebamed TROCKENE HAUT Pflegeprodukte – Waschlotion, Pflegelotion, Tagescreme und Nachtcreme – bei Kindern mit atopischem Ekzem anhand von quantitativen Meßgrößen, von klinischen Befundurteilen sowie von qualitativen Beurteilungen der Pflegewirkungen.

H. Dobrev, **Evaluation of dry Skin: a comparison between visual score, corneometry and image analysis,** Poster presented at the 16th Congress of the EADV, 5/2007

The term “dry skin” describes a skin condition characterized by reduced quantity and/or quality of moisture and/or lipids. The visible symptoms of dry skin are roughness, scaling and reduced elasticity. In addition, patiens complain about tightness and itching.

G. Feller-Heppt, C. Wagner, S. Ugurel, **Wirksamkeit und Patientenzufriedenheit verschiedener Pflegecremes bei Atopikern und Neurodermitispatienten im erscheinungsfreien Intervall**, Kosmetische Medizin 5/2007, S. 28-34

Bei Neurodermitispatienten stehen vor allem die Symptome trockene Haut und ausgeprägter Juckreiz im Vordergrund. Hierdurch kommt es zu vermehrtem Kratzen und nachfolgend möglicherweise zum Eintritt infektiöser Erreger bei gestörter Hautbarrierefunktion und gestörter zellulärer Immunität. Ein neuer Ekzemschub kann entstehen und den Juckreiz noch verstärken.

Z.D. Draelos, **The Skin Barrier Function in Rosacea Patients is Preserved with the Use of a Gentle, Non-alkaline Skin Cleanser**, 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Rosacea occurs most commonly in women with fair complexions between the age of 25 and 50 years, although it does occur in other patient populations as well. Rosacea appears as redness similar in appearance to sunburn and can be accompanied by papules and pustules.

M. Andreassi, R. Bilenchi, G. Mariotti, M. Centini, L. Andreassi, C. Anselmi **Phytic Acid: a Novel Topically Active Antioxidant Suitable for Cosmetic Preparations**, 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Many substances with antioxidant activity are present in the human skin, and their concentrations are generally higher in the epidermis than in the dermis. Under the effect of an oxidative stress, such as that caused by ultraviolet (UV) rays, these substances are strongly depleted, especially in the external epidermal layer

B. Piot, J. De Rigal, C. Yarhi, D. Compan-Zaouati, M. Lefebvre, **The skin sebageous function: in Asian and Caucasian climate influences,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Objective of the study: The first objective was to compare the sebaceous function in Asian and Caucasians, female, in real life conditions, using both intrumental measurement and visual evalutation by expert. A second objective was to investigate climate induced changes in the sebaceous function on a separate group of Japanese women, using the same methodology.

Z.D. Draelos, **Skin barrier and desquamation in Patiens with mild plaque Psoriasis is improved with the use of a gentle moisturizing cream**, 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Psoriasis is a disorder characterized by faster than normal skin growth and replacement. The result of this rapid skin growth and replacement is a build-up of red, thickened areas with a scaly appearance. The most commonly affected areas are the scalp, elbows, knees and back. These plaques are often dry and non-pliable areas on the skin that can be a source of pain and/or discomfort to affected individuals.

C. Orlandi, R. Loubies, S. Baeza, C. Reyes, X. Worstman, **Clinical Experience of the Treatment with Pro-Xylane TM, Isobioline TM and Phytocomplex TM on Chilean Women with Hormonal Aging,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

An open and prospective study was performed in order to evaluate the action of a formulation with pro-xylane, isobioline and phyto-Complex in 59 patients with hormonal aging during a period of twelve weeks. An open and prospective study was peformed in 59 patients, between 50 and 65 years of age (average 55 years old), with hormonal aging in order to evaluate the action of a formulation with –xylane, isobioline and phyto-complex.

N. Garcia Bartels, A. Mieczko, H. Proquitté, R. Wauer, T. Schink, U. Blume-Peytavi, **Influence of Bathing in Newborns: A Prospective, Randomized Clinical Study on Skin Barrier During the First Four Weeks of Life,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Background: The adapting process of skin barrier to extra-uterine life and the influence of bathing on term neonates's skin is not completely understood. Thus, we investigated the effect of bathing on skin barrier during the first four weeks of life. Methods: Monocenter, prospective, randomised study with 57 healthy full-term newborns (32 boys and 25 girls).

J.W. Fluhr, M. Miteva, G. Primavera, M. Ziemer, P. Elsner, E. Berardesca, **Functional Assessment of an Acidic Skin Care System in Patients under Chemotherapy,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Background: Cancer patients undergoing chemotherapy frequently experience skin problems e.g. xerosis. The aim of this study was to verify whether a concomitant treatment with an acidic washing and emollient products (pH 5.5) can significantly improve the quality of the skin in such patients

L. Kapteine, R. Karls, **Benefit of Keratolytic and Barrier Repair Emollients in Treating Lamellar Ichtyosis Patient,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Background: Lamellar Ichtiyosis (LI) is characterised by generalised scaling, decrease of skin barier function and resistance to ordinary emollients. Our case report include to assess and compare keratolytic agents 5%, lactic acid and 20% propylene glycol effect on LI patients skin, to find an optimal variant of skin care by combining keratolytic and skin restoring means.

P. Manissier, C. Fanchon, N. Piccardi, **Combination of Lycopene, Soy Isoflavones & Vitamin C: a Unique Efficient Oral Supplement to Prevent Skin Ageing,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Aim: The purpose is to present a set of in vitro and in vivo studies showing the potential of the unique combination of lycopene, soy isoflavones and vitamin C to stimulate cell renewal and prevent skin ageing. Methods: in vitro studies involved two skin models, i.e. an in vitro reconstructed epidermis (EPISKIN) and skin explants in culture. Skin explants were obtained from plastic surgery in menopausal women. Each ingredient of the combination was introduced at plasmatic concentration level in the culture medium to mimic systemic administration.

C. Montastier, A. Piccirilli, P.H. Humbert, B. Dreno, N. Piccaqrdi, P. Manissier, **Efficacy of a Dietary Supplement Against Skin Dryness,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

A specific nutritional supplement (NS) containing blackcurrant seed and fish oils, rich in omega-3 and –6 fatty acids, vitamins E and C and lycopene was developed. These nutrients are known for their key role in the maintenance of skin homeostasis. In particular they have been shown, in vitro, to improve ceramides in the epidermis and skin barrier function. The purpose of this presentation is to summarize studies that support the efficacy of this nutritional supplement.

Y. Appa, S. Hornby, G. Grove, C. Zerweck, **Glycerin Mitigates Surfactant Induced Barrier Disruption,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Background/Objective: The effect of sodium lauryl sulfate (SLS) on the skin barrier was explored in an epidermal skin model where skin barrier breaks could be visualized using two photon fluorescence (TPM) imaging. Other data from that study allowed us to calculate the dimensions of the damage. We found that glycerin was superior compared to urea and propylene glycol in mitigating the SLS induced barrier damage as evidenced by the lack of visual barrier breaks.

E. Gubanova, L. Caisey, C. Camus, D. Barras, J-L. Lévêque, **Influence of Age on Features and Functional Properties of Lips**, 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

There are very few reported works about ageing of lips and the perioral skin. This body area has however great functional and aesthetic importance. It is also a peculiar transitional tissue area between skin and mucosa. Purpose of the study: The present study was carried out to objectively describe the different changes occurring in the functional properties of the vermilion (hydration, trans-

epidermal water loss (TEWL), mechanical properties, colour and tactile sensivity) and to compare these changes with those occurring in the skin.

O.L. Jammayrac, B. Boussouira, T. Vuillet, C. Camus, P. Bastien, I. Tardy, Q.L. N'Guyen, O. de Lacharrière, **Fragile Lips-A Biochemical Insight,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Background/Objectives: Fragile lips are characterized by feelings of discomfort, presence of scales, cracking and bleeding to different extents of severity. The most severe class "very fragile lip" is predominantly observed on younger women. In the present study, the young female population was targeted in order to further investigate the biochemical profile of fragile lips. 67 French women (age: 19-35 yrs) were investigated. A standardized clinical questionnaire targeting the vermilion, with items on the signs and symptoms, occurrence and conditions linked to these signs and symptoms was collected from the subjects.

R. Moyon, K. Golz, L. Zastrow, **The Formulation of a Distinctive Skin Care Product,** SOFW-Journal, 133 / 4-2007, p. 2 – 9

First of all, we drew up the requirements of our new skin care product. Our reasoning was to formulate a benchmark emulsion with all the properties previously identified. To do this we mainly used raw materials from silicone chemistry to obtain a stable finished product with the remarkable properties observed on the market.

M. Kerscher, T. Reuther, G. Schramm, **Chlormadinonacetat enthaltende Mikropille verbessert unreine Haut**, Frauenarzt 48 (2007), Nr. 4, S. 373-378

Moderne Mikropillen zeichnen sich besonders durch eine Reihe von Zusatznutzen aus. Den wichtigsten stellt die Verbesserung des Hautbildes dar. Für die Chlormadinonacetat-haltige Mikropille Belara wurde in klinischen, kontrollierten Studien bei leichter bis mittelschwerer Akne die Überlegenheit im Vergleich zu einer Levonorgestrel-haltigen Mikropille und zu Plazebo nachgewiesen.

R. Debowska, C. Vincent, K. Bazela, M. Kruszewski, B. Winkler-Spytkowska, A. Maciejczyk, K. Rogiewicz, I. Eris, **The repair effect of Folacin on skin damage due to radiotherapy,** Kosmetische Medizin 2/2007

Zusammenfassung: Obwohl medizinische und pharmakologische Fortschritte unübersehbar sind, ist die Behandlung bösartiger Tumore nach wie vor mit einem hohen Risiko unerwünschter Nebenwirkungen verbunden. Insbesondere bei der Strahlentherapie sind allgemeine Nebenwirkungen (Krankheitsgefühl und Unwohlsein) und lokale Nebenwirkungen wie kutane Strahlenschäden zu beobachten. Kutane Strahlenschäden bedürfen einer entsprechenden Behandlung und Pflege sowohl während der Radiatio als auch nach Beendigung der Strahlentherapie. Viele Patienten greifen dabei nach kosmetischen Produkten, die die vorher geschädigte wieder in eine eine gesunde Haut zurückführen sollen. Ziel dieser Studie war es, Wirksamkeit, Tolerabilität und kosmetische Qualität einer Folacin-haltigen Creme während und nach trahlentherapie zu untersuchen. In vitro wurden Experimente an primären Fibroblastenkulturen vorgenommen: Der Alkalincomet-Assay wurde verwendet, um die Reparaturwirkungen von Folacin auf Röntgenstrahlen- induzierte DNA-Schaden zu erfassen. Bei 41 Patienten mit Strahlentherapie führten wir in vivo Untersuchungen durch. Über nichtinvasive Verfahren wurden die Parameter Erythrem, Feuchtigkeit der Haut und Talgbildung an den bestrahlten Körperregionen (Wangen, Hals oder Brust) jeweils 2, 4 und 8 Wochen nach Behandlung mit der Creme erfasst. Die Repairrate von DNA-Schäden war nach 15–30 min post radiationem höher bei Folat-behandelten primären Fibroblastenkulturen als bei Kontrollen. Unsere Daten sprechen für eine Folsäure-modulierte Reparatur der DANN mit einer rascheren Verknüpfung der Strangbrüche. Wir stellten eine wirksame Verbesserung der Hautparameter durch Folin-haltige Creme unter Radiotherapie fest. Die Anwendung des Verums verminderte i. Vgl. zu Kontrollen Rötung und Couperose, verbesserte aber auch Hautfeuchte und Sebumgehalt. Die Creme wurde sehr gut durch die Patienten toleriert und ihre kosmetischen Eigenschaften waren überzeugend.

E. Esposito, M. Drechsler, P. Mariani, E. Sivieri, R. Bozzini, L. Montesi, E. Menegatti, R. Cortesi, **Nanosystems for skin hydration: a comparative study**, IFSCC Magazine, Vol. 10, No. 2/2007, p. 173-174

The present investigation describes a comparative study for the design of innovative topical formulation for skin hydration. In particular, different colloidal forms based on lipidic components have been produced and characterized. Morphology and dimensional distribution have been investigated by means of electron microscopy and photon correlation spectroscopy.

J. Fluhr, **What's Wrong with the Barrier,** Dermatologie in Beruf und Umwelt, Jahrgang 55, Nr. 2/2007, p. 67

Irritant contact dermatitis is frequently observed not only in occupational dermatology but also in the context of atopic dermatitis and under house-hold conditions. Functional analysis of epidermal barrier-related parameters are performed using non-invasive instruments, based on biophysical measurements

E. Berardesca, **Bioengineering as a Tool in Occupational Dermatology,** Dermatologie in Beruf und Umwelt, Jahrgang 55, Nr. 2/2007, p. 67

Bioengineering techniques have been proven to be helpful in monitoring changes in skin physiology and quantifying skin disease. Detection of subliminal or non visual changes is a challenge in order to predict potentially pathological conditions such as irritation or pre-clinical dermatitis.

W. Gehring, **New Concept of Skin Protection after Occlusion and Wet Work,** Dermatologie in Beruf und Umwelt, Jahrgang 55, Nr. 2/2007, p. 89

Occlusion and wet work induce barrier damage, increasing the risk for the development of contact dermatitis. The use of adstringent agents before exposure to the noxious conditions does not always provide sufficient protection.

R. Muggli, **Systemic Evening Primrose Oil for Irritated Skin Care,** Cosmetics & Toiletries magazine, Vol. 122, No. 2/February 2007

Dry skin is a common complaint from men and women alike and its incidence and severity increase with age. This condition is the result of an impaired barrier function, increased transepidermal water loss (TEWL) and a significantly lower level of ceramides in the horny layer that causes the skin to lose an excessive amount of water.

U. Gönu Llü, D. Sensoy, M. Üner, G. Yener, T. Altinkurt, **Comparing the moisturizing effects of ascorbic acid and calcium ascorbate against that of tocopherol in emulsions**, IFSCC Magazine, Vol. 10, No. 1/2007, pp. 91-92

Calcium ascorbate (CAAS), which is a hydrophilic and stable derivative of ascorbic acid (vitamin C) (AA), is commonly used on foods as an antioxidative agent. There are very limited reports on its dermatological use in the literature. In this paper, it is reported that CAAS could be used in place of ascorbic acid, which has chemical stability problems in topicals due to degradation by oxidation.

G. Nakahami, H. Sanada, C. Konya, A. Kitagawa, E. Tadaka, Y. Matsuyama, **Evaluation of a new pressure ulcer preventive dressing containing ceramide 2 with low frictional outer layer,** JAN Journal Compilation 2007

Aim. This paper is a report of an evaluation of the effectiveness of a newly developed dressing for preveting persistent erythema and pressure ulcer development and improving the water-holding capacity without increasing the skin pH in bedridden older patients. Background. Shear forces and skin dryness play important roles in persistent erythema and pressure ulcer development. To eliminate these risks, we developed a dressing to reduce shear forces and improve the water-holding capacity. However, the effects of this dressing in clinical settings remain unknown. Method. An experimental bilateral comparison study was conducted at a hospital in Japan 2004 with 37 bedridden older patients at risk of pressure ulcer development.

R. Bazin, C. Fanchon, **Equivalence of face and volar forearm for the testing of moisturizing and firming effect of cosmetics in hydration and biomechanical studies**, IFSCC Magazine, Vol. 10, No. 1/2007, p. 86

The objective of the study was to compare measurements of skin hydration and of biomechanical properties perfomed on different zones of face and volar forearm. Thwo short-term (1h) and two long-term (3 weeks) studies were conducted with a moisturizing and a firming product, respectively, on groups of female volunteers with dry skin.

K. Völkening, **Hautpflege für Diabetiker,** www.wohlundwehe.de

Täglich sieben Einstiche in die Hautoberfläche für Blutzuckermessungen und Injektionen sind bei insulinabhängigen Diabetikern für eine gute Zuckereinstellung mindestens notwenidig.

M. Paye, S. Mac-Mary, A. Elkhyat, C. Tarrit, P. Mermet, P.H. Humbert, **Use of the Reviscometer s for measuring cosmetics-induced skin surface effects,** Skin Research and Technology 2007; 13, p. 343-349

Background/purpose: The Reviscometer® RVM600 that measures resonance running time (RRT) has been shown to be inversely related to the skin stiffness. However, very few publications describe the use of this instrument for testing the effect of cosmetic products.

Beurteilung von frühkindlichen Verbrennungen – Objektivität optimiert Therapie; aesthetic Tribune, Ausgabe 8, Dezember 2006

Die Beurteilung von Narben erfolgt im Allgemeinen visuell und palpatorisch durch den Arzt. Darin liegt allerdings auch ein grosses Fehlerpotential begraben, da jeder Untersucher die Narbe subjektiv eurteilt. Was leistet die objektive Einschätzung mittels Apparaten? Zur Beurteilung von Narben hat sich die Vancouver Scar Scale (VSS) etabliert. Mit ihr werden Hautrötung, Pigmentierung, Erhabenheit und Elastizität beurteilt. Allerdings spielen hier zahlreiche subjektive Einflussfakoren durch den Untersucher mit, sodass diese Methode insbesondere den wissenschaftlichen Ansprüchen nicht genügt. Dr. Jörn Lohmeyer von der Plastischen, Hand- und Wiederherstellungschriurgie und Intensivstation für Schwerbrandverletzte in Lübeck stellte Methoden vor, Narben nach frühkindlichen Verbrennungsunfällen mit objektiven Kriterien zu beurteilen.

M. Kerscher, U. Amon, **Verhinderung des Feuchtigkeitsverlustes,** DERMAforum Nr. 11, November 2006

Die neuen Produkte Cetaphil Creme und Cetaphil Lotion sind nach Erkenntnis der vortragenden Hautexperten besonders für trockene, empfindliche und geschädigte Haut geeignet. In der von Frau Prof. Kerscher geleiteten Untersuchung an der Universität Hamburg wurden die Creme und die Lotion in einer 14-tätigen monozentrischen, randomisierten und kontrollierten Studie an 20 Probanden im Alter von 35 bis 64 Jahren getestet.

Y.J. Kim, M.Y. Kim, P.K. Lee, H.O. Kim, Y.M. Park, **Evaluation of natural change of skin function in split-thickness skin grafts by noninvasive bioengineering methods**, Dermatol Surg. 2006 Nov;32(11):1358-63

Background: Autologous split-thickness skin grafts (STSGs) are considered the mainstay for the treatment of large full-thickness wounds. There have been few studies reporting the natural change of the skin function in STSGs after procedure, however. Objective: The objective was to evaluate the natural change of the skin function in STSG usingnoninvasive bioengineering methods. Methods: Eighteen patients were eligible for the study. The skin functions of the graft and the controlsite were evaluated by an evaporimeter, corneometer, mexameter, and cutometer at Postoperation Days 0.5, 1, 2, 3, 6, 9, and 12 months. Results: Transepidermal water loss (TEWL) of the graft was maintained around that of the normal skin. The values of the skin hydration testing generally decreased during the follow-up period. Erythema was highly maintained for the whole period. For the pigmentation, the ratio tended to increase after 6 months. The skin pliability of the graft was abruptly decreased at 0.5 month, and it recovered from 3 to12 months. The value did not reach that of the normal skin, however. Conclusion: Our results showed that the STSGs had changed within the frame of the skin function, including the TEWL, epidermal hydration, color, and pliability, throughout 1 year after surgery. The authors have indicated no significant interest with commercial supporters.

L. Rigano, C. Andolfatto, F. Rastrelli, **Antiaging Effects of a Skin Repair Active Principle**, Cosmetics & Toiletries, Vol. 121, No. 11/Nov. 2006, p. 57-64

Sodium DNA is an ingredient with activity at the cellular level. This fact has led to its incorporation in numerous high-end antiaging skin care products. An explanation of that activity and results of several tests of one sodium DNA material are presented in this article.

D. Tamarkin, M. Eini, D. Friedman, **Foam: The Future of Effective Cosmeceuticals**, Cosmetics & Toiletries, Vol. 121, No. 11/Nov. 2006, p. 75-84

The paramount objective of cosmeceutical development is to create effective products based on state-of-the-art, active ingredients that are conveniently delivered. The vehicle used to deliver topical ingredients can influence the performance of such ingredients since it can affect the delivery of the active agent to the target site of action.

E. Houben, K. de Paepe, V. Rogiers, **Skin condition associated with intensive use of alcoholic gels for hand disinfection: a combination of biophysical and sensorial data**, Contact Dermatitis 2006: 54, p. 261-267

Hand hygiene of healthcare workers (HCWs) is of major concern to avoid nosocomial infections (1-4). Therefore, hospitalwide infection control programmes prescribe disinfection of the hands after each patient contact (5, 6).

E. Xhauflaire-Uhoda, G. Loussouarn, C. Haubrechts, G.E. Piérad, **Skin capacitance imaging and corneosurfametry. A comparative assessment of the impact of sufactants on stratum corneum**, Contact Dermatitis 2006: 54, p. 249-253

Surfactants present in hygiene and skin care products are in part adsorbed at the skin surface, and they can also permeate the stratum corneum (SC) where they interact with proteins and lipids. In vitro studies have revealed a number of physico-chemical interactions between corneocytes and surfactants.

G. Kutz, C. Bruns, S. Hennig, M. Enga, **Current ingredients in semi-solid formulations and their effects on skin hydration, transepidermal water loss and water resistance**, Life Science Technologies – Pharmaceutical Engineering, Fachhochschule Lippe und Höxter, Germany, 2006, Poster Presentation.

A series of factors like excessive treatment with detergents or organic solvents, UV irradiation as well as low humidity are known to damage skin. Frequent barrier malfunction is due to a reduced amount of lipids.

E. Berardesca, N. Cameli, G. Primavera, M. Carrera, **Clinical and Instrumental Evaluation of Skin Improvement after Treatment with a New 50% Pyruvic Acid Peel,** Dermatol Surg 2006

Pyruvic acid is an a-keto acid that presents keratolytic, antimicrobial, and sebostatic properties as well as the ability to stimulate new collagen production and elastic fibers formation. Because of its low *p*Ka and its small dimension, it penetrates rapidly and deeply through the skin, so far as to be considered a potent chemical peel agent. It has proven its efficacy for the treatment of many dermatological conditions such as acne, superficial scarring, photodamage, and pigmentary disorders. Pyruvic acid application usually induces intense burning, and the postpeeling period is characterized by erythema, desquamation, and, sometimes, crusting.

D. Khazaka, **Objective Measurement at all Stages of the treatment**, 5th Asia Pacific Conference on Antiaging Medicine, Bali, September 2006

The days are over when a dermatologist only looked at the skin to make a diagnosis and to decide about the following treatments and to recommend skin care products to use. For almost 20 years now there is scientific equipment available to measure different parameters on the skin, such as hydration and sebum level, pH, elasticity, pigmentation skin texture and wrinkles and many more.

C.M. Weimer, **Irritation durch Waschen und Desinfizieren,** Digitale Bibliothek der Universität Marburg, 2006

Ziel dieser Studie war die Irritaion der Haut, hervorgerufen durch alkoholische Desinfektionsmittel und das Detergens Natriumlaurylsulfat (0,5% NLS) in einem repetitiven Testdesign zu untersuchen. Mittels nicht invasiver Untersuchungsmethoden quantifizierten wir die irritativen Effekte von Sterillium, 2-Propanol 45% v/v, 1-Propanol 30% v/v, welches die alkoholische Grundlage von Sterillium darstellt sowie von Wasser und NLS 0,5%.

S. Mac-Mary, P. Creidi, D. Marsaut, C. Courderot-Masuyer, V. Cochet, *T. Gharbi, D. Guidicelli-Arranz, F. Tondu, P. Humbert,* **Assessment of effects of an additional dietary natural mineral water uptake on skin hydration in healthy subjects by dynamic function measurements and clinic scoring**, Skin Research and Technology August 2006, 12, p. 199-205

The skin acts as a barrier to the outside world, protecting the body's organs and tissues from damage and physical, chemical and bacteriological injuries. Moreover, it helps to keep the body temperature under control. It also prevents the transcutaneous loss of water.

U. Heinrich, K. Neukam, H. Sies, W. Stahl, **Long-Term Ingestion of High Flavanol Cocoa Provides Photoprotection against UV-Induced Erythema and Improves Skin Condition in Women**, Journal of Nutrition 136: p. 1565–1569, July 2006

Dietary antioxidants contribute to endogenous photoprotection and are important for the maintenance of skin health. In the present study, 2 groups of women consumed either a high flavanol (326 mg/d) or low flavanol (27 mg/d) cocoa powder dissolved in 100 mL water for 12 wk. Epicatechin (61 mg/d) and catechin (20 mg/d) were the major flavanol monomers in the high flavanol drink, whereas the low flavanol drink contained 6.6 mg epicatechin and 1.6 mg catechin as the daily dose. Photoprotection and indicators of skin condition were assayed before and during the intervention. Following exposure of selected skin areas to 1.25 3 minimal erythemal dose (MED) of radiation from a solar simulator, UV-induced erythema was significantly decreased in the high flavanol group, by 15 and

25%, after 6 and 12 wk of treatment, respectively, whereas no change occurred in the low flavanol group. The ingestion of high flavanol cocoa led to increases in blood flow of cutaneous and subcutaneous tissues, and to increases in skin density and skin hydration. Skin thickness was elevated from 1.11 6 0.11 mm at wk 0 to 1.24 6 0.13 mm at wk 12; transepidermal water loss was diminished from 8.7 6 3.7 to 6.3 6 2.2 g/(h m2) within the same time frame. Neither of these variables was affected in the low flavanol cocoa group. Evaluation of the skin surface showed a significant decrease of skin roughness and scaling in the high flavanol cocoa group compared with those at wk 12. Dietary flavanols from cocoa contribute to endogenous photoprotection, improve dermal blood circulation, and affect cosmetically relevant skin surface and hydration variables.

G. Kampf, J. Ennen, **Regular use of a hand cream can attenuate skin dryness and roughness caused by frequent hand washing**, BMC Dermatology 2006, 6:1

Background: Aim of the study was to determine the effect of the regular use of a hand cream after washing hands on skin hydration and skin roughness. Methods: Twenty-five subjects washed hands and forearms with a neutral soap four times per day, for 2 minutes each time, for a total of two weeks. One part of them used a hand cream after each hand wash, the others did not (cross over design after a wash out period of two weeks). Skin roughness and skin hydration were determined on the forearms on days 2, 7, 9 and 14. For skin roughness, twelve silicon imprint per subject and time point were taken from the stratum corneum and assessed with a 3D skin analyzer for depth of the skin relief. For skin hydration, five measurements per subject and time point were taken with a corneometer. Results: Washing hands lead to a gradual increase of skin roughness from 100 (baseline) to a maximum of 108.5 after 9 days. Use of a hand cream after each hand wash entailed a decrease of skin roughness which the lowest means after 2 (94.5) and 14 days (94.8). Skin hydration was gradually decreased after washing hands from 79 (baseline) to 65.5 after 14 days. The hand wash, followed by use of a hand cream, still decreased skin hydration after 2 days (76.1). Over the next 12 days, however, skin hydration did not change significantly (75.6 after 14 days). Conclusion: Repetitive and frequent hand washing increases skin dryness and roughness. Use of a hand cream immediately after each hand wash can confine both skin dryness and skin roughness. Regular use of skin care preparations should therefore help to prevent both dry and rough skin among healthcare workers in clinical practice.

U. Wollina, J. Kubicki, **Dexpanthenol supports healing of superficial wounds and injuries**, Kosmetische Medizin 5+6/2006, p. 240-249

Oberflächliche Hautverletzungen und Wunden sind häufig. Unter Einsatz eines Spektrums verschiedener In-vivo-Modelle der epidermalen Barrierestörung und der Wundsetzung untersuchten wir das Potential der topischen Dexpanthenol-Anwendung in der Förderung der epidermalen Regeneration und der Wundheilung.

*B.-I. Bettzüge-Pfaff, H. Prieur***, Nutzen einer adjuvanten Basiscreme bei trockener, atopischer Haut,** Kosmetische Medizin 5+6/2006, p. 261-263

Im Rahmen eines dermatologisch kontrollierten Anwendungstests und hautphysiologischer Messungen an Patienten mit atopischem Ekzem hat sich eine lipidreiche Basiscreme auch bei Kindern als effektive und gut verträgliche Formulierung erwiesen. Nach Anwendung der Creme wurde eine Steigerung der Hautfeuchtigkeit und Hautfettung sowie eine Verbesserung der Hautbarrierefunktionen erreicht.

N.O. Hübner, G. Kampf, H. Löffler, A. Kramer, **Effect of a 1 min hand wash on the bactericidal efficacy of consecutive surgical hand disinfection with standard alcohols and on skin hydration**, Int J Hyg Environ Health. 2006 May; 209(3): p. 285-91

Background: In most surgical theatres, a 1 min or even longer hand wash is routine as part of the pre-operative hand disinfection. But its benefit has recently been seen critically. Methods: We have therefore investigated the effect of a 1 min hand wash on skin hydration and on the efficacy of consecutive surgical hand rubbing with three standard alcohols (60% propan-1-ol, 60% propan-2-ol, 80% ethanol; all v/v) on the resident hand flora. Three types of treatment were performed: (i) a 1 min pre-wash before surgical hand disinfection, (ii) no pre-wash before surgical hand disinfection and (iii) no pre-wash but use of a brush for 1 min during disinfection procedure. The efficacy of the alcohols was determined according to prEN 12791 with the same 20 volunteers in paired groups. To assess the effect of the hand wash on skin hydration, 10 volunteers washed their hands with sapo kalinus for 1 min and dried hands with a paper towel. Skin hydration was measured with a Corneometer before the hand wash and subsequently up to 10 min thereafter both on the palm and dorsum of hands. We also tested the reduction of bacterial spores by a 15 s hand wash according to EN 1499 after artificial contamination of hands of 14 volunteers with spores of B. stearothermophilus. Results: Propan-1-ol (60%) was most

effective with a mean log10 reduction of 2.11, followed by ethanol (80%) with a mean log10 reduction of 1.76 and propan-2-ol (60%) with a mean log10 reduction of 0.57 (all immediate effect without hand wash). The efficacy of the alcohols was neither significantly improved nor impaired by a preceding 1 min hand wash, but there is a trend towards better efficacy on dry hands. Using a brush for 1 min during disinfection resulted in a better efficacy with all alcohols. An anaylsis of variance revealed that the immediate effect of ethanol ($p = 0.013$) and propan-2-ol ($p = 0.001$) is significantly influenced by the variation of treatments which is mainly explained by the effect of brushing during disinfection. But no significant difference between treatment variations was found in the sustained effect with any of the alcohols. Skin hydration increased significantly by a 1 min hand wash for up to 10 min despite drying hands with a paper towel. A 15 s hand wash reduced the number of bacterial spores significantly from log10 3.84 to log10 1.99 ($p = 0.001$). Conclusion: There is no benefit of a hand wash as part of surgical hand disinfection except that a short hand wash of 15 s can effectively reduce spores. The best time for this short hand wash is at the beginning of work in hospital, but at the latest in the sluice of the operating theatre about 10 min before applying an alcohol-based hand rub to give the skin enough time to dry.

S. Tamburic, *I. Arsic, G. Vuleta, S. Savic,* **In vivo skin performance of a cationic emulsion base in comparison with an anionic system**, Journal of Applied Cosmetology, Vol. 24, Number 2, April/June 2006, p. 63-74

Cationic emulsifiers are relatively recent addition to the vast range of emulsifiers for personal care products. There are very few data regarding their in vivo skin performance. This study presents a comparative assessment of skin hydration potential of two emulsion creams: a cationic emulsion, based on distearyldimonium chloride, and an anionic emulsion, based on hydrophobically modified acrylic acid polymer.

S. Tamburic, **Effects of Polymer Entrapment of Prunus Spinosa Fruit extract on its cosmetic efficacy**, Journal of Applied Cosmetology, Vol. 24, Number 2, April/June 2006, p. 1-14

The aim of this paper was to find out whether the entrapment of herbal extract into polymeric “reservoir” systems affects its skin efficacy.

R. Ismail, S. Ahmad, **Skin Care Formulation Incorporating Natural Moisturising Factor and its Efficacy on Asian Skin**, SOFW-Journal No. 132, 4-2006, p. 2-7

The skin has the property to retain water in order to maintain its proper barrier function. In situations of environmental stress, age or intrinsic physiological disturbances, this function is maintained only in part. The water storage capacity of the skin decreases with an increased water loss by evaporation (transepidermal water loss, TEWL), resulting in a dry, deep-wrinkled or even squamous skin.

H. Heinrich, B. Garbe, H. Tronnier, M. Béjot, J.M. Mauretta, **Supplementation with Nutritional Cartilage Extract Positively Influences Skin Hydration, Skin Barrier and Skin Structure: A Double-Blind, Randomized, Placebo-Controlled Study,** IFSCC Magazine, Vol. 9, No. 4/2006, p. 319-323

The aim of the study was to evaluate the efficacy of polysaccharides from fish cartilage with regard to their skin aging properties. An application test was carried out during the intake of cartilage tablets as a nutrinional supplement.

Experiment „SkinCare“ auf der Raumstation: Hautphysiologische Messungen in Schwerelosigkeit, Newsletter #1/2006, Raumstation: Fachinformationsdienst zur Nutzung der Internationalen Raumstation, April 2006, p. 10

Im Rahmen der geplanten europäischen ISS-Langzeitmission von Juli bis Dezember 2006 sollten erstmals systematisch physiologische Parameter der menschlichen Haut bei einem längeren Aufenthalt in Schwerelosigkeit erfasst werden. Dabei erlaubt der Einsatz moderner nicht-invasiver Messverfahren, durch die Bestimmung von Parametern wie Feuchtigkeit, Barrierefunktion und Mikrostruktur, den physiologischen Hautzustand exakt zu charakterisieren.

F. Guillaumie, B.M. Malle, K. Schwach-Abdellaoui, T.C. Beck, **A New Sodium Hyaluronte for Skin Moisturization and Antiaging**, Cosmetics & Toiletries Vol. 121, No. 4, April 2006, p. 51-58

In response to growing concerns about animal-derived sources for hyaluronic acid, some researchers have turned to biotech methods to produce this skin moisturizing agent.

R. Ismail, S. Ahmad, **Skin Care Formulation Incorporating Natural Moisturising Factor and its Efficacy on Asian Skin**, SOFW-Journal, International Journal for Applied Science, 4 2006, p. 2-7

The skin has the property to retain water in order to maintain its proper barrier function. In

situations of environmental stress, age or intrinsic physiological disturbances, this function is maintained only in part.

H. Matsuki, K. Kiyokane, T. Matsuki, S. Sato, G. Imokawa, **Reevaluation of the Importance of Barrier Dysfunction in the Nonlesional Dry Skin of Atopic Dermatitis Patients through the Use of Two Barrier Creams,** Exogenous Dermatology, March 2006

Atopic dermatitis (AD) can be considered a barrier disease in which antigens and irritants that can easily penetrate clinically normal, nonlesional skin due to its defective barrier function trigger and worsen the dermatitis.

C.M. Lee, H.I. Maibach, **Bioengineering Analysis of Water Hydration**, Cosmetics & Toiletries, Vol. 121, No. 3, March 2006, p. 46-52

The water content of the stratum corneum (SC) influences almost every biophysical property measurable at the skin surface. Water hydration can be measured using the plastic occlusion stress test (POST) or the water sorption-desorption test (WSDT).

Reevaluation of the importance of Barrier Dysfunction in the Nonlesional Dry Skin of Atopic Dermatitis Patients through the use of two barrier creams.
Karger, 09.03.2006

Background: Atomic dermatitis (AD) can be considered a barrier disease in which antigens and irritations that can easily penetrate clinically normal, nonlesional skin due to its defective barrier function trigger and worsen the dermatitis. Thus, repleneshing the barrier function in clinically normal, nonlesional skin of patients with AD seems to be a key for preventing the refractory nature of the dermatitis.

A. Rougier, S. Seite, **Clinical efficacy of topically applied vitamin C associated with madecassoside on skin aging,** AB28 J. Am. Acad. Dermatol.

Cutaneous aging is a complex biological process that affects the different compartments of the skin. In sun-exposed areas, skin aging is caused by two distinct processes: chronological aging and sun-induced actinic damage, called photoaging. We have previously demonstrated in vivo, the beneficial effect of topically applied vitamin C in the treatment of skin aging.

W. Wallo, C. Bertin, T.Oddos, F. Costes, **Clinical improvement in the appearance of photoaging with a serum containing retinal,** AB30 J. Am. Acad. Dermatol.

Vitamin A has been proven to be an important ingredient for improving the appearance of photoaged skin. Products containing retinol are available in various forms, such as creams, gels and lotions, which are applied to the face as part of the daily skin care regimen. Serums represent a new patient preferred form with better aesthetics an an enhanced delivery profile, capable of providing retinol and aging benefits.

N. Trookman, R. Rizer, R. Ford, R. Trancik, **Atopic dermatitis: Advantages of a novel hydrogel vehicle,** AB75 J. Am. Acad. Dermatol.

Atopic dermatitis (AD) is a chronic condition requiring long-term use of medication where patient compliance is essential to treatment success. The vehicle used can substancially affect the active agent's clinical action, potency and acceptability to the patient. Desonide is a well-known synthetic, non-fluorinated corticosteroid with anti-inflammatory and anti-pruritic properties, currently available in only cream, ointment and lotion formulations.

M.-D. Thouvenin, V. Turlier, V. Mengeaud, P. Morinet, **Assessment of efficacy, tolerance and cosmetic acceptability of 0,1% delta-tocopheryl glucoside serum on skin aging,** AB84 J. Am. Acad. Dermatol.

A biometrological, open, monocenter study was conduced to assess efficacy, tolerance and cosmetic acceptability of 01,% delta-Tocopheryl glucoside serum in the skin aging treatment. Thirty women between the ages of 35 and 45, with a minimum score of 3 on a 9-point-scale of wrinkles, applied the product twice a day for 8 weeks on the face an on one forearm. A sunscreen pruduct (SPF 50) was provided for sun exposure.

T. Weber, A.Kowcz, N. Trookman, R. Rizer **Evaluation of a moisturizer containing sodium acetate and urea to ameliorate senile xerosis,** AB33 J. Am. Acad. Dermatol.

Objective: to asses the ability of a commercially available moisturizing cream to ameliorate the dry skin condition of subjects 65 to 86 years of age. Methods: in this 7-week, single-blinded, controlled

clinical study, 28 subjects with moderate to severe xerosis were treated twice daily for 6 weeks with a moisturizing cream containing 10% urea and 5% sodium lactate.

S. Hawkins, J. Alicera, S. Krishnan, R. Marriott, **Clinical improvement to photoaged skin with conjugated linoleic acid (CIA): A novel cosmetic PPAR lipid for anti-aging benefits,** AB15 J. Am. Acad. Dermatol.

Photoaged skin is the manifestation of accumulated skin damage from chronic sun exposure, superimposed upon the chronological aging process. Alpha hydroxy acids (AHAs) have been a mainstay ingredient in anti-aging products for many years. New products are introduced annually including ingredients such as retinol, retinol derivates, beta hydroxy acids, niacinamide, peptides and prescription retinoids.

R. Wanitphakdeedecha, W. Manuskiatti, S. Eimpunth, S. Hunnangkul, **The effects of single application of mucopolysaccharide polysulphate (MPS),** AB96 J. Am. Acad. Dermatol.

To study the efficacy on the skin hydration of mucopolysaccharide polysulphate (MPS) 0,1% after single application. Twenty female volunteers aged 30 to 45 years with dry skin, defined by the corneometer, were recruited to the study. All subjects were asked to apply 2 g of MPS cream on a selected forearm.

R. Wanitphakdeedecha, W. Manuskiatti, S. Eimpunth, Sadwalak Hunnangkul, **The effects of mucopolysaccharide polysulphate (MPS) on the hydration and elasticity of human skin,** AB95 J. Am. Acad. Dermatol.

To study the efficacy of mucopolysaccharide polysulphate (MPS) in hydration and elasticity of human skin. Methods: Sixty female volunteers aged 30 to 45 years with dry skin, defined by the corneometer, were recruited to the study. The volunteers were randomly treated with MPS and placebo.

T. Miller, S. Batra, J. Ramirez, **Evaluation of the effect of a Novel Bi-Mineral Complex on photoexposed periorbital skin**, AB32 J. Am. Acad. Dermatol.

The elasticity of the skin is attributable to elastic fibers that can stretch and then recoil. The elastic fibers contain elastin – a large protein synthesized by dermal fibroblasts that forms spiral filaments comparable to springs. The spiral filaments are crosslinked together and, when the skin is stretched, this crosslinking enables the spiral filaments to spring back to their original positions.

L. Colon, R. Rizer, L. Johnson, N. Trookman, **Corneometric assessment of skin hydration following the application of Metronidazole 1% Gel**, AB13 J. Am. Acad. Dermatol.

Rosacea is a skin condition characterized by unsightly redness on the face, sometimes accompanied by acne-like papules and pustules. Symtom flares are most often triggered by spicy foods, sun exposure or irritating skin products. Accordingly, the irritation potential of any topical treatment prescribed for rosacea patients should be considered.

H. Matsuki, K. Kiyokane, T. Matsuki, S. Sato, G. Imokawa, **Recharacteriasation of the nonlesional dry skin atopic dermatitis through disrupted barrier function,** Exogenous Dermatology, March 2006

Background: The etiology of the nonlesional dry and baris is till unclear. Objective: to determine whether disrubted barrier function in the nonlesional skin is associated with inflammatory or postinflammatory events, which are relevant to the severity of AD or local dry skin properties, respectively. Methods: we evaluated the barrier function and the water content of nonlesional forearmskin and compared.

C. Couteau, L.J. Coiffard, V. Sébille-Rivain, **Influence of excipients on moisturizing effect of urea,** Drug Dev Ind Pharm, 2006 Feb;32(2): p. 239-242

Water is the most important molecule contained in the skin and is bound to the intracellular hygroscopic substances called natural moisturizing factors (NMF). The clinical characteristic of xerosis is rough and/or coarse skin. This anaesthetic alteration necessitates cosmetic products application. In this study, we tested the efficiency of urea incorporated into six different emulsions (O/W) and 10 different gels. Skin of 10 healthy women (20 to 45 years) was treated using 50 mg of emulsion or gel containing 5% of urea. A skin surface of 16 cm(2) was chosen in the area of the forearm. The gain in moisturizing was performed measuring the skin electrical capacity using a corneometer (Courage & Khazaka, model CM 825), one hour after treatment. Sodium carboxymethyl cellulose gel has the least moisturizing effect. On the other hand, the mixture of polyacrylamide and C13-14 isoparaffin polysorbate 85 can be a good vehicle in the treatment of skin dehydration. Adding various oils (6%) or collagen in

aqueous solution does not improve the efficiency of the tested products. Moisturizing effect of gels (polyacrylamine with C13-14 isoparaffin polysorbate 85) is higher than the one of emulsions (L/H).

M. Wahlen, N. Buhles, **Beruflich bedingtes allergisches Handekzem durch Euro-Münzen bei vorbestehender Hyperhidrosis manuum**, Akt Dermatol 2006; 32: p. 260-264

Nickel ist das meist verbreitete Allergen in Europa und weltweit, so auch in Euro-Münzen. Münzen werden allerdings nicht zu den Gebrauchsgegenständen, die direkten und langen Kontakt zur Haut haben, gerechnet. Die 1-Euro-Münzen und die 2-Euro-Münzen weisen eine Bimetallstruktur auf. In Kombination mit Schweiß entsteht aus diesem Grunde ein sog. ¹Galvanisches Element". Durch einen messbaren Stromfluss werden vermehrt Nickelionen freigesetzt. Wir berichten über den Fall eines 55-jährigen Bankkaufmannes in einer Sparkasse, der arbeitskongruent im September 2001 ein dyshidrotisches Handekzem entwickelte. Der Patient wies zudem eine Hyperhidrosis manuum auf. Zuvor hatte der Patient nie an Ekzemen gelitten. Ab Herbst 2001 kam der Patient im Rahmen der Einführung erstmals mit Euro-Münzen in Kontakt. Ein Epikutantest zeigte eine Typ-IV-Sensibilisierung gegenüber Nickel und den Inhaltsstoffen von 1-Euro- und 2-Euro-Münzen.

C. Vincent, M. Szubert, K. Rugiewicz, I. Eris, **The assessment of efficacy, tolerability and cosmetic features of Diosperin K 1% PROLONGATUM cream containing complex of diosmine, hesperidine and vitamin K**, Poster Presentation, Centre for Science and Research Dr. Irena Eris, 2005

Face redness and couperoses can cause very negative visual effect and influent on patients´quality of life. Such type of skin requires special regime. Application of very gentle cleaners, sun protective products and appropriate cosmetic creams can improve the skin condition and minimize the red face effect.

A.S.G. Ansel, **Schadstoffe und Allergene in der Innenraumluft: Untersuchung zur Beeinflussung von Hautfunktion und allergologischer Reaktivität bei Patienten mit atopischem Ekzem,** Dissertation 2005 an der Technischen Universität München

Da sich besonders in den modernen westlichen Ländern ein starker Anstieg allergischer Erkrankungen verzeichnen lässt, werden insbesondere Umweltfaktoren als eine mögliche Ursache für die Zunahme der Allergien diskutiert. Ring [96] und der Rat von Sachverständigen für Umweltfragen [10] nennen als mögliche Gründe die Wirkung von Umweltverunreinigungen, die Zunahme von Aeroallergenen in Außen undInnenluftbereich, das Auftreten neuer Allergene, die geringere Stimulation des kindlichen Immunsystems (weniger Infektionen, Parasiten, Impfungen) und einen westlichen Lebensstil. In dem Gutachten wird außerdem darauf hingewiesen, dass die luftgetragenen Allergenträger des Innenraumes und der Außenluft die häufigsten und wichtigsten natürlichen Umweltfaktoren für die Auslösung und Unterhaltung atopischer Erkrankungen sind.

I. Hütter, A. Behler, S. Cornelsen, **"Vitamin" of surfactants profiled,** Personal Care, Nov. 2005, p. 45-47

Natural alpha hydroxy acids (AHA) or so-called "fruit acids" such as citric, malic or glycolic acid, have been used for years in personal care applications. They are highly appreciated for their cosmetic benefits, such as anti-ageing and moisturising.

W. Rungsima, S. Apichati, T.Papapit, **Transepidermal water loss, hydration, pH and elasticity of skin in atopic dermatitis and normal Thai subjects**, Siriraj Medical Journal, 2005 Nov; 57(11): p. 486-490

In order to obtain objective data on skin functions in patients with atopic dermatitis (AD), we studied, by means of measurement of transepidermal water loss (TEWL), skin surface hydration, pH, and elasticity of dry and normal skin at the dorsum and volar aspects of the forearms in patients with atopic dermatitis compared with normal subjects. Transepidermal water loss (TEWL), skin surface hydration, pH, and elasticity function were measured using Tewameter TM 210, Corneometer CM 820, Skin-pH-meter pH 900, and Cutometer SEM 575, respectively. Forty-one subjects, twenty-five atopic dermatitis patients with dry skin, sixteen atopic dermatitis patients without dry skin, and twenty normal subjects, were recruited in the study. Considering all skin sites together, no significant differences were found between the mean values of TEWL in the same sites, the dorsum and volar forearms, of subjects in each group of patients ($p = 0.717$, and $p = 0.981$, respectively). Statistically, there were significant differences between the mean values of skin surface hydration at the dorsum and volar forearms ($p = 0.019$ and $p = 0.019$, respectively) and skin pH at the dorsum and volar forearms ($p = 0.036$ and $p = 0.043$, respectively). Regarding the elasticity function of the dorsum, immediate recovery and biological elasticity were significant differences in each group of the patients ($p = 0.048$ and $p = 0.019$, respectively), meanwhile, the elasticity function of the volar forearms, immediate recovery, elasticity

index, elastic recovery index, viscoelastic ratio and relative elastic recovery were significant differences ($p = 0.014$, $p = 0.029$, $p < 0.001$, $p < 0.001$ and $p < 0.001$, respectively). Therefore, further wellcontrolled studies, investigating the skin morphology of patients with atopic dermatitis, should be pursued to provide more targeted therapies and establish an optimal standard of care for all patients with atopic dermatitis.

T.L. Grosick, V.L. Hollis, **Making Sensitive Skin Less Sensitive,** The Procter & Gamble Company

The often-elusive mechanism of sensitive skin remains a challenge to overcome as an estimated 40-50% of patients express, to varying degrees, perceived and symptomatic episodes of sensitivity. Dryness is a focal element of sensitivity and there are many benign moisturizers (devoid of fragrance, dyes and offensive agents) offering some momentary escape from this particular effect.

M. Gloor, B. Senger, M. Langenauer, J.W. Fluhr, **On the course of the irritant reaction after irritation with sodium lauryl sulphate,** Universirty of Karlsruhe, Germany and Spirig Pharma AG, Switzerland and Friedrich-Schiller-University Jena, Germany

Background: The sodium lauryl sulphate (SLS) irritation test is a well-established model for irritant contact dermatitis after the effects of surfactants.Aim of the study: The course of changes in corneometric measurements (stratum corneum hydration), in transepidermal water loss (TEWL), in laser Doppler measurements (epidermal perfusion) and in colorimetric measurements (skin redness), aftera single SLS irritation, should be studied over time.

F. Rou, Y.-S. Park, **Comparison of determined skin types by different factors of facial skin hydration, sebum content and surface pH levels** (study in Korean), Korean Journal of Skin Beauty Education

Objective: We studied to find suitable spots to measure facial oil and water status for identifying the skin-type. This study was performed with 131 female students in juniors and seniors in collage at a city from 23th May to 3rd June 2003. Their age averaged 19.9±3.1 years. Design: We measured the sebum content and the hydration status of 4 facial spots as the brow, the chin, the eye rims, and the cheek, after 1 hour, 2 hours and 12 hours after washing their faces by Sebum-meter and Corneo-meter, and also measured the pH of their cheek by Skin-pH-meter after 12 hours after washing. We assumed the whole face skin, as the average of 4 facial spots. The questionnaires for skin type classification were also performed as well as a single question of self-perceived skin types. The statistical analysis were done by using SPSS11.0 for Win like average, t-test, ANOVA, X2, and Pearson's correlation coefficient. Results: We observed that the skin types based on the sebum content of whole face skin(4 spots) showed signigicant low correlations with the self-perceived skin types($r=0.287$, $p=0.016$) or the skin types based on the questionnaires($r=0.393$, $p=0.000$). The self-perceived skin types and questionnaires skin types were very highly related($r=0.709$, $p=0.000$). There were remarkably the positive correlations between skin types by the sebum contents of whole face skin and T-Zone($r=0.812$, $p=0.000$). Especially skin types by T-zone sebum showed significant low correlations with the self-perceived skin types($r=0.373$, $p=0.001$) or with the skin types based on the questionnaires($r=0.403$, $p=0.000$). Sebum creation rate is very important element for skin condition (type), so measuring sebum content of the whole face skin seemed to be very much resonable for identifying skin type. Especially only T-Zone measurement could be compatible. This results can be used for skin type identification before cosmetic material selections or facial makeups.

K. Schweikert, V. Kalhöfer, B. Gabard, **Improving the properties of Hyaluronic acid on dry skin,** Personal Care, Nov. 2005, p. 35-39

The effects of two cosmetic actives intended for the treatment of skin dryness (Hyaluronic acid and the new Tamarindus indica seed extract) were evaluated in five healthy volunteers by objective measurements after twice daily application on the skin of the volar forearm for two weeks.

S.W. Son, S.Y. Park, S.H. Ha, G.M. Park, M.G. Kim, J.S. Moon, D.S. Yoo, C.H. Oh, **Objective evaluation for severity of atopic dermatitis by morphologic study of skin surface contours**, Skin Research and Technology 11/05, p. 272-280

Wide variation in outcome methodology can make the interpretation of patient outcomes confusing and the comparison of the results of different studies almost impossible. It is important to objectively measure and record the severity of atopic dermatitis (AD) for routine clinical practice and research. The aim of this study was to evaluate whether morphologic study of skin surface contours might be helpful to objectively quantify the severity of AD.

Dermokosmetik, Beratung in der Apotheke, PTA Nr. 11, Oktober 2005

Eine gute Unterstützung bei Promotionaktionen zum Thema „Hautpflege“ sind Hautanalysegeräte. Sie erleichtern den Einstieg in die Beratung, individuell auf den Hauttyp und Hautzustand der Kundin oder des Kunden abegestimmt.

J. Nemes, M. Alberth, **Reliability and clinical usefulness of sudorometry in measuring dental fear of children**, University of Debrecen, Medical and Health Science Centre, Hungary, Oct. 2005

Dental fear is a common health care problem in the child population. To the effective management of this handicapping trait, it is important to determine the prevalence of the problem in the community so as to help in the planning of public health service.

D. Kowatzki, C. Machold, K. Krull, P. Elsner, J.W. Fluhr, **Regeneration kinetic of sweating, Stratum Corneum hydration, Surface pH, Sebum production and mechanical properties is not altered by regular sauna bathing,** Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Wellness and especially sauna bathing are of growing interest in modern health care. The positive effect of sauna for general health is well documented. However, to our knowledge no controlled studies have been published on the effect of sauna on skin physiology.

M. Visscher, J. Smith, D. Said, P. Bondurant, R. Wickett, **Stratum Corneum integrity and function in health care workers following hand hygiene procedures,** Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Compliance with the Centers for Disease Control´s hand hygiene guideline is low and health care workers (HCWs) cite skin irritation as highest reason for failure to comply.

J.W. Fluhr, M. Breternitz, M. Flach, P. Elsner, **Acute experimentally induced barrier disruption by tape stripping is influenced by pressure, time and anatomical location: Integrity and Cohesion assessed by sequential tape stripping,** Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Tape stripping is a well-known procedure in stratum corneum physiology research. Adhesive films are pressed to the surface of SC and then removed. The superficial layers of SC adhere on the film and are accessible for further investigations. Although this method is widely used, only few information about standardization are known.

S. Son, S. Park, S. Ha, G. Park, G. Lee, C. Oh, **Analysis of the skin hydration states using high resolution magnetic resonance microscope,** Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Magnetic Resonance (MR) technique have been rapidly developed, and Magnetic Resonance Image (MRI) is now the most versatile non-invasive diagnostic tool with a much higher resolution than other imaging modalities such as conventional X-ray, or Computed Tomography (CT).

A. Behler, S. Cornelsen, I. Huetter, **A new multifunctional mono alkyl ether citrate with unique properties,** Poster Presentation on the ISBS Meeting 2005 in Phildelphia, abstract

K. de Paepe, V. Rogiers, **Corneofix F20®, a new technology to define skin desquamation,** Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

The aim of the present study was the evaluation of a newly marketed methodology for the characterization of the skin desquamation index (DI) being an important parameter for the evaluation of overall skin condition.

R. Voegeli, J. Heiland, S. Doppler, T. Schreier, **Efficient and Simple Quantification of Stratum Corneum Proteins on Tape Strippings,** Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Tape stripping is established as a common technique in dermatological research and is used in a broad range of applications. However, a concurrent colorimetrical determination of protein content and enzyme activity on the same tape is circumstantial.

M. Giuliani, G. Amicosante, L. Di Marzio, B. Cinque, M.G. Cifone, **Increase of skin-ceramide levels in aged subjects following a short-term topical application of bacterial sphingomyelinase from *Streptococcus thermophilus,*** Presentation at the IFSCC in Florence 2005

Several studies have demonstrated that ceramides play an essential role in both the barrier and

water-holding functions of healthy stratum corneum, suggesting that the dysfunction of the stratum corneum associated with ageing as well that observed in patients with several skin diseases (i.e. atopic dermatitis, psoriasis) could result from a ceramide deficiency.

K. Lintner, C. Mas Chamberlin, P. Mondon, O. Peschard, **IgG fragments regulate IL6 production in keratinocytes: potential use in anti-age treatments,** Presentation at the IFSCC in Florence 2005. *

Cytokines play a fundamental role in inter-cellular communication. Their secretion rate and cellular concentrations are well regulated and in an equilibrium state ("homeostasis") in healthy, young skin. Ageing leads to changes in these equilibriums. DHEA clearly controls IL6: the age-related decrease in DHEA (by a factor of >2 after age 50) is accompanied by increased IL6 levels. Cytokine IL6 is also known to be strongly induced in skin by UV rays.

P. Granata, R. Maffei Facino, A. Ghirardini, E. Berardesca, G. Primavera, M. Carrera, **Tyrosyl-Histidine Dipeptide: A new Approach against Premature Aging,** Presentation at the IFSCC in Florence 2005

Oxidative fragmentation of polyunsaturated fatty acids in the skin generates cytotoxic aldehydes, mainly 4-hydroxy-*trans*-2-nonenal (HNE), involved in premature skin aging and photo-aging, due to the formation of collagen and elastin cross-links, skin enzymes inactivation, accumulation of lipid peroxidation products. Since histidine-containing dipeptides have been recently shown to possess carbonyl quenching activity, we developed a series of different dipeptides with the aid of combinatorial chemistry and each of them was subjected to antioxidant and anti-carbonyl assays, in a cell-free model using the ORAC assay (Oxygen Reactive Antioxidant Capacity) for anti-lipoperoxidant activity, HPLC analysis for the evaluation of the HNE quenching ability and LC-MS/MS for the characterization of the site and of the mechanism of adduction.

A. Barel, M. Calomme, A. Timchenko, K. de Paepe, N. Demeester, V. Rogiers, P. Clarys, D. Vanden Berghe, **Effect of Oral Intake of Choline-Stabilized Orthosilicic Acid On Skin, Nails And Hair In Women With Photodamaged Facial Skin**, Poster Presentation, AAD 2005, New Orleans and Presentation on the IFSCC in Florence 2005

Chronic exposure of the skin to sunlight or ultraviolet causes severe damage to the underlying connective tissue, with a loss of elasticity and a reduction in its protective function. Silicon (Si) was suggested to have an important function in the formation and maintenance of connective tissue.

P. Masson, F. Merot, M.-J. Albin, C. Simonet, S. Flauto, P. Pommez, **Psychoneuroimmonulogical Effects of a Cosmetic Product: Benefits of a Multifactorial Approach,** Presentation on the IFSCC in Florence 2005

Several publications have reported the existence of a relationship between individual mood and immunological response, basing the observations on the variation in the salivary IgA and Cortisol content [1,2]. Then, it seemed relevant to consider if such considerings could apply to demonstrate the ability of specific cosmetic formulations to influence the users' behaviour by providing them pleasure and well being in addition to the usual cosmetic effects. The first results obtained have demonstrated a lack of stability of the immunological responses and the obligation to correlate the results with complementary parameters.

A. Koyanagi, N. Goto, S. Daikai, S. Uchida, N. Hayashi, N. Ikeda, M. Yoshioka, **Evaluation of a multi-functional hybrid polymer based on a novel technology: as emulsifier, lastarizer, smoother, texture enhancer and moisturizer,** Presentation on the IFSCC in Florence 2005

The copolymer consisted of hydrolysed silk protein and alkylmethylsiloxane was recently developed by our technology. The copolymer enabled us to make stable Water in Silicone emulsion as well as Water in Oil emulsion by cold process. It was dispersible in various kinds of oil, in spite of its insolubility in water or solvents and this proved the important feature of this copolymer.

P.M.B.G. Maia Campos, M.D. Gianeti, G.M.S. Gonçalves, L.R. Gaspar, **Assessment of *in vitro* antioxidant and *in vivo* anti-ageing effects of cosmetic products containing vitamin C and its derivatives on human skin,** Presentation at the IFSCC in Florence 2005

The objective of this study was to determine the *in vitro* antioxidant activity of vitamin C (AA) and its derivatives, magnesium ascorbyl phosphate (MAP), ascorbyl tetra-isopalmitate (ATIP) as well as their *in vivo* anti-ageing effects by using Cutaneous Bioengineering Techniques on human skin. The study of antioxidant activity *in vitro* was made with an aqueous and a lipid system, the luminol-chemiluminescence, and malondialdehyde assay, respectively.

R. Ismail, S. Ahmad, **Skin Care Formulation Incorporating Sodium Lactates, Sodium PCA and**

Lauryl PCA: Comparative Moisturizing Efficacy on Asian Skin, Presentation on the IFSCC in Florence 2005

Sodium lactates, sodium PCA and lauryl PCA are known Natural Moisturizing Factor (NMF) commonly used in skin care formulations. In this paper, moisturizing efficacy of oil-in-water (O/W) based emulsion containing 3% glycerin use as placebo and with additional NMF @1%, 3% and 5% active were conducted *in-vivo* on 36 Asian subjects consisting of a mixture of one Indian, two Chinese and the rest Malays including 21 females and 15 males, age between 23 to 45 years old (average 32 years).

Y.H. Kim, Y.-S. Kim, J.-H. Kim, **Cosmeceutical Properties of Polysaccharides from the Root Bark of *Ulmus davidiana* var. *japonica,*** Presentation on the IFSCC in Florence 2005

In Korea and China, *Ulmus davidiana* var. *japonica* has been used as traditional oriental medicine for the treatment of difficulty in urination, skin inflammation, etc. In order to investigate the potential of a polysaccharide extract from *Ulmus davidiana* var. *japonica* as a cosmetic ingredient, we measured its moisturizing effect, photo-induced cytotoxicity, and anti-inflammatory effect. After hydrolysis, HPLC experiments showed that the composition of polysaccharide was mainly rhamnose, galactose, and glucose.

F. Distante, V. Pagani, B. Green, A. Bonfigli, J. W. Fluhr, **Objective Evaluation of Placebo Effectin Cosmetic Treatment,** Presentation on the IFSCC in Florence 2005 and IFSCC Magazine, Vol. 9, No. 3/2006

Product's packaging and efficacy claims may stimulate pleasant emotions during cosmetics' use thus enhancing their perceived benefits. Aim of the study: To objectively evaluate the influence of packaging and strongly claimed attributes on cosmetic efficacy both by non-invasive bioengineering techniques and by self-assessment. The selected cosmetic product was a marketed antiaging gluconolactone-based formulation. The packaging was either a fancy refined jar or an unbranded plain container.

J.J. Wille, **Cutaneous Delivery of Antioxidant Botanicals**, Presentation on the IFSCC in Florence 2005

A truly effective anti-irritant strategy seeks to modulate checkpoints in the irritant signal cascade. Earlier, we reviewed our work and the scientific and patent literature on anti-irritants (1-2) for prevention and treatment of contact irritant due to topical cosmetic, dermatological and transdermal drugs.

R. Ismail, S. Ahmad, **Sodium lactates in skin lightening formulations: its synergy with other skin lightening agents**, Presentation on the IFSCC in Florence 2005

In many Western countries, skin lighteners and related products sold in the market are aimed to prevent and treat melasma, freckles and age spots. However in Asia, skin-lightening products are primarily used to achieve the beauty ideal of a white and flawless skin, although they also treat problem areas.

T. Tsuchiya, S. Haze, T. Hirao, J. Hosoi, A. Kikuchi, K. Shoji, M. Tanida, T. Tsuda, **Odorant Inhalation Lowered Stress Levels Systemically, Subsequently Resulting in the Improvement of Cutaneous Functions: Linkage Between Olfactory Sensation and Skin,** Presentation at the IFSCC Florence 2005

Our research conducted over several years has demonstrated that odorant inhalation produces an effect on cutaneous functions by inducing changes in the neuroendocrinological system. For example, inhalation of the natural sedative component of the rose flower, DMMB (1,3-dimethoxy-5-methylbenzene), inhibited an increase in plasma cortisol levels and barrier recovery delay or an increase in forehead sebum, which was induced by stress. These findings were obtained using authentic experimental patterned stress and short-period odorant inhalation.

M. Alberth, J. Nemes, **Protective Glasses and Dental Fear,** Poster (PPT)

For the patients' own safety, certain dental treatments require them to use protective glasses. Until recently wearing of glasses during dental treatment was not a generally accepted and widely used method in Hungary. In our study we wanted to find out whether this unusual circumstance has any effect on the children's dental fear, and what effect – if any – the lens color of the protective glasses makes.

G. Khazaka, **Assessment of Stratum Corneum Hydration: Corneometer CM 825**, Bioengineering of the Skin: Water and the Stratum Corneum, Second Edition, CRC Press 2005, p. 249-261.

The assessment of skin moisture is one of the first and most important measurements for testing the efficacy of cosmetic products on the skin surface. The quantity of literature worldwide dealing with

this topic indicates the significance of this measurement. Numerous studies about the advantages, disadvantages, and comparisons among the different commercially available devices have been published.

G. Primavera, J. W. Fluhr, E. Berardesca, **Electrical Assessment of Skin Hydration: Standardization of Measurements and Guidelines**, Bioengineering of the Skin: Water and the Stratum Corneum, Second Edition, CRC Press 2005, p. 287-295

The importance of water to the proper functioning of the stratum corneum (SC) is well recognized. The reliable quantification of water in the corneum and its interaction with topically applied products is, in fact, essential for understanding skin physiology and developing efficient skin care formulation.

C. Edwards, R. Marks, **Hydration and Atopic Dermatitis**, Bioengineering of the Skin: Water and the Stratum Corneum, Second Edition, CRC Press 2005, p. 323-333

Frequently, the skin on noneczematous areas of atopic dermatitis (AD) sufferers feels rough and appears “dry”. This xerosis is associated with the itch that accompanies the disorder. Reports of the incidence of xerosis in AD patients vary from 48 to 98 %.

J.W. Fluhr, C. Uhl, **Hautphysiologische Messungen in der täglichen Praxis: Corneometrie und Sebumetrie bei physiologischen und krankhaften Hautveränderungen**, Diagnostische Verfahren, Kap. Nr. 37, 2005, p. 321-345

Grundlagen der Methoden: Bei der Corneometrie handelt es sich um eine nicht-invasive Messung der Hautoberfläche zur Bestimmung des Feuchtigkeitsgehalts im Stratum corneum. Die Messung erfolgt auf kapazitivem Weg und beruht auf der Tatsache, dass Wasser eine von anderen Stoffen sehr unterschiedliche Dielektrizitätskonstante besitzt.

N. Branco, I. Lee, H. Zhai, H.I. Maibach, **Long-term repetitive sodium lauryl sulfate-induced irritation of the skin: an in vivo study,** Contact Dermatitis 2005: 53: p. 278-284

Skin may adapt to topical irritants through accommodation. This study focuses on long-term exposure to irritants and attempts to demonstrate accommodation. Sodium lauryl sulfate (SLS) induced irritant contact dermatitis at 3 concentrations (0,025% to 0,075%).

K. Damer, **Epidermale Permeabilitätsbarriere - Irritabilität und Regeneration in Abhängigkeit von psychischen Faktoren - Regeneration unter impermeablen und semipermeablen Handschuhmaterialien - Psychologische und hautphysiologische Untersuchungen**, Dissertation der Oniversität Osnabrück, Oktober 2005

Die vorliegende Arbeit wurde im Rahmen des interdisziplinären DFGGraduiertenkollegs „Integrative Kompetenzen und Wohlbefinden“ durchgeführt. Unter besonderer Berücksichtigung des interdisziplinären Anspruchs des Graduiertenkollegs wurden sowohl psychodermatologische als auch hautphysiologische Zusammenhänge untersucht. Es galt, die Verknüpfung psychologischer und naturwissenschaftlicher Aspekte innerhalb einer Untersuchung anzustreben.

J. Molinero, R. Ojeda, J. Coll, A. Mirada, C. Trullas, **Clinical and bioengineering evaluation of the efficacy and safety of 30% urea cream in the treatment of hyperqueratotic skin disorders,** Presentation at the 14th EADV Congress, London, Oct. 2005

Topical products with high concentrations of urea have been recently incorporated to dermatological vademecum. Urea, an active ingredient with a long history in dermatology has been extensively used in several skin diseases due to their moisturizing, desquamating, antiproliferative and antipruritic effect.

S. Savic, S. Tamburic, S. Vesic, G. Vuleta, C. Müller-Goymann, **Effect of Vehicle Composition on In vitro/ in vivo Hydrocortisone Penetration,** Presentation at the 14th EADV Congress, London, Oct. 2005

Diffusion/penetration properties of locally applied drugs are affected by both the status of the stratum corneum (SC) and by the composition and colloidal structure of the vehicle.

A.G. Schepky, U. Holtzmann, K. Bohnsack, A. Filbry, H. Max, M. Rudolph, H. Wenck, F. Rippke, **Novel effects of an acidic humectant combination result in protection and activation of enzyme activity in human skin,** Presentation at the 14th EADV Congress, London, Oct. 2005

Sensitive skin conditions result from an imbalance between endogenous, protective factors and exogenous, aggressive stimuli like exposure o irritants, e.g. harsh surfactants. This imbalance goes along with an impairment of skin enzyme activity.

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G.-W. Nam, S.-H. Kim, E.-J. Kim, J.-H. Kim, B.-G. Chae, H.-K. Lee, S.-J. Moon, H.-H. Kang, I.-S. Chang, **How Skin Care Ingredient Concentrations Can Modulate the Effect of Polyols and Oils on Skin Moisturization and Skin Surface Roughness,** Presentation on the IFSCC in Florence 2005 and IFSCC Magazine, Vol. 9, No. 1 2006

The aim of this study was to evaluate the influence of different skin care ingredient concentrations on the effect of polyols and oils on the human skin moisturization and skin surface roughness. Polyols and oils were essential ingredients to make a skin care formulation. But these were still not understood how much concentrations display on human skin as efficacy and sensory. We studied to examine various concentrations of ingredient by cosmetic companies using noninvasive methods.

J.W. Wiechers, C. Kelly, T.G. Blease, J.C. Dederen, **Formulation for fast efficacy: inflence of liquid christalline emulsion structure on skin delivery and active ingedients,** Presentation at the IFSCC in Florence 2005 and IFSCC Magazine Vol. 9, No. 1 2006

Summary: In a previous publication, we described how the thermodynamic activity of an active ingredient could be optimized in a cosmetic formulation by the choice of a primary and secondary emollient. This paper describes our initial attempts to explain the influence of the emulsifier system on the dermal delivery of an active ingredient. The emulsifiers studied in this investigation induced liquid crystal formation in the formulations and interacted in two different ways. On the one hand, they prevented the evaporation of water from the formulation when applied on the skin and in doing so prolonged the delivery phase of water-soluble active ingredients as only solubilized molecules penetrate the skin at reasonable rates.

Y. Tomita, M. Akiyama, H. Shimizu, **Stratum corneum hydration and flexibility are useful parameters to indicate clinical severity of congenital ichthyosis**, Exp Dermatol. 2005 Aug; 14(8): p. 619-24

To determine any correlation between the stratum corneum barrier function and the phenotypic severity of congenital ichthyosis, we studied stratum corneum hydration, flexibility, thickness and transepidermal water loss (TEWL) in patients with congenital ichthyosis. Seven patients with congenital ichthyosis aged 2-46 years and age-matched controls were included in the present study. We divided seven patients into two groups; patients with non-bullous type (non-bullous congenital ichthyosiform erythroderma patients) and patients with the bullous type of congenital ichthyosis (bullous congenital ichthyosiform erythroderma and ichthyosis bullosa of Siemens). Stratum corneum hydration, thickness and flexibility were measured using a Corneometer ASA-M2. The stratum corneum thickness was also examined using a skin biopsy technique. TEWL was measured using Evaporimeter AS-TW1. The clinical severity of ichthyosis phenotype was evaluated using a visual analogue scale (VAS). Stratum

corneum hydration and flexibility were significantly reduced in both congenital ichthyosis patient groups. Stratum corneum thickness was significantly increased in both groups. In the patient group with non-bullous congenital ichthyosis, significant negative correlations were confirmed between the VAS score and stratum corneum hydration and between the VAS score and flexibility. A significant, positive correlation was also observed between the VAS score and stratum corneum thickness. There was a positive correlation between the VAS score and TEWL on both the extensor and flexor sides of the forearm and back. We conclude that stratum corneum hydration, flexibility and thickness measured by the corneometer, and TEWL on the arm may be a useful indicator of the severity of ichthyosis phenotype.

C.L. Packham, H.E. Packham, H.M. Packham, A. Cherrington, **Investigations into different skin conditions in certain occupations**, The Journal of The Royal Society for the Promotion of Health, July 2005, Vol. 125, No. 4

The aim of this study was to establish whether those working in certain occupations had skin with a lower moisture content than would be considered normal. Skin moisture levels were measured as well as visual assessment. Results indicated that all occupational groups studied had skin that was less well hydrated than would be considered normal, although there were significant inter-individual variations within any one group.

K. Ertel, H. Focht, J. Plante, R. Bacon, A. Newman, **Challenging The Personal Cleanser Paradigm: A Body Wash That Provides Skin Improvement Benefits,** The Procter & Gamble Company

Personal cleansing products are a useful adjuvant in dermatologic therapy, not only as an aid to removing dirt and other soils from the skin's surface but also by helping to maintain or increase patients' confidence and sense of wellbeing. Personal cleansers are generally viewed as agents that can dry or irritate skin and disrupt the stratum corneum barrier. To minimize such effects patients are recommended to use cleansers based on synthetic detergents (syndets).A leave-on lotion is frequently added to this recommendation to help relieve dry skin. Personal cleanser technology has advanced in recent years and evidence suggests that newer personal cleanser forms such as petrolat

A. Zecconi, E. Binda, V. Daprà, T. Hemling, R. Piccinini, **Field study on protocols for evaluation of teat skin conditions**, J Vet Med B Infect Dis Vet Public Health, 2005 Jun;52(5): p. 219-225

Different protocols to evaluate teat skin status under field conditions based on scoring and on the measurement of pH and hydration of teat skin were evaluated. After determination of the teat score for all eligible animals in a commercial dairy herd, 50 of them were chosen, based on their pre-trial average teat score, and separated in two groups. Two different post-dipping products with the same amount of disinfectant, but with a different concentration of emollient were applied. All four teats were assessed with the corneometer and pH probes. A digital picture of each teat skin and teat orifice was taken with a digital camera. Hydration and pH data were analysed by anova with repeatedmeasurement factors, while teat skin and apex score patterns, were assessed by the means of MannWhitney test; between- and within-group changes were assessed by the mean of Mantel-Haenzel chisquare statistic. Data showed that teat skin pH and hydration could be assessed under field conditions and they were influenced by teat conditioning. The approach based on evaluating odds for scores, stratified for sampling and for treatment, was found to be a sensitive and informative way to compare the changes between and within treatment groups.

C. Uhl, **Neue Wege in der Hautdiagnostik,** Kosmetische Praxis, Juni 2005

Der Einstieg in die professionelle Hautberatung ist stets das persönliche Gespräch mit dem Kunden. Dabei ist es entscheidend, neben der Beurteilung des optischen Eindrucks der Haut herauszufinden, welche individuellen Lebensgewohnheiten vorliegen. Genetische Disposition, Ernährung, Risikofaktoren wie Rauchen, Stress oder hoher Alkoholkonsum, sportliche Aktivitäten, Schlafverhalten und Alter beeinflussen entscheidend den Hautzustand und müssen daher in die Beratung mit einbezogen werden. Basis einer qualitativen und auf die Bedürfnisse des Kunden zugeschnittenen Körperkosmetik ist die Bestimmung des individuellen Hautzustands.
Diese Information ist unentbehrlich, um eine fundierte Hautberatung durchzuführen. Auf dieser Diagnose soll der gesamte Pflegeplan aufgebaut werden, der essentiell für den Erfolg der Behandlung und damit für die Zufriedenheit der Kunden ist. Lesen Sie, welche Methoden es gibt und wie man vorgeht.

H. Dobrev, **Evaluation of Dry Skin: a Cpmparioson between Visual Score, Corneometry and Image Analysis**, Medical University, Plovdiv, Bulgaria

The term "dry skin" describes a skin condition characterized by reduced quantity and/or quality of moisture and/or lipids. The visible symptoms of dry skin are roughness, scaling and reduced elasticity.

In addition, patients complain about tightness and itching. Clinical evaluation of dry skin and is based upon visual and tactile evaluation of clinical signs using descriptive ordinal scales. involving the measurements of moisture content using electric skin properties (conductance, impedance and capacitance of the stratum corneum), skin roughness, transepidermal waterloss (TEWL), lipid content and desquamation.

A. Krebs, **Prüfung der irritativen Wirkung von hydrophilen und lipophilen Irritantien im repetitiven Irritationstest,** Dissertation der Medizinischen Fakultät der Friedrich-Schiller-Universität Jena

P. Humbert, P. Creidi, A. Richard, A. Rougier, **Efficacy of a 5% ascorbic acid cream on skin aging induced by UVA**, JAAD Case Reports, 2005

The aim of this study was to assess the tolerance and the effect of a cream combining ascorbic acid and sunscreen on women with facial heliodermatitis, after receiving UVA and repeated application of the cream for 3 months. A 3-month, open study (daily application of the active on the face) was conducted in 20 women with heliodermatitis (age range, 50-65 years). At each visit (day 0, day 30, day 61, day 94), volunteers had a clinical examination on several items, and biometric measurements were performed: corneometry (CM825; Courage et Khazaka), cutometry (SM810; Courage et Khazaka), and wrinkles evaluation analyzed with fringe projection (prototype). These volunteers were irradiated with UVA 3 times per week over 3 months, with increasing doses (10 J/cm2 the first week, 15 J/cm2 the second week, 20 J/cm2 until the end of the study). Clinical scoring showed a significant increase in hydration, slackness, softness, bright complexion and a significant decrease in roughness and wrinkles. Skin hydration (SH) as determined by corneometry as well as skin elasticity (Ur/Ue) of the face were significantly increased by the cream (SH = 54.3 ± 9.3 at day 0 and SH = 63.5 ± 7.9 at day 94; Ur/Ue = 0.454 ± 0.113 at day 0 and Ur/Ue = 0.549 ± 0.084 at day 94). The wrinkles were significantly decreased as shown by the volume (V) assessed by fringe projection *in vivo { P* = .0361) and the depth of the wrinkles *(P* = .0024). One of the main causes of skin aging induced by the environment is UV radiation from the sun. Previous studies have shown that UV radiation decreases basal ascorbic acid levels. This study has shown the benefit of using a cream combining ascorbic acid and sunscreen in terms of protection and efficacy against photoaging, by improving wrinkles, skin elasticity, and skin hydration, even after 3 months of repeated UVA irradiation.

H. Dobrev, **The Effects of topically applied Matrixyl, natural grape seed and avocado oils on skin surface, hydration and elasticity**, EADV, May 2005, Sofia, Bulgaria (abstract/poster)

Background: Matrixyl is a lipophilic pentapeptide that stimulates the collagen synthesis by fibroblasts in the skin. The grape seed extract is rich in flavonoids which are powerful antioxidants. Avocado oil consists predominantly of unsaturated fatty acid glycerides, vitamins and minerals, and has good emollient properties.

A. Bornkessel, M. Flach, M. Arens-Corell, P. Elsner, J. W. Fluhr, **Functional assessment of a washing emulsion for sensitive skin: mild impairment of stratum corneum hydration, pH, barrier function, lipid content, integrity and cohesion in a controlled washing test,** Skin Research and Technology, 2005-11, May, p. 53-60

Sensitive skin has been described as a skin type with higher reactivity than normal skin and exaggerated reactions to external irritants. Washing with soaps is harmful for barrier-related parameters.

H. Arimoto, M. Egawa, Y. Yamada, **Depth profile of diffuse reflectance near-infrared spectroscopy for measurement of water content in skin**, Skin Research and Technology, 2005-11, May, p.27-35

The penetration depth of light in diffuse reflectance near-infrared spectroscopy for measuring water content in skin is assessed both from theoretical and experimental points of view.
Near-infrared (NIR) spectroscopy provides information on such aspects as constituents concentration.

K. O´goshi, J. Serup, **Inter-instrumental variation of skin capacitance measured with the Corneometer®,** Skin Research and Technology 2005-11, May, p. 107-109

Commercially available measuring devices that allow for the quantitative evaluation of the stratum corneum (SC) function and provide continuous data are an important advance in experimental dermatology. The measurement of skin surface hydration state has gained considerable interest in recent years because the water content of the SC influences various physical characteristics of the skin such as barrier function, drug penetration, and mechanical properties.

G. Korinth, Th. Göen, H. M. Koch, Th. Merz, W. Uter, **Visible and subclinical skin changes in male and female dispatch department workers of newspaper printing plants**, Skin Research and

Technology 2005-11, May, p. 132-139

Irritant hand dermatitis is one of the major occupational diseases. Approximately 90% of all cases of hand eczema are caused by occupational exposure. It is a well-established fact that wet work and skin exposure to detergents or solvents often trigger irritant contact dermatitis. Even water can be a skin irritant itself.

V. Brazarelli, T. Barbagallo, F. Prestinari, C. Rona, A. de Silvestri, V. Trevisan, G. Borroni, **Non-Invasive Evaluation of Tacalcitol plus PUVA Versus Tacacitol plus UVB-NB in the Treatment of Psoriasis: "Right-Left Intra-Individual - Pre/Post Comparison Design",** International Journal of Immunopathology and Pharmacology Vol. 18, No. 4, p. 755·760 (2005)

Photochemotherapy with psoralen plus ultraviolet A (PUVA) and phototherapy with UVB narrow band (UVB-NB) are used in the treatment of psoriasis. Numerous studies have shown that the additional administration of either topical or systemic antipsoriatic agents may effectively increase the efficacy of these therapies. This study aimed to compare through objective data the efficacy of topical tacalcitol in combination with PUVA or UVB-NB versus PUVA and UVB-NB monotherapy in the treatment of mild to moderate chronic plaque psoriasis. Modified Psoriasis Area and Severity Index (PAS!) score, transepidermal water loss (TEWL) and stratum corneum hydration were used to monitor the restoration of skin barrier in the psoriatic plaques of 40 patients during photochemotherapy. The study was a right-left, intra-individual, pre/post comparison trial. PUVAand UVB-NB treatments were given three times a week. On those plaques localized on the right side ofthe body tacalcitol ointment was applied once a day, in the evening. Corneometry, TEWL and modified PASI score were used to evaluate the response to the treatment at baseline, one month and two months. Thirty-six ofthe forty enrolled subjects completed the study. The comparison between combination treatments and the PUVAlUVB-NB monotherapy showed no significant differences with regard to modified PASI index. However, significant differences were recorded with regard to TEWL and corneometry. The combination oftacalcitol plus PUVAor tacalcitol plus UVB-NB restored epidermal barrier functions as well as skin hydration faster than PUVA or UVB-NB monotherapy (TEWL: p=O.0050 and corneometry: p=O.003). The combination of tacalcitol plus UVB-NB allowed a better restoration of skin barrier functions than tacalcitol plus PUVA (p=0.013). In conclusion, the combination of tacalcitol plus PUVA or plus UVB-NB improves the therapeutic result. In addition, the data from TEWL and skin hydration suggest a means in which tacalcitol plus UVB-NB induces a better normalization of skin biophysical parameters.

R. Debowska, K. Rogiewicz, T. Iwanenko, M. Kruszewski, I. Eris, **Folic Acid (Folacin) – New Application of a Cosmetic Ingredient**, Kosmetische Medizin 3/2005, p. 16-22

Many years of trials and research tests proved that a lot of well-known vitamins could be successfully used in cosmetology. The available data indicate that one of them – folic acid plays an important role in life process of mitotically active tissues and its deficiency increases background level of DNA damage.

I. Arsic, S. Tamburic, S. Bulatovic, I. Homsek, G. Vuleta, **Exploring moisturising potential of naturals: The cases of St. John´s wort, chamomile and blackthorn**, Euro Cosmetics 3, 2005, p. 14-21

The application of plant extracts in cosmetics and toiletries has been a distinct trend over the last decade and, given consumers´ interests in naturals, will probably continue. Both cosmetic and dermatological practices have benefited from the use of new and re-discovered plants, as well as plant biotechnology extracts.

K. Friebe, **Einfluß von Okklusionseffekten auf die Epikutantestung mit Natriumlaurylsulfat,** Dissertation an der Philipps-Universität Marburg, 24.02.2005

Zur Bestimmung der Hautempfindlichkeit werden Epikutantestungen mit dem Detergens Natriumlaurylsulfat (NLS) schon seit Jahren in der dermatologischen Diagnostik als Hautirritationstests eingesetzt. Eine klinische Relevanz besitzen diese Irritationstests für die chronisch-irritative Kontaktdermatitis, die zu den häufigsten Hauterkrankungen gehört. Bei der Bewertung der infolge der Testung auftretenden Hautreaktionen kommen neben der visuellen Beurteilung verschiedene nicht-invasive hautphysiologische Meßmethoden zum Einsatz, von denen die Messung des transepidermalen Wasserverlustes (TEWL) am aussagekräftigsten erscheint.

G. Guglielmini, M. Cucchiara, **Cosmetic treatment for heavy legs**, Poster Presentation, IFSCC Orlando USA, 2004

Heavy legs is a really widespread problem. It hits the 50% of the adults of more than 50 years old, with a prevalence for female sex, interested 4 times more than the male one. Subjects perceive some symptoms associated to a sense of tiredness and to a sensation of pain for lower limbs…

M. Gloor, B. Wasik, W. Gehring, R. Grieshaber, P. Kleesz, J.W. Fluhr, **Cleansing, dehydrating, barrier-damaging and irritating hyperaemising effect of four detergent brands: comparative studies using standardised washing models,** Skin Research and Technology 2004; 10: 1-9.

Background and problem: It is well known that the damaging effect of surfactants on the stratum corneum varies according to the surfactant used. The present investigations aim to compare four standard commercial cleansing solutions (Esemptan® Cleansing Lotion, Stephalen® Shower Gel, Manipur® Antimicrobial Cleansing Solution and Tork® Mevon55™ Liquid Soap) with respect to their cleansing and skin barrier-damaging effects.

K. Matsumoto, K. Mizukoshi, M. Oyobikawa, H. Ohshima, H. Tagami, **Establishment of an atopic dermatitis-like skin model in a hairless mouse by repeated elicitation of contact hypersensitivity that enables to conduct functional analyses of the stratum corneum with various non-invasive biophysical instruments**, Skin Research and Technology 2004, 10, p. 122-129

Pathogenesis of atopic dermatitis (AD) has been studied in animal models such as the NC/Nga mouse strain or Balb/C mice that are repeatedly treated with 2,4,6-trinitro-1-chrolobenzene (TNCB). These mice exhibit features of chronic contact dermatitis, including an intensified early type skin reaction, increased number of mast cells and elevated serum IgE levels with a shift of cutaneous cytokine expression from a type 1 to type 2 profile.

K.L. Gebhard, **Evaluation und Standardisierung von Hauttestungen zur Diagnostik der irritativen Kontaktdermatitis,** Digitale Bibliothek der Universität Marburg, 2004

Ziel der vorliegenden Arbeit ist es, durch Variation verschiedener Applikationszeiten, Konzentrationen und Vorbehandlungen (VB) der Teststellen zu evaluieren, ob der bisher übliche 24-stündige epikutane Irritationstest auf 4 Stunden verkürzt werden kann. Hierzu wude an 36 hautgesunden Probanden ein epikutaner Natriumlaurylsulfat-Test (NLS-Test) auf die oberen Rückenpartien appliziert. Folgende Variablen wuurden hierzu angewendet: a) Applikationszeiten: 4 und 24 Stunden b) Messzeitpunkte: 4, 24 und 72 Stunden c)Testkonzentrationen: 0,5%, 1%, 2%, 5% NLS-Lösung in aqua dest. d) Fünf versdschiedene VB der Teststellen.

M. Gloor, B. Senger, M. Langenauer, J. W. Fluhr, **On the course of the irritant reaction after irritation with sodium lauryl sulphate**, Skin Reserach and Technology 2004, 10, p. 144-148

The sodium lauryl sulphate (SLS) irritation test is a well-established model for irritant contact dermatitis after the effects of surfactants. The course of changes in corneometric measurements (stratum corneum hydration), in transepidermal water loss (TEWL), in laser Doppler measurements (epidermal perfusion) and in colorimetric measurements (skin redness), after a single SLS irritation, should be studied over time.

U. Kappes, S. Schliemann-Willers, L. Bankova, C. Heinemann, T.W. Fischer, M. Ziemer, H. Schubert, J. Norgauer, J.W. Fluhr, P. Elsner, **The quality of human skin xenografts on SCID mice: a noninvasive bioengineering approach**, Br J Dermatol, 2004 Nov;151(5): p 971-976

Background: Animal models are important tools for studies in skin physiology and pathophysiology. Due to substantial differences in skin characteristics such as thickness and number of adnexa, the results of animal studies cannot always be directly transferred to the human situation. Therefore, transplantation of human skin on to SCID (severe combined immunodeficiency) mice might offer a promising tool to perform studies in viable human skin without the direct need for human volunteers. Objectives: To characterize the physiological and anatomical changes of a human skin transplant on a SCID animal host. Methods: In this study human skin was transplanted on to 32 SCID mice and followed for 6 months. Barrier function was assessed by transepidermal water loss (TEWL; tewametry) and moisture content of the stratumcorneum was studied by measurement of electrical capacitance (corneometry). Results: The results showed considerable deviations of TEWL values and skin hydration between the grafts and human skin in vivo. The human skin showed epidermal hyperkeratosis and moderate sclerosis of the corium 4 and 6 months after transplantation on to SCID mice. Conclusions: Our results indicate that human skin does not completely preserve its physiological and morphological properties after transplantation on to SCID mice. Therefore, results from experiments using this model system need to be discussed cautiously.

P. Gasser, L. Peno-Mazzarino, E. Lati, B. Djian, **Original semiologic standardized evaluation of stratum corneum hydration by Diagnoskin® stripping sample**, International Journal of Cosmetic Science, 2004, 26, p. 117-127

Synopsis: In a normal and healthy skin, the regular elimination of the superficial corneocytes,

called desquamation, is a fundamental physiologic process intended to protect the barrier function of the skin. This invisible loss of corneocytes, individually or in small groups, is incessantly compensated by the divisions of the proliferative layer and the upward cellular maturation in order to maintain the harmonious renewal of the epidermis and the integrity of the stratum corneum.

J. W. Fluhr, J. Ennen, **Standardized washing models: facts and requirements**, Skin Research and Technology, 2004, 10, p. 141-143

Regular skin cleansing with washing substances has medical, cosmetic, hygienic and socio-cultural functions. In western cultures, the hygienic and cosmetic aspects prevail. The aim of a washing process is to remove or reduce dust particles, microorganisms and odorous substances. The resident skin flora in a washing process can be reduced significantly. The antiseptic effect of washing is gained independently from the function of tensides, through the removal of dust and dandruff material from the skin and hence through a reduction of growth medium for bacteria.

I. Nicander, S. Ollmar, **Clinically normal atopic skin vs. non-atopic skin as seen through electrical impedance,** Skin Reserach and Technology 2004, 10, p. 178-183

In an earlier study, we have shown that the electrical impedance (IMP) is dependent on the lipid content of the stratum corneum as studied by lipid extraction. Therefore, we now employ the IMP technique to compare the properties of clinically normal atopic skin with that of non-atopic skin.

J.-L. Lévêque, E. Goubanova, **Influence of Age on the Lips and Perioral Skin,** Dermatology, 2004, 208, p. 307-313

There are few objective descriptions of the age-related changes taking place on the lips and perioral skin. This zone, however, has great importance in relational functions. Objectives: To describe quantitatively the age-related changes in dimensions of the lips and the appearance of the perioral wrinkles, to revisit, thanks to a new method, the pattern of the lip furrows, to compare the hydration states of the upper and lower lips.

H. Ranc, A. Elkhyat, C. Servais, B. Launay, P. Humbert, **Coefficient de friction et mouillabilité de la muqueuse linguale : influence d'une couche de mucus salivaire**, Nestlé Research Center, Nestec Ltd., Lausanne, Suisse

Les aliments, une fois en bouche, sont cisaillés et comprimés entre la langue et des surfaces telles que les dents et le palais. La tribologie appliquée aux surfaces interagissant en bouche devrait permettre d`expliquer certains phénomènes physio-chimique qui régissent la perception orale de la structure des aliments.

C. Packham, **You need hands: protecting your hands from the working environment**, Health & Safety International, October 2004

In our daily life our hands will be exposed to many different hazards. Some of these will occur, or mainly, at work, some in the home or in our hobbies or free time activities. In principle we can divide these hazards into two main groups: physical and chemical.

P. Landa, F. Lam, I. Morosov, R. Rothman, D. Howard, A. Gestmann, **Glycerin and Hydroxyethyl Urea: Comparing Two Skin Moisturizers**, Cosmetic & Toiletries, Vol. 119, No. 10, Oct. 2004

Glycerin is widely considered to be the industry bench mark for skin moisturization. It has been demonstrated by numerous methods to be an effective moisturizer when used at levels above 3%, although the choice of vehicle can influence performance.

A. Elkhyat, C. Courderot-Masuyer, S. Mac-Mary, S. Courau, T. Gharbi, P. Humbert, **Assessment of spray application of Saint GERVAIS water effects on skin wettability by contact angle measurement comparison with bidistilled water**, Skin Research and Technology 10, p. 283-286, 2004

The skin is responsible for protecting the body from physical, chemical and microbial injuries. The stratum corneum is the top layer of the epidermis and it plays a key role in helping to contain moisture. When the skin becomes damaged, it's ability to perform these functions is compromised. Dry skin is a common form of skin damage. Contact angle 0 between a surface and water is a good indicator of hydrophobic or hydrophilic tendency of surfaces.

I. Angelova-Fischer, I. Petrov, P. Elsner, J.W. Fluhr, T.L. Diepgen, **The objective severity assessment of atopic dermatitis (OSAAD) score: interobserver variability with reference to the SCORAD score**, Skin Research and Technology 10, Abstracts, 2004

The need for reliable and reproducible measures for assessment of atopic dermatitis severity has resulted in the development of numerous scores most of which have not been adequately tested in terms of validity, reliability, responsiveness to change and acceptability. The SCORAD index of the European Task Force on Atopic Dermatitis has been considered the standard outcome measure in clinical trials in the last decade.

H. Lambers, S. Piessens, A. Bloem, H. Pronk, P. Finkel, E. Voss, **Natural skin surface pH is on average below 5, which is beneficial for its resident flora,** Skin Research and Technology 10, Abstracts, 2004

The acidic surface pH as well as the pH gradient over the gradient over the stratum corneum (SC) are important for a good skin condition, supporting optimal structure and function of the lipid barrier and SC homeostasis.

M. Visscher, J. Smith, R. Wickett, S. Hoath, **Effect of hand hygiene regimens on stratum corneum integrity and function,** Skin Research and Technology 10, Abstracts, 2004

A national patient safety goal for 2004 is to reduce the risk of healthcare-acquired infections. To achieve this goal, the organizations have been directed to comply with the hand hygiene guideline issued in 2002 by the Centers for Disease Control (CDC). It developed to reduce the transmission of microorganisms to patients and health care workers (HCW).

J.J. Wille, **Corneotherapy: skin hydration and occlusivity of some commercial skin moisturizers and skin protectants**, Skin Research and Technology 10, Abstracts, 2004

Corneotherapy is defined here as a topical treatment that improves the condition of the stratum corneum. In this respect, cosmetic and dermatological vehicles play an important role independent of their capacity to deliver drugs or cosmetic actives, in formulating an optimal topical treatment for skin diseases such as atopic dermatitis.

N. Barai, M. Visscher, A. LaRuffa, V. Narendan, S. Hoath, **Vernix caseosa treatment for epidermal barrier repair**, Skin Research and Technology 10, Abstracts, 2004

The very low birth weight (VLBW) preterm infant lacks vernix caseosa (VC), has an incompetent stratum corneum (SC) barrier, and is predisposed to high water loss. Treatment with non-physiologic creams (e.g., petrolatum, oils) have been associated with increased nosocomial infection and delayed barrier repair.

S. Savic, S. Tamburic, M. Savic, N. Cekic, J. Milic, G. Valuta, **Vehicle-controlled effect of urea on normal and SLS-irritated skin**, International Journal of Pharmaceutics, Oct. 2004

It is known that, depending on the concentration, treatment with urea could improve skin barrier function, despite its penetration-enhancing properties. This controversial skin effect of urea has been explored systematically in this study in terms of the effect of vehicle on the performance of urea. In the first part, a series of four semi-solid emulsions with 5% (w/w) urea, varying in the type of emulsion, nature of emulsifier and polarity of oil ingredients, have been evaluated with regard to their skin hydrating and transepidermal water loss (TEWL)-modifying properties.

S. L. Zhang, C. L. Meyers, K. Subramanyan, **Near-infrared imaging: a better approach to measure and visualize skin hydration and to assess the mildness of skin cleansers**, Poster Presentation, IFSCC Orlando USA, 2004

Optimal hydration is one of the key factors for effective functioning of the stratum corneum. The state of skin hydration has been typically assessed through instrumental methods that depend on the correlation of skin hydration with the electrical conductance and capacitance responses of the skin.

H. Shibayama, H. Indo, K. Ueda, K. Yoshio, Y. Kook Choi, Y. Ishigami, M.S. Yang, D.S. Lim, G.Y. Lee, S.S. Lee, **New Derivatives of Supiculisporic Acid as Biosurfactants and Application for Cosmetics,** IFSCC Orlando USA, 2004

It is well known that some microorganisms produce surface-active substances on cultural conditions.

G. Vielhaber, J. Ley, O. Koch, **N-Palmityl-4-Hydroxy-L-Proline Palmityl Ester: A Ceramide Analogue that provides efficient skin barrier repair,** IFSCC Orlando 2004, Podium Proceedings

The epidermal permeability barrier protects the skin against uncontrolled water loss and environmental damage. It is located in the horny layer and consists of a compact lipid matrix of ceramides, fatty acids and cholesterol embedded between the corneocytes.

H. Nishimura, Y. Takasuka, M. Yamamoto, **Optical Properties of Skin Gloss and Development of "Mizumizushii" – Looking Makeup Foundation***,* IFSCC Orlando 2004, Podium Proceedings

Modern makeup formulations are becoming ever more complex and diversified. Although sunscreens and moisturizers are often added for better skin protection, the primary function for foundation makeup remains making the skin appear beautiful.

B.M. Morrison, M. Paye, V. Charbonnier, H.I. Maibach, **The Effect Of Surfactants On Skin As Measured By Squamometry : A Sensitive Way To Observe Sub-Clinical Irritant Dermatitis**, IFSCC Orlando 2004, Podium Proceedings

In order to define the early parameters of surfactant induced skin dryness, an exaggerated hand washing model has been chosen to assess the effects of three surfactants, SLS, SLES, and AOS on stratum corneum function as measured visually, instrumentally, and through Squamometry. These three surfactant solutions were compared to their water controls.

A.L. Agero, V.M. Verallo-Rowell, **A randomized double-blind controlled trial comparing extra virgin coconut oil with mineral oil as a moisturizer for mild to moderate xerosis**, Dermatitis, 2004 Sep;15(3): p. 109-116

Background: Xerosis is a common skin condition (1) characterized by dry, rough, scaly, and itchy skin, (2) associated with a defect in skin barrier function, and (3) treated with moisturizers. People in the tropics have effectively used coconut oil as a traditional moisturizer for centuries. Recently, the oil also has been shown to have skin antiseptic effects. A moisturizer with antiseptic effects has value, but there are no clinical studies to document the efficacy and safety of coconut oil as a skin moisturizer. Objective: This study aimed to determine the effectivity and safety of virgin coconut oil compared with mineral oil as a therapeutic moisturizer for mild to moderate xerosis. Methods: A randomized double-blind controlled clinical trial was conducted on mild to moderate xerosis in 34 patients with negative patch-test reactions to the test products. These patients were randomized to apply either coconut oil or mineral oil on the legs twice a day for 2 weeks. Quantitative outcome parameters for effectivity were measured at baseline and on each visit with a Corneometer CM825 to measure skin hydration and a Sebumeter SM 810 to measure skin lipids. For safety, transepidermal water loss (TEWL) was measured with a Tewameter TM210, and skin surface hydrogen ion concentration (pH) was measured with a Skin pH Meter PH900. Patients and the investigator separately evaluated, at baseline and at each weekly visit, skin symptoms of dryness, scaling, roughness, and pruritus by using a visual analogue scale and grading of xerosis. Results: Coconut oil and mineral oil have comparable effects. Both oils showed effectivity through significant improvement in skin hydration and increase in skin surface lipid levels. Safety was demonstrated through no significant difference in TEWL and skin pH. Subjective grading of xerosis by the investigators and visual analogue scales used by the patients showed a general trend toward better (though not statistically evident) improvement with coconut oil than with mineral oil. Safety for both was further demonstrated by negative patch-test results prior to the study and by the absence of adverse reactions during the study. Conclusion: Coconut oil is as effective and safe as mineral oil when used as a moisturizer.

M. Fröschle, R. Plüss, A. Peter, F. Etzweiler, **Phytosteroids for skin care**, Personal Care, Vol. Sept. 2004

Healthy skin is a largely self-regulating system. In order to keep metabolic processes functioning efficiently, the relevant biological precursors and activators must be available to the skin cells for metabolism. If, due to age-related changes, the body no longer provides a sufficient amount of certain substances, an additional external supplement can proactively support the biological processes and thus counteract the advance of the ageing process.

S.L. Hester, C.A. Rees, R.A. Kennis, D.L. Zoran, K.E. Bigley, A.S. Wright, N.A. Kirby, J.E. Bauer, **Evaluation of Corneometry (Skin Hydration) and Transepidermal Water-Loss Measurements in two Canine Breeds**, The American Society for Nutritional Sciences J. Nutr. 134:2110S, August 2004

Mammalian skin is a highly dynamic organ that is constantly adapting to changes in its environment. It provides structural, sensory, immunologic, and physiologic functions and contributes an essential barrier function against potential environmental insults.

I. Van Reeth, M. Moré, R. Hickerson, **New Formulating Options with Silicone Emulsifiers**, Euro Cosmetics 6, Juni 2004, 12. Jahrgang, Vol. Nr. 12

In today´s highly competitive skin care and underarm markets, multifunctional, high performance products have the best chance of success. Consumers expect convenience and superior aesthetics.

They want long-lasting, highly efficient moisturizers; effective antiaging and anti-wrinkle creams; durable, wash-off resistant, protective color cosmetics; and underarm products that go on smoothly, without tackiness or residue

R. Rudolph, E. Kownatzki, **Corneometric, sebumetric and TEWL measurements following the cleaning of atopic skin with a urea emulsion versus a detergent cleanser,** Contact Dermatitis, 2004 Jun;50(6): p. 354-358

A non-detergent urea emulsion cleanser and a detergent cleanser with added moisturizers were compared for their effects on stratum corneum moisture, surface lipids and transepidermal water loss (TEWL) of atopic skin. Following a single wash with either cleanser, low corneometry and sebumetry values increased and elevated TEWL values decreased. Over the course of more than 6 h, all induced changes gradually returned to their starting points. In all instances, the changes induced by the urea emulsion lasted significantly longer than those caused by the detergent cleanser. The sebumetry increase after a wash with the lipid-free detergent cleanser indicated that this method recognized not only true lipids but also the lipid-derived and skin lipid-depleting detergents. The transient TEWL normalization with either cleanser could not be attributed to a passing barrier restoration nor to an occlusion. It is speculated that the TEWL changes were related to stratum corneum water binding capacity.

H. Tronnier, U. Heinrich, **Beautytek-Studie: Gutachten über einen Wirksamkeitsnachweis einer kosmetischen Behandlung**, i. A. der Firma MediLab Research + Trading GmbH & Co., Würzburg, Mai 2004

Durch die Behandlung mit dem beautytek-Verfahren wurden bei **allen** Probanden gute Ergebnisse erzielt. Sowohl im Brust- wie im Oberschenkelbereich wurden positive Beeinflussungen **aller** Parameter festgestellt: 1. Messung der Elastizität...2. Messung der Hautdichte (Ultraschall) – Cellulitereduktion.*

K.L. Gebhard, **Evaluation und Standardisierung von Hauttestungen zur Diagnostik der irritativen Kontaktdermatitis**, Dissertation des Fachbereichs Humanmedizin der Philipps-Universität Marburg, April 2004

Die irritative Kontaktdermatitis (IKD) ist eine im klinischen Alltag häufig anzutreffende Erkrankung, deren Diagnostik jedoch, aufgrund ihres morphologisch sehr ähnlichen Erscheinungsbildes zur allergischen Kontaktdermatitis (AKD) (Björnberg, 1968) und anderen dermatologischen Krankheitsbildern, oft sehr schwierig ist. Zur Erleichterung der Diagnostik werden routinemäßig epikutane Irritationstests durchgeführt. Mit Hilfe solcher Tests kann die Diagnosestellung einer IKD vereinfacht, aber auch frühzeitig Hautrisikogruppen identifiziert werden. Ein Standardtest ist hier der Natriumlaurylsulfat (NLS)-Test. Dieser Test besteht klassischer Weise aus einer 24-stündigen Applikation okklusiver Testpflaster, die mit einer 0,5 %-igen NLS-Lösung in aqua destillata (aqua dest.) getränkt sind. Zur objektiven Messung der Testergebnisse stehen verschiedene nicht-invasiveb hautphysiologische Meßmethoden zur Verfügung, z.B. die Messung des transepidermalen Wasserverlustes (TEWL).

H. Dobrev, **Impact of Three Different Emulsions on Skin Hydration And Elasticity,** Department of Dermatology and Venereology, Med. Uni. Plovdiv, Bulgaria

The well-hydrated skin is smooth, soft and elastic. Therefore, the restoration and maintenance of skin water content is the main goal of skin care products. Currently, two kind of moisturizers are used Emollients (lipids), which reduce the loss of water from the skin by simple occlusion of its surface and by improvement of water-holding capacity of stratum corneum in result of restoration of the lipid layers around the corneocytes.
Humectants (urea, glycerin, lactic acid, pyrrolidone carboxylic acid, hyaluronic acid), which bind or attract water in or to the corneal layer.

M. Fröschle, R. Plüss, K. Bojarski, A. Peter, **Antiaging Effect with Cosmotropic Substances**, SOFW-Journal, 130, 4 2004, S. 36-43

Water is one of the most important and limiting factors for plants, animals and humans. The human being consists of 60-65% water and loses daily up to several liters through the skin. The regulation of water content is therefore very significant. Plants especially have developed fascinating physiological and structural strategies to minimize water loss and survive periods of dryness.

C. Packham, **Damage to health from dermal exposure**, Facilities Manager 2004 (Health and Safety), p. 1-2

Although there are no reliable statistics about the extent of damage to health from workplace dermal exposure, there is no doubt that such exposure is a major contributor to the high level of occupational ill health that still occurs in most industrial countries.

R. Plüss, M. Fröschle, K. Bojarski, A. Peter, P. Bottiglieri, **Resurrection in Cosmetics,** Conference Proceedings, Personal Care Ingredients Asia, Guangzhou, March 2004

Resurrection plants possess the fantastic ability to dry out and then reach their normal state again and continue growing a short time after being remoisturized. For this to be possible there has to be an ingenious protection system in place in than plant during the drying-out phase as well as an extraordinary ability to restructure the plant's cell structure during the remoisturization period. This potential of resurrection plants could be incorporated in the active complex S-61. As the test results showed, a short treatment of 1 – 2 weeks with a cream containing the active complex S-61 improves the skin's appearance, with the skin looking clearly revitalized. The skin is seen to have restructured itself, wrinkling is significantly reduced and the suppleness of the skin can be felt as being improved. The skin's ability to resist wear and tear from its external environment is seen to improve.

E. Camel, L. Arnaud-Boissel, L. Basset, S.K. Tan, J.-P. Guillot, **Do Skin Moisturization, pH Colour, Water Loss, Lipids or Age, Phototype and Racial Origin (Asian/Caucasian) Affect S.P.F.?**, Personal Care Ingredients Asia, Guangzhou, March 2004

The aim of these studies was first to investigate the possible reasons inducing S.P.F. variations during clinical testing, as regards specific cutaneous parameters (skin colour, hydration, barrier function, pH, surface lipids …), and secondly to assess the effect of racial origin (Asian/Caucasian) in a large range of sunscreen products (S.P.F. 4 to 30).

J. W. Arbogast, E. J. Fendler, B. S. Hammond, *T.J. Cartner, M.D. Dolan, Y. Ali, H.I. Maibach,* **Effectiveness of a Hand Care Regimen with Moisturizer in Manufacturing Facilities Where Workers Are Prone to Occupational Irritant Dermatitis**, Dermatitis, Vol. 15, No 1 (March), 2004: p. 10-17

Background: Limited information documents the prevention and treatment benefits of a hand care regimen using moisturizer in a controlled manner for employees in typical manufacturing situations. Objective: The objective was to assess the effectiveness of a comprehensive skin care program including skin conditioning lotion in multiple manufacturing environments where employees are at high risk for skin disease.

J.Y. Song, H.A. Kang, M.Y. Kim, Y.M. Park, H.O. Kim, **Damage and recovery of skin barrier function after glycolic acid chemical peeling and crystal microdermabrasion**, Dermatol Surg. 2004 Mar;30(3): p. 390-4

Background: Superficial chemical peeling and microdermabrasion have become increasingly popular methods for producing facial rejuvenation. However, there are few studies reporting the skin barrier function changes after these procedures. Objective: To evaluate objectively the degree of damage visually and the time needed for the skin barrier function to recover after glycolic acid peeling and aluminum oxide crystal microdermabrasion using noninvasive bioengineering methods. Methods: Superficial chemical peeling using 30%, 50%, and 70% glycolic acid and aluminum oxide crystal microdermabrasion were used on the volar forearm of 13 healthy women. The skin response was measured by a visual observation and using an evaporimeter, corneometer, and colorimeter before and after peeling at set time intervals. Results: Both glycolic acid peeling and aluminum oxide crystal microdermabrasion induced significant damage to the skin barrier function immediately after the procedure, and the degree of damage was less severe after the aluminum oxide crystal microdermabrasion compared with glycolic acid peeling. The damaged skin barrier function had recovered within 24 hours after both procedures. The degree of erythema induction was less severe after the aluminum oxide crystal microdermabrasion compared with the glycolic acid peeling procedure. The degree of erythema induced after the glycolic acid peeling procedure was not proportional to the peeling solution concentration used. The erythema subsided within 1 day after the aluminum oxide crystal microdermabrasion procedure and within 4 days after the glycolic acid peeling procedure. Conclusions: These results suggest that the skin barrier function is damaged after the glycolic acid peeling and aluminum oxide crystal microdermabrasion procedure but recovers within 1 to 4 days. Therefore, repeating the superficial peeling procedure at 2-week intervals will allow sufficient time for the damaged skin to recover its barrier function.

L.J. Draaijers , Y.A.M. Botman, F.R.H. Tempelman, R.W. Kreis, E. Middelkoop, P.P.M. van Zuijlen, **Skin elasticity meter or subjective evaluation in scars: a reliability assessment,** Volume 30, Issue 2, p.

109-114 (March 2004)

Abstract**:** Various methods are available for evaluating the elasticity of scars. However, the reliability and validity of these methods have been sparsely examined. The aim of this study was to examine the reliability of the subjective evaluation of scar pliability, while at the same time testing the reliability of the measurements of a non-invasive suction device (Cutometer® Skin Elasticity Meter 575) on scars. Four observers assessed 49 scar areas of 20 patients with a subjective assessment of pliability. Subsequently, each observer measured the scar areas with the Cutometer. The intraclass correlation coefficients (ICC) of the elasticity (Ue) and extension (Uf) parameters of the Cutometer were acceptable (r=0.76 and 0.74, respectively) when a single observer carried out the measurements. The subjective assessment of pliability needs to be completed by two or more observers to make the evaluation reliable (r=0.79). The concurrent validities between the subjective pliability–assessment and each of the Cutometer parameters were statistically significant and ranged from r = 0.29–0.53. The correlations between each of the Cutometer parameters were high and statistically significant (r 0.71). *Conclusion:* A single observer can reliably use the Cutometer for the elasticity measurements of scars. Furthermore, either Ue or Uf, instead of all five elasticity values provided by the Cutometer, can be adequately used for the elasticity measurements of scars. The subjective assessment of pliability of scars can only be assessed reliably when completed by two or more observers. The concurrent validity showed that all Cutometer parameters, except for visco-elasticity (Uv), and the subjective assessment of pliability measured the same characteristic of a scar.

K. Subramanyan, A.W. Johnson, M. Bryk, S. Krein, **Developing an Ultra-Mild Cleanser for Sensitive Skin**, American Academy of Dermatology, Washington D.C., Feb. 6-11, 2004

Patients with atopic dermatitis, psoriasis, rosacea, and related skin disorders are known to have a defective stratum corneum (SC) barrier that makes them susceptible to penetration of irritant molecules into skin.

I. Arsic, S. Tamburic, S. Savic, I. Homcek, G. Vuleta, **The Effect of Chamomile Extract on Skin Hydration and Tewl: Is it more effective when encapsulated in Liposomes**?, Euro Cosmetics, Ausgabe 2-2004, S.12-17

The aim of this study was to investigate whether the extract of chamomile (Chamomilla recutita, (L) Rausch, Asteraceae) increases skin hydration level and its barrier properties when used in an O/W cream. In addition, it was of interest to find out whether the encapsulation of chamomile extract in liposomes affects its skin functionality.

S. Amari, C. Schubert, **From Olive Oil an Innovative O/W Peg-free emulsifier: OLIVEM 1000**, Euro Cosmetics, Ausgabe 2-2004, S. 18-22

Olive Oil is the one of the lipids showing the highest compatibility with our skin. Olive Oil in fact is a precious vegetable oil as it has got a high similarity to human skin lipids. The sebum secreted by the sebaceous glands works through an important activity: to protect the skin against the environment and to reduce the Trans-Epidermal-Water Loss.

R. von Pelchrzim, St. Soost, M. Worm, **Klinischer Hautzustand bei Beschäftigten im Gesundheitswesen und der Einfluß von Präventionsmaßnahmen**, Dermatologie in Beruf und Umwelt, Jahrgang 52, Nr. 1/2004, S. 26-32

Mitarbeiter des Gesundheitswesens sind aufgrund der häufig durchzuführenden Feucht- und Naßarbeiten besonders gefährdet, toxisch-irritative Handekzeme zu entwickeln. Durch geeignete Hautschutz- und pflegepräparate können die körpereigenen Reparaturmechanismen unterstützt werden. In einer prospektiven Untersuchung wurden der klinische Hautzustand und die hautphysiologischen Parameter bei Mitarbeitern des Pflegepersonals von Intensivstationen (IS) und Normalstationen (NS) überprüft.

A. Kramer, *V. Mersch-Sundermann***,** *H. Gerdes, E.-A. Pitten, H. Tronnier,* **Toxikologische Bewertung für die Händedesinfektion relevanter antimikrobieller Wirkstoffe**, in Günter Kampf (Ed.): Hände-Hygiene im Gesundheitswesen, Springer Verlag, 2003, Kapitel 5

In zahlreichen Ländern (z.B. Belgien, Dänemark, Deutschland, Finnland, Schweden, Schweiz und allen osteuropäischen Ländern) sind Hände-Desinfektionsmittel Arzneimitteln gleichgestellt und zulassungspflichtig.

G. Korinth, T. Goen, K.-H. Schaller, W. Uter, J. Angerer, H. Drexler, **Vergleichende Untersuchung zur Belastung und Beanspruchung am Arbeitsplatz durch Reinigunsmittel auf Mineralöl-und auf Pflanzenölbasis unter besonderer Berückstichtigung akuter und Chronischer Hauterkrankung,**

Abschlussbreicht zur Feldstudie „Alternative Reinigungsmittel“ der Universität zu Erlanden, Dezember 2003

J.L. Sugarman, J.W. Fluhr, A.J. Fowler, T. Bruckner, T.L. Diepgen, M.L. Williams, **The Objective Severity Assessment of Atopic Score – An Objective Measure Using Permeability Barrier Function and Stratum Corneum Hydration with Computer Assisted Estimates for Extent and Disease***,* Arch. Dernatol., Vol. 139, Nov. 2003

Clinical scores used to assess the severity of atopic dermatitis (AD) rely entirely on subjective criteria to the severity of lesions and the extent of involvement.

S. Schulz, C. Lautenschläger, I. Beyer, **Messung der Hydratation der Mundschleimhaut mit dem Corneometer CM 820**, Deutsche Zahnärtzliche Zeitung 58, 2003

Das Corneometer CM 820 ist ein Instrument zur kapazitativen Messung des Feuchtigkeitsgrades der Haut. Erstmalig wurde das Gerät introoral an der Mundschleimhaut bei 148 schleimhautgesunden Nichtrauchern, 27 Rauchern, 23 Totalprothesenträgern (Nichtraucher) und 15 Patienten der Radiotherapie erprobt.

A. Castro, **Evaluation of the moisturizing effectivity of different materials**, Colamiq Congress in Cartagena, 2003

La resequedad de la piel tiene diversos origenes: disminucion de lipidos, perdida de agua transepidermal, factores hormonales, geneticos, medicamentosos, ambientales. Durante muchos anos se han buscado medicamento o procedimientos que puedan revertir o detener los danos de la piel que se presntan a traves del curso de la vida, inducidos por factores externos o internos. La condicion de piel seca que afecta a un amplio universo de la poblacion, viendose mas marcada en la poblacion adulta, aunque tambien se presenta en la poblacion joven, juega un papel determinante en el proceso de envejecimiento de la piel (article is Spanish).

U. Heinrich, U. Koop, K. Osterrieder, S. Bielfeld, C. Chkarnat, J. Degwert, D. Häntschel, S. Jaspers, H-P. Nissen, M. Rohr, G. Schneider, H. Tronnier, **Multicentre comparison of skin hydration in terms of physical-, physiological- and product-dependent parameters by the capacitive method**, International Journal of Cosmetics Science, 2003, 25, 45-53 *

A multicentre study for measuring skin hydration with 349 volunteers was carried out in six different laboratories. The purpose of the study was to investigate physical-, physiological- and product-dependent parameters of three test emulsions (base, base+moisturizer and base+moisturizer+lipids) in a double-blind study. A comparison between analogous and digital sensor technology of the Corneometer CM 825 was examined.

E. Hernandez, **Bioengineering in Dermatology and Cosmetology: Methods, Studies and Prospects**, SOFW-Journal, 129. Jahrgang, 11-2003

One of the trends in modern dermatology and its perspectives for the near future are skin bioengineering and imaging. The 1st joint meeting of two scientific societies focusing on measurements and visualisation of skin function, structure and physiology – the International Society for Skin Imaging (ISSI) – took place in Hamburg, May 21-24, 2003. Before that, the meetings and conferences organised by these societies had been held separately.

P.-G. Sator, J.B. Schmidt, H. Hönigsmann, **Clinical Evidence of the Endocrinological Influence of a Triphasic Oral Contraceptive Containing norgestimate and Ethinyl Estradiol in Treating Women with Acne vulgaris,** Dermatology 2003;206: 241-248

Acne vulgaris is a multifactorial inflammatory follicular skin disorder occuring in pilosebaceus units, espacially on the face and the trunk. The major etiological factors are increased sebum production, hypercornification of the pilosebaaceous duct, abnormal microbial flora and inflammation. There are many different faces of acne. Acne and acneiform eruptions affect persons of all ages, beginning with neonatal acne and progressing to include rosacea in older persons. Acne vulgaris is the most common skin disorder, affecting close to 80% of people at least once between 11 and 30 years of age.

A.G. Shepky, A. Bürger, G. Rudolph, M. Max, U. Koop, J. Ennen, M. Kuhn, A. Schölermann, F. Rippke, **Mild keratolysis by topical application of proteolytic enzyme subtilisin**

The proteolytic enzyme subtilisin offers a novel, especially mild way of keratolysis, obtained already in low concentrations and within the normal pH-range of the skin. The highly purified protease subtilisin from Bacillus subtilis degrades the bonds between the corneocytes and promotes the release of peptides and amino acids as natural moisturizing factors.

A. del Pozo, M. Torello, C. Romero, A. Viscasillas, **Restitution of cutaneous barrier from o/w bigels emulsifier-free,** Association de Pharmacie Galenique Industrielle, Paris 22-23 Oct. 2003

To evaluate the capacity of modifying water retention at cutaneous level (WHC: water holding capacity) of formulation elaborated with Emulfree CBG (INCI: Isostearyl Alcohol and Butylene Glycol Cocoate and Ethylcellulose), a new stabilizer system o/w bigel type emulsifier-free preparations.

S. Guehenneux, I. Le Fur, E. Tschachler, **Influence of aircraft cabin environment on skin hydration in healthy women,** 12th EADV, 15-18. Oct. 2003, Barcelona

Airline passengers often complain about sensations of skin and mucous membrane dryness and discomfort due to the dry atmosphere in aircraft cabins. Moreover, low relative humidity in the aircraft cabin is an unavoidable consequence of pressurization at high altitudes. Despite the fact that very low humidity is routinely encountered, no study of its effects on the skin has been reported in the cabin environment. The aim of our study was to study the changes in skin hydration in healthy women during long distance flights.

P-A. Wendling, G. Dell'Acqua, **Skin biophysical properties of a population living in Valais, Switzerland,** Skin Research and Technology 2003, 9, 306-311

On average we observed low values of skin capacitance that identify subjects with dry skin. Measures of skin visco-elasticity ratios were also particulary low, while skin pH and sebum content were in the normal range. Age was correlated with a decrease of skin elasticity and sebum content, but there was no correlation with hydration or pH.

A.E. Sagiv, Y. Marcus, **The connection between in vitro water uptake and in vivo skin moisturization,** Skin Research and Technology 2003, 9, 306-311

Adding hydroxyl groups to a consecutive set of polyhydroxyalkanes increases the humectancy of the polyols in vitro. This elevation was found to be linear at low relative humidities (Relative humidity = 31,9 % and 37°C). In vivo, moisture was returned to normal within a week in all three groups. However, only glycerol managed to abolish the erythema within 7 days.

B. Hughes-Formella, **Teststrategien für Mittel gegen trockene Haut,** Skin Care Forum, Ausgabe 24, Sep. 2003

Trockene Haut stellt ein häufiges Problem in der Dermatologie dar und repräsentiert eine Dysfunktion der Epidermis, insbesondere des Stratum Corneum als morphologischem Äquivalent der Hautbarriere. Verschiedene Hauterkrankungen wie z.B. Atopische Dermatitis oder Ichthyose basieren auf einer genetischen Disposition für trockene Haut.

K. Biro, D. Thaçi, F.R. Ochsendorf, R. Kaufmann, W.H. Boehncke, **Efficacy of dexpanthenol in skin protection against irritation: a double-blind, placebo-controlled study**, Contact Dermatitis, 2003 Aug;49(2): p. 80-84

Dexpanthenol is popular in treating various dermatoses and in skin care, but few controlled clinical trials have been performed. We investigated the efficacy of dexpanthenol in skin protection against irritation in a randomized, prospective, double-blind, placebo-controlled study. 25 healthy volunteers (age 18-45 years) were treated for the inner aspect of both forearms with either Bepanthol Handbalsam containing 5% dexpanthenol or placebo x2 daily for 26 days. From day 15-22, sodium lauryl sulfate (SLS) 2% was applied to these areas x2 daily. Documentation comprised sebumetry, corneometry, pH value and clinical appearance (photographs). 21 volunteers completed the study, 3 were excluded because of non-compliance and 1 experienced a non-study-related, severe, adverse event. Only corneometry yielded a statistically significant difference, with decreased values following SLS challenge at the placebo sites ($P < 0.05$). Intraindividual comparisons showed superior results at the dexpanthenol-treated sites in 11 cases and in only 1 case at the placebo site. 6 volunteers experienced an irritant contact dermatitis, with more severe symptoms at the placebo site in 5 cases. In conclusion, dexpanthenol exhibits protective effects against skin irritation. The initiation of a study to evaluate the efficacy of dexpanthenol in preventing irritant occupational contact dermatitis under real workplace conditions is validated.

M. I. Nogueira de Camargo Harris, **Propriedades biomecânicas da pele,** Pele: estrutura, propriedades e envelhecimento, Editora Senac, Sao Paulo, 2003

A biometrologia cutânea, ramo da ciência que avalia quantitativamente as propriedades biomecânicas da pele, tem encontrado na cosmetologia um importante aliado, pois o apelo mercadologico dos produtos destinados aos cuidados com a pele e com os cabelos tem-se baseado

cada vez mais em evidências cientificas e tecnicas sensiveis, precisas e validadas, ao inves de serem fundamentadas em especulacoes.

S. Amari, A. Amari, C. Schubert, **Focus on the hydrating profile of two naturally derived emulsifiers,** Personal Care, July 2003

Olive oil is the one of the lipids showing the highest compatibility with our skin. The sebum secreted by the sebaceous glands is produced for an important reason: to protect the skin against the environment and to reduce the Trans-Epidermal-Water Loss (TEWL). When one examines and compares the percentage ranges of fatty acids, oleic acid, polyunsaturated fatty acid, waxy esters and squalene contained both in the skin and in wirgin olive oil, it is quickly evident that there is a remarkable similarity.

L.P.L. van de Vijver, E. Boelsma, R.A. Bausch-Goldbohm, L. Roza, **Subjective skin condition and its association with objective skin measurements**, Cosmetics & Toiletries, Vol. 118, No. 7, July 2003

From a group of 302 volunteers, the authors obtained both selfreported subjective evaluations of skin condition and objective measurements of skin conditions, and then looked for correlations between the subjective and objective kin measures.

M. Takahashi, M. Egawa, T. Hirao, **The frictional feel analyzer**, Skin Research and Technology, Vol. 9, No. 2, May 2003, Abstract No. 18

Sensory evaluation is important in the testing of cosmetic products. Several devices for the measurement of sensory properties have been developed in recent years. The objective here is to measure skin surface friction using these devices and to examine the correlation with other physiological parameters in order to evaluate the feasibility of using physical measurement to predict tactile sensation.

H.-C. Kim, S.-J. Hong, M.-H. Lee, J.-S. Moon, H.-S. Oh, M,-G. Kim, C.-H. Oh, S.-J. Park, **Objective evaluation of severity in SLS-induced irritant dermatitis: comparing the studies between new skin color analysis technique and other bioengineering tools,** Skin Research and Technology, Vol. 9, No. 2, May 2003

In evaluation for severity of SLS-induced irritant dermatitis, visual scoring system is wide being used as a subjective method. However, it is well known that variations exist even in the interpretations by experienced dermatologist. So it is required to develop the new objective and quantitative method for the assessment for severity of SLS induced irritant dermatitis.

S. Savic, N. Cekic, S. Tamburic, J. Milic, G. Vuleta, **The effect of urea from dermo-cosmetic emulsions on skin hydration and its barrier function: a vehicle-controlled study**, Skin Research and Technology, Vol. 9, No. 2, May 2003

A number of studies have shown that, depending on the concentration, treatment with urea could improve skin barrier function, despite of its penetration enhancing properties. This controversial skin effect has not been explored systematically in terms of the effectof vehicle on the performance of urea.

H.K. Lee, S.Y. Bae, S.J. Moon, I.S. Chang, **Comparisons of skin characteristics between men and women using non-invasive methods in young healthy Asians**, Skin Research and Technology, Vol. 9, No. 2, May 2003

Skin has different properties depending on intrinsic effects such as inherent factors, race, gender and so on. Besides, it has been known that skin may change because of the environmental stress such as UV, climate and life style. We would like to know the differences of skin characteristics between male and female. The results of this study might be applicate the depart of dermatology and cosmetology.

I.F. Almeida, D. Endo, M.F. Bahia, **Moisturizing properties of two oleogels following single application**, Skin Research and Technology, Vol. 9, No. 2, May 2003

Oleogels are interesting new systems obtained with a hydrophobic liquid. On the last years there were discovered and developed many organogelators that in same cases were able to gelify biocompatible liquids. Their applications were investigated in several areas such as organic chemistry, environmental chemistry and also in pharmaceutical and cosmetics fields.

S. Bielfeld, M. Brandt, A. Gerstenkorn, K. Wilhelm, **Capacitance measurement of skin moisture: sophisticated calibration of instruments**, Skin Research and Technology, Vol. 9, No. 2, May 2003

Absolute valuesof different instruments designed to measure the skin capacitance are not comparable, even though they all work with the same measurement principle. Even in the same instrument type differences in measurement results are common. For this reason, studies are generally performed with only one instrument and a comparison of data obtained in different studies with different instruments is not regarded as valid.

P.C. Pinto, L.M. Pereira, L. Monteiro Rodriguez, **Skin water dynamics: disposition-decomposition analysis (DDA) od transepidermal water loss (TEWL) and epidermal capacitance**, Skin Research and Technology, Vol. 9, No. 2, May 2003

Knowledge about human skin water dynamics seems to represent a growing importance to understand the organ's normal physiology. Mathematical modelling of (cutaneous water) related variables obtained through skin bioengineering, provided new perspectives to approach this problem.

M. Setaro, A. Sparavigna, **It is possible to define a "biological age"of the skin?**, Skin Research and Technology, Vol. 9, No. 2, May 2003

The evaluation of global skin performance as compared to anagraphical age of the subject is until today dependent on clinical evaluation. By doing so, "pre-clinic" alterations of skin aging, are often missed, loosing the possibility to set up adequate strategies of prevention and treatment. Non-invasiev evaluations based on the measurements of skin parameters allow to monitor functional alterations of the skin with age in objective, sensitive specific and reproducible way.

D. Kelly, J. Bessiere, J. Crimmins, S. Renard, **Anti-inflammatory properties of Amazonian Oil**, SOFW-Journal, 129. Jahrgang 4-2003

The rainforest regions of South America are the most bio-actively diverse natural phenomena on the planets housing 70 % of the world's flora and fauna, 10-15 million insects and 20000 different species of planet life.

R.L. Rizer, T.M. Weber, A. Kowcz, **Evaluation of Tolerance and Efficacy of a Skin Cream Using a Diabetic Foot Skin Model**, Poster at the American Academy of Dermatology, 61st Annual Meeting, San Francisco, March 2003

Diabetis often have significant problem with skin dryness and susceptibility to skin infections due to elevated blood glucose levels, impaired sweating and circulatory insufficiencies

R.L. Rizer, T.M. Weber, A. Kowcz, **Establishment of the Tolerance Profile for a Topically Applied Facial Lotion Using an Atopic and Rosacea Population Model**, Poster at the American Academy of Dermatology, 61st Annual Meeting, San Francisco, March 2003

Newly developed cosmetic and drug skin products are typically evaluated using a battery of tests to establish the product's safety profile.

R.L. Rizer, A. Kowcz, T.M. Weber, A. Filbry, F. Rippke, **Tolerance Profile and Efficacy of a Menthol Containing Itch Relief Spray in Children and Atopics,** Poster at the American Academy of Dermatology, 61st Annual Meeting, San Francisco, March 2003

Itch is a persistent and tenacious problem in the management of atopic dermatitis and other dry skin conditions. It is particulary difficult to control itch in atopic children, who may not understand the consequences of scratching.

A. Vargas , A. Castro, **Formulacion de jabon liquido con productos naturals:medida de su efectividad,** Actualizaciones Terapéuticas Dermatológicas y Estéticas, Vol. 25, No. 3

Los habones estan formados por la saponificacion d' acidos grasos de alto peso molecular, con alkalis. Teniendo presente la incidencia de dermatitis de contacto por Jabones y la solicitud del consumidor y especialista tratante, de un producto seguro, no irritante, y que no remueva la capa lipidica, se formulo un Jabon con productos naturales que aporta el efecto buscado. Siguiendo los principos de formulacion se utilizaron mezclas de detergents anionicos y anfotericos con una sustancia viscosante.

P.-G. Sator, J.B. Schmidt, H. Hönigsmann, **Comparison of epidermal hydration and skin surface lipids in healthy individuals and in patients with atopic dermatitis,** J Am Acad Dermatol, March 2003

The water content of the stratum corneum and the skin surface lipids form a balance that is important for the appearance and function of the skin. Nevertheless, the water content of the stratum corneum and the skin lipids, the water-binding substances from the hydro-lipid film of the skin, act

together as a barrier to the environment.

S.-J. Choi, M.-G. Song, W.-T. Sung, D.-Y. Lee, J.-H. Lee, E.-S. Lee, J.-M. Yang, **Comparison of Transepidermal Water Loss, Capacitance, and pH Values in the Skin Between Intrinsic and Extrinsic atopic Dermatitis Patients**, J Korean Med Sci 2003, 18, 93-6, p. 93-96

Atopic dermatitis (AD) is characterized by an intensely pruritic skin disease with typical distribution and morphology. The age of onset is nearly always within the first 5 yr of life, and lifetime prevalence in children is roughly 10 to 15% in industrialized countries.

L.R. Gaspar, P.M.B.G. Maia Campos, **Evaluation of the protective effect of alpha-tocopheryl acetate in a sunscreen, preventing erythema formation, transepidermal water loss and sunburn cell formation,** IFSCC, Vol. 6, No. 3/2003

Nowadays, vitamin E acetate is used as an antioxidant and moisturizer in sunscreens. Although free vitamin E presents UV protection effects, little data has been forthcoming documenting the beneficial effects of vitamin E acetate on cutabeous photodamage, when combined with sunscreens. The aim of this study was to evaluate the protective effect of a sunscreen formulation with or without vitamin E acetate on erythema in hairless mice, transepidermal water loss (TEWL) and sunburn cell formation.

T. Seki, S. Morimatsu, H. Nagahori, M. Morohashi, **Free residual chlorine in bathing water reduces the water-holding capacity ofthe stratum corneum in atopic skin**, J Dermatol. 2003 Mar;30(3): p. 196-202

Some patients with atopic dermatitis (AD) develop dry skin or exacerbated cutaneous inflammations with frequent swimming in public pools or after bathing. We examined the effects of residual chlorine in bathing water on the function of the stratum corneum (SC) in patients with AD and determined the lowest chlorine concentration showing an effect. In addition, we investigated the relationship between the free residual chlorine concentration in bathing water and the water-holding capacity of the SC in patients with AD. Twenty patients with AD and 10 normal control (NC) subjects were included in this study. The hydration status of the SC on the flexor surface of the forearm was measured with a corneometer before and after the subject's arms were immersed in tubs filled with comfortably hot water (40 degrees C) containing residual chlorine at concentrations of 0, 0.5, 1.0 and 2.0 mg/L for 10 minutes in a room maintained at normal temperature (24 degrees C) and relative humidity (55%). The water-holding capacity of the SC after immersion was calculated by integration of the hydration status determined every 30 seconds over a period of 10 minutes. In the patients with AD, the average SC hydration status after immersion in comfortably hot water containing residual chlorine at 1.0 and 2.0 mg/L was significantly lower than that following immersion in water containing a negligible concentration of residual chlorine (i.e., less than 0.03 mg/L) ($p<0.05$). In the NC subjects, significant differences were observed only between the 2.0 mg/L and the negligible residual chlorine groups ($p<0.05$). The waterholding capacity of the SC was significantly decreased with a residual chlorine concentration of 0.5 mg/L or higher in the patients with AD ($p<0.01$). However, in the NC subjects, a significant decrease in waterholding capacity was observed only at a residual chlorine concentration of 2 mg/L ($p<0.01$). These results indicate, first, that the water-holding capacity of the SC in patients with AD is more sensitive to free residual chlorine exposure than that in NC subjects without AD. Second, these results suggest that free residual chlorine exposure in patients with AD may play a role in the development or exacerbation of AD.

E. Boelsma, L.P.L van de Vijver, R.A. Goldbohm, I.A.A. Klöpping-Ketelaars, H.F.J. Hendriks, .L. Roza, **Human skin condition and its associations with nutrient concentrations in serum and diet**, Am J Clin Nutr 2003;77: p. 348–355

Background: Nutritional factors exert promising actions on the skin, but only scant information is available on the modulating effects of physiologic concentrations of nutrients on the skin condition of humans. Objective: The objective was to evaluate whether nutrient concentrations in serum and diet are associated with the skin condition of humans. Design: A cross-sectional study was conducted in which data on serum concentrations of nutrients, dietary intake of nutrients, and the hydration, sebum content, and surface pH of skin were obtained from 302 healthy men and women. Skin condition was measured with the use of noninvasive techniques. Dietary intake was assessed with 2 complementary food-frequency questionnaires. Multiple regression analysis was used to evaluate associations of serum vitamins and carotenoids and of dietary micro- and macronutrients with skin condition. Results: After adjustment for potential confounders, including sex, age, and smoking, statistically significant associations were shown in the total population between serum vitamin A and skin sebum content and surface pH and between the dietary intake of total fat, saturated fat, monounsaturated fat, and skin

hydration. Monounsaturated fat intake was also associated with surface pH. Associations between serum -cryptoxanthin and skin hydrationm and between surface pH and fluid and calcium intakes were observed in men only. Conclusion: Several associations between nutrients in serum and diet and skin condition were observed, indicating that changes in baseline nutritional status may affect skin condition.

D. Lautenschläger, **Hautanalyse – Moderne Geräte helfen**, Ki-Magazin 3/2003

Die Hautanalyse ist ein zentraler Bestandteil der kosmetischen Behandlung. Sie schafft die Grundlage für für erfolgreiche hautspezifische Konzepte. Ein großes Angebot an Geräten kann die Hautbestimmung erleichertern. Was können diese Instrumente genau.

X. Briand, **Algal Active Substances**, Cosmetics & Toiletries, Vol. 118, No. 2, Feb. 2003, p.55 ff

In recent years, ingredients from the sea have shown to be effective in cosmetic applications. In this article, the author explains how some of these ingredients can be used successfully in personal care formulations.

Y. Yoshizawa, K. Kitamura, S. Kawana, H. Maibach, **Water, salts and skin barrier of normal skin,** Skin Research and Technology, Vol.9, No. 1, Feb. 2003

We recently reported that open application of seawater for 20 min ameliorated experimental irritant contact dermatitis induced by sodium lauryl sulphate (SLS) cumulative irritation. The efficacy was overall contributed by 500 mM of sodium chloride (NaCl) and 10mM of potassium chloride (KCl), which are consistent with the each concentration in seawater.

R. Huei Chen, W. Yuu Chen, **Skin hydration effects, film formation time, and physicochemical properties of a moisture mask containing Monostroma nitidium water-soluble mucilage,** Journal of Cosmetic Science, Vol. 54, No. 1, Jan/Feb. 2003

The objectives of the study were to explore the effects of using the water-soluble mucilage of Monostroma nitidium to replace the humectant and half of the thickening agent on the rheological properties, color, storage stability, water-holding capacity, and film formation time of moisture masks thus prepared. Results showed that moisture masks containing water-soluble mucilage were pseudoplaxtic fluids.

N. Krüger, L. Fiegert, D. Becker, T. Reuther, M. Kerscher, **Spurenelemente in Form eines Kupfertripeptidkomplexes,** Kosmetische Medizin, 1/2003, 24. Jahrgang

In den letzten Jahren wurde eine Reihe von neuen dermatokosmetischen Wirkstoffen entwickelt, um Hautalterungssymptome zu bessern. Neben konsequentem Lichtschutz, Retinol und Antioxidantien werden jetzt auch in Deuschland Spurenelemente bei Hautalterung eingesetzt. In der hier vorgestellten offenen, kontrollierten Untersuchung an 40 Probanden zeigte sich bei topischer Applikation von Kupfertripeptid eine Zunahme der Hautdichte in der 20MHz-Sonographie, eine verbesserte Hydratation der obersten Hautschichten gemessen mittels Corneometrie sowie eine im Vergleich zu Retinol und Placebo signifikant stärkere Glättung der Haut, erfasst mit dem Visio-Scan.

L.R. Gaspar, P.M. Maia Campos, **Rheological behaviour and the SPF of sunscreens,** Int. J. Pharm. 2003, Jan. 2,250(1), p. 35-44

Due to a large variety of sunscreens, it is important to study among other things, the effect of three vehicle on the thickness and uniformity of sunscreen films. In this study, we determined the physical stability of five sunscreens SPF 15 (FA to FG), containing or not PVP/eicosene crosspolymer (PVP/EC), and two different self-emulsifying bases (SEB), and also evaluated the influence of the vehicle in their SPF.

H. Schroeder, P. Jasmin, A. Sanquer, P. de Villiers, **Corneometric assessment of seasonal variations of skin hydration of 124 normal South African dogs**, 2003 European Society of Veterinary Dermatology, Veterinary Dermatology, 14, p. 237–267

Skin hydration is a relatively unexplored field of veterinary dermatology. The objective of this study was to measure skin hydration of normal dogs to establish baseline values for of South on different cutaneous areas African dogs and to compare the findings of winter vs. summer. A corneometer was used to measure skin hydration (*C* values) in 62 dogs in summer and 62 in winter, using 4 replicates on 20 different cutaneous sites. For statistical analyses, an ANOVA was performed with the following variables: season, sex, age, weight, length and thickness of hair coat, activity and mode of life. Then, for the significant variables, multiple comparisons were performed using a Newman–Keuls test. Right and left aspects of the 20 sites were pooled in 11 different cutaneous areas: periorbital (*C* = 5.4); external and internal ear pinnae (*C* = 6.2 and *C* = 16.8, respectively); chin (*C* = 8.6); axillae (*C* = 8.0); inguinal (*C*

= 12.7); palmar and dorsal aspects of front (*C* = 5.4) and hind (*C* = 5.1) feet; and ano-genital (*C* = 5.9). Every cutaneous area was less hydrated in winter than in summer (*P* < 0.0001 for 7 on 11), except the internal ear pinna which was more hydrated in winter (*P* < 0.0001). Total skin hydration was also lower in winter (*C*mean = 6) than in summer (*C*mean = 7.5), *P* < 0.0001. Comparing the various cutaneous areas, chin, axillae and particularly internal ear pinnae and inguinal areas were more hydrated than the other cutaneous areas measured. These findings show that the skin of South African dogs is less hydrated in winter than in summer. It might then be useful to use topical products (shampoos and lotions) that hydrate the skin of dogs more frequently in winter. Any correlation between variously hydrated cutaneous areas and preferential areas for the development of certain dermatoses, e.g. atopy, impetigo and chin pyoderma may be studied further.

S. Hansen, **Influence of environmental and pulsation factors on teat skin condition and teat tissue with regard to mastitis**, Dissertation Tierärztliche Hochschule Hannover, 2002

Milking and non-milking influences on teat skin and tissue parameters were examined in a series of trials in New Zealand at theDairying Research Corporation, Hamilton and on farms within a 100 km radius of Hanover, in Germany. In New Zealand, identicaltwins were available for six short-term trials and one long-term trial, involving 10 twin sets. In Germany, one main trial was carried out, with 304 unrelated cows located on five participating dairy farms. The determination of the teat skin parameters pH and moisture waspossible, with the Corneometer CM 820Ò and Skin-pH-Meter PH 900Ò (Courage and Khazaka electronic GmbH, Cologne, Germany). The teat skin moisture was determined in arbitrary units. The test of repeatability resulted in a coefficient of variation (cv) of 25.6 per cent for moisture and 6.07 per cent for pH. The reproducibility over time resulted in similar cvs. Teat skin moisture and pH were not significantly correlated. The average teat skin pH of New Zealand cows varied from 6.44 to 6.88 for lactating cows and from 7.06 to 7.26 for dry cows. German lactating cows had a mean teat skin pH of 7.19 to 7.26. In New Zealand, the teat skin moisture of lactating cows fluctuated between 23.9 and 39.8, and between 23.0 to 57.5 for dry cows. The average teat skin moisture of German lactating cows ranged from 46.6 to 47.8. The teat skin moisture was correlated with the environmental temperature on a low level. The teat skin pH correlated with the environmental temperature and the relative humidity. The milking interval did not have any influence on teat skin moisture or pH. The application of a post milking teat sanitiser, containing iodine and a mixture of glycerine and sorbitol, increased the moisture of teat skin significantly. This increase was observable up to 16 h, but after 24 h, the effect had deteriorated. The low pH of the sanitiser solution (3.3) had a very strong, decreasing influence on the teat skin pH. Six different teat sanitiser formulations were tested regarding their teat conditioning properties. The level of glycerine in the sanitiser influenced the moisture level on the skin. Products without emollient did not moisturise the teat skin as well as products with emollient. Disinfectant solutions with a pH around neutral did not change the teat skin pH whilst treatments with the same pH (3.5) resulted in approximately the same decrease in teat skin pH. The influence of the treatments on the teat skin flora was tested, taking rinsing samples. The teat skin flora observed on untreated skin was similar to the microflora reported in the literature. However, no effect of the sanitiser treatment on the number of teats colonised with a particular group or genus of bacteria could be found. Ten twin sets were used to compare two different pulsation modes in a long-term trial. The group, treated with the 'fast' milking mode exhibited significantly higher teat thickness changes than the 'slow' group. Yet, the pulsation treatment had no significant effect on teat skin moisture or pH. The udder health of 253 German cowswas compared with teat skin moisture and pH. No significant correlation of these parameters was observed. Analysis of the data indicated that time, farm and individual cow factors influenced the teat skin parameters to a greater extent than the udder health on quarter basis.

A. Zimmermann, A. Kligman, F. Anderson, **The vexing problem of dry skin**, Journal of Cosmetic Science, 2002 Annual Scientific Meeting

We all know what dry skin is…don't we?

G. Kampf, M. Muscatiello, D. Häntschel, M. Rudolf, **Dermal tolerance and effect on skin hydration of a new ethanol-based handgel**, J Hosp Infect. 2002 Dec;52(4): p. 297-301

We studied the dermal tolerance (repetitive occlusive patch test; ROPT) and the skin hydrating properties of a new ethanol-based gel [85% (w/w)], Sterillium Gel. For the ROPT, 53 participants were studied. Gel was applied to one site on the back under an occlusive patch during an induction phase (nine applications over three weeks) and two weeks later to a virgin site on the back during a challenge phase (one application). Twenty-four hours after the removal of the patches (induction phase and challenge phase), then 48 and 72 h later (challenge phase) sites were graded for skin reactions using a standardized scale. In the induction phase none of the 53 participants had a skin reaction. In the challenge phase one participant had a barely perceptible skin reaction, and one had mild erythema at

one time point. To evaluate skin hydrating properties of the gel, treated skin of 21 participants was compared to untreated skin. The gel was applied twice a day to the forearm for 14 days. Control corneometer values were taken before application of the gel (mean: 32.7 +/- 5.0) and after one (36.3 +/- 4.4) and two weeks (36.1 +/- 5.4). Relative skin hydration on treated skin in comparison with an untreated control field was significantly higher after one week by 6.85% (P = 0.0031; paired t -test for dependent samples) and after two weeks by 4.47% (P = 0.0153). Sterillium Gel did not demonstrate a clinically relevant potential for dermal irritation or sensitization, and significantly increased skin hydration after repetitive use, and so could enhance compliance with hand hygiene among healthcare workers.

K. de Paepe, D. Roseeuw, V. Rogiers, **Repair of acetone- and sodium lauryl sulphate-damaged human skin barrier function using topicallyapplied emulsions containing barrier lipids,** J Eur Acad Dermatol Verereol, 2002, Nov;16(6): p. 587-594

Background: It is generally acknowledged that well-formulated moisturizing skin care products can restore disturbed barrier function that can be assessed by transepidermal water loss (TEWL) measurements. When ceramides and/or other barrier lipids are incorporated, it is, however, not always clearly demonstrated which ingredients of the formulation exert the beneficial effects. Objectives: In this study the effects of topically applied ceramide-containing mixtures on the barrier repair of sodium lauryl sulphate (SLS)- and acetone-induced skin damage have been studied in human volunteers. TEWL and stratum corneum hydration measurements were carried out. The emulsions applied contained either a mixture of two types of ceramides, CerIII and CerIIIB (emulsion 1) or a complete mixture of ceramides III, IIIB and VI together with phytosphingosine, cholesterol and the free fatty acid linoleic acid (emulsion 2). Results: After SLS damage, it was observed that barrier recovery was significantly accelerated by topical application (14 days, 2 x/d) of emulsion 2 compared with the results obtained with emulsion 1. Corneometrical results were not relevant due to the occurrence of scaly fissured skin, failing to provide a good skin/probe contact. Although no effect on TEWL could be observed, the improvement of skin hydration after acetone treatment and a single application of the emulsions, was significantly more positive for emulsion 2 than for emulsion 1. Conclusions: The investigative methods used in this study show that ceramides combined with other skin lipids can improve barrier repair after damage.

M. Egawa, M. Oguri, T. Kuwahara, M. Takahashi, **Effect of exposure of human skin to a dry environment,** Skin Research and Technology, Vol. 8, No. 4, Nov. 2002

There was a significant decrease of water content of stratum corneum at both test sites from the time points 0 h to 3 h and 6 h ($P<0.01$) and transepidermal water loss from the time point 0 h to 6 h ($P<0.05$). Regarding the roughness parameters, a significant increase of Rz in the directions of 45º/225º and 90º/270º to the body axis and Sm in the directions of 0º/180º ($P<0.05$) on the forearm and VC1 ($P<0.05$) on the cheek.

R. Korichi, **Video Imaging in the Measurement of Makeup Efficacy and Performance,** Cosmetics & Toiletries October 2002, Vol. 117 No. 10

Video imaging techniques add quantitative data about the visual effects of makeup when evaluating efficacy and performance of products such as mascaras, lip colorants, facial foundations and nail enamels.

H. Dobrev, **Changes in Epidermal Water Content in Patients with Psoriasis Vulgaris**, Medicine and Stomatology Session, 18 October, 2002 House of Scientists, Plodiv, Bulgaria

The aim of this study was to determine the epidermal water content in lesional and perilesional skin before and after treatment with ditranol.

J-H. Park, S-W. Son, Y-M. Yoon, M-H. Lee, Y-S. Lee, H-C. Kim, H-S. Oh, C-H. Oh, **Objective evaluation for xerosis by morphological study in atopic dermatitis,** Symposium of the International Society for Bioengineering and the Skin, Baltimore Oct. 24-26, 2002

It is essential to be able to measure and record the severity of atopic dermatitis for routine clinical practice and research. Many clinical severity scales have been proposed, but not yet objective. Of severity scoring systems currently available for atopic dermatitis, the SCORAD index has been the most extensively tested.

J.W. Fluhr, J.L. Sugarman, T.L. Diepgen, M.L. Williams, **The objective severity assessment of atopic dermatitis (OSAAD),** Symposium of the International Society for Bioengineering and the Skin, Baltimore Oct. 24-26, 2002 (Poster)

An objective measure utilizing permeability barrier function and stratum corneum hydration, with computer-assisted estimates for extent of disease.

M-H. Lee, S-J. Hong, J-H. Park, H-C. Kim, H-S. Oh, C-H. Oh, **Quantitative evaluation of patch test results – comparing the studies between new skin color analysis technique and other bioengineerin tools,** Symposium of the International Society for Bioengineering and the Skin, Baltimore Oct. 24-26, 2002

Contact dermatitis is a common problem occurring in the field of dermatology and patch test is the only reliable procedure for the detection of the causative agent. In evaluation of patch test result, visual scoring system is wide being used as a objective method. However, it is well known that variations exist even in the interpretations by experienced dermatologist.

P.G. Sator, J.B. Schmidt, M.O. Sator, J.C. Huber, H. Hönigsmann, **Parameters of skin aging during hormone replacement therapy,** EADV 7th Congress, 2002, Abstract

All patients with HRT showed an increase in skin hydration, elasticity and thickness, as well as subjective and clinical improvement.

U. Uksal, C. Atasavun, B. Özcelik, S. Utas, A. Ferahbas, **The effects of hormone replacement therapy on the skin of postmenopausal women (abstract),** 11th Congress of the European Academy of Dermatology and Venereology, Prag 2002

The study was performed to compare skin pH, transepidermal water loss (TEWL), skin surface lipids and hydration in postmenopausal women receiving hormone replacement therapy (HRT) and those who not. Two parallel age-matched groups (each 24) of 48 postmenopausal women evaluated by tewameter, sebumeter, pHmeter and corneometer.

H. Dobrev, **Treatment of Psiorasis Vulgaris with Hydrocolloid Occlusive Dressings in Combination with Betamethasone Dipropionate 0.05 % Cream**, Medicine and Stomatology Session, 18 October, 2002 House of Scientists, Plodiv, Bulgaria

L.M. Rodrigues, P.C. Pinto, P. Lamarao, **After-sun claims substantiation: experimental criteria to assess the in vivo effects of sun care products under controlled-using conditions,** Cosmetics & Toiletries, Vol. 117, No. 10, October 2002

The authors describe a practical method of substantiating claims of “after-sun” products. Ten healthy women 35-65 years old were irradiated on both legs (antero-lateral) in a laboratory for six sequential days using an indoor solarium-type UV source. Efficacy assessment endpoints were defined from the product’s typical claims.

G.R. Leonardi, L. R. Gaspar, P.M. Campos, **Application of a non-invasive method to study the moisturizing effect of formulation containing vitamins A or E or ceramide on human skin,** Journal of Cosmetic Science, Vol. 53, No. 5, September/October 2002

Moisturizers containing vitamins A and E as well as ceramides are believed to improve the skin condition by increasing the water content of the stratum corneum. The aim of this research was to evaluate, through the capacitance method (a non-invasive method), the moisturizing effect of an O/W emulsion (non-ionic self-emulsifying base) containing vitamin A palmitate, vitamin E acetate, and ceramide III on human skin. The studies were carried out on a group of 40 healthy Caucasian female test subjects between 30 and 45 years of age, using the Corneometer CM 825 PC.

M.M. Jiménez Soriano, M.J. Fresno Contreras, E. Sellés Flores, **Pharmacotechnical characterization and effectiveness testing of a proposed emulsion for the treatment of dry skin,** Boll Chim Farm. 2002 Sep-Oct; 141(5): p. 333-342

One of the most important objectives of the Pharmaceutical Industry is the development of new excipients as well as the optimization of other more traditional ones. Also, the investigation of new active substances able to prevent, palliate or treat the cutaneous dehydration is another of the most important of their objectives. Both tendencies are implanted in this experimental work: we propose an emulsion formulated with the base--Neo PCL' (25%), NMF (Lactil', 5%) and a peculiar active--Honey of Rosemary (15%). The working scheme is as follows: 1) Pharmacotechnical Characterization--organoleptic characteristics, Photomicrograph Study, Type of Emulsion, pH, Rheology; 2) Stability Study by means of accelerated tests based on temperature and centrifugation; 3) Effectiveness Study by applying of non-invasive assessment techniques. An emulsified dermopharmaceutical form is obtained (O/W) with a satisfactory organoleptic characteristics and eudermic pH (5.2), attributable to the acid character of Honey. From the rheological study, a very good results are obtained: viscosity (T = 408.8.D0.549), structural recuperation (30%) and thixotropy (AD1/AD2 = 1.36). On the other hand, from the effectiveness results (corneometric--P.I.120 = 43.2%- and sebumetric--E.I. = 33-144 mg/cm2-), a high

level of moisturizing is deduced, which is attributable to the synergic action of both Lactil' and Honey. Finally, the proposed emulsion would serve as a treatment for all type of dry skin.

M. Rohr, A. Schrader, **FOITS – corneometry influenced by peripheral expperimental conditions,** Congress Stratum Corneum III, Basel, September 2001 and The Essential Stratum Corneum, edited by R. Marks, J.-L. Lévêque, R. Voegeli, Martin Danitz Ltd., London, 2002

Besides a good compatibility, which should be a matter of course for cosmetic products, the skin's physiological effectiveness, in particular moisture and skin-smoothing effects, are of main interest for this kind of product. Techniques such as FOITS (Fast Optical In vivo Topometry of human Skin), and corneometry are used to investigate their effectiveness. In order to succeed in reproducible and statistically significant results, experimental side conditions, such as a defined panel, controlled climatic conditions or a test design that includes a positive and a negative standard, are the basic starting tools.

J. Gareiss, M. Ghyczy, **Normalization of inflammation and humidity in sodium lauryl sulfate (SLS) – perturbed skin in vivo by gel state phosphatidylcholine,** The Essential Stratum Corneum, 2002 Martin Dunitz Ltd.

Phosphatidylcholine (PC) is the most abundant component of biological membranes. It possesses an intrinsic hydration force, and its metabolites are essential osmoprotectants. PC that is composed of saturated fatty acids (hydrogenated PC), also named gel-state PC or HPC, possesses physical properties that are comparable with those of the components of the skin permeability barrier.

I. Le Fur, F. Morizot, S. Lopez, C. Guinot, J. Latreille, E. Tschachler, **Seasonal changes in skin biophysical properties in healthy Caucasian women,** Congress Stratum Corneum III, Basel, September 2001 and The Essential Stratum Corneum, chapter 60, edited by R. Marks, J.-L. Lévêque, R. Voegeli, Martin Danitz Ltd., London, 2002

The human skin surface has to adapt constantly to changing environmental conditions, such as temperature and relative humidity. Several studies have demonstrated the detrimental effects of winter weather in our countries on the skin and seasonal changes in certain biophysical parameters. The work presented here examines seasonal variations of biophysical parameters on facial skin in Caucasian women in France.

R. Lambrecht, P. Clarys, K. Alewaeters, A. O. Barel, **Influence of in vivo iontophoresis on the skin barrier and percutaneous penetration**, Congress Stratum Corneum III, Basel, September 2001 and The Essential Stratum Corneum, chapter 21, ed. by R. Marks, J.-L. Lévêque, R. Voegeli, Martin Danitz Ltd., London, 2002

Iontophoresis is a technique used to enhance the transdermal delivery of a drug by means of an electric current. The iontophoretic transport is influenced by several factors, such as concentration, size, ionic strength and the Ip of the drug and pH of the solvent, and also by the applied intensity and shape of the current and the application time.

J.W. Wiechers, M. Snieder, N.A.G. Dekker, W.G. Hansen, **Factors influencing Skin Moisturasation Signal Using Near Infrared Spectroscopy**, Proceedings of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

The effectiveness of skin moisturisers can be measured by electrical and spectropic methods. We explored the benefits of near infrared (NIR) spectroscopy for the investigation of skin moisturisation. This technique provides information on the interaction of water molecules with its surrounding structures and has been used to identify whether the water is freely moving, loosely or tighly bound.

B.S. Hammond, E. Fendler, **The Impact of a Skin Care Program in a Fiberglass Facility utilizing Bioengineering Techniques**, International Conference on Occupational and Environmental Exposures of Skin to Chemicals, September 8-11, Hilton Crystal City, Washington DC

A study was conducted at a fiberglass manufacturing facility to better understand the effects of a skin care regimen. A comprehensive skin care program was implemented that included site surveys and anlyses. A training program and the use of Gojo products.

B.S. Hammond, E. Fendler, J.H. da Silva Tavares, A. de Abreu Sodré, **A Comprehensive Approach of a Hand Regimen System in Oil Production and Refinery Facility**, International Conference on Occupational and Environmental Exposures of Skin to Chemicals, September 8-11, Hilton Crystal City, Washington DC

A study was conducted at three oil production and refinery facilities to better understand the effects of a skin care regimen. A comprehensive analysis of the skin care program was conducted that evaluated costs, skin condition, washing practises, and waste management.

R. Armengol, L. Mayordomo, A. Benaiges, J. Bosch, E. Serra, **Influences of exercise on the ion distribution in human epidermis and on the skin hydration**, Posters of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

The loss of different electrolytes by sweating after intense exercise is well known and the influence of these changes in blood plasma, muscles and other organs has been deeply studied.

I. Le Fur, S. Lopez, F. Morizot, J. Latreille, C. Guinot, E. Tschachler, **Age-related reference ranges for skin biophysical parameters in healthy women**, Posters of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

The aim of this study was to establish age-related reference ranges in healthy Caucasian women for some widely used skin biological parameters on different body areas.

L. Ambroisine, C. Guinot, J. Latreille, E. Mauger, M. Tenenhaus, I. Le Fur, S. Lopez, F. Morizot, E. Tschachler, **Relationship between visual and tactile skin characteristics and skin biophysical parameters**, Posters of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

The skin does more than simply encase the human body.

K.-P. Wilhelm, K. Kaspar, F. Schumann, K. Articus, **Development and validation of a semiautomatic image analysis system for measuring skin desquamation with D-Squames,** Skin Research and Technology 2002, No. 8

Analysing D-Squames with the image analysis system proved to be reproducible, independent of the shape of ROI, cost effective and fast and easy to operate. It has shown to be a suitable and reliable method for the objective determination of desquamation levels.

H.J. Blaheta, B. Vollert, D. Zuder, G. Rassner, **Intravenous regional anesthesia (Bier's block) for botulinum toxin therapy of palmar hyperhidrosis is safe and effective**, Dermatol Surg. 2002 Aug;28(8): p 666-71

Background: Botulinum toxin type A (BTX-A) has been shown to be highly effective in reducing palmar hyperhidrosis. Since palmar injections is a painful procedure, the use of an anesthesia method is recommended. Objective: To assess the efficacy of intravenous regional anesthesia (IVRA) for painless treatment of palmar hyperhidrosis with BTX-A compared to topical application of a local anesthetic agent. Methods: Thirty patients with palmar hyperhidrosis were treated with BTX-A injections, using a total dose of 100 U BTX-A for each hand. One palm was pretreated with a topical application of local anesthetizing cream (EMLA cream), while the other palm was anesthetized with IVRA. Sweat secretion was visualized with Minor's test and quantified by corneometer analysis before and after BTX-A therapy. BTX-A therapy was significantly less painful in palms anesthetized with IVRA than in palms pretreated with EMLA cream ($P < 0.0001$, paired Wilcoxon rank test). Results: Two weeks after the BTX-A injections, corneometer measurements showed that spontaneous sweat production had declined significantly, from 115 +/- 16.25 (left hand) and 114 +/- 17.58 (right hand) before therapy to 81.5 +/- 27.33 (left hand) and 74 +/- 28.08 (right hand) after therapy ($P < 0.001$, paired t test). Conclusions: IVRA safely and effectively alleviates the pain associated with BTX-A treatment for palmar hyperhidrosis. Quantitative analysis with the corneometer showed that BTX-A significantly reduces sweat production. We conclude that IVRA is a suitable method for providing pain relief in the treatment of patients with palmar hyperhidrosis.

C. Packham, H. Packham, **Health and Safety at work: special report**, Occupational Skin Management Update, Croner, Issue 60, August 2002

S. Seidenari, **Non-Invasive Techniques for Diagnosis and Monitoring of Skin Diseases: an Updating of Recent Techniques useful in Dermatology,** 20th World Congress of Dermatology, Paris, 2002

Besides the necessity of a realistic assessment of spontaneous course of diseases, the evaluation of the cost/benefit ratio of potentially new treatments is increasingly required. Objective documentation of dermatological disorders can be achieved by means of bioengineering techniques, which provide numerical values as a basis for statistical analysis and enable instant in vivo information in the absence of interferences with the spontaneous course of the disease.

I. Le Fur, S. Lopez, F. Morizot, J. Latreille, C. Guinot, E. Tschachler, **Age-Related Reference Ranges for Skin Biophysical Parameters in Healthy Women,** 20th World Congress of Dermatology, Paris 2002

Purpose: The aim of this study was to establish age-related reference ranges in healthy Caucasian women for some widely used skin biophysical parameters.

I. Le Fur, A. Reinberg, S. Lopez, F. Morizot, E. Tschachler, **Facial Skin Circadian Rhythms of Healthy Women Investigated Using Non-Invasive Methods,** 20th World Congress of Dermatology, Paris 2002

Purpose: The aim of this study was to document around the clock changes in a set of skin biophysical parameters.

E.A. Holm, G.B.E. Jemec, **Objective Measurement of Atopic Dermatitis with Non-Invasive Techniques,** 20th World Congress of Dermatology, Paris 2002

Quantification of desease severity is a prerequisite for the development of evidence based therapy. Today, patient history and clinical scoring are the main tools for dermatologists when attempting to assess the morbidity of patients with atopic dermatitis AD. These methods however have their limitations, as they all are operator dependant and frequently show poor inter- and intra-observer reproducibility.

F. Distante, L. Rigano, R. D'Agostino, A. Bonfigli, E. Berardesca, **Intra- and Inter-Individual Differences in Sensitive Skin,** Cosmetics &Toiletries July 2002, Vol. 117, No. 7,

The authors investigated the intra-individual and the inter-individual variations of transepidermal water loss, capacitance and microcirculation in 10 different facial areas in subjects with "sensitive skin" and in subjects with "non-sensitive skin".

P. Msika, F. Perin, P. Beau, G. Georgesco, J.C. Pittet, B. Chadoutaud, J.C. Choulot, L. Vaillant, **AvocadoFurane, Pentapeptides and Soy Isoflavones: A Clinical Study against Hormonal Aging,** Bioengineering and The Skin, International Congress 27-28th June 2002, Paris

A patented association containing a new inducer of collagen synthesis via TGF-beta (Avocadofurane), an MMP's inhibitor (Pentapeptides) and soy isoflavores was evealuated in postmenopausal skin aging. 30 women were engaged in two clinical studies (age < 50, no hormonal replacement theraphy) and have applied twice daily the product for 1 year.

F. Pirot, V. Faivre, G. Peyrot, F. Falson, **Prediction of Stratum Corneum Water Loss and Skin Hydration from Physiochemical Parameters**, Bioengineering and the Skin, International Congress 27-28th June 2002, Paris

The amount of water contained in the stratum corneum (SC) is dependent on natural moisturizing factors (NMF) and its intercellular lipids. Hydration of the SC, which is exposed to relatively dry environment is maintained by NMF, a mixture of highly hydroscopic and water-solulable substances. The goal of the present stady was (i) to investigate the water content in SC ex vivo and the skin hydration in vivo after treatment with an highly hydrophilic substances, (ii) to examine the correlation between SC water loss, skin hydration and physiochemical parameters (i.e. the octanol/water partition coefficient of these substances.

I. Buraczewska, M. Loden, **Influence of pH on Skin Barrier Recovery**, Bioengineering and the Skin, International Congress 27-28th June 2002, Paris

PH of the skin surface is known to be acidic (around 5), whereas body's internal environment has a neutral pH. Cosmetic products, have various pH values, from acidic to alkalic. The aim of the presented study was to check ig pH of an alkaline moisturizing cream would influence skin barrier recovery and dryness in surfactant-damaged human skin.

P.-A. Wendling, G. Dell' Acqua, **Quantitaive Evaluation of Skin Biophysical parameters of a Population living in the Swiss Alps**, Bioengineering and the Skin, International Congress 27-28th June 2002, Paris

Previous studies, in which skin biophysical characteristics of human volunteers were measured, have evidenced that populations where genetic background, geography, environmental factors, as well as life style habbits differ, present different skin biophysical characteristics.

A. de Castro, **Efectividad de cremas antienvejecimiento con activos naturales,** GCI Latinoamerica, Vol. 1, No. 2, Mai-August 2002,

La autora describe un estudio con el uso de una crema que contiene una mezcla de filtros solares fisicos, extractos vegetales, hidratantes, antirradicales libres, sustancias antiinflamatorias con el objetivo de comprobar la eficacia de materias primas de origen vegetal en el tratamiento y prevencion del fotoenvejecimiento.

Hurdles getting to the Market…is the product right?…is it safe?….is it legal? A report from the Britisch Society of Cosmetic Chemists, IFSCC Magazine – Vol. 5, No. 3/2002

The 2002 spring symposium at the Royal Society of Medicine proved to be a great success

B. Roy, **Duoskin: significant hydratisierende Wirkung,** Kosmetische Medizin, Ausgabe 5/2002, 23. Jahrgang

Die hydratisierende Wirkung der beiden Präparate Duoskin Gesicht und Duoskin Körper wurde bewertet und mit der von zwei hydratisierenden Referenzprodukten verglichen. Es handelt sich um eine monozentrische, vergleichende, randomisierte Studie. Die Ergebnisse beziehen sich auf 12 Frauen mit sehr trockener Haut. Jede Probandin war gleichzeitig ihre eigene Kontrolle, da ein Areal unbehandelt blieb.

E. Proksch, H.P. Nissen, M.F. Bremgartner, C.J. Urquhart, **Erhöhung der Hautfeuchtigkeit durch Mg-reiches Duschgel,** Kosmetische Medizin, 4/2002, 23. Jahrgang

Baden oder Duschen mit gewöhnlichen Detergenzformulierungen kann zu Problemen bei Patienten mit Psoriasis, Ekzemen und bei trockener Haut führen. Detergenzien können eine Irritation verursachen und die Trockenheit der Haut verschlimmern. Die therapeutische Wirkung des Totes Meer Salzes bei Hauterkrankungen ist seit der Antike bekannt; Magnesiumsalze sind der überwiegende Bestandteil des Salzes aus dem Toten Meer. In der vorliegenden Untersuchung wurde die Wirkung eines Duschgels, welches ein besonders magnesiumchlorid-reiches Salz aus der Tiefe des Toten Meeresenthält (Mavena Derma Line Mg46 Duschgel), zur Reinigung bei Psoriatikern eingesetzt.

T. Gambichler, P. Altmeyer, S. Rotterdam, M. Herde, M. Stücker, K. Hoffmann, **Bioengineering der Haut,** Kosmetische Medizin, 4/2002, 23. Jahrgang

Nicht-invasive Untersuchungstechniken (Bioengineering) am Hautorgan werden in der Dermatologie und Kosmetologie zunehmend eingesetzt. Gegenüber der bloßen klinischen Untersuchung bietet der Einsatz von Bioengineering-Methoden viele Vorteile. Es lassen sich morphologische und funktionelle Parameter der Haut objektiv darstellen und standardisiert messen, die der bloßen klinischen Untersuchung bzw. sensorischen Wahrnehmung oft unzugänglich sind.

MegaSun beauty & care, **Sonnen ohne Risiko,** Kosmetische Medizin, 4/2002, 23. Jahrgang

Sonne gilt für große Bevölkerungsteile als die Universal-Arznei aus der „Himmelsapotheke". Doch der Dermatologe rät: Was für die Risiken und Wirkungen von Arzneimitteln gilt, gilt auch für die Solarien-Besonnung: Die Dosis ist entscheidend. Auf der Pressekonferenz am 16.10.2002 in Hamburg präsentierte die KBL-Solarien AG den Medien sowie dem Fachhandel ein auf streng wissenschaftlicher Basis entwickeltes Gerät zur individuellen Hauttypbestimmung, um Solarstrahlen für gesunde und natürliche Bräune optimal zu dosieren – das megaSun care Terminal.

B. Gabard, S. Schliemann-Willers, **Better Skin Protection with New Barrier Creams,** SOFW Journal, 128. Jahrgang 4-2002

Skin protection creams are considered judicially as cosmetics. Besides a good efficacy, a main requirement to be fulfilled by these preparations is maximal safety as they are often applied on lesioned skin.

S. Haug, **Feuchtigkeit, Fettgehalt und pH-Wert der Haut im Gesicht – Eine Untersuchung zur Festlegung von Normalwerten an definierten Punkten im Gesicht und am Hals,** Dissertation an der Technischen Universität München 2002

Das größte Organ des menschlichen Körpers, die Haut, besitzt eine Gesamtfläche von 1,5-2,0 m², die von Körpergröße und Gewicht abhängig ist [1]. Die Haut ist in mehreren Schichten aufgebaut. Das 6-20µm, an Handinnenfläche und Fußsohle zwischen 200-600 µm [54,86], dicke kernlose Stratum corneum (Hornhaut) ist die oberste Schicht der Haut. Es besteht aus 13 Zellschichten [76]. Der Aufbau des Stratum corneum ist dabei ähnlich einer Mauer aus Ziegelsteinen und Mörtel (bricks and motar-Modell). Die Ziegelsteine entsprechen in dieser Modellvorstellung proteinreichen Korneozyten, die hauptsächlich au seiner starren Zellhülle [6], Keratinfilamenten [107] und dem interfilamentären Matrixprotein [28] bestehen.

J. Woodruff, **Body of evidence,** Soap, Perfumery & Cosmetics 2002 April

Proving effect may not be new but it is of course an absolute requirement these days. And there are many different ways of going about it, explains John Woodruff.

J. Djordjevic, G. Vuleta, J. Milic, H. Zhai, H. Maibach, **O/W Emulsions Enriched with Vitamin E,** Cosmetics & Toiletries 2002 April, Vol. 117, Nr. 4

Vitamin E has an important protective function for the entire organism. It is believed that the broad biological activities of vitamin E are due to its ability to inhibit lipid peroxidation and stabilize biological membranes.

C. Fox, **Antimicrobials,** Cosmetics & Toiletries 2002 April, Vol. 117, Nr. 4

This article reviews antimicrobial agents and their use in personal care products as reported in more than 50 patents and journal articles published between 1996 and 2001

J.W. Wiechers, C. Verboom, V.A.L. Wortel, W.A. Starmans, **Multifunctionality: From „One in More" to „More in One",**Cosmetics & Toiletries 2002 April, Vol. 117, Nr. 4

The authors explain the requirements for interactions of single components in mixtures in order to obtain multifunctional mixtures. These requirements include synergy and the need to excel in a single specific performance.

G. Maramldi, M. A. Esposito, **Potassium Azeloyl Diglycinate: A Multifunctional Skin Lightener,** Cosmetics & Toiletries, March 2002, Vol. 117, Nr. 3

Skin lightening and sebum normalization are among the useful cosmetic functions of potassium azeloyl diglycinate, a soluble derivative of azelaic acid.

A. Kramer, T. Bernig, G. Kampf, **Clinical double-blind trial on the dermal tolerance and user acceptability of six alcohol-based hand disinfectants for hygienic hand disinfection**, Journal of Hospital Infection, 2002, 51: 114-120

Six commercially available available alcohol-based hand rubs (AHD 2000, Desderma, Muscasept A, Manorapid (Poly-Alkohol, Spitacid, and Sterillium)) were investigated in a clinical double-blind trial involving 10 participants who had no previous experience of using hand rubs (Group 1) and seven who had substancial professional experience of using hand rubs (Group 2, viro laboratory staff).

M. Ghyczy, V. Vacata, **Phosphatidylcholine and Skin Hydration,** "Skin Moistarization", Cosmetic Science and Technical Series Vol. 25, ed. by J. Leyden, Marcel Dekker Inc., New York, 2002

Phosphatidylcholine (PC) is the most abundant phospholipid in animal cells. It possesses an intrinsic hydration force, and its metabolites are essential osmoprotectants. Phosphatidylcholine composed of saturated fatty acids (hydrogenated PC; HPC) possesses physical properties which are comparable with those of the components of the skin permeability barrier.

D. Black, A. del Pozo, Y. Gall **Evaluation of surfactant effects on stratum corneum using squamometry, transepidermal water loss measurements and the sorption-desorption test**, The Essential Stratum Corneum, chapter 41, ed. by R. Marks, J.-L. Lévêque, R. Voegeli, Martin Danitz Ltd., London, 2002.

Overexposure to certain cleansers will result in skin damage, manifested by impaired barrier function, leading to irritant reactions with prolonged use. Evaluation of barrier function deterioration is thus a useful indicator of early stratum corneum (SC) damage, and may help to predict potential skin irritancy for these products.

A. O. Barel, **Product Testing: Moisturizers**, In P. Elsner, et al. (Edts): Bioengineering of the Skin, CRC Press, 2002, Chapter 21

The presence of an adequate amount of water in the stratum corneum is important for maintaining the following properties of the skin: general appearance of a soft, smooth, flexible, and healthy-looking skin; and an intact barrier function allowing a slow rate of transepidermal water loss (TEWL) under dry external conditions, which are frequently encountered.

M. Egawa, M. Oguri, T. Hirao, M. Takahashi, M. Miyakawa, **The evaluation of skin friction using a frictional feel analyzer,** Skin Research & Technology, 2002 Feb;8(1): p. 41-51

Background/Aims: Sensory evaluation is an important factor for cosmetic products. Several devices for the measurement of sensory properties have been developed in recent years. The objective here is to measure skin surface friction using these devices and examine the correlation with other

physiological parameters in order to evaluate the potential of physical measurement of tactile sensation. Methods: A KES-SE Frictional Analyzer, a commercial device for measurement of surface frictional characteristics, was used in this study. An arm holder was added to this device for measurement on the human forearm. The frictional coefficient (MIU) and its mean deviation (MMD) were used as the parameter to indicate surface friction. The moisture content in the stratum corneum was measured with a Corneometer CM825, the transepidermal water loss with a Tewameter TM210, the viscoelastic properties of the skin with a Cutometer SEM575 and the skin surface pattern by observing the negative replica using silicon rubber. Results: The MIU was not influenced by load; however, it was increased due to water application on the skin. The relationship between MIU and the moisture content in the stratum comeum, between MMD and skin surface pattern and between MMD and viscosity of both normal human forearm skin and SDS (sodium dodecyl sulfate)-induced dry skin were confirmed by statistical analysis in a test on human subjects. There was also a correlation between either MIU or MMD and sensory evaluation in the morning after the application of moisturizing products. Human skin surface friction was measured by using a KES-SE Frictional Analyzer. Conclusion: Judging from the correlation between either MIU or MMD and sensory evaluation, we considered this instrumental analysis to be useful for evaluating the tactile impression of human skin.

S. Schliemann-Willers, W. Wigger-Alberti, P. Kleesz, R. Grieshaber, P. Elsner, **Natural vegetable fats in the prevention of irritant contact dermatitis,** Contact Dermatitis, January 2002, Vol. 46 No. 1
Chronic irritant contact dermatitis (ICD) is one of the most pressing problems in occupational medicine and is common in the food processing industry. To date, protective creams that fulfil the special requirements in the foodstuffs industry have not been available.

C. Hun Huh, K. Il Seo, S. Duck Kim, J. Han, H. Chul Eun, **Biophysical changes after mechanical injury of the stratum corneum in normal skin,** Contact Dermatitis, January 2002, Vol. 46 No. 1
Scrubbing off the stratum corneum with a rough towel after soaking in warm water is a bathing custom unique to Korea. However, Korean dermatologists have advised against this practice due to the potential harm that it may cause, though there is little data to support this advice.

D. Swatschek, W. Schatton, J. Kellermann, W.E. Müller, J. Kreuter, **Marine sponge collagen: isolation, characterization and effects on the skin parameters surface-pH, moisture and sebum**, Eur J Pharm Biopharm, 2002 Jan;53(1): p. 107-113
A previously described isolation procedure for collagen of the marine sponge Chondrosia reniformis Nardo was modified for scaling-up reasons yielding 30% of collagen (freeze-dried collagen in relation to freeze-dried sponge). Light microscope observations showed fibrous structures. Transmission electron microscopy studies proved the collagenous nature of this material: high magnifications showed the typical periodic banding-pattern of collagen fibres. However, the results of the amino acid analysis differed from most publications, presumably due to impurities that still were present. In agreement with earlier studies, sponge collagen was insoluble in dilute acid mediums and all solvents investigated. Dispersion of collagen was facilitated when dilute basic mediums were employed. The acid-base properties of the material were investigated by titration. Furthermore, a sponge extract was incorporated in two different formulations and compared with their extract-free analogues and a commercially available collagen containing product with respect to their effects on biophysical skin parameters. None of the preparations had a noticeable influence on the physiological skin surface pH. Skin hydration increased only slightly. However, all tested formulations showed a significant increase of lipids measured by sebumetry.

L.A. Young, J.C. Dodge, K.J. Guest, J.L. Cline, W.W. Kerr, **Age, Breed, Sex and Period Effects on Skin Biophysical Parameters for Dogs Fed Canned Dog Food**, American Society for Nutritional Sciences, J. Nutr. 132: 1695S–1697S, 2002
Noninvasive skin biophysical methods have been used in clinical and experimental dermatology for humans (1). The application of some of these methods has also been investigated for companion animals (2–9). Skin biophysical measurements have been reported to be affected by age, breed, sex, site of measurement, animal excitement, evaluation (time) period or season, gonadal status and even coat color (9). The objective of this study was to look at the effect of age, breed, sex and time period on skin biophysical parameters for dogs fed a nutritionally complete and balanced canned food for adult dogs.

T. Sato, W. Sakamoto, W. Odanaka, K. Yoshida,O. Urishibata, **Clinical effects of dietary hyaluronic acid on dry, rough skin**, Aesthetic Dermatology Vol . 12: p. 109-120, 2002

A double-blind feeding study was carried out wherein 35 subjects who frequently suffer from dry, rough skin were given either a dietary hyaluronic acid supplement (120 mg/day) or a placebo for comparison for a 4-week period. The results have clarified the following: (1) Measurements of skin moisture showed that ingested hyaluronic acid acted to increase moisture content. (2) Microscopic skin surface analysis showed that ingested hyaluronic acid acted to increase skin smoothness and to ameliorate wrinkles. (3) Significant increases in blood hyaluronic acid concentration were found in both the hyaluronic acid and placebo ingestion groups, but the percentage increase was higher in the hyaluronic acid group. Other clinical laboratory test results indicated no clinically significant changes. It has been shown from the above that ingestion of hyaluronic acid is effective at increasing moisture retention and smoothness in the skin, and there are also no safety problems.

M. Zondlo Fiume, **Final Report on the Safety Assessment of Lecithin and Hydrogenated Lecithin**, International Journal of Toxicology, 20 (Suppl. 1), Cosmetic Ingredients Review: p.21–45, 2001

Lecithin is a naturally occurring mixture of the diglycerides of stearic, palmitic, and oleic acids, linked to the choline ester of phosphoric acid, commonly called phosphatidylcholine. Hydrogenated Lecithin is the product of controlled hydrogenation of Lecithin. Bilayers of these phospholipids in water may form liposomes, a spherical structure in which the acyl chains are inside and not exposed to the aqueous phase. Lecithin and Hydrogenated Lecithin are used in a large number of cosmetic formulations as skin conditioning agents-miscellaneous and as surfactant-emulsifying agents. Hydrogenated Lecithin is also used as a suspending agentnonsurfactant. Historical data on concentration of use of Lecithin reveals that 0.1% to 1.0% is the concentration range most frequently seen, with concentrations up to 50% reported for two moisturizing products. A solution of 65% Lecithin is currently reported to be used at concentrationsup to 3% in cosmetics.Nonocclusive application of Lecithin-containing liposomes to murine skin resulted in 30% penetration to the subdermis. In piglet skin, the same application resulted in 99% accumulating in the stratum corneum. In general, liposomes are considered effective in capturing other compounds inside their spherical structure and delivering any such captured compound through the skin barrier. As a result, caution should be exhibited in formulating cosmetic products that contain these ingredients in combination with other ingredients whose safety is based on their lack of absorption or where dermal absorption is a concern. Lecithin is virtually nontoxic in acute oral studies, short-term oral studies, and subchronic dermal studies in animals. Lecithin is not a reproductive toxicant, nor is it mutagenic in several assays. In an oral carcinogenicity study, brain neoplasms were found in mice exposed to Lecithin. In a subcutaneous carcinogenicity study, no neoplasms were found in mice and rats exposed to Lecithin. Adverse reactions to Lecithin in a metered-dose inhaler have been reported. Lecithin and Hydrogenated Lecithin were generally nonirritating and nonsensitizing in animal and human skin. Based on the available data, Lecithin and Hydrogenated Lecithin are safe as used in rinse-off cosmetic products; they may be safely used in leave-on products at concentrations up to 15%, the highest concentration tested in clinical irritation and sensitization studies; but the safety of use could not be substantiated in cosmetic products likely to be inhaled. Because of the possibility of formation of nitrosamines, these ingredients should not be used in cosmetic products in which *N*-nitroso compounds may be formed.

G. Hillebrand, M. J. Levine, K. Miyamoto, **The Age-Dependent Changes in Skin Condition in African Americans, Asian Indians, Caucasians, East Asians, and Latinos,** IFSCC Magazine, October/December 2001, Vol. 4, No. 4

Understanding the similarities and differences in skin characteristics as a function of age, race and geography should aid in the development of skin care products that better meet consumers' skin care needs around the world.

K.-D. Neander, F. Hesse, **The role of cream mousses in the treatment of dry skin in patients with diabetes mellitus,** Podology, LII, Issue 10/2001, p. 19-21

Diabetics are well known for their frequent struggles with the problem of "dry skin". The diverse and unpleasant effects to which these patients are exposed range from pruritus to skin inflammations, particularly in the interdigital spaces of the feet. As has been demonstrated in a variety of studies, lack of moisture is at the heart of this problem.

D. Perrenoud, D. Gallezot, G. van Melle, **The efficacy of a protective cream in a real-world apprentice hairdresser environment**, Contact Dermatitis, Vol. 45 No. 3, September 2001

The object of this study was to compare the protective action of a new barrier cream to its vehicle in the context of hand irritation of apprentice hairdressers caused by repeated shampooing and exposure to hair-care products.

I. Le Fur, A. Reinberg, S. Lopez, F. Morizot, M. Mechkouri, E. Tschachler, **Analysis of Circadian and Ultradian Rhythms of Skin Surface Properties of Face and Forearm of Healthy Women**, J Invest Dermatol, Vol. 117, NO. 3 September 2001, p. 718–724

Biologic rhythms of cells and organisms are well documented and have been extensively studied at the physiologic and molecular levels. For the skin, many circadian changes have been investigated but few systematic studies comparing skin at different body sites have been reported. In this study we investigated facial and forearm skin circadian rhythms in eight healthy Caucasian women. Noninvasive methods were used to assess skin capacitance, sebum excretion, skin temperature, transepidermal water loss, and skin surface pH on fixed sites of the face and the volar forearm during a 48 h span under standardized environmental conditions. Using the cosinor or ANOVA methods, circadian rhythms could be detected for sebum excretion (face), transepidermal water loss (face and forearm), skin temperature (forearm), pH (face), and capacitance (forearm). No circadian rhythmicity was found for the other biophysical parameters. In addition to the 24 h rhythm component, rhythms with periods of 8 h were found for sebum excretion, of 8 and 12 h for transepidermal water loss (face and forearm), and of 12 h for skin temperature (forearm). Our study confirms that rhythms of skin surface parameters are readily measurable and that these rhythms differ between different sites. Furthermore, we demonstrate for the first time that, for transepidermal water loss (face and forearm), sebum excretion, and skin temperature (forearm), in addition to circadian rhythms, ultradian and/or component rhythms can be detected.

M. Egawa, T. Hirao, M. Takahashi, **The measurement of skin friction using a frictional feel analyser**, Congress Stratum Corneum III, Basel, September 2001

Sensory evaluation is an important factor for cosmetic products. Several devices for the measurement of sensory properties have been developed in the recent years.

G.G. Hillebrand, K. Miyamoto, B. Schnell, M. Ichihashi, R. Shinkura, S. Akiba, **Quantitative evaluation of skin condition in an epidemiological survey of females living in northern versus southern Japan,** J Dermatol Sci. 2001 Aug, 27 Suppl 1: p .S42-52

Image analysis and biophysical methods were used to compare the skin condition of a group of females ranging in age from 5 to 65 years who had lived all of their lives in either Kagoshima (n=300), located in southern Japan, or Akita (n=302), located in northern Japan. Kagoshima annually receives approximately 1.5 times more solar UVB radiation than Akita. The methods used and corresponding skin parameters reported in this survey were: high resolution digital imaging followed by computer analysis of facial images for facial skin wrinkling and hyperpigmentation; silicone skin replicas followed by Moiré interferometry for facial skin surface roughness (texture); the Minolta Chromameter for skin color (L*a*b*) on sun-exposed (forehead) and sun-protected (upper inner arm) skin sites; the Corneometer for skin capacitance (hydration) on the cheek and ventral forearm; the Sebumeter for sebum excretion rate on the forehead; and the Minolta Spot Thermometer for skin temperature on the upper cheek. Compared with Japanese women living in Akita, Japanese women living in Kagoshima had significantly longer facial wrinkles, higher number of wrinkles, larger hyperpigmented spots, higher number of spots, rougher facial skin texture, more yellow foreheads and upper inner arms, darker foreheads, and less stratum corneum hydration in the cheeks and arms. When compared on an age-for-age basis, the average 40-year-old Kagoshima women has the same level of facial wrinkling as a 48-year-old Akita women, a delay of 8 years for living in the northern latitude. For facial hyperpigmentation, the delay is 16 years; the average 40-year-old Kagoshima women has the same level of facial hyperpigmentation as a 56-year-old Akita women. The results further testify to the skin damaging effects of sun exposure and may be useful in public health education to promote everyday sun protection.

K. de Paepe, K. Janssens, J.P. Hachem, D. Roseeuw, V. Rogiers, **Squamometry as a screening method for the evaluation of hydrating products**, Skin Research and Technology, Vol.7, No. 2, August 2001

Squamometry is a combination of sampling corneocytes by adhesive coated discs following by colour measurements after staining the cells. In this study, the correlation between stratum corneum (SC) hydration and scaling was investigated using capacitance measurements and squamometry, respecitively.

M. Gloor, B. Wasik, W. Gehring, **Hat ein Hamamelis-Destillat eine entzündungshemmende Wirkung?,** H+G Zeitschrift, Ausgabe 7/8-2001

Fragestellung: Beeinflußt der Wirkstoff Hamamelis die irritative Reaktion der Haut bei experimentellen Irritationsmodellen? Versuchsanordnung: Bei 15 Versuchspersonen wurde der Natriumlaurylsäure (NLS)-Irritationstest an jeweils 4 Versuchsstellen beider Unterarme volar

durchgeführt. Es wurde einmal täglich 1% NLS 30 Minuten lang appliziert. Nach Beendigung der NLS-Einwirkung wurden die Prüfpräperationen aufgetragen. An den jeweils 4 symmetrischen Versuchsstellen wurden geprüft.

H. Löffler, H. Dickel, O. Kuss, T. Diepgen, I. Effendy, **Characteristics of Self-estimated Enhanced Skin Susceptibility,** Acta Derm Venereol 2001; 81: 343–346

A considerable number of people complain about enhanced skin sensitivity. The aim of this study was to investigate the characteristics of subjective statements and objective measurable parameters in subjects with self-estimated enhanced skin susceptibility. Four-hundred-and-twenty volunteers completed a questionnaire form with a self-estimation of skin susceptibility, possible triggering factors and other skin problems. In addition, basal values of transepidermal water loss, cutaneous blood flow and skin hydration were measured.

T.H. Kim. E.H. Choi, Y.C. Kang, S.H. Lee, S.K. Ahn, **The Effects of Topical α-Hydroxyacids on the Normal Skin Barrier of Hairless Mice**, British Journal of Dermatology 4011, 2001

α-hydroxyacids (AHA) such as glycolic acid and lactid acid have recently been used in cosmetic and dermatological formulations.

T. Dietz, **Two Novel O/W Emulsifiers with Complementary Properties**, Cosmetic Science Conference 2001, Düsseldorf

The two novel O/W emulsifiers ABIL® Care 85 and TEGO® Care CG 90 are introduced.

M. Ghyczy, W. Gehring, V. Vacata, B. Gertchen-Ohligschläger, **Normalisation of Skin Humidity in SLS Pertubed Human Skin In Vivo by Gel State Phosphatidylcholine,** Cosmetic Science Conference 2001, Düsseldorf

The central role of skin moisturizers in stratum corneum (SC) for the healthy skin was established in the last decade.

P. Agache, S. Mary, P. Muret, A.M. Matta, P. Humbert, **Assessment of the Water Content of the Stratum Corneum Using a Sorption-Desorption Test,** Dermatology 2001

Various instruments based on electrical properties of the skin are currently used to assess the stratum corneum (SC) hydration state or water holding capacity. However, no direct relation with the quantity of water measured is provided. The objective of the present study was to calibrate the Corneometer, a device displaying electrical-capacitance-related values (which reflect the skin hydration state), and the amount and behaviour of the water taken up by the outer part of the SC during a sorption-desorption test.

I. Castiel-Higounenc, R. Jourdain, C. Queille-Roussel, C. Ferraris, P. Bastien, R. Schmidt, O. de Lacharrière, **Is barrier function disrupted in atopic xeroxis?,** Poster for SFIC,Lausanne, July 2001

Atopic dermatitis (AD) is thought to be accompanied by alterations of the epidermis including reduction in water content and an augmentation in the transepidermal water loss (TEWL). In addition, studies have suggested that qualitative and quantitative differences exist in certain epidermal lipids of the intercorneocyte spaces of atopic patients, as compared to healthy subjects. Recent studies, however, have challenged these findings and indicate that the results obtained are highly dependent upon the skin zone evaluated as well as the clinical characteristics of the subjects being studied. The purpose of the work presented here was to more thoroughly characterize the water content and the barrier function of the cutaneous barrier of atopic xerosis patients as well as to analyze the type and quantity of intercorneocyte lipids found in the epidermis of these same patients.

A. Castro, A. Vargas, **Formulacao de Sabonete Liquido com Productos Naturais: Medida de sua Efectividade,** Cosmetics & Toiletries (Portugese), Vol. 13 No 6, p. 93, 2001

P.-G. Sator, J.B. Schmidt, M.O. Sator, J.C. Huber, H. Hönigsmann, **The influence of hormone replacement therapy on skin ageing. A pilot study,** Maturitas 39 (2001) 43-55

We studied the effect of hormonal treatment on skin ageing in menopausal women. Twenty-four patients without hormone treatment for at least 6 months were included. Patients were assigned to three therapy groups: 1, oestrogen only 2. transdermal oestrogen and progesterone.One group without therapy was included as a control group. Treatment was continued for 6 months. Three patients, one from group 2 and two from group 3, discontinued therapy before the study endpoint. The following skin parameters were measured at monthly intervals during treatment.

H. Lambers, H. Pronk, **Biophysical Methods for Stratum Corneum Characterization**, in T. Förster (Editor): Cosmetic Lipids and the Skin Barrier, 2001 by Marcel Dekker

There is no doubt that the application of cosmetic lipids has many positive effects on the structure and function of the skin. These effects are pleiotropic, caused either by direct interaction with the epidermis, particularly the stratum corneum, or indirectly, by influencing the physiologic, homeostatic condition of the skin.

S. Sustmann, **Body care for dry skin**, Scientific Study Eubos Med, 2001

Dry skin is a widespread phenomenon of our time and is characterized by a deficiency of fat and moisture.

S. Sustmann, **Face care for sensitive and particularly dry skin**, Scientific Study Eubos Med, 2001

Daily influences, such as stress and the effects of weather, attack our skin and cause damage that is initially slow and scarcely detectable.

H.-P. Nissen, S. Sustmann, **Body care for normal to oily and sensitive skins**, Scientific Study Eubos Med, 2001

Body cleansing is particularly important in modern civilization, with its emphasis on hygiene, and it makes an important contribution to individual well-being.

A. Berghi, E. Bauza, G. Oberto, D. Pyronel, N. Domloge, **In vivo Studies of Phytosterol Sulfate Effect on human skin hydration and barrier function,** Society for Investigative Dermatology, May 2001

Phytosterol Sulfate (PS) is a new sterol and homologue to cholesterol sulfate an essential component in the human epidermis. Sterols are critical for epidermal barrier function; they mediate lipid synthesis and stratum corneum formation, desquamation, and membrane hydration. They also serve as an important precursor for Vitamin D.

M. Paye, Y. Cartiaux, V. Goffin, G.E. Piérard, **Hand and Forearm Skin: Comparison of their Respective Responsiveness of Surfactants**, Skin Research and Technology, Vol. 7, No. 2, May 2001

Skin compatibility of detergent products is usually evaluated using predictive tests where products are applied on the back of the forearm of the volunteers, even if these products come more readily into contact with the consumers' hands.

J. Djordjevic, G. Vuleta, H. Zhai, H.I. Maibach, J. Milic, **Effect of the Oil Phase of O/W Emulsions with Vitamin E Acetate on Skin Moisutre Content and Skin Barrier Function**, IFSCC Conference, Stockholm/Sweden, May 7-9, 2001

Three cosmetic emulsions with vitamin E acetate (5%) were formulated using polymeric emulsifier, with different type but same amount of emoillient oil (25 %).

H.M. Ribeiro, J. Morais, L. Rodrigues, **Long-term Influence of Polymers on the Biological Properties of the In Vivo Normal Human Skin**, IFSCC Conference, Stockholm/Sweden, May 7-9, 2001

Cosmetic formulations are actually included into the normal skin care daily habits and often aim to contribute to the normal skin physiology.

A.O. Barel, R. Lambrecht, P. Clarys, B.M. Morrison JR., M. Paye, **A Comparative Study of the Effects on the Skin of a Classical Bar Soap and a Syndet Cleansing Bar in Normal Use Conditions and in the Soap Chamber Test**, Skin Research and Technology, Vol. 7, No. 2, May 2001

The skin irritation potential of a body cleansing product is intended to be used at home with repetitive and brief contact with the skin.

G. Pellacani, S. Seidenari, **Water sorption-desorption test and moisture accumulation test for functional assessment of atopic skin in children**, Acta Derm Venereol. 2001 May;81(2): p. 100-3

Sorption-desorption and moisture accumulation tests are simple and quick methods for the in vivo functional analysis of stratum corneum hydration kinetics. The aim of this study was to evaluate the hydration dynamics of the uninvolved and affected skin of children with atopic dermatitis and to compare them with the skin of healthy children. The study investigated 45 children. The dynamic tests were performed using the corneometer CM820. Numerical parameters were calculated. With the sorptiondesorption test, eczematous skin showed lower water accumulation during the sorption phase, whereas water was released more slowly during the desorption phase. With the moisture accumulation test, increases in water accumulation velocity and in water accumulation were observed in atopic children. Dynamic tests showed that the stratum corneum of unaffected atopic skin was less hydrated

but more easily hydratable than normal skin. Conversely, despite a lower absorption capability, eczematous skin showed a greater avidity to retain water. New functional parameters (water-sorption capacity and accumulated water decay) are proposed to describe more precisely the hydration kinetics of eczematous skin.

M. Lodén, W. Wessman, **The influence of a cream containing 20% glycerin and its vehicle on skin barrier properties,** Int J Cosmet Sci. 2001 Apr;23(2): p. 115-9

Glycerin is widely used in cosmetics and well as in pharmaceutical formulations, mainly as humectant. In vitro studies have shown glycerin to prevent crystallization of stratum corneum model lipid mixture at low room humidity. Whether this may affect the skin barrier function during repeated application of glycerin in a cream base to normal skin is not known. Therefore, the influence of a cream containing 20% glycerin was compared with its placebo cream in a bilateral, double-blind study on 17 healthy volunteers. The effect was evaluated as influence on hydration with a corneometer and on skin barrier function. Skin barrier function was assessed as permeability to water with an evaporimeter (transepidermal water loss; TEWL) and as sensitivity to an irritating surfactant by measuring the biological response (measured as TEWL and skin blood flow). Ten days treatment of normal skin with 20% glycerin significantly increased skin corneometer values, indicating an increased hydration. However, our study failed to show an influence of glycerin on human skin, in terms of TEWL and skin sensitivity to SLS-induced irritation.

C. Fuchs, C. Heinemann, S. Schliemann-Willers, P. Elsner, **Wirksamkeitsnachweis eines Pflegeproduktes**, Kosmetische Medizin 4/2001

Berichtet wird über eine dreiwöchige Anwendungsbeobachtung eines Pflegeproduktes, in welcher der Einfluss des Produktes auf die Hornschichtfeuchtigkeit an 20 Probanden mit atopischer Hautdisposition und trockener, irritierbarer Haut in form einer Kurz- und Langzeitstudie geteste wurde.

G.G. Hillebrand, B. Schnell, K. Miyamoto, M. Ichihashi, R. Shinkura, S. Akiba, **The Age-Dependent Changes in Skin Condition in Japanese Females Living in Northern Versus Southern Japan**, IFSCC Magazine, Vol. 4, No. 2, April/June 2001

Image analysis and biophysical methods used to compare skin conditions of a group of females ranging in age from 5-65 years who have lived all of their life in either Kagoshima prefecture (n=300) located in southern Japan or Akita prefecture (n=302), located in Nothern Japan.

W. Gehring, M. Gloor, **Der Effekt von Dexpanthenol bei experimentell geschädigter Haut**, (The effect of dexpanthenole in experimentally damaged skin). H+G, Band 76, April 2001-05-21

Im Rahmen einer randomisierten vehikelkontrollierten, doppelbilinden Studie wurde Dexpanthenol in zwei unterschiedlichen lipophilen Vehikeln im repetitive Waschtest untersucht.

C. Fox, **Literature and Patent Review: Analytical and Test Methodologies,** 1990-2000, Part I. Cosmetics & Toiletries, Vol. 116, No. 4, April 2001-05-21

This article reviews some of the important methodologies published during the past ten years on the subject of cosmtics and toiletries.

T.-H. Oh, J.-H. Jeong, K.-H. Jang, **The Comparison of Shampoos for Skin Hydration by Measurement of Epidermal Capacitance in Normal Canine Skin**, *J Vet Clin* 18(3): p. 206-210, (2001)

Various commercial shampoos were frequently prescribed for dermatologic therapy in small animal practice. Skin hydration affected by the shampoos, however, was not evaluated routinely. In order to evaluate the skin hydration for the exact prescription of shampoos method to measure skin hydration of shampoos are needed. This study was undertaken to evaluate the skin hydration effect of shampoo on canine skin using Comeometer. Five healthy dogs were applied with 7 commercial shampoos: Humilac, Sebocalm, Sebolytics, Etiderm, Benzoyl peroxide, HyLyt and Zn-7 Derm. Skin hydrations were evaluated by measurement of electrical capacitance by Comeometer. A statistically significant increase in skin hydration was found 17($p< 0.05$) and 77 minutes ($p<0.01$) after application of Humilac indicating a humidifying effect of this product. A statistically significant decrease in skin hydration was found for the Benzoyl peroxide after 77 minutes ($p < 0.05$). No statistically significant differences between the other shampoos were found. None of the products tested had any negative effect on the skin barrier function. The Comeometer was found useful for detecting skin hydration to shampoos and considered as a simple and useful tool for prescription of various shampoos routine practice.

H. Song, **The Effects of Inositol Extracted from Rice on the Skin**, Personal Care Ingredients Asia,

March 2001

Inositol, which belongs to the vitamin B group, is a water soluble crystaline compound.

K. Mijyajmoto, **Quantitative comparison of the differences in facial skin aging and Skin Biophysical Properties in Japanese femals living in south and north part of Japan, and global research expansion on Caucasians, East Asians, Indian Asian and Latinos**, 5th ASCS, March 2001

Avoidance of sun exposure has been clearly recognized as the best way to prevent premature skin aging (e.g. wrinkling and age spots) and more severe neoplastic disease (squamous and basal cell carcinoma and malignant melanoma).

L. Rigano, F. Distante, A. Bonfigli, E. Berardesca, **Functional map of "normal" and "sensitive" facial skin for trans-epidermal water loss**, **capacitance and microcirculation,** 5th ASCS March 2001

Different body sites are reported to show significant variations in skin biophysical and functional properties such as the response to locali applied stimuli or substances, including cosmetic products.

E. Azizah, T. Rosemiarti, C. Weki, R.I.S. Tranggono, **Comparative Study of Several Whitening Agents in Cosmetic Products**, 5th ASCS March 2001

Melanin is the main factor determining skin color, which provide protection against UV irradiation. An abnormal increase in the amount of melanin in the epidermis is the main cause of hyperpigmentation due to several factors such as aging, pregnancies, endocrine disorders, sexual hormone treatments, sunlight bums, etc. Some pharmaceutical agents such as arbutin, kojic acid, vitamin C and its derivatives have been used as whitening agents, which control the number of melanin by inhibiting melanin production in melanocytes, because of their low toxicity to melanocytes. This study was aimed to compare several whitening agents in the same base creams. Twelve healthy volunteers were involved in the study; each received 4 different types of whitening creams. Two types of creams were used on each side of face and two others on the outer of each arm. Subject were evaluated for the number of melanin and erythema (with Mexameter MX 16), skin lightness and skin color index (with Chromameter CR 300), and skin moisture level (with Corneometer CM 820), over 12 weeks. The result obtained show that the cream contained 3% Arbutin and 0.005% Licorice Extract was better in decrease the number of melanin (3.41%), while the cream contained 3% Ascorbyl Phosphate Magnesium and 0.005% Licorice Extract was better in increase skin lightness (4.32%).

*A. Msi, T. Rosemiatri, E. Azizah, R.I.S. Tranggono***, Comparison Study of Single and Multi Alpha Hydroxy Acids in Decreasing the Number of Melanin**, 5th ASCS March 2001

Alpha Hydroxy Acids (AHAs) are a group of organic acids that play a specific role in the cycle of carbohydrate and other metabolic pathways.

M.K. Park, S.C. Ma, J.H. Kim, H.B Pyol, **Study of Preparation of Sodium Chloride-Free w/s Emulsion Using NFM, Chitin Derivatives and the Other**, 5th ASCS March 2001

In general a w/o or o/w emulsion is stabilized by sodium chloride which is hydrated by and increases electric conductivity of aqueous solutions.

Assessing and managing risks at work from skin exposure to chemical agents, HSE Books, Guidance for employers and health safety specialists, 2001, p. 23

D. Iliev, U. Hinnen, P. Elsner, **Skin Bioengineering Methods in Occupational Dermatology**, Skin Bioengineering Vol. 26, March 2001

Measruing biophysical properties of the skin is not only useful to study cutaneous physiology and pathology but may also be of value for the prediction of eczema risk, for the detection of subclinical eczema and for therapy control in occupational dermatology.

M. Rohr, K.-H. Schrader, **Climatic Influence on Cosmetic Skin Parameters.** Skin Bioengineering Vol. 26, March 2001

A high degree of standardization is required in order to quantify the effects of cosmetics. As the following discussion will show, it is not only normal standardization procedures, such as acclimatization of volunteers in special air-conditioned laboratories, which have to be taken into consideration when interpreting objective and subjective cosmetic parameters, but also the effect of the actual climate during the application phase and especially during the days of measurement.

G. Pellacani, B. Belletti, S. Seidenari, **Evaluation of the Short-Term Effects of Skin Care Products: A Comparison between Capacitance Values and Echographic Parameters of Epidermal**

Hydration, Skin Bioengineering, Vol. 26, March 2001

The hydration kinetics of the epidermis is influenced by various environmental conditions and controlled by the organism. Since the stratum corneum receives water from within the body and from the environment. Different techniques have been employed to detect and measure surface changes after application of skin care products, to define the mechanisms of water binding in the stratum corneum and to objectively measure the hydration effects of moisturizers.

R. Girard, K. Amazian, J. Fabry, **Better compliance and better tolerance in relation to a well-conducted introduction to rub-in hand disinfection**, J Hosp Infect., 2001 Feb;47(2): p. 131-7

The aim of the study was to demonstrate that the introduction of rub-in hand disinfection (RHD) in hospital units, with the implementation of suitable equipment, drafting of specific protocols, and training users, improved compliance of hand disinfection and tolerance of user's hands. In four hospital units not previously using RHD an external investigator conducted two identical studies in order to measure the rate of compliance with, and the quality of, disinfection practices, [rate of adapted (i.e., appropriate) procedures, rate of correct (i.e., properly performed) procedures, rate of adapted and correct procedures carried out] and to assess the state of hands (clinical scores of dryness and irritation, measuring hydration with a corneometer). Between the two studies, the units were equipped with dispensers for RHD products and staff were trained. Compliance improved from 62.2 to 66.5%, quality was improved (rate of adapted procedures from 66.8% to 84.3%, P > or = 10(-6), rate of correct procedures from 11.1% to 28.9%, P > or = 10(-8), rate of adapted and correct procedures from 6.0 to 17.8%, P > or = 10 (-8)). The tolerance was improved significantly (P > or = 10(-2)) for clinical dryness and irritation scores, although not significantly for measurements using a corneometer. This study shows the benefit of introducing RHD with a technical and educational accompaniment.

Y. Yoshizawa, H. Tanojo, S.J. Kim, H.I. Maibach, **Sea Water or its Components Alter Experimental Irritant Dermatitis in Man**, Skin Research and Technology, Vol. 7, No. 1, February 2001

Ocean bathing has been considered “healthy” for skin, but its efficacy remains testimonial in nature.

T. Reuther, S.C. Behrens-Williams, M.Kerscher, **Untersuchungen zur Wirkung von Mometasonfuroat-Fettcreme auf die epidermale Barriere**. H+G, Supplement 2/2001

J.S.C. English, J. Ratcliffe, H.C. Williams, **Irritancy of industrial hand cleansers tested by repeated open application on human skin,** Contact Dermatitis, Vol. 40, No. 2

The aim of this study was to compare the irritancy potential of 2 industrial hand cleansers with a brand leader of “mild” children’s hand cleanser and with an emollient.The products were tested using repeated open application tests (ROATs) on the forearms of 40 subjects. Scoring of signs and symptoms (itching or burning), transepidermal water loss (TEWL) and stratum corneum hydration (Corneometer) evaluated responses.

F. Li, E. Conroy, M. Visscher, R. Wickett, **The ability of electrical measurements to predict skin moisturization. Effects of NaCl and glycerin on short-term measurements**, J. Cosmet. Sci., 52, p. 13-22 (January/February 2001)

Non-invasive methods to evaluate skin hydration by measuring electrical properties are widely used in the cosmetic industry. However, there is still some controversy about factors that affect measurement. For example, concerns have often been expressed about the possible confounding effect of salts, either in the formulation or on the skin. Ionized salts on the skin may increase electrical conductivity and may lead to changes in electrical properties that are not related to increased water content. We have performed a systematic study of the effects of salt, i.e., sodium chloride, and glycerin on the electrical properties of skin as measured by the three most commonly used instruments, the Nova® DPM 9003, the Corneometer® CM 825, and the Skicon® 200. Formulations containing salt from 0-3% and glycerin from 0-10% were tested for their effects at one and two hours after a single application. Salt lowered the readings in the absence of glycerin and increased the reading in the presence of glycerin. For all three instruments, there was a linear correlation between the measurement and the glycerin level in the presence or absence of salt.

J. Lübbe, C. Ruffieux, G. van Melle, D. Perrenoud, **Irritatives Potenzial des Händedesinfektions-mittels n-propanol auf vorgeschädigter Haut**, H+G, Supplement 1/2001

Die alkoholische Händedesinfektion ist Methode der Wahl zur Vorbeugung der Übertragung nosokomialer Infektionen in Spitälern.

H. Dobrev, **Evaluation of the inhibitory activity of topical indomethacin, betamethasone valerate and emollients on UVL-induced inflammation of means of non-invasive measurements of the skin elasticity,** Photodermatology, Photoimmunology & Photomedicine, January 2001

Topical indomethacin has been reported to inhibit ultraviolet light-induced erythema. The objective of this study wajs to verify this assertion and to compare indomethacin 10% ointment to betamethasone valerate 0.1% ointment, water-in-oil emulsion and oil-in-water emulsion by means of non-invasive skin elasticity measurements.

A. Sirvent, D. Doyen, P. Girard, **The safety and efficacy of cosmetic products**, Personal Care, Jan. 01

To be exported to the entire world, cosmetic products have to satisfy the different regulations of each country.

J.W. Fluhr, H. Dickel, O. Kuss, I. Weyher, T.L. Diepgent, E. Berardesca, **Impact of anatomical location on barrier recovery, surface pH and stratum corneum hydration after acute barrier disruption,** British Journal of Dermatology 2001; 146: p. 770-776

It is not known whether distinct anatomical locations will respond with different recovery rates following acute barrier challenges. To investigate whether barrier parameters differ at five body sites during recovery from acute disruption. Acute barrier disruption was achieved by tape stripping and by acetone extraction of stratum corneum lipids. Transepidermal water loss (to assess barrier function) capacitance (for stratum corneum hydration) and skin surface pH were measured at each of five different body sites in 14 human volunteers. Individual measurements were obtained every 24 h for 96 h. Lipid-rich skin areas (e.g. the forehead) were the most vulnerable to barrier disruption by either method.

N. Vidakovic, M. Primorac, M. Stupar, G. Vuleta, **In Vivo Study: Influence of Polyacrylic Anticellulite Gels on Hydration and pH-Value of the Skin**, SOFW-Journal 11-2000

The effect on hydration and pH-value of the skin has been investigated on 22 female subjects during the thirty-day treatment. The following formulations have been tested: polyacrylic gel with 2% of caffeine, ployacrylic gel with propylene-glycol plant extract of Ivy – 2%, Horse Chestnut – 2%, Seaweed – 1,5%, as well as ployacrylic gel with caffeine and above-mentioned plant extracts.

S. Tamburic, G. Abamba, J. Ryan, **Potencial Umectante do d-α-Tocoferol**, Cosmetics & Toiletries (Edicao em Portugues), Vo. 12, set/out 2000

Produtos umectantes são desenvolvidos com a intenção de melhorar as condições e ….

M.F. Silva, L.B. Silva, P.J. Rolim Neto, D.P. Santana, **Óleo de Babaçu: Novo Adjuvante Lipofilcio**, Cosmetics & Toiletries (Edicao em Portugues), Vo. 12, set/out 2000.

O óleo be babaçu é um óleo vegetal extraído do coco da palmeiera babaçu…

S.M. John, W. Uter, H.J. Schwanitz, **Relevance of Multiparametric Skin Bioengineering in a Prospectively-followed Cohort of Junior Hairdressers**, Contact Dermatitis, Vol.43, No. 3, September 2000

There is conflicting evidence concerning predictors of individual susceptibility to develop irritant contact dermatitis in wet work. A cohort of initially 92 hairdresser apprentices was prospectively followed for 3 years.

H. Dobrev, **In vivo Study of Skin Mechanical Properties in Psoriasis Vulgaris**, Acta Derm. Venerol., 2000; 80, p. 1-5

The aim of this study was to investigate the mechanical properties of the skin in psoriatic plaques before and after treatment with dithranol in clinically uninvolved psoriatic skin in comparison with skin of healthy controls.

*P. Wirtz***, Objektive Beurteilung physiologischer Parameter der Haut von an atopischem Ekzem erkrankten Kindern: eine Untersuchung von pHWert, transepidermalem Wasserverlust und Corneometrie an der Haut gesunder und erkrankter Kinder mit klinisch nicht betroffener und mittels lokalem SCORAD differenzierter ekzematöser Haut**, Dissertation zur Erlangung der Doktorwürde der Technischen Universität München, 2000

M. Takahashi, **Recent Progress in Skin Bioengineering and its Application to Evaluation of Cosmetics.** SOFW Journal, September 2000

With the advances in skin bioengineering technology, great progress has been made in the techniques used for testing the efficacy of cosmetics to the skin ranging from the physical properties to the biochemical characteristics of the skin.

S. Herman, **Skin Deep**, Global Cosmetic Industry, September 2000

With a growing ethnic population in the U.S., large and small marketers need to turn their attention to skin-care products.

S.M. John, W. Uter, H.J. Schwanitz, **Relevance of Multiparametric Skin Bioengineering in a Prospectively-Followed Cohort of Junior Hairdressers**, Contact Dermatitits, Vol. 43, No. 3, Sept.2000

There is conflicting evidence concerning predictors of individual susceptibility to develop irritant contact dermatitis in wet work. A cohort of initially 92 hairdresser apprentices was prospectively followed for 3 years. The association between anamnestic and clinical findings, and multiparametric skin bioengineering data (transepidermal water loss TEWL), microcirculation, capacitance, pH, sebum, temperature) was investigated. The observation intervals were 3 months in the 1st year of training and 12 months thereafter.

G. Yosipovitch, A. Maayan-Metzger, P. Merlob, L. Sirota, **Skin barrier properties in different body areas in neonates,** Pediatrics. 2000 Jul; 106(1 Pt 1): p. 105-108

Objective: The aim of the study was to investigate skin barrier function in neonates in different anatomic sites during the first 2 days of life. Design: The study population consisted of 44 healthy full-term newborn infants. Transepidermal water loss (TEWL), stratum corneum hydration (SCH), and skin surface pH were measured in different anatomic sites (forehead, flexor part of forearm, upper back, abdomen, inguinal region, palms, and soles) during the first 10 hours of life and 24 hours later. Measurements were recorded with a Tevameter, a Corneometer, and a skin pH meter with a flat glass electrode. Results were compared with those in 20 healthy adults. Results: TEWL was lower in infants than in adults in the forehead, palms, soles, and higher in the forearms. It was significantly higher on day 1 than on day 2 in the soles, palms, and forearms, and in the forearm, palms, and inguinal region compared with the other anatomic sites. SCH was significantly lower in the infants on the forehead, back, and abdomen, and higher on the forearms and palms; it was significantly higher on the first day of life on the forearms and palms, and lower in the inguinal region. Skin surface pH was significantly higher in the infants in all body sites (>6.6 in most measurements). On day 2, it was significantly lower than on day 1, but still higher than in adults. SCH correlated positively with TEWL in the neonates but not in the adults. None of the variables were related to gestational age, sex, mode of delivery, or body weight. Conclusdions: Changes take place in SCH, water loss, and pH in the first 2 days after birth, suggesting that the stratum corneum barrier is still in the process of adapting to extrauterine life. The significant anatomic variability in TEWL and SCH should be taken into account in evaluating the permeation of skin care products and topical medications in newborns.

J.W. Wiechers, F.J. Groenhof, A. Barlow, **Relative Performance Testing of Formulations: Emollients,** Cosmetics &Toiletries, Vol. 115, No. 7, 2000

Cosmetic formulators select raw materials to be incorporated into their skin-care formulations based on the individual functionality of these ingredients. Some of these materials, such as emulsifiers, are essential to manufacture skin-care products, and other ingredients, such as moisturizers, provide a specific skin-care benefit.

C. Houghton, **New natural oils**, Cosmetic Science & Business 2000

Here we look at a selection of vegetable oils from different sources which have recently come under R&D spotlight.

V. Lambert, I. Le Fur, C. Guinot, F. Morizot, S. Lopez, E. Tschachler, **Comparaison des Parametres Biophysiques Cutanés en Hiver et en Été chez des Femmes Caucasiennes,** IIième Congrès de la Société D'Ingénierie Cutanée, Juin 2000

Les modifications environmentales au cour des saisons fávorisant la survenue de pathologies cutanée mais sont aussi citées par les femmes comme fávorisant l'apparition des signes de sensinilité cutanée.

O. Doucet, L. Ferrero, D. Fouchard, V. Decherf, L. Zastrow, **Description of a new Type of O/W Emulsion Allowing the Formation of Liquid Crystals After Application Onto the Skin. Interest for Creating Intensive and Long Lasting Moisturizer**, XXIst IFSCC Congress 2000, Berlin

Most of the topically-applied products leave onto the skin surface a cream-residue which is of particular importance in the regulation of the bio-disponibility of the active ingredients. Once the spreading phase onto the skin is over, the evaporation of some volatile compounds, such as water, promptly modifies their intial structure.

A. Teglia, A. Mondelli, **Short Term Effects of Hydrophilic Ingredients on the Hydration Parameters of the Stratum Corneum,** XXIst IFSCC Congress 2000, Berlin

Though the real benefit of raising the skin's water content is not fully explained, it is evident to everyone that without an adequeate amount of water, skin displays undesirable perceivable changes (brittleness, flakiness, roughness) and its protective function tends to be impaired.

A. de Castro, **Measurement of the Effectivity of Natural Raw Materials: Soja Protein, Barley, Titanium Dioxide and Zinc Oxide**, XXIst IFSCC Congress 2000, Berlin

Consumer's preference for natural materials, as well some obtained by biotechnology processes instead of animal or chemical origin, in products for skin care, obeys to the fact that on one hand they are looking to avoid possible adverse reactions, and in the other hand, they constitute renewable sources of raw material.

M. Gotsche, R. Dieing, A. Jentzsch, P. Hoessel, W. Schrof, **Investigations of Polymers for Skin Care**, XXIst IFSCC Congress 2000, Berlin

There is a need for improved skin care products due to a demographic shift in the population. A major challenge for the cosmetic chemist in this area is the improvement of skin smoothness and moisturization.

W. van Es-Spiekman, G.W. Lucassen, **Skin Characterization: Human Skin Water Content Versus Lipid Content Measured by Corneometer, Sebumeter and ATR-FTIR Spectroscopy**, XXIst IFSCC Congress 2000, Berlin

Skin characterization methods are important for the cosmetic industry, personal care industry, in pharmacology and dermatology. Water content and lipid content are of special importance because of their crucial role in the barrier function of the skin.

F. Distante, L. Rigano, S. Sirigu, R. D'Agostino, A. Bonfigli, E. Berardesca, **Intra- and Inter-Individual Differences in Facial Skin Functional Properties: Influence of Site and "Skin Sensitivity" for Bioengineering Studies**, XXIst IFSCC Congress 2000, Berlin

Biophysical and functional skin differences according to the body site have been widely reported by non-invasive studies of skin bioengineering in the past years.

J. Brasch, M. Hüttemann, E. Proksch, **Iontophoresis of nickel elicits a delayed cutaneous response in sensitized individuals that is similar to an allergic patch test reaction**, Contact Dermatitis, 2000, Vol. 42, p. 36-41

Wearing of patch test chamber fro 1-2 days is uncomfortable for the patients.

D. Schmid, A. Lang, T. Allgäuer, C. Bayerl, E.G. Jung, **Beurteilung der Veränderung der Hautbeschaffenheit durch die Heilpflanzensäfte Brennnessel und Löwenzahn**, Akt. Dermatol. 2000

Wir führten eine Anwendungsbeobachtung über die Beeinflussung von objektiven und subjektiven Parametern der Hautbeschaffenheit durch die Kombination der Heilpflanzensäfte Brennnessel und Löwenzahn bei gesunden Probandinnen durch. Zehn Probandinnen (Versuchsgruppe) nahmen über 6 Wochen die Kombination der Heilpflanzensäfte oral ein, gleichzeitig erhielten sie eine standardisierte Körperpflege mit Basiscreme DAC, weitere 10 Probandinnen (Kontrollgruppe) benutzten lediglich die standardisierte Körperpflege mit Basiscreme DAC.

H. Dobrev, **Evaluation of the photoprotective activity of topical indomethacin, betamethasone valerate and emollients by means of non-invasive measurements of the skin elasticity,** Department of Dermatology, Plodiv, Bulgaria

Topical indomethacin has been reported to inhibit ultraviolet light-induced erythema.

H. Dobrev, **Treatment of psoriasis vulgaris with hydrocolloid occlusive dressins in combination with betamethasone dipropionate 0.05% cream**, 7th National Congress of Dermatology and Venereology, May 2000

In the present preliminary study we report comparative results regarding a new method, used for the first time in Bulgaria.

H. Dobrev, **Immediate effects of cosmetic series for men "Karo Royal" on the skin water content and pH**, 7th National Congress of Dermatology and Venereology, May 2000

Six products of cosmetic series for men "Karo Royal" (Alen Mak, Plodiv) were studied.

H. Dobrev, **Assessment of cosmetical products by means of measurements of the epidermal water content and residual lipid film on skin surface,** 7th National Congress of Dermatology and Venereology, May 2000

The aim of the present study was to compare the moisturizing effect of six emulsions by means of skin capacitance measurements (Corneometer).

A .Markowetz, **Die Pflege reifer Haut,** Dermatologie & Ästhetik 3/2000-10-13 und Haut, Heft 3, Mai 2000

Reife Haut benötigt eine andere Pflege als junge Haut. Es bestehen einige Unterschiede, denen bei der Pflege Rechnung getragen werden muss. Reife Haut ist in der Regel besonders trocken und benötigt daher eine gute Feuchtigkeitszufuhr und eine Verbesserung des Hautgefühls.

W. Baschong, C. Artmann, J. Röding, **Comparison of Skin Moisturization Attained by Supplementing the NMF in the Skin or by Applying Water Binding Molecules on the Skin Surface**, SOFW April 2000

Skin moisture can principally be improved either by hydrophilic substances binding water on the skin surface (humectants), or by enriching the natural moisturizing factor (NMF) of the skin.

J. Lübbe, D. Perrenoud, **Skin Irritancy of Alcoholic Skin Disinfectants,** 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

Irritant contact dermatitis (ICD) of the hands is a recognized problem in health care workers (HCW) exposed to disinfectants.

J.W. Fluhr, O. Kuss, T. Diepgen, S. Lazzerini, A. Pelosi, E. Beradesca, **Testing for Irritation with a Multiparametric Approach: Comparison of Eight Parameters and Five Different Irritation Models,** 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

The assessment of irritated skin reactions by non-invasive bioengineering methods is widely used.

D. Black, A. Del Pozo, S. Diridollou, J.M. Lagarde, Y. Gall, **Stratum Corneum Barrier Function Assessment Using the Sorption-Desorption Test and Laser Doppler Flowmetry,** 13th ISBS Jerusalem, March 2000 und Skin Research and Technology, Vol. 6, No. 3, August 2000

The Stratum Corneum (SC) serves as a multi-factor protective barrier for the underlying skin whereby any abnormality in this function leads to degenerative changes in this tissue.

E.A. Sagiv, S. Dikstein, **The Efficiency of Humectants as Skin Moisturizers in Presence of Oil.** 13th ISBS Jerusalem, March 2000.

J.W. Fluhr, A. Pelosi, L. Lazzerini, F. Distante, S. Dikstein, E. Berardesca, **Corneocyte Surface Area is Influenced by Hormonal Status in Humans: Assessment with the Noninvasive VIC-Method (Videomicroscopic Imaging of Corneocytes),** 13th ISBS Jerusalem, March 2000

The corneocytes surface area has been studied invasively and non-invasively with different methods in the last decades.

I. Le Fur, C. Guinot, S. Lopez, F. Morizot, V. Lambert, E. Tschachler, **Age-Related Reference Ranges for Skin Biophysical Parameters in Healthy Caucasian Women**, 13th ISBS Jerusalem, March 2000 and 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

Knowledge about the variations of skin biophysical parameters is a prerequisite for the interpretation of results of the skin bioengineering studies.

F. Li, E. Conroy, M. Visscher, R. Wickett, **Influence of Formulations Containing Salt and Glycerin on the Electrical Properties of Skin: Correlation Between Single Treatments and Long-Term Results,** 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August

2000

In recent years, non-invasive methods to evaluate skin hydration by measuring electrical properties have become increasingly popular.

A.M. Matta, P. Muret, P. Humbert, **In Vivo Calibration of the Corneometer CM820 and the Evaporimeter EP1 Servomed for the Assessment of the Water Content of the Upper Part of the Epidermis Using a Water Sorption Desorption Test,** 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

Various instruments based on electrical properties of skin, are presently available to assess the hydration state of it, and the different electrical methods have been compared for the evaluation of the hydration state.

A.O. Barel, K. Alewaeters, P. Clarys, **Non-Invasive Bioengineering Study of the Effects on the Human Skin of a Direct Electric Current,** 13th ISBS Jerusalem, March 2000

The effects of a small intensity direct electric current (galvanic current) on the volar forearm skin was examined in vivo by several non-invasive bioengineering methods.

G. Pellacani, S. Seidenari, **Functional Non-Invasive Tests for the Assessment of the Stratum Corneum Hydration Kinetics in Children Affected by Atopic Dermatitis,** 13th ISBS Jerusalem, March 2000

Sorption-Desorption Test (SDT) and Moisture Accumulation Test (MAT) enable to assess the functional properties of the stratum corneum.

A. Leal, J. Alves, L. Rodrigues, **Usefulness of Transcutaneous Indictors as Predictors of Peripheral Dysfunction**, 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

Transcutaneous monitoring of biological signals has been a major research objective specially for cicular (haemodinamics) of hydro-electrolytic parameters.

K. Janssens, K. de Paepe, D. Roseeuw, V. Rogiers, **Lack of Correlation between Stratum Corneum Hydration and Scaling Pattern: Evaluated by Corneometry and Squamometry,** 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

Squamometry is a combination of smapling corneocytes by adhesive coated discs followed by colour measurements after staining of the cells.

D. Black, A. del Pozo, J.M. Lagarde, Y. Gall, **Seasonal variability in the biophysical properties of stratum corneum from different anatomical sites,** Skin Research and Technology 2000, 6, p. 70-76

A 10-month-long study on a panel of 24 young female subjects was carried out to determine whether various biophysical aspects of the stratum corneum (SC) varied with season.

H.E. Packham, C.L. Packham, **Skin Bioengineering as a Contribution to Product Performance and Safety**, Cosmetics & Toiletries 03/2000

With today's increasing consumers sophistication and the demand both for products that work and are safe for the user, there is a need for greater objectivity and accuracy in both formulations and claims made by the manuafcturer.

C. Stoltz, **How Can the Special Needs of Mature Skin be Catered For?** Cosmetics & Toiletries 03/2000

S. Lopez, I. Le Fur, F.Morizot, G. Heuvin, C. Guinot, E. Tschachler, **Transepidermal Water Loss, Temperature and Sebum Levels on Women's Facial Skin Follow Characteristic Patters,** Skin Research and Technology, Vol. 6 No. 1, February 2000

The aim of this study was to compare the biophysical properties of different facial zones.

E.A. Sagiv, S. Dikstein, **The Efficiency of Humectants as Skin Moisturizers in Presence of Oil,** 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000 and Skin Research and Technology, Vol. 7, No. 1, February 2001

The research on the treatment of "dry skin syndrome" is hampered by the lack of suitable animal models.

A.E. Sagiv, A. Ingber, S. Dikstein, **A Novel In Vivo Model in Guinea Pigs for Dry Skin Syndrome,**

Skin Research and Technology, Vol. 6 No. 1, February 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

The lack of suitable validated animal model for the comparison of the pharmacological effectiveness of known and potential moisturizers in the treatment of “dry skin syndrome” let us to develop such an in vivo model.

E.A. Sagiv, S. Dikstein, **The Efficiency of Humectants as Skin Moisturizers in Presence of Oil,** 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000 and Skin Research and Technology, Vol. 7, No. 1, February 2001
The research on the treatment of “dry skin syndrome” is hampered by the lack of suitable animal models.

G. Gacic-Vukavljak, **Sebum Control Performance with Powdered Silicone Elastomers**. Personal Care Ingredient Asia Conference, Bangkok, March 2000.

T. Barlow, J.W. Wiechers, **Measuring Skin Hydration**. C&T, December 1999

In the contribution to the series”From Test to Claim”, aimed at cosmetic scientists that are involved in the management or execution of trials relating to cosmetic claim substantiation, we will be discussing probably the most popular type of skin efficacy, anemly the hydration or skin moisturization.

J.W. Wiechers, A. Barlow, **Just below the Skin Surface: Skin Hydration**. Cosmetics & Toiletries 114 (12) 47-53, 1999

Gut gepflegt, Test – Stiftung Warentest Nr. 11, 1999

Eingecremt von Kopf bis Fuss – dat tut gut. Muss es aber die teure Bodylotion aus der Parfümerie sein? Muss es nicht, zeigte der Test.

M. Fischer, I.M. Schneider, R. Neubert, W. Wohlrab, **Über den Einfluss methylverzweigter Fettsäuren auf die Barrierefunktion des Stratum corneum,** Dermatosen in Beruf und Umwelt, 47/221-264, Nov/Dez 1999

Es wurde die Wirkung von methylverzweigtem Fettsäuren (2 % bzw. 5 % 10-Methylpalmitinsäure und 10-Methylhexadec-9-ensäuren als Penetrationsehancer untersucht.

J.W. Wiechers, M. Lüder, F.J. Groenhof, A. Barlow, **Building Skin Functionality Into Formulations.** IFSCC 2, 34-40, October-December 1999.

L.M. Harnisch, M.K. Raheja, L.K. Lockhart, A. Pagnoni, A. Lopez, A. Gabbianelli, **Substantiating Antiaging Product Claims**, C&T, Vol. 114, No. 10, October 1999

Areas of the body most battered by the damaging effects of UV raditation, such as face and hands, are also the most visible in our social life.

L. Norlén, I. Nicander, B. Lundh Rozell, S. Ollmar, B. Forslind, **Inter- and Intra-Individual Differences in Human Stratum Corneum Lipid Content Related to Physical Parameters of Skin Barrier Function In Vivo,** J Invest Dermatol 112: p. 72–77, 1999

For a full understanding of the properties of the human skin barrier, physical macroscopic parameters of barrier function must be correlated to the structural organization of the barrier on a molecular level. This study was undertaken to relate differences in the relative composition of the three main lipid classes of human stratum corneum, i.e., free fatty acids, cholesterol, and ceramides, to differences in transepidermal water loss, stratum corneum electrical impedance, and corneometer value. A new high performance liquid chromoatography/light scattering detection-based analysis method recently developed was used for collection of quantitative lipid data in conjunction with gas chromatography/mass spectrometry/flame ionization detection measurements on the free fatty acid fraction. After subtraction of contaminating lipid fractions we have estimated the molar ratio of the human skin barrier lipid composition to be, respectively, 15% cholesterol esters, 16% saturated long chain free fatty acids, 32% cholesterol, and 37% ceramides. The inter-individual difference in the relative amount of free fatty acids, cholesterol, and ceramides, respectively, can be >100% in the individual case. It was found that the relative amount of ceramides to cholesterol is larger in the wrist area, paralleled by a higher transepidermal water loss and Corneometer value as well as different skin electrical impedance values as compared with the upper forearm area. We conclude that the site-dependent differences in the stratum corneum lipid composition are small compared with the large inter-individual variation. Interestingly, in the individual case, no correlation was registered between relative ceramide content and barrier properties.

M.M. Jiménez Soriano, M.J. Fresno Contreras, E. Sellés Flores, **Pharmacotechnical caracterization and effectiveness study of a dermopharmaceutical form: Rosemary honey contributions as a moisturizing active,** Bollettino chimico farmaceutico 138(8): p. 401-417, October 1999

We have designed, elaborated and studied a dermopharmaceutical form formulated on the basis of a modern self-emulsifying excipient and rosemary honey (known as Miel de La Alcarria--Spain--according to the Governing Council), in order to obtain a hight degree of cutaneous hydratation. The formulation is typified and characterized from a pharmacotechnical and rheological points of view. In this sense, the experimental protocol has emphasized rheological essays which give relevant practical information. Also, we have performed a complete study of it physical and structural stability, and, lastly, we evaluated the dermopharmaceutical effectiveness. The work plan included the following tests: 1) Pharmacotechnical Essays--organoleptic characteristics, photomicrograh study, type of interposition, pH-determination, rheological and thixotropic study and physical stability tests; 2) Dermopharmaceutical Effectiveness Assays--Corneometric and Sebumetric measurements. From the results, we have deduced that the emulsified binary system that is proposed, stable from a physical and structural points of view, presents confirmed properties and a very good cosmetological adequation. In this sense, our emulsion presents a high degree of moisturizing/emollient power that qualifies it not only as a magnificent eudermic dermopharmaceutical form, but also as a very appropriate vehicle for Dermopharmaceutical and/or Dermatological Formulation.

G. Yosipovitch, B. Mevorah, M. David, **Migratory Ichthyosiform Dermatosis With Type 2 Diabetes Mellitus and Insulin Resistance**, Arch Dermatol. 1999; 135(10): p. 1237-1242

Background: In addition to the well-defined hereditary primary ichthyoses, many sporadic or less well-defined keratinization disorders with or without systemic manifestations have been reported. Herein we describe ichthyosiform dermatosis associated with type 2 diabetes mellitus. Observations: The patients were members of a large Arab family with heavy consanguinity. Eighteen members were affected with a variously severe scaly disorder. They showed migratory polycyclic keratotic scaly plaques evolving into diffuse generalized scaling or complete remission. Acanthosis nigricans–like lesions were also noted, and there was an association with type 2 diabetes mellitus. A scarcity of intercorneocyte lamellae and reduction in lamellar body contents were observed. Conclusions: We could not find a report of a similar dermatosis. Furthermore, an association between ichthyosis and diabetes has not been documented. Therefore, we believe that this may constitute a new entity. In addition to the well-defined groups of hereditary primary ichthyoses, many sporadic or familial ichthyosiform disorders have been described. In the latter group of less well-defined ichthyoses, there may be extracutaneous manifestations. Whereas excessively dry skin of the shins with mild ichythyosiform skin changes has been associated with diabetes,[1] true ichthyosis has not been reported, and, to the best of our knowledge, hereditary ichthyosiform dermatosis has not been associated with diabetes.Herein described is a heavily consanguineous Arab family, originating in Africa, that displays a unique form of migratory ichthyosiform dermatosis as well as type 2 diabetes mellitus, probably representing a new entity.

A. de Castro, **Productos Naturales: Utilidad y medida de su eficacia**, Actualizaciones Terapeuticas Dermatologicas y Esteticas, Vol. 22 No. 5, Sept/Oct 1999

La preferencia del consumador por materiales naturales o biotecnológicos obeche al hecho de evitar las posibles reacciones adversas.

*A.M. Vargas, A. de Castro***, Proteina de Soja: Evaluacion de su Efecto Hidratante**, IFSCC Chile May 1999 and Actualizaciones Terapeuticas Dermatologicas y Esteticas, Vol. 22 No. 5, Sept/Oct 1999

La piel, el órgano más voluminoso…

A. De Castro, A.M. Vargas, **Evaluacion del tratamientodel prurito con el residuo lipidico de la cebada**. Actualizaciones Terapeuticas Dermatologicas y Esteticas, Vol. 22 No. 5, Sept/Oct 1999

J.W. Wiechers**, Combining Clinical and Sensory Assessment of Skin Moisturisation**. XXth Conference of the Int.Federation of the Societies of Cosmetic Chemists, Cannes (Poster) 09/1999.

J.W. Fluhr, M. Gloor, S. Lazzerini, P. Kleesz, R. Grieshaber, E. Berardesca, **Comparative study of five instruments measuring stratum corneum hydration (CORNEOMETER CM 820 and CM 825, Skicon 200, Nova DPM 9003, DermaLab) Part II. In vivo**, Skin Research and Technology, Vo. 5, 1999, p. 171-178 and ISBS and EEMCO Meeting, Liege, 09/1999

The hydration state of the stratum corneum can be measured with different instruments.

J.W. Fluhr, M. Gloor, S. Lazzerini, P. Kleesz, R. Grieshaber, E. Berardesca, **Comparative study of five instruments measuring stratum corneum hydration (CORNEOMETER CM 820 and CM 825, Skicon 200, Nova DPM 9003, DermaLab) Part I. In vitro**, Skin Research and Technology, Vo. 5, No. 3, August 1999

The hydration state of the stratum corneum can be measured with different instruments.

W. Gehring, R. Bopp, F. Rippke, M. Gloor, **Effect of topically applied evening primrose oil on epidermal barrier function in atopic dermatitis as a function of vehicle,** Arzneimittel-Forschung/Drug Research 49(II), 7, 635-642 (1999)

The aim of this study was to establish the effect on barrier function in atopic dermatitis of topical evening primrose oil in an amphiphilic and a stable water-in-oil emulsion. The studies were vehicle-controlled in two populations of 20 atopic subjects. Barrier function was assessed in terms of transepidermal water loss and stratum corneum hydration after a 4-week treatment period and a 1-week

C. Packham, **Bio-engineering and the skin,** AOHNP(UK) 1999

In this article a modern approach to the age-old problem of irritant contact dermatitis is examined.

L. Vaillant, L. Declerq, D. Malvy. J.C. Béani, J. Bazex, D. Maes, S. Hercberg, **Topical Antioxidant treatment provides long term pretective benefits against skin aging,** Poster Arbois 1999

Most photoniological effects (from sunburn to immunosuppressin, photoaging and photocarcinogenesis) are attributed to ultraviolet raditation and are believed to be essentially mediated by reactive oxigene species.

J.W. Wiechers, V.A. Wortel, **Creating Effective Claim Support Packages**, Cosmetics & Toiletries, July 1999

It is interesting to study the history of ceramides as an example of what can happen to ingredient claims. Unilever scientists identified ceramide 1 as a functional skin lipid in 1982 and many scientific papers have since been written to describe the beneficial skin effects of ceramides. The name of this ingredient was popularized by Elizabeth Arden, a company belonging to the Uniliver group, when they launched Ceramide Time capsules in 1990.

M. Förschle, I. Frei, **Elastisch und geschmeidig – Tests zur Messung der Hautstraffung,** Kosmetik International 6/99

Der Hauptnutzen vieler Produkte ist es, die Haut der jüngeren Konsumentin elastisch und geschmeidig zu erhalten, bzw. die der älteren Verwenderin wieder straffer aussehen zu lassen.

E. Thumm, E..G. Jung, C. Bayerl, **Überprüfung der Auswirkung von Kosmetika auf Hautrauhigkeit, Feuchtigkeitsgehalt und Barrierefunktion der Haut**. Kosmetische Medizin 3 Juni 1999

In einer seitenkontrollierten Studie wurde drei Kosmetikpräparate auf liposomaler Basis hinsichtlich ihrer Auswirkung auf a)Hautrauhigkeit (Skin Visiometer SV 500), b) den Feuchtigkeitsgehalt des Stratum corneum (Corneometer CM825) und c) die Hautbarrierefunktion bzw. den transepidermalen Wasserverlust/TEWL (Tewameter TM 210) untersucht.

K. Lanzerath, **Eine Notwendigkeit für die dermatolische Praxis? Die apparative Bestimmung von Hautparametern,** H+G Band 74, Heft 6, 1999

Transepidermaler Wasserverlust (TEWL), Corneometrie, Sebumetrie, Melanin- und Erythembestimmung – Schlagworte, die in der dermatologischen Forschung und Praxis immer mehr an Bedeutung gewinnen.

B. Gabard, **Dry Skin and the Cosmetic Benefit of Moisturization**, 12th ISBS, Boston, 06/98 and Skin Research and Technology, Vol.5 No. 2, May 1999

The importance of water for the functional integrity of skin in general and of the horny layer in particular has been recognized for a long time and is underlined by the wealth of literature published on this subject.

P. Clary, A.O. Barel, B. Gabard, **Non-invasive electrical measurements for the evaluation of the hydration state of the skin: comparison between three conventional instruments – the Corneometer®, the Skicon® and the Nova DPM®,** Skin Research and Technolgy, 1999, 5, p. 14-20

Some electrical properties of the skin may be related to the water content of the horny layer and measurements of impedence and/or capacitance have been used to assess the hydration state of the skin surface.

L. Rodrigues, P. Pinto, N. Galego, P.A. Da Silva, L.M. Pereira, **Transepidermal water loss kinetic modeling approach for the parameterization of skin water dynamics**, Skin Research and Technology, Vol.5 No. 2, May 1999

The evaluation of transepidermal water loss (TEWL) is one of the methods most frequently used in studies involving skin water dynamics. However, TEWL does not provide a direct measurement of epidermal barrier function, being rather a surrogate effect of it. In particular, when external stimuli change cutaneous water balance, these stimuli must be taken into account in order to achieve a rigorous interpretation of the results.

S. Tamburic, G. Abama, **Moisturizing Potential of d-¤-Tocopherol**, Cosmetics & Toiletries, 05/1999

Moisturizing products are designed with the intention of improving skin condition and appearance by increasing skin hydration. The classic approach to this problem involves the use of occlusive ingredients (to decrease the level of transepidermal water loss) and humectants (to imporve the water-binding ability of the stratum corneum.

A. de Castro, A.M. Vargas, **Alternativas Naturales en el Tratamiento del Fotoenvejecimiento**, IFSCC Chile May 1999

Estudíos realísados a nivel mundial …

N. Arnejo, **Evaluacion del poder de retención de agua de los agentes humectantes**, IFSCC Chile May 1999

Los humectantes son apliamente usados …

S.H. Perez Damonte, G.M. Cuomo, R.L. Galimberti, **Evaluacion Instrumental de la Piel Sensible**, IFSCC Chile May 1999

Numerosos patientes se haceran a la consulta cosmética…

M. Maruno, F.C. Facco, P.A. Rocha Filho, **Hydration, Oily and PH of Skin In Vivo Evaluation After Application of Both Simple and Complex Emulsions Containing Hydrolyzed Proteins**, IFSCC Chile May 1999

Cosmetic industry considers skin treatment as a market which is increasing and spreading throughcosmteic products as well.

A. Vexler, I. Polyansky, R. Gorodetsky, **Multi-Parametric Examination of Irradiated Skin in Breast Cancer Patients,** Skin Research and Technology, Vol. 5 No. 2, May 1999

More than 12 % of the women in Wesren Hemisphere are projected to develop carcinoma of the breast.

C. Dani, E. Martelli, M.F. Reali, G. Berini, G. Panin, F.F. Rubaltelli, **Effects of Application of Vitamin E Ointment to Premature Neonates' Skin***,* Pediatric Research April 1999

Following the hypothesis that oxidative stress plays a role in the development of skin lesions in preterm infants, we planned a prospective study to investigate the effects of application on epidermis of a vitamin E ointment.

J.W. Wiechers, **Verbraucher messen etwas anders. Vergleich objektiver und subjektiver Hautfeuchtigkeitsbestimmung.** Parfümerie und Kosmetik, 80 (4) 50-56, 1999.

*W. Voss, G. Schlippe, M. Breuer***, Tests on Cosmetics Scientific Standards**, SOFW-Journal 4/99

In general, body care articles and cosmetics have only a low allergy potential. The probability that toxic-irritative reactions will arise after proper use is even lower.But especially with patients with sensitive skin, unclear skin reactions, which can frequently be confused with allergies, can arise. The cosmetics manufacturers, however, would like to produce safer products and naturally want to avoid that type of problem from the start.

H. Tronnier, **Empfindliche Haut,** Seminar Hausarzt Praxis März/April 1999

Die Empfindlichkeit der Haut hat keineswegs nur somatische Aspekte und Ursachen, sondern auch psychogene. Sie wird damit partiell vergleichbar mit anderen menschlichen Empfindungen, deren

Existenz niemand bestreitet, deren Definition aber alles andere als einfach ist. Kann man einer Haut ihre Empfindlichkeit ansehen?

A. Fendl, **Einzelheiten der Hautdiagnose**. Natürlich schön/Grundlagten der Ganzheitskosmetik, Handwerk und Technik – 1999

Wie ein Mantel schützt der eigene fettige Film die Haut gegen negative Einflüsse von aussen und Wasserverluste von innen.
treatment-free period.

S. Bielfeldt, H. Köhler, J. Gassmüller, **Minimalinvasive Verfahren in der Wirksamkeits- und Verträglichkeitsprüfung von Kosmetika**. 13. Symposium der DGK Bad Neuenahr, 1999

J.W. Wiechers, **Efficacy Testing of Cosmetic Ingredients. In: Hincal, A.A., and de Jong (Eds.) Recent Advances in Pharmaceutical**, Cosmetic and Food Excipients. Minutes 9th Int. Pharmaceutical Technology Symposium, Editions de Santé, Paris, 126-138 Book Chapter, 1999

K.P. Wittern, F. Stäb, R. Wolber, T. Blatt, R. Keyhani, V. Schreiner, U. Schönrock, **Wirkstoffe und ihre Wirkprinizpien**. 13. Symposium der DGK, Bad Neuenahr, 1999

U. Maerker, P. Behm, V. Schreiner, **NIR-Spektroskopie und Haut,** Poster Bad Neuenahr 1999

Wasser findet sich in großen Mengen im lebenden Gewebe der Epidermis.

C. Greif, W. Wigger-Alberti, M. Arens-Corell, P. Elsner, **Beurteilung einer Körperlotion für trockene und empfindliche Haut,** Poster – 5. Tagung der ABD, Aachen 03/99 und Allergologie 3, 03/1999

Durch häufige Reinigungsmaßnahmen kann es zu einer starken Entfettung des Stratum corneum und zu Störungen der epidermalen Permeabilitätsbarriere kommen.

M. Bock, H.J. Schwanitz, **Modulation der epidermalen Permeabilitätsbarriere durch die topische Anwendung von CO_2 – imprägniertem Wasserklinische und hautphysiologische Untersuchungen**, Allergologie 3, 03/1999

Eine Stabilisierung der epidermalen Permeabilitätsbarriere bzw. der physiologische Wiederaufbau nach Barrierstörungen werden zu den wichtigesten Zielen der Externabehandlung gezählt.

T. Fischer, W. Wigger-Alberti, C. Greif, P. Elsner, **Irritative Wirkung von abrasiven Reinigungsmitteln auf die Barrierefunkton der Haut,** Allergologie 3, 03/1999

Dermatologische Hautreinigung am Arbeitsplatz sollte schadstoffbezogen so mild wie möglich und so reinigend wie nötig sein.

V. Rosenberger, A. Klotz, K.-P. Wilhelm, **Nachweis der Wirksamkeit einer traubenkernöl- und harnstoffhaltigen Creme anhand biophysikalischer Untersuchungen,** Allergologie 3, 03/1999

Die zunehmende Problematik der Gesunderhaltung arbeitsbelastender Haut in der Bevölkerung macht die Entwicklung geeigneter Pflegeprodukte notwendig

H. Tronnier, C.M. Heeks, M. Wiebuch, U. Heinrich, **Comparative Measurement of Skin-Hydration**, Poster at Clinical Dermatology Update, 03/99

A sufficient horn-skin layer hydration which is neither endogenously nor exogenously reduced is the perequisite of a functioning skin barrier.

H.-G. Ji, B.-S. Seo, **Retinyl Palmitate at 5% in a Cream: Its Stability, Efficacy and Effect,** Cosmetics &Toiletries, 03/99

This paper evaluates the stability, efficacy and effect of retinyl palmitate at 5% in four different cream formulations: w/o water-in-silicone, o/w and multilamellar vesicles.

M. Paye, G. Gomes, C.R. Zerweck. G.E. Pierard, G.L. Grove, **A hand immersion test under laboratory-controlled usage conditions: the need for sensitive and controlled assessment methods**, Contact Dermatitis, Vol. 40, No. 3

Exaggerated test conditions were frequently used to investigate the cutaneous tolerance of detergent products in the past. As the sensitivity of newly designed biometric methods is steadily improving, the trend towards more realistic test conditions should be encouraged.

B. Chadoutaud, L. Curtil, C. Veret, F. Alais-Gallou, **Evaluation objective en double avuegle de la performance hydratante et de la rémanence de duex émollients corporels E/H et H/E dans le traitement des peaux sèches et très sèches,** Les Nouvelles Dermatologiques, Vol. 18 No. 2, Feb. 99

Cette étude en double aveugle randomisée chez 20 volontaires à peau sèche et très sèche, concerne l'analyse controlatérale de l'activité hydratante de deux émulsions

E. Bárány, M. Lindberg, M. Lodén, **Biophysical characterization of skin damage and recovery after exposure to different surfactants,** Contact Dermatitis, Vol. 40, No. 2

The majority of adverse skin reaction to personal-care products are presumed to be caused by irritant substances, like surfactants. In this study, different aspects of the irritant reaction after a single exposure to 8 surfactants were characterized during 2 weeks.

C. Packham, **Chemicals and your health: Beware!**, Engine Repair and Remanufacture, January 1999

Most people working in the engineering industry will at some time be exposed to chemicals, the range of which, is enormous and includes substances, such as the solvents used in paint spraying or to degrease engine components; this includes metal working fluids, epoxy resin compounds, and even the skin cleanser used by the mechanic or fitter to clean hands after work.

P.M. Müller, R. Jermann, **The Skin,** IFSCC Vol. 1 No. 1, October/December 1998

The authors introduce a novel psycho-physical approach to determining subejctive skinfeel involving weights on panelists' volar forearms. Through this method and by determining differentiation threshold values, the authors demonstrate that skin moisturized with a liposomal formulation performs better than skin dehydrated with sodium dodecyl sufate and aqueous ethanol.

U. Bornschein, **Der Schuß ins Waschwasser...** Die Schwester/Der Pfleger 12/98

Die Ganzkörperwaschung der Patienten durch Pflegende ist im Krankenhaus eine täglich wiederkehrende Verrichtung. In vielen Einrichtungen ist dafür ein Pflegestandard geschaffen worden. Dabei kommt es oft zu einer Diskussion um den Waschwasserwechsel, und dies nicht nur aus hygienischen Gesichtspunkten.

F. Morizot, I. Le Fur, E. Tschachler, **Sensitive Skin,** Cosmetics & Toiletries Vol. 113, November 1998

Studies on skin reactions to irritant substances and topical preparations have a long history. Clinical signs and symptoms of irritant reactions in the dermatological sense are well defined and are synonymous with skin inflammatory reactions.

J.W. Wiechers, **Multifunktionelle Mischungen: Eine neue Workstoffgeneration?** Parfümerie & Kosmetik, 79 (11) 36-38, 1998.

L. Rodrigues, Y.R. Salgueiros, N. Galego, P. Pinto, N. Da Silva, I.Z. Ferro, **Study on the In Vivo Performance of Two Capacitance Systems: Assessment of the Experimental Reproducibility and sensitvity**, J. Appl. Cosmetol. 16, October – December 1998, p. 135-153

The epidermal water content is one of the most fundamental indicators for cutaneous functional evaluation. The major role of water in the skin physiological and pathophysiological processes is actually well known and recognised and for it, the reinforcement or re-establishment of these properties, through a wide variety of topical formulations, including cosmetics, is a frequent objective of therapeutical intervention.

H. Zhai, **Preventing Irritant Dermatitis**, Cosmetics&Toiletries, October 1998

The author reviews the role of moisturizers in preventing irritant dermatitis with testimonial and controlled experimental data.

J.S. Koh, K.S. Chae, H.O. Kim, **Skin Characteristics of Normal Korean Subjects According to Sex and Site using Non-Invasive Bioengineering Methods**, Korean J Dermatol., 1998 Oct; 36(5): p. 855-864

Background: During the last few years, the in vivo study of the physiological parameters of the skin by non-invasive methods has been considerably developed. So far, there have been some reports on the skin characteristics only in parts, but there has not been any criteria to classify those of normal subjects. Objective: The aim of the present study was to investigate the skin characteristics of healthy Korean subjects according to sex and sites using non-invasive methods. Methods: To determine normal levels of sebum, skin hydration, transepidermal water loss (TEWL), skin elasticity and skin color according to sex, 163 subjects (male; 124, female; 39) were used to investigate 5 different anatomical

sites. 6 different instruments were used: The Sebummeter SM 410, Corneometer CM 820, Evaporimeter EP1, Cutometer SEM 474, Chromameter CR-121, and Mexameter MX 16, for evaluating sebum excretion rate, capacitance, TEWL, mechanical property and skin color respectively. Results: Differences were noticed depending on the anatomical sites and sex. Most of the measuring parameters were significantly different according to sites and sex. The values of sebum levels, capacitance and TEWL were higher in the males on the cheek, forehead and crows foot, whereas in the females, higher values were observed on the dorsum of the hand. The skin elasticity varied considerably among the nine-parameters but, for the elastic ratio (R2, R5), the females showed significantly higher values than the males in all sites except the forehead. Skin lightness (L* value) was higher in the females, whereas the males showed lugher values in the category of redness (a* value) and yellowness (b* value). The values of the eqrthema index (EI) and melanin index (MI) were also higher in the males on all sites. Correlations between the skin parameters mentioned above were calculated. A negative, correlation between capacitance and TEWL was observed only on the cheek (male/female, r =-0.2/ r =-0.4, p<0.05). The L* value correlated negatively with MI. Mioreover the values between a* and EI also showed sipificant correlations in the male (cheek and dorsum of hand, y =0.2, forehead and crows foot, r =0.3, p<0.05). There were considerably significant correlations between the visual pigmentation score and instrumental skin parameters in the males (visual pigmentation score vs. L* value measured by Chromameter ; cheek/crows foot, r = -0.3/y =-0.4, visual pigmentation score vs. MI by Mexameter ; cheek/crows foot, r =0.2/ r =0.4, viisual winkle score vs. sebum excretion rate measured by Sebumeter ; cheek, r=0.2, visual winkle score vs. elasticity parameters measured by Cutometer ; cheek, R2/R5/R7, r =-0.3/ r =-0.2/ r =-0.3, p<0.05). Conclusion: Skin physiological parameters can be evaluated by non-invasive skin bioengineering methods which show quantitative modifications in physiological conditions in relation to sites and sex.

D. Khazaka, **Assessing Hydration of the Skin - A Practical Approach to the Measurement with the Corneometer CM825®**, Euro Cosmetics 10/98

The measurement of the moisture content of the skin surface is one of the most important parameters in cosmetics. This study describes the advantages of the capacitance method of the Corneometer CM 825® concerning the influence of products on the skin, occlusion effects and the penetration depth of the scatterfield.

B. Varangot, S. Marull, R. Voultoury, V. Couturaud, **Normal and Dry Skin Evaluation of Corneocyte Size as a Function of Depth in the Epidermis by Tape Stripping and Image Analysis,** Poster - 20th IFSCC Congress Cannes, 09/1998

Cosmetologists have long been interested in dry skin (slinicalassessment and treatment).

I. Le Fur, S. Lopez, F. Morizot, M. Dubourgeat, C. Guinot, E. Tschachler, **Comparison of Malar and Frontal Zones by Bioengineering Methods for Different Cosmetic Skin Type Groups of Women,** Poster - 20th IFSCC Congress Cannes, 09/1998

During the past decades the in vivo study of physiological parameters of the skin by non invasive methods has considerately developed.

Y. Yazan, M. Seiller, S. Avcier, M. Demirel, **Comparison of Glycolic, Lactic and Glycolic + Lactic Acids in Multiple Emulsion Systems,** 20th IFSCC Congress Cannes, 09/1998

G. Leone, S. Siladji, G.F. Secchi, M. Carducci, M. Fazio, **A New Challenge For High SPF Sunscreens: The Outdoor Dynamic Test** - Product Evaluation - 20th IFSCC Congress Cannes, 09/1998.

D. Black, A. Del Pozo, S. Diridollou, J.M. Lagarde, Y. Gall, **Assessment of Emollient Effects on the Stratum Corneum of Wingter Dry Skin Using A Multiple Measurement Approach**, Stratum Corneum II Symposium, Cardiff, 09/98

A randomised single-blind study was carried out on 13 female volunteer subjects aged 21-43, (mean 35 yrs), with the aim of assessing the effects of a glycerine/vaseline based emollient cream on the stratum corneum of winter dry skin.

J.W. Wiechers, A. Barlow, **Skin Moisturisation and Elasticity Originate From at Least Two Different Mechanisms.** Stratum Corneum II Symposium, Cardiff, 09/98.

O. Barel, P. Clarys, B.Gabard, **In Vivo Evaluation of the Hydration State of the Horny Layer: The Use of Electrical Measurements for Claim Support**, Stratum corneum II Symposium, Cardiff, 09/98

Objective assessment of the hydration state of the horny layer and evaluation of the efficacy of moisturizers can be readily done with simple instruments based on electrical methods.

J.W. Fluhr, S. Lazzedni, F. Distante, M. Gloor, E. Beradesca, **Effects of Prolonged Occlusion on Stratum Corneum Barrier Function and Water Holding Capacity**, Stratum Corneum II Symposium, Cardiff, 09/98

Occlusion is used in clinical practice to enhance transcutaneous penetration and drug delivery to the skin. Occlusion can also be generated by the professional use of protective garments, gloves and cosmetics.

J.W. Fluhr, W. Gehring, M. Gloor, S. Lazzerini, P. Kleesz, E. Berardesca, **Comparative Study of 5 Instruments Measuring Stratum corneum Hydration in Vitro.** Stratum Corneum II Symposium, Cardiff, 09/98.

A.V. Schreiner, Zeden, G. Gercken, U. Hoppe, P.Gerson, **Comparison of Barrier Properties of Different Layers of Stratum Corneum of Xerotic Skin of Elderly and Normal Skin**. Stratum Corneum II Symposium, Cardiff, 09/98

T. Fischer, C. Greif, W. Wigger-Alberti, P. Elsner, **Instrumentelle Methoden zur Bewertung der Sicherheit und Wirksamkeit von Kosmetika,** Aktuelle Dermatologie, 8/9-1998

Durch die Erfordernisse eines Wirksamkeits- und Sicherheitsnachweises für Kosmetika gewinnen nichtinvasive biophysikalische Meßmethoden zunehmend an Bedeutung. Neben der Bestimmung des transepidermalen Wasserverlustes und der Messung der Hautfeuchtigkeit, des Oberflächenfettes, des pH-Werts, und der Elastizität kommen der Erfassung des Oberflächenreliefs, der Farbe und der Hautdurchblutung große Bedeutung zu. Mit diesen Methoden können u.a. die hautfeuchtigkeitsfördernden, glättenden und straffenden Wirkungen von Topika sowie der Grad der Irritation durch Externa evaluiert werden. Zur Messung und Vergleichbarkeit dieser unterschiedlichen Hautfunktionsparameter sind standardisierte Meßbedingungen erforderlich.

R. Vanbever, D. Fouchard, A. Jadoul, N. De Morre, V. Préat, J.P. Marty, **In vivo Noninvasive Evaluation of Hairless Rat Skin after High-Voltage Pulse Exposure**. Skin Pharmacol Appl Skin Physiol 1998

Short high-voltage pulses have recently been shown to dramatically increase and expedite transdermal drug transport via a mechanism bypothesized to involve electroporation. This study addresses tolerance issues of the method in vivo in hairless rat. Chromametry, transepidermal water loss (TEWL), laser Doppler flowmetry (LDF) and corneometry were jointly used for noninvasive sensing of skin biophysical parameters. Slight increases in skin redness, TEWL and LDF values followed the application of electric pulses. The changes in skin capacitance were nonisignificant. The magnitude of the alterations depended on the electrical features of the pulses. When compared to iontophoresis, high-voltage pulses did not induce stronger alterations of skin functions. This report provides the first in vivo demonstration of the safety of the high-voltage pulses proposed for transdermal delivery.

M. Paye, G. Gomes, C. Zerweg, G.E. Pierard, G.G. Grove, **A Hand Immersion Test in Laboratory-Controlled Usage conditions: A Need For Sensitive and Controlled Assessment Methods,** 12th ISBS, Boston, 06/98

In the investigation of cutaneous tolerance of detergent products, exaggerated test-conditions are frequently used.

R.R. Warner, K.J. Stone, Y.L. Boissy, N. Lilly, M.J. Spears, K.L McKillop, **Electron Microscopy of Hydrated Skin: Water Disrupts the Barrier Lipids,** 12th ISBS, Boston, 06/98

Using conventional transmission electron microscopy of RuO_4-fixed tssue combined with cryo/scanning electron microscopy (Cryo-SEM) of frozen biopsies, prolongued water exposure is shown to seriously disrupt stratum corneum (SC) lipid ultrastructure and the intercellular space.

J. Fluhr, M.Gloor, F. Distante, S. Lazzerini, E. Berardesca, **Glycerol Modulates Recovery of Barrier Function In Vivo,** 12th ISBS, Boston, 06/98

The mechanism promoting barrier repair in vivo after applying of the stratum corneum are not completely clear; the modulation of water flux is probably the key factor involved.

P. Clarys, A.O Barel, **Percutaneous Penetration Models In Vivo - Evaluation By Means Of Non-Invasive Biophysical Measurement Techniques,** 12th ISBS, Boston, 06/98

The methods for in vivo percutaneous penetration on human volunteers are limited.

R. Lambrecht, P. Clarys, B. Gabard, A.O. Barel, **Relation Between Capacitance Measurements and Biomechanical Skin Properties Under Different Hydration Conditions,** 12th ISBS, Boston, 06/98

The biomechanical characteristics of the stratum corneum are influenced by the water content of this layer.

J.W. Fluhr, E. Berardesca, M. Gloor, W. Gehring, **Protective Value of Bathoils with Different Solvent Characteristics Against Different Irritation.** 12th ISBS, Boston, 06/98.

M. Willard, D. Tonucci, L. Harnisch, J. Bowman, L. Jorgensen, W. Dressler, **Modified Mini-Regression Moisturization Protocol to Evaluate Different Moisturizer Technologies Using Biophysical and Clinical Measurements.** 12th ISBS, Boston, 06/98.

J.W.Wiechers, T. Barlow, **Skin Moisturization and Elasticity Originate From at Least Two Different Mechanisms**, 12th ISBS, Boston, 06/98

Skin moisturisation and elasticity are clearly linked in people's mind.

E.H. Braue, J.S. Graham, J.L. Martin, J.E. Zallnick, C.R. Nalls, P. Matterson, L.W. Mitcheltree, **Comparison of Skin Thickness Measuremnt Techniques Using the DermaScan C Ultrasound Imaging System**, 12the ISBS, Boston, 06/98

Our laboratory has used a wide variety of bioengineering analytical methods for evaluating the severity of sufur mustard (SM) skin lesions in several animal models.

C. Greif, W. Wigger-Alberti, M. Arens-Corell, P. Elsner, **Beurteilung einer Körperlotion für trockene und empflindliche Haut**, Kosmetische Medizin Nr. 5, 1998.

In einer offenen kontrollierten Anwendngstudie über 3 Wochen wurde an 30 Probanden eine Body Milk auf Hautverträglichkeit und Wirksamkeit getestet. Dazu wurden folgende hautphysiologische Parameter erfaßt: Hautfeuchtigkeit, transepidermaler Wasserverlust, Hautelastizität, pH-Wert sowie Hauttemperatur.

G. Yosipovitch, G.L. Xiong, E. Haus, L. Sackett-Lundeen, I. Ashkenazi, H.I. Maibach, **Time-Dependent Variations of the Skin Barrier Function in Humans: Transepidermal Water Loss, Stratum Corneum Hydration, Skin Surface pH, and Skin Temperature**, J Invest Dermatol 110: p. 20–23, 1998

Although circadian rhythms have been described for many human functions, there are minimal data on circadianrhythmsrelatedtoskinphysiology. This study investigated the circadian rhythmicity of skin variables related to skin barrier function in humans. We measured transepidermal water loss, stratum corneum moisture, skin surface pH, and skin temperature in 16 healthy volunteers (nine men and seven women, aged 23–53 y). Subjects were sampled every 2 h in two sessions over a 24 h span. Twelve samples were obtained for each variable in the following sites: forehead, forearm, upper back, and shin. We used cosinor analysis and ANOVA to validate observed differences. Time-dependent rhythms were detected in most skin vari ables except in stratum corneum hydration. We found a statisticallysignificant circadianrhythmicity characterized by cosinor analysis in transepidermal water loss, skin surface pH, and skin temperature on the forearm, forehead, and shin.Peak–troughdifferencesoccurredin alllocations. The values of the same variables measured at different sites correlated positively, whereas the values of the different variablesdidnot.Theseresults suggestthat skinpermeability is higher in the evening and night than in the morning. These data may be clinically relevant in several aspectsapplied to skin physiology and topical drug application.

T. Fischer, C. Greif, W. Wigger-Alberti, P. Elsner, **Instrumentelle Methoden zur Bewerbung der Sicherheit und Wirksamkeit von Kosmetika**, Kursprogramm Sicherheitsaspekte in der Kosmetik, Basel, Mai 1998

Durch die Erfordernisse eines Wirksamkeits- und Sicherheitsnachweises für Kosmetika gewinnen nichtinvasive biophysikalische Meßmethoden zunehmend an Bedeutung. Neben der Bestimmung des transepidermalen Wasserverlustes und der Messung der Hautfeuchtigkeit, des Oberflächenfettes, des pH-Werts, und der Elastizität kommen der Bestimmung des Oberflächenreliefs, der Farbe und der Hautdurchblutung große Bedeutung zu. Mit diesen Methoden können u.a. die hautfeuchtigkeitsfördernden, glättenden und straffenden Wirkungen von Topika sowie der Grad der Irritation durch Externa valuiert werden. Zur Messung der Vergleichbarkeit dieser unterschiedlichen Funktionsparameter sind standardisierte Meßbedingungen erforderlich.

E.J. Thumm, C. Bayerl, E.G. Jung, **Evaluation Of The Efficacy Of Cosmetic Products By Using Profilometry,** 3rd Int.Symposium on Cosmetic Efficacy, May 1998

Efficacy of three cosmetic products was studied by using laser profilometry for skin roughness, by corneometry for the hydration of stratum corneum and by assessment of transepidermal water loss (TEWL).

J.W. Fluhr, G. Vrzak, M. Gloor, **Hydratisierender und die Steroidpenetration modifizierender Effekt von Harnstoff und Glycerin in Abhängigkeit von der verwendeten Grundlage**, H+G 4/1998

Ausgangspunkt war die bekannte hydratisierende Wirkung von Harnstoff und Glycerin auf die Hornschicht bei Anwendung in Externagrundlagen, die bekannte penetrationsfördernde Wirkung von Harnstoff auf Dermatokortikosteroide sowie der penetrationsfördernde Effekt von Glycerin, der früher für Hexylnikotinat nachgewiesen worden war. Überprüft werden sollte die Konzentrationsabhängigkeit der Wirkung von Harnstoff und Glycerin, die Abhängigkeit der Wirkung dieser Wirkstoffe vom verwendeten Vehikel und die Penetrationsbeeinflussung für Hydrokortison durch Glycerin.
Untersucht wurden insgesamt 49 Versuchspersonen, die Hydratisierung wurde mit Hilfe der Corneometrie und Skicon-Methode gemessen, die Wirkstoffpenetration für Hydrokortison mit Hilfe des Blanchingeffektes. Die Untersuchungen zeigen, daß Harnstoff und Glycerin in allen verwendeten O/W- und W/O-Grundlagen eine vergleichbare hydratisierende Wirkung aufweisen. Eine Steigerung der Harnstoff- Konzentration von 5 auf 10% erbrachte keine eindeutigen Vorteile, whrend 10% Glycerin unabhängig von der Grundlage effektiver als 5% ist. Harnstoff wirkt nicht in jedem Vehikel penetrationsförderned auf Steroide, sondern nur in der verwendeten wasserreichen O/W-Emulsion. Glycerin beeinflußte bei den vorliegenden Untersuchungen die Hydrokortisonpenetration nicht.

J.W. Fluhr, M. Gloor, W. Gehring, **Protective Value of Bath Oils With Different Solvent Characteristics Against Irritation,** The Journal of Investigative Dermatology, Vol. 110, No. 4, April 1998.

The presented study was carried out to evaluate the the protective value of bathoils with different solvent characteristics and different content of non-ionic tenside against 3 different irritation models (NLS 2 %occluded, water, mechanical irritation).

H. Tronnier, **Empfindliche Haut**, Kosmetische Medizin 4, 10/98

Eine einheitliche Ursache für eine empfindliche Haut gibt es nicht. Zahlreiche Funktionsabweichungen, die anamnestisch zu erfassen und mit geeigneten Methoden zu bestimmen sind, können individuell das Muster einer empfindlichen haut abgeben oder die Grundlage einer empfindlichen haut darstellen. Wesentlichen Einfluß können psychogene Faktoren haben.

J. Gottfreund, T. Meyer, **Die Bedeutung des pH-Wertes 5,5 in Emulsionen.** Kosmetische Medizin Nr. 3, 1998.

Es wird die Bedeutung des pH-Wertes 5.5 in Emulsionen dargestellt. In einer W/O-Emulsion wurde der pH-Wert der Wasserphase auf einen Wert von 5,5 eingestellt. Es ließ sich zeigen, daß der durch Umwelteinflüsse tiefe pH-Wert der Haut sich an 5,5 anpaßt. Bei der Auswahl der Rohsteoffe für den Fettkörper einer Emulsion müssen die speziellen Bedingungen, die durch den pH-Wert bedingt sind, berücksichtigt werden.

I. Tausch, B. Hughes-Formella, A. Schölermann, F. Rippke, **Harnstoff - ein wichtiger Wirkstoff in der Dermatotherapie**, Kosmetische Medizin Nr. 3., 1998.

Die hydratisierenden eigenschaften der Präparate Eucerin® 10% Urea Lotio und Eucerin® Salbe 10% Urea wurden in kontrollierten klinischen Prüfungen über 4 Wochen an insgesamt 78 Patienten mit trockener Haut bei atopischen Ekzem im erscheinungsfreien Intervall im Vergleich zu der wirkstoffreien Grundlage (Lotio) bzw. zu unbehandelter Haut (Salbe) geprüft. Beide Präparationen führten im Vergleich zu den Ausgangswerten zu einer signifikanten Erhöhung des Wassergehaltes der Hautoberfläche.

M. Morrison, Y. Cartiaux, M. Paye, Charbonnier, H. Maibach, **Demonstrating Invisible (Subclinical) Sodium Lauryl Sulfate Irritation with Squamometry**, AAD, Orlando, March 1998

High concentration of sodium lauryl sulfate (SLS) may cause skin damage when applied to skin under occluded conditions.

R. Ward, **The Human Factor,** SPC March 1998
With the proposed ban on animal testing on the horizon, Dr. Rachel Ward looks at the ethical aspects of human volunteer testing

Glättende Wirkung im Vordergrund. Dermaforum März 1998

W. Gehring, F. Schwan, Th. Meyer, M. Gloor, **Eignung von Emulsionen als Vehikel für verschiedene Ceramide,** Kosmetische Medizin Nr. 2, 1998

In einer O/W-Emulsion wurden ein Phytoceramidgemisch und 2 synthetische Ceramide bei intakter Barrierefunktion und nach Lipidextraktion untersucht. Einmalige Applikation der Ceramide in beiden Vehikeln hat keinen Effekt auf die Barrierefunktion der Epidermis erkennen lassen, der auf den Ceramidgehalt zurückzuführen ist. Zwei Stunden nach Applikation der Formulierungen wurde ein Barrierefunktionstest mit Nikotinsäureester durchgeführt. Nur durch die syntetischen Ceramide in der O/W-Emulsion konnte nach Lipidextraktion eine Reduktion des Nikotinsäure-Erythems festgestellt werden.

C. Fox, **Cosmetic and Pharmaceutical Vehicles: Skin Care, Hair Care, Makeup and Sunscreens,** Cosmetics & Toiletries, January 1998

The author surveys 39 articles and patents from the past four years for advances in the science and technology of cosmetic and pharmaceutical vehicles. Here, in Part 2 of a two-part series, topics include hair-care vehicles, lipsomes, makeup, shampoos, skin-care vehicles, sticks and sunscreen vehicles.

M. Arens-Corell, J. Welzel, H.H .Wolff, **Beurteilung von Hautreinigungsmitteln für trockene und empfindliche Haut**, Kosmetische Medizin 1/1998.

Die zunehmende Problematik trockener und empfindlicher Haut in der Bevölkerung macht die Entwicklung geeigneter Reinigungsmittel notwendig. Ihre Hautverträglichkeit und minimierte Austrocknungwirkung kann in dermatologisch kontrollierten Anwendungsbeobachtungen unter Einbeziehung der Messung hautphysiologischer Parameter objektiv geprüft werden. Das Beispiel eines Duschöls und einer Waschemulsion für trockene und empfindliche Haut zeigt, daß durch einen hohen Ölanteil ebenso wie durch die Auswahl milder Syndetsubstanzen bei Anpassung des pH-Wertes im Hautphysiologischen, leicht sauren Bereich die Hautreinigung unter Praxisbedingungen ohne Austrocknung und Irritationen möglich ist.

EnviroDerm's Skin Breakthrough. Engine Repair and Remanufacture, 01/98

Until now, prevention of occupational skin disease was very much a hit and miss affair. There was no practical way of detecting unseen damage to the skin from working practice or contact with chemicals.

P.M. Müller, R. Jermann, **The Skin**, IFSCC Magazine, Vol.1 No. 1, 1998

The authors inroduce a novel psycho-physical approach to determining subjective skinfeel involving weights on panelists' volar forearms. Through this method and by determining defferentiation threshold values, the authors demonstrate that sin moisturized with a liposomal formulation performs better than skin dehydrated with sodium dodecyl sulfate and aqueous ethanol.

C.A. Morton, M. Lafferty, C.H. Henderson, M. Jones, J.G. Lowe, **Pruritus and skin hydration during dialysis,** Nephrol Dial Transplant (1996) 11: p. 2031-2036

Background: Dry skin is frequently observed in uraemic patients and a link with the common complaint of pruritus has been suggested. Objective data on skin dryness in haemodialysed patients is sparse and equivocal. No such information exists for the many patients now receiving peritoneal dialysis. We assessed the prevalence and severity of both pruritus and skin dryness in a uraemic population receiving maintenance dialysis. Methods: Forty-eight haemodialysis and 24 eritoneal dialysis patients were examined and skin dryness assessed by clinical grading and measurement of stratum corneum hydration using a corneometer. Forty age- and sex-matched controls were also assessed. Several biochemical parameters with possible relevanceto pruritus were measured. Regular emollient therapy was prescribed to pruritic dialysis patients and efficacy assessed. Results: Dialysis patients overall had clinically drier skin than controls, especially the peritoneal dialysis group. Stratum corneum hydration levels were significantly reduced in the peritoneal dialysis *(P<* 0.004), but not the haemodialysis, population. Twenty-seven per cent of haemodialysed and 54% of peritoneal dialysis patients complained of pruritus. Pruritic patients in each dialysis group had significantly lower hydration than non-pruritic patients (/><0.05). Regular emollient use in pruritic patients produced a marked reduction in severity of pruritus, abolishing the symptom in nine of 21 patients treated. Conclusion: Reduced stratum corneum hydration correlates with pruritus in patients on maintenance haemodialysis and peritoneal dialysis, and may be alleviated by simple emollient therapy.

H. Dobrev, **Value of the Non-Invasive Skin Bioengineering Investigations of the Skin Mechanical Properties In Vivo,** 5th National Congress of Rheumatology, November 1997

During recent years several modern non-invasive bioengineering methods and devices for evaluation of the skin mechanical properties have been introduced.

H. Dobrev, **Changes of Epidermal Hydration after Single Application of Different Moisturizers,** 1st Balkan Congress of Medicine, October 1997

Effects of single application of pure petrolatum, paraffin oil, glycerine, water-in-oil emulsions (65 % lipids) and oil-in-water emaulsions (25 % lipids) were studied on the volar forearm skin of 20 healthy volunteers.

M.Kläsgen-Radez, **Putting Claims to the Test**, SPC Oktober 1997

The pressure is on to substantiate your product claims or drop them altogether. Michael Kläsgen-Radez of Courage + Khazaka explains how high-tech equipment is making this possible in skin care.

A.O. Barel, R. Lambrecht, P. Clarys, B.M. Morrison Jr., M. Paye, **Comparative study of the effect on the skin of two soap bars in normal use and in the soap chamber test,** Experimental Dermatology Vol 6 No 5, ISICD and ISBS Meeting Rome 2-4 October 1997

A double-blind study of the normal use during 10 weeks of two soap bars (soap and a syndet) was carried out on 25 female subjects. Eventual skin changes were evaluated by bioengineering measurements during the ten weeks treatment. Characterization of the skin was carried out using measurements of the skin colour, hydation, skin surface pH and TEWL.

D.A. Comes, M.J. Dolan, E.J. Fendler, R.A. Williams, **Characterization and treatment of occupational contact dermatitis**, Experimental Dermatology Vol 6 No 5, ISICD and ISBS Meeting Rome 2-4 October 1997

During the last two decades, bioengeneering techniques have emerged as highly effective tools for the evaluation of skin condition. Studies have been performed to assesss the potential of skin bioengineering instrumentation and techniques for the evaluation and treatment of occupational skin condition. Using large panels of automotive technicians, bioengineering techniques, such as TEWL and skin hydration, were used to characterize the extent of contact dematitis and the effectiveness of intervention with protective moisturizing creams.

G. Richter, S. Großmann, **Comparison of special skin protective creams and ointment basis (German Pharmacopoeta DAB 10) in different irritation models,** Experimental Dermatology Vol 6 No 5, ISICD and ISBS Meeting Rome 2-4 October 1997

Skin irritation was performed with sodium lauryl sulphate (1% and 2%, big Finn Chamber, 30 min, day 1 to 5 and 8 to 11, volar side of the right forearm) or with the skin disinfectant Sterillium® (open, 30 min, 3 times daily, day 1 to 5 and 8 to 11, volar side of the left forearm), respectively on all 21 human volunteers. Assessment data: Tewameter-, Chromameter-, Corneometer-data and visual score.

A. Teglia, A. Mondelli, **Influence of cosmetic treatments on the intercorrelations of skin elasticity, hydration and microrelief,** 19th IFSCC Congress Sydney, October 1996 and Experimental Dermatology Vol 6 No 5, ISICD and ISBS Meeting Rome 2-4 October 1997

Skin Hydration, elasticity and surface microtopography are important cutaneous parameters reflecting sensory/aesthetic qualities of the skin and have been largely adopted as indicators of the effectiveness of cosmetic treatments. Several studies have been made about the influence of environmental and biological factors on them, while little is known about their correlation. Aim of our study was to investigate their intercorrelation and possible influence of cosmetic applicartions on their relationship. 30 healthy volunteers were subject to the study over a period of one year. 7 skin sites for each longitudinal half of the body were taken as test areas: volar aspect of the forearm (3sites), upperarm, breast cheek, forehead. The subjects divided into two groups were properly instructed to apply twice a day a W/O emulsion (1st group) and an O/W emulsion (2nd group) on the test sites of a half of the body; contolateral untreated sites were used as controls. Biophysical measurements of skin hydration, mechanical properties and surface geometry were made at regular intervals over the test period for each volunteer. The data collected were submitted to statistical analyses for cross-correlation and differences of the means. The following variables were considered: electric capacitance EC as measure of the hydration of the horny layer; the viscoelastic to elastic ratio Uv/Ue and the biological elasticity Ur/Uf as mechanical properties of the skin; mean roughness depth Rz and coefficient of skin

estensibility LD as parameters of the skin surface microtopography. Age of the subjects was considered as biological variable. On untreated skin were observed: significant correlation of topographycal and mechanical parameters with age; correlation of Rz with Uv/Ue (direct) and with Ur/Uf (inverse); correlation of LD with EC (inverse) and with Ur/Uf (direct). Correlation of mechanical properties with hydration was not significant. Treatment with W/O emulsion increases significantly hydration, elasticity and skin smoothness; intercorrelation of biophysical variables does not show important variations. The baseline correlation of microrelief parameters with age was reduced. Treatment with O/W emulsion increases moderately hydration and smoothness but does not effect the elastic properties of the skin; correlation of Rz with biological elasticity and viscoelastic component loses significance. Exposure of the skin to different type of emulsions ca effect selectively the cutaneous biophysical parameters and vary their intercorrelation.

J.W. Wiechers, **Relative preformance testing: Introducing a tool to facilitate cosmetic ingredient selection,** Cosmetics and Toiletries, 112 (9) 1997, p. 79-84.

D.W. Ramsing, T. Agner, **Preventive and Therapeutic Effects of a Moisturizer**. Acta Dermatovenereologica, September 1997, Vol. 77, p. 335-337

The effects of a moisturizer (Locobase) on previously irritated skin was measured using trans-epidermal water loss (Evaporimeter®), blood flow (laser doppler flowmetry) and skin moisture content (Corneometer®).

J.-L Lévêque, **Non-Invasive Methods for Efficacy Substantation: Importance and Limits,** IFSCC Conference Mexico 25-27 September 1997

In the 1970's and 80's, the first measurements for the efficacy of cosmetics using non-invasive methods were obtained, and the surprise was not in being able to show that these products had real and measurable effects, but rather showing how significant and variable these improvements could be. Today these methods remain indispensable but they must be used, as with all instrument, with care and with a critical approach so necessary for avoiding technical errors and misinterpretation. Since they can only provide indirect measurements, they cannot individually give a complete picture of the complexity of clinical phenomena and even less decribe the totality of a cosmetic property where, the pleasure of application, the sublety in the effect experienced and the result obtained in comparison to expectations and their own self-image, is blended together with the evaluation of the consumer.

B.K. Sun, H.K. Lee, J.C. Cho, J.I. Kim, **Clinical Improvement of Skin Aging by Retinol Containing Products: With Non-Invasive Methods,** IFSCC Conference Mexico 25-27 September 1997

Retinol as well as RA (retinoic acid) is well known to have many benificial effects on (photo)aged skin. But the skin irritation potential and unstable condition of the products containing them have been some problems in their cosmetic uses. So, retinol containing gel product (MDC gel) was developed for less skin irritancy and more stability in cosmetic products. To examine the clinical effects of retinol containing product, we used clinical non-invasive assessment techniques on 40 volunteers for 6 months maintaining double-blind test conditions. According to our results, the use of retinol containing product improved skin color and hydration level slightly. But there was no statistical difference. There was no erythema reaction compared to the use of RA. Especially, the skin elasticity increased above 20% and skin wrinkles od crows`feet region decreased more than 10%. Besides the instrumental analysis, a large majority of volunteers felt that their skin was improved in the case of wrinkles, elasticity, hydration and color.

H.-K. Ji, Y.-H. Jeon, **Study on Stability, Efficacy, and Effect of a Cream Containing 5% of Retinyl Palmitate,** IFSCC Conference Mexico 25-27 September 1997

Retinyl Palmitate, the skin normalizer, is useful to promote greater skin elasticity, to diminish lipid peroxidation and skin roughness following UV exposure, and promote a youthful general skin appearance. In manufacturing creams, Retinyl Palmitate (RP), which is a derivative of retinol, is used since retinol is easily oxidized by heat and light. However, only a small mount of retinyl palmitate is used since using a large amount of it may be harmful to its stability. In this study, thermal stability and UV stability of W/O-, W/S-, O/W-and MLV-type creams containing 5% of retinyl palmitate and 10% of tocopheryl acetate (TA) are measured by Chroma Meters, and the content of RP is quantitatively analyzed by HPLC at 25°C and 45°C. Also, how RP has been changed by heat, light, etc. is measured by HPLC, and toxicity of the changed substance is studied. Particle size of each type of the cream is measured, cellular renewal is measured by using DHA (dihydroxyacetone) and Chroma Meters in order to study their efficacy and effect, moisture content is measured by using Corneometer and Tewameter, and how much wrinkles are improved is studied by using Image Analyzer. Development of MLV-type

cream containing 5% of RP and 10% of TA, and satisfying conditions for better creams has been successful.

V. Zuang, C. Rona, F. Distante, E. Beradesca, **The Use of a Capacitance Device to Evaluate the Hydration of Human Skin,** J. Appl. Cosmetol. 15 July-Sept.1997

In this study, the Corneometer® CM 820 has been shown to be a sensitive and useful tool, able to quantify skin hydration in a rapid and inexpensive way. The study has been designed in such a manner as to avoid as much as possible the limitations of the instrument. However, even then the results have to be interpreted with caution, bearing in mind that the instrument only gives relative information on the water content of the stratum corneum and not absolute values.

M. Arens-Corell, **Reinigung und Pflege der Babyhaut**, Kosmetische Medizin 1997 18,2

Baby skin is highly sensitive concerning dehydration and irritation. Mild cleansing agents with maximum skin compatibility and adaptation of the pH of the cleansing product to 5.5 in accordance with the developing acid mantle of the skin are necessary. For skin care water-in-oil emulsions with a strong protective effect are predominantly used. Occlusion has to be avoided. Skin compatibility and care effect should be examined by Dermatologists. The diaper region must be protected from urine and feces by mild cleansing and special creams.

H. Tronnier, **An Irritation-Test for the Evaluation of "Sensitive Skin", Tensides and Barrier-Cremes,** Kosmetische Medizin 1997 18, 2

Two variants of an irritation model are described, both of which are suitable for testing the irritation properties of surfactants as well as for determining the protective effect of skin ointments. This model can also be used to assess individual skin sensitivity in evaluations of possible occupational eczema and the length of time the subject in question is likely to remain in his/her present job. It may also prove useful for assessing job suitability.

M. Gloor, S. Schermer, W. Gehring, **Ist eine Kombination von Harnstoff und Glycerin in Externagrundlagen sinnvoll,** Zeitschrift für Hautkrankheiten H+G 7 (72) 1997

The influence of a monotherapy with glycerol and urea, respectively, on the stratum corneum hydration against exsiccation by a tenside solution and on the skin - smoothing effect was investigated in comparison with a combination therapy with glycerol and urea. Here, an increase of 5% in the dose of urea in an oil-in-water did not produce significant advantages with regard to the stratum corneum hydration and the protective effect against the dehydration by tenside solutions. In contrast to this an increase in the dose of glycerol of over 5% in an oi-in-water-emulsion proved to be efficient under both criteria. With regard to the stratum corneum hydration and the protective effect against exsiccation by tensides, the combination of 5% glycerin and 5% urea was superior to a monotherapy, with exception of the oil-in-water-emulsion containg 10% glycerin. With regard to the smoothing effect only the combination of 5% urea and 5% glycerin produced a significant advantage.

G. Sauermann, T. Mann, U. Hoppe, K. Takahashi, M. Tagawa, **Skin Care Efficacy of Phospholipids,** IFSCC and 4th Hungarian Congress on Cosmetics and Household Chemicals, Budapest 1997

Goal of the study: The question was investigated whether phospholipids dispersed in a basic vehicle formulation display skin care potential.

J.C. Espejo, J.F. Vozmediano, **Valoratión de la hidratación cutánea por métodos de exploración no invasivos,** Piel Vol.12 No.6 1997

El grado de humedada cutánea y la regulación del transito de agua hacia la atmósfera dependen de la integridad de la epidermis y más en concreto del estrato córneo.

T. Russo, V. Landeryou, L. Hall, **Polyglycerol Esters, A New Class of Active Skin Moisturisers,** Cosmetics and Toiletries Manufacture Worldwide 1997

This research has demonstrated that skin moisturisation properties of PGEs can be documented through the use of quantitative measurements. The substantivity studies have demonstrated that high HLB PEGs have the ability to be retained within the stratum corneum and are not easily removed via water washing. This substantive nature provides longer lasting skin moisturizing benefits. The independant research study at Clarkson University has provided new insight into the mechanism by which PEGs moisturise the skin.

R. Wachter, M.Hofmann, C. Panzer, E. Stenberg, **Hydagen® CMF, Multifunctional Agents of Biomarine Origin,** Cosmetics and Toiletries Manufacture Worldwide 1997

Chitosan is a natural polymer which is obtained from the shells of marine crustaceans. Different qualities of these cationic polymers were developed for the cosmetic industry according to a new process and tested in comparison with other film formers.

Gute Pflege für die Fältchen, Tagescremes für die "reife" Haut, Stiftung Warentest, Juli 1997

Für die „reife“ oder „anspruchsvolle“ Haut – charmant umschreiben die Kosmetikfirmen ihre Angbote für die ältere Haut.

Siliconas Para La Industria Del Cuidado Personal, Ciencia & Cosmetica, Año 8 No. 14

Formulatión de productos para el cuidado de la piel y del cabello, de bellezea, para el afeitado y antitranspirantes/desodorantes. Usando fluidos, emulsiones y antiespumantes de siliconas suministrados por Dow Corning.

W. Meuling, A. Franssen, D. Brouwer, J. van Hemmen, **The influence of skin moisture on the dermal absorption of propoxur in human volunteers: a consideration for biological monitoring practices,** The Science of the Total Environment, 1997

A large number of workers in agriculture are exposed daily (through skin contact) to pesticides either directly during mixing and loading or indirectly due to contact. The aim of this study was to investigate the influences of skin moisture on the dermal uptake of the pesticide propoxur.

I. Tausch, K. Bohnsack, A. Schölermann, F. Rippke, J. Grassmüller, **Efficacy of Eucerin® 10% urea cream and Aquadrate® cream in the treatment of xeroderma,** Australian Journal of Dermatology: Abstracts 19th World Congress of Dermatology, Sydney, June 1997

To compare the efficacy and safety of a 10% urea containing cream (Eucerin® 10% Urea Cream) with Aquadrate® Cream and demonstrate essential similarity in the treatment of xerosis a doubleblind intraindividual comparative study according to GCP standards was performed.

D.A. Comes, M.J. Dolan, E.J. Fender, R.A. Williams, **Treatment of contact dermatitis in the health care and automotive occupations**, Australian Journal of Dermatology: Abstracts 19th World Congress of Dermatology, Sydney, June 1997

Irritant and allergic contact dermatitis is a serious problem in many occupations. Among those with the most severe problems are automotive and body shop technicians and health care professionals. However, there is a dearth of studies which objectively characterize the extent of contact dermatitis in these occupations.

M. Lodén, **Barrier recovery and influence of irritant stimuli in skin treated with a moisturizing cream,** Contact Dermatitis, Vol. 36, No. 5, 1997

Moisturizers are used daily by many people to alleviate symptoms of clinically and subjectively dry skin. Recent studies suggest that certain ingredients in creams may accelerate the recovery of a disrupted barrier and decrease the skin susceptibility to irritant stimuli. In the present single-blind study, a moisturizing cream was tested for its influence both on barrier recovery in surfactant-damaged skin and on the susceptibility of normal skin to exposure to the irritant sodium lauryl sulphate (SLS). Parameters measured were transepidermal water loss (TEWL) and skin corneometer values, indicating degree of hydration. Treatment of surfactant-damaged skin with the test cream for 14 days promoted barrier recovery, as observed as a decrease in TEWL. Skin corneometer values also normalized more rapidly during the treatment. In normal skin, use of the test cream significantly reduced TEWL after 14 day of treatment, and irritant reactions to SLS were significantly decreased. Skin corneometer values increased after only one application and remained elevated after 14 days. In conclusion, the accelerated rate of recovery of surfactant-damaged skin and the lower degree of SLS-induced irritation in normal skin treated with the test cream may be of clinical relevance in attempts to reduce contact dermatitis due to irritant stimuli.

L. Pereira, M. Melo, I. Jaco, S. Abrunhosa, L. Rodrigues, **Nonparametric System Analysis Approach for the Characterization of Skin Hydration Dynamics**, Poster, IN COSMETICS/ISCD Conference, Düsseldorf 4-7 May 1997

From a functional point of view skin is a highly complex organ with interfaces sensitive and homeostatically equilibrated biological systems with a number of aggressive environmental conditions.

L. Rodrigues, P. Pinto, P. Quaresma, N. Galego, N. Silva, M. Melo, M. Fitas, H.M. Ribeiro, L.M. Pereira, **Testing the Biological Efficacy of Facial Moisturising Creams, Short-Term and Long-Term Studies,** Poster, IN COSMETICS/ISCD Conference, Düsseldorf 4-7 May 1997

Being one of the most popular consumer's preference formulations, the use of facial moisturizers is fast growing into the normal diary personal skin care habits, being inclusively regarded as an important therapeutical co-adjuvant in clinical dermatological practice.

P. da Silva, P. Pinto, N. Galego, N. Silva, P. Quaresma, L.M. Pereira, L. Rodrigues, **Assessment of the Biological Effects of Human-like Ceramides**, Poster, IN COSMETICS/ISCD Conference, Düsseldorf 4-7 May 1997

The study of epidermal component biological functions is a central theme in human skin biology among with Ceramides representmajor group following the regognitionof its imporatant involvement in some physiological processes such as "epidermal barrier function" and "skin aging".

P. Quaresma, N. Silva, L. Gouveia, S. Longo, P. Pinto, N. Galego, L. Rodrigues, **Effect of Post-occlusive Hydration on Human Skin Profile Evaluated by Light Transmission Optometrical Analysis,** Poster, IN COSMETICS/ISCD Conference, Düsseldorf 4-7 May 1997

Development of new skin profile analysis systems has been an important research motivation specially concerning cosmetological science 1-5.

H.M. Ribeiro, L. Nougiera, L. Rodrigues, L. Pereira, J. Morais, **Skin Surface Kinetic Analysis to Assess the Efficacy of Haircare Polymers Applied to Skin Care Formulations,** Poster, IN COSMETICS/ISCD Conference, Düsseldorf 4-7 May 1997

Stratum corneum (SC) water retension properties are a crucial factor in keeping the skin supple and flexible.

A. Barel, P. Clarys, I. Manou, **Objective Evaluation of the Cosmetic Use of Some Selected Essential Oils as "Active Ingredients" in Skin Care Products,** Conference Proceedings - IN-COSMETICS 97

The first sources of medicinal products; skin care and care products were plants and herbs.

K.-P. Wilhelm, **Skin Hydration Measurements: General Considerations and Possible Pitfalls,** Conference Proceedings - IN-COSMETICS 97

The primary function of the stratum corneum (SC), the outermost skin layer; is to protect our body from dessication and from a barrier to percutaneaous absorption of topically applied xenobiotics.

D. Khazaka, **Claim Support and Efficacy Testing,** Industry Supplier News 1997

P. Clarys, I. Manou, A.O. Barel, **Influence of temperature on irritation in the hand/forearm immersion test,** Contact Dermatitis Vol. 36 No. 5 1997

As indicated by in vitro experiments the penetration of irritants through the skin is significantly influenced by the temperature of the solution. In vivo experiments, demonstrated equally a significant influence of temperature in surfactant-induced skin irritation. In order to evaluate the irritant potential of detergent solutions under normal user conditions, we used the hand/forearm immersion test. We compared 2 detergents with different anionic character in a repetitive immersion protocol (30 min immersion on 4 consecutive days). The solutions were tested at 2 temperatures (37°C and 40°C). The irritation was quantified by assessment of the stratum corneum barrier function (transepidermal water loss), skin redness (a*colour parameter) and skin dryness (capacitance method). Both detergents affected the integrity of the skin in a significant way. The anionic content as well as the temperature of the solutions were found to be determinative for the irritant potential, with a stronger response for higher anionic content and temperature, respectively.

D.A. Comes, M.J. Dolan, E.J. Fendler, T.K. Turner, R.A. Williams, **Physiological and Microbiological Effects of Topical Alcohol Gel Use,** GOJO Industrie, Inc. 1997

F. Stäb, G. Sauermann, and U. Hoppe, **Evaluation of Moisturizers,** Bioengineering of the Skin CRCPress Skin Surface Imaging and Analysis 1997

The stratum corneum (SC) skin of human consists of 15 or more layers of dead corneocytes, depending on the skin site. The water content of the outermost layers of SC is very low in comparison with the innermost part of SC and the lower layers of the epidermis. Therefore, the existence of a physiological relevant water gradient in stratum corneum can be generally assumed. Along this gradient, water diffuses passively from the living part of the epidermis to the skin surface. this normal physiological transeqidermal water loss depends on an intact barrier function of SC and appears to also be important for the transepidermal signalling and regulation of the cell renewal rate in the epidermal basal

keratinocyte layer. The water content of the stratum corneum is influenced by endogenous and exogenous parameters and can even be modulated by environmental humidity.

J.W. Wiechers, **A Supplier's contribution to performance testing of personal care ingredients,** SOFW-Journal, 123. Jahrgang 14/97

Current cosmetic formulations address a wide variety of customer needs. This variety requires a plethora of personal care ingredients. In order to create excellent new products, it is essential that the formulator not only knows the physical properties of the components (s)he chooses, but also the skin performance that these products may have. In order to facilitate the selection process for the formulator, we have investigated the effect of our products against some of the most prominent claim areas of cosmetic products: skin moisturisation, elasticity, substantivity, and mildness.

E. Beradesca, **EEMCO guidance for the assessment of stratum corneum hydration: electrical methods,** Skin Research and Technology 1997-3

The improvement of stratum corneum hydration is one of the most important claims in the cosmetic industry. Objective assessment of moisturization can be done with devices based on electrical methods provided these instruments are used in an appropriate manner.

A.O. Barel, P. Clarys, **In vitro calibration of the capacitance method (Corneometer CM 825) and conductance method (Skicon-200) for the evaluation of the hydration state of the skin,** Skin Research and Technology 1997-3

A major problem with electrical measurements of the capacitance of the skin using the well known capacitance method (Corneometer) resides in the fact that the results of this instrument are expressed as arbitrary capacitance hydration units that are not directly related to real electrical units or to the water content of the horny layer. The purpose of this study was to establish a calibration of the capacitance method using a simple in vitro simulation system of the horny layer.

P. Clarys, I. Manou, A. Barel, **Relationship between Anatomical Skin Site and Response to Halcinonide and Methyl Nicotinate Studied by Bioengineering Techniques**. Skin Research and Technology 3/1997

Regional differences in percutaneous penetration and skin properties are well documented. However, only a few studies have investigated the relationship between substance penetration and specific skin characteristics in function of the body region. It was our aim to evaluate the physiological effect of topically applied substances in function of skin parameters determined at different body regions.

J. Bettinger, J. Fluhr, M. Gloor, W. Gehring, **Have Oil/Water Emulsions a Dehydrating Effect on the Horny Layer,** Euro Cosmetics 3/97

Since oil/water emulsifiers can be considered as surfactants which have a strong dehydrating effect, this study investigates the question of whether the usage of o/w emulsions also has a dehydrating effect on the skin. In 5 groups, each with 10 experimental subjects, five different o/w emulsions were used. One arm of each subject was treated with the emulsion over 3 days. Both arms were then washed with pure water and subsequently the moisture content of the horny layer measured with a corneometer. For unpretreated skin in all cases the washing lead to dehydration; none of the o/w emulsions led to any additional dehydrating effect.

D.A. Comes, M.J. Dolan, E.J. Fendler, T.K.T urner, R.A. Williams, **Effects of Alcohol Gel on Human Skin**, American Academy of Dermatology, 55th Annual Meeting March 1997

Alcohol has been historically recognized as a safe and effective topical antiseptic with the undesirable characteristic of skin drying. The formulation of alcohol gels may mitigate or eliminate the drying effect of the alcohol. This study was initiated to evaluate the effects of alcohol gels on the skin.

D.A. Comes, M.J Dolan, E.J. Fendler, T.K. Turner, R.A. Williams, **Effects of an alcohol Sanitizer (Gel) on Human Skin,** Poster at AAD, San Francisco March 1997

Alcohol has been historically recognised as a safe and topical antiseptic with the undesirable characteristic of skin drying. The formulation of alcohol gels may mitigate or eliminate the drying effect of alcohol. This study was initiated to evaluate the effects of alcohol gels on human skin. This study provides a comprehensive assessment of the effects of alcohol gels on human skin.

P. Clarys, R. Lambrecht, A.O Barel, **Does lipid sampling with the Sebutape technique disturb the skin physiology?**, Skin Research and Technology, 1997, 3 p. 169–171

Lipid sampling with the Sebutape technique takes at least one hour to obtain a representative follicular pattern.

U. Heinrich , **Potwierdzanie Dzialania Kosmetycznego,** Pollena 2/97

Proof of cosmetic efficacy. In the following some methods, which have proven to be relevant in establishing cosmetic efficacy are shown. With the help of these methods and a special study design, it is possible to determine and to evaluate the character and extent of the influence cosmetics have on skin care and smoothing effects. (Article in Polish)

V. Zuang, **Zastosowanie Corneometru CM 820 Do Oceny Nawodnienia Skory Ludzkiej;** Pollena 2/97

The use of Corneometer CM 820 to evaluate the Hydration of Human Skin. Directive 93/35/EEC on the testing of cosmetics requires that evidence is provided to support the efficacy claims made for marketed products. In order to fulfil this requirement without resorting to the use of animals, non-invasive skin bioengineering techniques are now being employed with human volunteers. These techniques provide quantitative and objective data, if the measurements are performed under rigorously standard conditions. In this study, a non-invasive instrument, the Corneometer® CM 820, which measures skin capacitance, has been used to evaluate the short term effects of three commercially available moisturisers, by monitoring the water content of the stratum corneum at different treated test sites of human skin (inner forearm) in comparison with that at an untreated site. A standard reference material (20% glycerol in distilled water) was employed, so that results could be compared between laboratories and to avoid differences relating toinstrumentation and methodologies. Measurements with the Corneometer© CM 820 were taken at the baseline visit, bafore product application, and at 1, 3, and 6 hours post application, at each test and control site.

K.P. Wilhelm, proDERM institut for applied Dermatological Research GmbH. Schenfeld, Germany. **Client-Server based On-Line Data Acquisition for Skin Bioinstrumentation Devices**.

During dermatological safety and efficacy studies, huge amounts of data- both instrumental data as well as evaluator scores may accumulate. We have developed an integrational data with on-line data acquisition capability. The program runs in a Macintosh network. A graphical interface facilitates data entry. A multilevel password system secures unauthorised use. In order to comply with GCP/GLP requirements all data entries and any possible changes relating to experimental studies- both scores and instrumental values -are secured in a log file together with date, time, and initials of the person entering the data. The program can at present acquire data from: Chromameter (Minolta), Tewameter, Corneometer, pH-Meter, Sebumeter, Mexameter, (all Courage and Khazaka). However, the open architecture would easily allow to incorporate more instruments with a serial interface. Data can be exported in DOS, windows or Macintosh format for easy import into any spreadsheet or statistics programs. The program has been completely validated and successfully used in a contract research organisation for over 12 months. Automatic data acquisition has proven to be very useful tool to facilitate and speed up data analysis and to enhance the quality and reliability of test results.

D.A. Comes, E.J. Fendler, M.J. Dolan and R.A. Williams, **Bioengineering Instrumentation: Automation and Use.** Skin Research and Technology, Vol. 2, No.4, Nov. 1996

Objective: The increasing complexity and use of bioengineering skin test instrumentation has created a critical need for unified software that controls the instruments, collects and stores data, performs analysis, and generates reports. In this study, user-friendly software programs were developed and applied to perform panel testing on a large number of test subjects utilising bioengineering skin test instrumentation. Methods/Results: Generic software programs were developed to integrate and automate operation, data storage, and data analysis of multiple bioengineering skin instruments. The software was applied to the following instruments:- Courage and Khazaka - Sebumeter SM810, Corneometer CM 820, skin pH-meter 900, Tewameter TM210; Minolta Chromameter CR300, and NOVA DPM 9003. Conclusions: Automation of skin bioengineering instrumentation allows evaluation studies to be performed using a large number of test subjects (with multiple variables). This greatly increases the statistical validity of data and overall efficiency, whilst negating the historical constraints which required a large commitment of resources.

K.P. Wilhelm, **Possible Pitfalls in Skin Hydration Measurements.** Skin Research and Technology, Vol. 2, No.4, Nov 1996.

Stratum Corneum (SC) and the outermost skin layer adapts quickly and efficiently to variable outside relative humidities by means of binding or releasing water. The water content (WC) of SC greatly influences the appearance, surface contour and feelingof the skin. A broad range of cosmetic and pharmaceutical products aim to increase WC of SC. However, the visual appearance of "dry and rough",

or "hydrated and soft" skin is not only determinedby the SC WC, but also by the quantity and the quality of intercellular lipids. It is therefore almost impossible to determine the WC of SC visually.
Various instruments utilising electrical methods, eg capacitance, impedence, resistance and conductance, are commercially available for the objective measurement of SC hydration. However, all methods may be influenced by various surces of disturbance. Additionally, systematic errors in the study design may invalidate the results independant of the methodology behind the instrument.
Care has also been taken in the interpretation of the data obtained. Various specific examples of possible pitfalls in skin hydration measurements as well as a strategy to avoid them will be presented

A. Barel, **Evaluation of Stratum Corneum hydration: Comparison between Electrical Capacitance (Corneometer CM825) and Conductance (Skicon 200) Measurements,** Skin Research and Technology Vol. 2 No. 4 Nov. 1996

In vivo determinations of the hydrationof the superficial laayers of the epidermis can be carried out using electrical instruments. We compared the conductance (microSiemens) at high frequency (3.5Mhz) and a recent version of the corneometer, CM 825, designed to measure the capacitance at high frequency (1.0 Mhz). Calibration of the capacitance instrument is now possible using filter paper impregnated with a moiturising aqueous solution and with solvents of different dialectic constant. The detection depth of the probe can be evaluated when covering the moistened filter paper with plastic foil of variable thickness. The accuracy, sensivity and reproducibility of the measuring capabilities of both instruments were compared in vivo on subjects with a wide range of hydration state of the horny layer.

P.M. Clarys, A.O. Barel, **The Influence of a Single Topical Corticosteroid Application on the Hydration State of the Stratum corneum,** Skin Research and Technology, Vol. 2, No. 4, Nov 1996.

The impact of vehicle properties on stratum corneum hydration and bioavailability of active substances is well known. As demonstrated by the reports on side effects after prolonged treatment with topical corticosteroids, the active substance may equally effect the integrity of the stratum corneum. Few studies evaluate the short term effects of topically applied corticosteroids. In our experiment, we evaluated the influence of a single topical corticosteroid application on the stratum corneum hydration. Two different corticosteroid molecules were tested as well as the influence of the applied quantity, the time, the corticosteroid concentration and the influence of a moisturiser (urea). One of the tested corticosteroid caused drying of the skin while the other did not. The addition of urea caused an increase of stratum corneum hydration.

M. Lodén, **Measuring Hydration of the Skin: A Practical Approach,** Skin Research and Technology, Vol. 2, No. 4, Nov 1996.

Techniques for the assessment of skin hydration are often based on the electrical properties of the skin.

M.A. Francomano, K. Mantovani, P. Pepe, A. Di Nardo, S. Seidenari, **Baseline Biophysical Skin Parameters in Subjects with Sensitive Skin,** Skin Research and Technology, Vol. 2, No. 4, Nov 1996.

Aim of the study: to assess the baseline biophysical parameters in subjects with sensitive skin.

C.A. Morton, M. Lafferty, C.H. Henderson, M. Jones, J.G. Lowe, **Pruritus and skin hydration during dialysis,** Nephrol Dial Transplant (1996) 11: p. 2031-2036

Background: Dry skin is frequently observed in uraemic patients and a link with the common complaint of pruritus has been suggested. Objective data on skin dryness in haemodialysed patients is sparse and equivocal. No such information exists for the many patients now receiving peritoneal dialysis. We assessed the prevalence and severity of both pruritus and skin dryness in a uraemic population receiving maintenance dialysis. Methods: Forty-eight haemodialysis and 24 eritoneal dialysis patients were examined and skin dryness assessed by clinical grading and measurement of stratum corneum hydration using a corneometer. Forty age- and sex-matched controls were also assessed. Several biochemical parameters with possible relevanceto pruritus were measured. Regular emollient therapy was prescribed to pruritic dialysis patients and efficacy assessed. Results: Dialysis patients overall had clinically drier skin than controls, especially the peritoneal dialysis group. Stratum corneum hydration levels were significantly reduced in the peritoneal dialysis *(P*< 0.004), but not the haemodialysis, population. Twenty-seven per cent of haemodialysed and 54% of peritoneal dialysis patients complained of pruritus. Pruritic patients in each dialysis group had significantly lower hydration than non-pruritic patients (/><0.05). Regular emollient use in pruritic patients produced a marked reduction in severity of pruritus, abolishing the symptom in nine of 21 patients treated. Conclusion: Reduced stratum corneum hydration correlates with pruritus in patients on maintenance haemodialysis and peritoneal dialysis, and may be alleviated by simple emollient therapy.

A. Herpens, U. Maerker, V. Schreiner, U. Hoppe, **Estimation of epidermal turnover by semiautomatic measurement of corneocyte area**, Proceeding of the 19th IFSCC Congress, Sydney 10/96

Different approaches and cosmetic ingredients have been described as being able to enhance the epidermal turnover (ET) of the skin of the elderly, for example peeling of the stratum corneum (SC) and/or topical application of alpha-hydroxyacids and retinoids.
Measurement of the efficacy of such procedures currently relies on estimation of the rate of disappearance of a stratum corneum coloration achieved by covalent binding of dyes to structural dyes or lipids of the SC (SC transmits time studies, 1, 2). But these methods should be considered with great care because there are possible sources of artefact.
We present a method and measurement protocol we believe to be less susceptible to such pitfalls, more closely related to changes in the mitotic activity of the epidermal cells, delivering reliable and producible results and significantly less invasive to human volunteers. Our method mainly relies on exfoliative cytology with assessment of the parameter "corneocyte area"(CA), which is well-known to be closely related to ET as shown by its strong dependance on age (3,4).

D.A. Comes, E.J. Fendler, M.J. Dolan, R.A. Williams, **Work Cream Effectiveness with a Heavy Duty Skin Cleanser,** Skin Research and Technology, Vol. 2, No. 4, Nov 1996.

The acceptability and effectiveness of creams is mitigating or improving contact dermatitis of automotive mechanics was studied using multiple bionengineering skin instrumentation techniques, visual skin ebaluation and subject self-evaluation.

R. Voegeli, J. Meier, S. Doppler, J. Stürzebecher, P. Girard, **Elastase and Tryptase Determination on Human Skin Surface,** Cosmetics and Toiletries Magazine Vol. 111 July 1996.

The skin, as an organ enveloping the body, mainly functions to seal and mediate the body from the environment. Various biochemical and biophysical systems help maintain the integrtiy of this exposed organ via complex physiological processes with well-defined interactions between cells and enzymatic reaction cascades

J. Woodruff, **Testing time,** Cosmetics, June 1996

In his continuing series on impending EC cosmetics-legislation, John Woodruff looks at the requirements for proof of efficacy, and takes a trawl around available testing facilities.

S. Seidenari, B. Belletti, G. Pellacani, **Time Course of Skin Changes Induced by Short-term Occlusion with Water: Evaluation by TEWL, Capacitance, and B-scanning Echography**, Skin Research and Technology, Vol. 2 No.1 February 1996.

Application of water under occlusion increases hydration of the stratum corneum, thereby swelling the corneocytes and promoting the uptake of water into intercellular lipid domains. Hydration values, as measured by capacitance, remain higher for 20 min after soaking skin with tap water. Equalisation of water diffusion between the stratum corneum and the ambient air occurs within 20 min. Water, re-emitted from a 24h occlusion site, is recorded as increased TEWL values. B-scanning techniques, based on segmentation, enable the visual observation of the dynamics of changes due to inflammatory processes in the skin and the quantitive assessment of epidermal and dermal components of skin reactions. The effects of simple occlusion with a test chamber are assessable using the echographic evaluation of dermal edema. The aim of our study was to investigate the sonographic aspects of hydration, as documented by measurements of TEWL and capacitance, induced by a short-term occlusion with water.

A. Dweck, **Botanicals –Research of Actives**, Cosmetics & Toiletries magazine, Vol. 111, January 1996, p. 46-57

Because skin care products cannot infringe on the Medicines Act, it is important to start with some definitions.

J. Bettinger, J. Fluhr, M. Gloor, W. Gehring, **Have oil/water emulsions a dehydrating effect on the horny layer?**, Kosmetische Medizin 1996 1: 46-49, 1996

The emulsifiers used in wash solutions, which have a dehydrating effect on the horny layer of the skin, have a large hydrophilic and a small lipophilic moiety. Such oil/water (o/w) emulsifiers are also used in o/w emulsions, although here combined with emulsifiers, which are responsible for the consistency of the emulsion. Under repeated use of the o/w emulsions, the emulsifiers remain on the skin after evaporation of the water component. It can be assumed that on renewed contact with water

by showering, bathing or sweating, this can form a wash solution, resulting in skin dehydration. The intention of the present work was to answer this question.

H. Gerny, **IV Medizinische und Kosmetische Behandlungen,** Kosmetik und Dermatologie, Krause & Pachernegg Verlag GmbH, Wien.

Die Langzeitwirkung einer Pflege kann nur dann einigermaßen beurteilt werden, wenn ein klar definierter Ausgangspunkt bezüglich des aktuellen Hautzustandes und Hauttypes gegeben ist. Die Bestimmung des Hauttypes ist ein sehr komplexer Vorgang, da viele äusserliche Einflüße auf unser Hautbild einwirken. Auch ist die Haut hormonell empfindlich und stellt ein Bild unseres Innenlebens dar. Da der Zustand der inneren Schichten ohne chirurgische Maßnahmen nicht definitiv beurteilbar ist, kann nur die Summe aller Beobachtungen durch Auge, Lupe, und Woodlampe sowie Apparativer Hilfsmittel einen approximativen Anhaltspunkt über den Zustand der Haut geben. Es ist empfehlenswert, nach dem 35. Altersjahr von Zeit zu Zeit eine Hautbeurteilung durchführen zu lassen, um die Pflege nach dem aktuellen Hautbedürfnis anzupassen.

L. Celleno, A. Vasselli, M.V. Tolaini, A. Mastroianni, F. Macchia, **Verifica di tollerabilità ed accetabilità cosmetica di detergenti cutanei: confronto di metodiche,** Cosmesi Dermatologica 45, 1995

La detersione cutanea è un atto igienico ma reppresenta altresi un important momento cosmetologico e dermatologico. Infatti solamente se il prodotto utilizzato è cosmetologicamente ben accettato essa risulta un atto gradevole. Inoltre spesso l'uso di tensioattivi o saponi tradizionali si traduce in un'alterazione del film idrolipidico superficiale. Se a questo fa seguito l'esposizione e il danneggiamento della strato corneo, può innescarsi quel meccanismo che conduce alla comparsa della dermatite irritativa da contatto, facilitando anche l'insorgenza della dermatite allergica da contatto (1,2).

I. Tausch, J. Gaßmüller, W.J. Kessler, **Beurteilung der protektiven und pflegenden Potenz von Lichtschutzpräparaten mit biophysikalischen Methoden**, Wissenschaft Dt. Derm. (43), 1995

Während einer zehntägigen UV-Bestrahlung wurden die Eigenschaften zweier Lichtschutzpräparate (LSF6, LSF20) untersucht. Als Vergleich dienten unbehandelte als auch mit der jeweiligen Grundlage behandelte Hautareale. Es wurde die Intensität des UV-Erythems mit einem Farbmeßgerät, die Hautfeuchtigkeit mittels der Corneometrie und die Hautoberflächenstruktur durch Profilometrie beurteilt. Beide Lichtschutzpräparate unterdrückten das UV-Erythem vollständig, der Feuchtigkeitsgehalt der Haut und die Faltentiefe blieben unverändert. In den Arealen, die einer zehntägigen UV-Bestrahlung ohne Lokalbehandlung ausgesetzt waren, traten deutliche Erytheme, Feuchtigkeitsverluste und eine Zunahme der Faltentiefe auf. Die Anwendung der Grundlagen allein zeigte nur bei einem Präparat eine leichte Lichtschutzwirkung. Neben den UV-protektiven Eigenschaften, die bei beiden Lichtschutzpräparaten gleich gut waren, sind die herausragenden pflegenden Eigenschaften der LSF20-Emulsion hervorzuheben.

A.O .Barel, P. Clarys, **Measurement of Epidermal Capacitance**, Handbook of Non-Invasive Methods and the Skin, J. Serup G.B.E. Jemec, 1995

The presence of an adquate amount of water in the stratum corneum is important for the following properties of the skin: general appearance of a soft, smooth, well-moisturized skin, in contrast to a rough and dry skin; of a flexible skin, in contrast to a brittle and scaly skin; and of an intact barrier function allowing a slow rate of transepidermal water loss (TEWL) under dry conditions. As a consequence, the in vivo determination of the degree of hydration of the horny layer is an important factor in the characterization of normal and pathological situations of this layer, of an actinic aged skin, of irritated skin conditions, and, finally, in the assessment of the effciency of various moisturizing topical products. As pointed out by Tagami, the use of various dermatocosmetic products in order to restore softness, smoothness, and moisture in very dry skin is widely practised in western countries.

F. Distante, E. Berardesca, **Hydration,** Bioengineering of the Skin: Methods and Instrumentation, CRC Press 1995

The development of commercially available measurement devices that allow for the quantitative evaluation of skin function and provide continuous data is an important advance in experimental dermatology. Indeed the measurement of skin hydration has gained considerable interest in recent years because the water content of the stratum corneum influences various physical characteristics of the skin such as barrier function, drug penetration, and mechanical properties. Generally, three different commercially available methods for evaluating skin moisture are used: capacitance, impedance, and conductance.

Kein Aha Erlebnis, Test Gesichtspflegemittel mit Fruchsäuren, Test 10/95

Sind Pflegemittel mit Fruchtsäuren wirklich die Kosmetik der Zukunft, die Wunschträume von ewig jugendlichem Aussehen wahr werden läßt? Oder reizen die Mittel vor allem die Haut, wie andere Fachleute vermuten? In neun dieser Tiegelchen und Töpfchen schauten wir genauer hinein.

P. Girard, L. Violin, A Denis, M. Maurice, **Comparison of three methods for measuring in vivo skin hydration on humans, depending on epidermal depth: "NMR Spectroscopy", "Transient Thermal Transfer" and "Corneometry"**, IFSCC - In Between Congress, Montreux, Switzerland, 18-20 September 1995
The aim of this study is to determine the more convenient method of measuring skin hydration at several epidermal depths. Two in vivo, non invasive, quantitative and innovative methods - "Nuclear Magnetic Resonance Spectroscopy! (NMRS) and "Transient Thermal Transfer" (TTT) - and conventional corneometry are compared.

M. Lodén, E. Hagforsen, M. Lindberg, **The Presence of Body Hair Influences the Measurement of Skin Hydration with the Corneometer**, Acta Derm Venereol (Stockh) 1995; 75: p. 449-450

Techniques for the assessment of skin hydration are often based on the electrical properties of the stratum corneuni. A commonly used instrument for measurements of skin moisture is the corneometer, which detects changes in the dielectric constant of the material in contact with the probe. It has been suggested that different materials, for example cream residues and desquamating scales, may interfere with the Corneometer readings, hut this question has not been settled conclusively in previous studies. In the present study the influence of body hair was examined. Significantly lower Corneometer values were obtained on the dorsal aspect of the forearm than on the volar aspect (/><0.05), indicating that the former region was less hydrated than the latter. After shaving of the skin, however, there was no difference in the Corneometer readings between the two regions. Thus, the presence of hair needs to be considered when the hydration status of the skin is examined with the use of a Corneometer.

H.C. Korting, **Rationale der Hautreinigung mit sauren Syndets,** 38. Tagung der Deutschen Dermatologen Gesellschaft, Berlin, 29. April - 03. Mai 1995

W. Gehring, M. Fischer, M. Gloor, **Die Bedeutung von rückfettenden Substanzen in Waschlösungen**, 38. Tagung der Deutschen Dermatologen Gesellschaft, Berlin, 29. April - 03. Mai 1995

Cetiol HE wird als rückfettende Substanz tensidischen Waschlösungen zugegen, um die Hautfreundlichkeit zu verbessern. Der Effekt von 5% Cetiol HE wurde im Waschversuch an 15 gesunden Probanden in vivo und in vitro am Gefrierschnitt menschlicher Haut (GMH) sowie Kammerpenetrationstest (KPT), zwei bewährten Irritationsmodellen, überprüft. Als Meßparameter in vivo galten die Hornschichtfeuchtigkeit (Kapazitätsmessung) und der transepidermale Wasserverlust (Evaporimeter)

P. Elsner, **Nichtinvasive Techniken in der Hautphysiologie,** 38. Tagung der Deutschen Dermatologen Gesellschaft, Berlin, 29. April - 03. Mai 1995

Nichtinvasive Techniken (Synonyma: Bioengineering-Verfahren, biophysikalische Meßverfahren) haben in den vergangenen Jahren in verschiedenen dermatologischen Forschungsgebieten Eingang gefunden. Dazu zählen insbesondere die Hautphysiologie, die Dermatopharmakologie und Dermatotoxikologie, die Allergologie und die Berufsdermatologie, aber auch die Erforschung der Kollagenosen, der Veränderungen der Altershaut (dermatologische Gerontologie) un die Onkologie.

A.M.Grunewald, M. Gloor, W. Gehring, P. Kleesz, **Barrier Creams,** Dermatosen 43, Heft 2 - 1995

Repetitive washing with 0.01 mol/l sodium lauryl sulphate solution for one week was followed by a measurable skin function disorder as evaluated by corneometry, laser Doppler flowmetry, and transepidermal water loss (TEWL) measurements. The application of commercially available barrier creams (Marly Skin®, Saniwip®, Tactosan®) as well as the application of well-defined oil-in-water emulsions containing 10% urea or 10% glycerol, respectively, significantly reduced skin function deterioration following repetitive washings. Urea and glycerol containing oil-in-water emulsions were at least as effective as the most effective commercial barrier cream Tactosan and had the additional advantage of better user acceptance.

P. Soto, C. Queille Roussel, B. Soler, A. Clucas, **Evaluation of a New Moisurizing Cream using a mini Regression Test,** AAD-Congress, New Orleans, February 1995

Xerosis is a very common condition affecting at least 75% of persons over the age of 64 (1) and also a significant number of younger people. Although not associated with significant physical instability, it is uncomfortable and esthetically unacceptable to many patients. Treatment is based on the use of moisturizers, of which a large variety are available commercially.

J.D. Büscher, B.C. Lippold, **Messung feuchthaltender Effekte an menschlicher Haut,** Krankenhaus-pharmazie, 15. Jahrgang, Nr. 12, 1994

Die Wirkung von Feuchthaltern auf die Barriere Stratum corneum wird mit einem Corneometer bestimmt. Diese nicht invasive und einfache Methode erlaubt quantitativ, die Veränderung der Hornschichthydratation zu messen. Glycerol, Natriumthioglycolat, Natriumlactat, Harnstoff, Propylenglycol und Natriumedetat erhöhen significant (7-12%), Diethylenglycolmonoethylether (Transcutol®) erniedrigt schwach in 10%-iger Lösung die Hautfeuchte, 2-Butanol und Ethanol bleiben praktisch ohne Einfluß.

C. Trullas, J. Coll, C. Pelejero, J. Vilaplana, S. Sirigu, C. Dederen, **Cosmetological Activity of Glycolic Acid Incorporated in a New Topical Delivery System (W/O/W Emulsion),** 18th International IFSCC-Congress, Venice, October 1994

The cosmetological potential of alpha hydroxyacids (AHA'S) is still evolving. The powerful research in physicochemistry has provided a promising new delivery system, the multiple emulsion W/O/W which could permit a controlled and sustained release of AHA'S, modifying their efficiency and safety. The cosmetological activity and safety of a W/O/W multiple emulsion containing 3% of glycolic acid has been assessed by bioengineering methods using several tests. A six-hour test and 30-days study for comparison of the effects of 3% glycolic acid in two delivery systems W/O/W multiple emulsion and O/W emulsion were conducted. The cutaneous biophysical variables evaluated were electrical capacitance of stratum corneum, skin surface lipids, transepidermal water loss, biomechanical properties, blood flow and skin surface topography. The safety of 3% glycolic acid in the two delivery systems was determined using patch testing and assessment of cutaneous responses by visual scoring and biophysical non-invasive methods (evaporimetry, laser doppler flowmetry, reflectance spectophotometry).

B. Seybold, K. Seidel, K. Beck-Devalle, F. Hevert, K. Klein, T.L. Diepgen, **Distribution and Variation of Basic Physiological Characteristics of Uninvolved Skin in the General Population - a Bioengineering Study,** The 10th International Symposium on Bioengineering & the Skin, Cincinnati, Ohio, June 13-15, 1994

The aim of the study was to data about the distribution and variation of bioengineering parameters in the general population (GP).

E. Berardesca, G.P. Vignoli, F. Distante, P. Brizzi, G. Rabbiosi, **Effects of Water Temperature on Surfactant Induced Dermatitis,** The 10th International Symposium on Bioengineering & the Skin, Cincinnati, Ohio, June 13-15, 1994

Surfactants are a common cause of irritant contact dermatitis. Their aggressive action on skin structures is well documented even though the complex meachnisms of skin irritation are not fully understood.

C. Baudry, C. Loufrani, **Les Meilleures Crèmes Hydratantes,** Le Guide D'Achat, No. 273, Mai 1994

La peau de votre visage mérite ce qu'il y a de mieux. «50» passe au crible les crèmes hydratantes.

C. Letawe, D. Castelli, GE. Pierard, **Les Nouvelles Dermatologiques**, Nouv. Dermatol.C.C.I. 1994; 13-No 4

Une étude ouverte a été réalisée avec le Cold cream fluide Kéfrane dans l'indication de la xérose atopique. Les évaluations cliniques et biométrologiques, incluant la squamométrie, la capacitance et la perte insensible en eau, on révélé après quinze jours d'applications biquotidiennes, une correction de la xérose que devient très nette après un mois de traitement.

A.M. Grunewald and M.Gloor, **Value of barrier creams against skin damage due to repeated washings,** Second International Symposium on Irritant Contact Dermatitis (ISICD), Zurich, April 14-16, 1994

The aim of our study was to evaluate the protective effect of barrier creams onto irritant contact dermatitis. Therefore the following skin function parameters were evaluated: corneal lipids (sebumetry), water content of the corneal layer (corneometry), transepidermal water loss (TEWL), pH of the skin, skin

reddening (colorimetry) and skin blood flow (laser doppler flow). We did standardized washings of both arms on the first and the 8th day. The subjects were asked to wash 5 times daily for one week.
In a first study we evaluated the irritating effect of repeated washings with 0.01 mol/l sodium lauryl sulphate solution on 20 subjects. We were able to show that there is a more than 12 hours lasting change in skin function parameters after one week of repeated washings. Concerning corneometry, corneal lipids, TEWL, pH and laser doppler flow there were highly significant differences before and after repeated washings ($p<0.01$). In a second study we evaluated the irritation reducing effect of 3 barrier creams on 15 subjects for each cream. Using the same method as in our first study, one selected arm was additionally treated with a barrier cream 5 times daily. Barrier creams had a highly significant ($p<0.01$) effect on laser doppler flow, corneometry and tewl. Nevertheless they were not able to offer complete protection. The different barrier creams showed significant differently positive effects onto skin function parameters.

B. Gabard, P. Treffel, F. Charton-Picard and R. Eloy, **Irritant reactions on hairless micropig skin: A model for testing barrier creams,** Second International Symposium on Irritant Contact Dermatitis (ISICD), Zurich, April 14-16, 1994

Occupational dermatoses are most numerous among recognized occupational diseases and their frequency is increasing. Skin barrier creams (SBC) are designed to prevent or reduce the irritancy or hazardous materials in the working and/or home environment. Used repeatedly, detergents, organic solvents or cutting oils presumed to be responsible for the development of numerous chronic irritant dermatitis.
Many methods have been used to identify the potential protective efficacy of SBC but up to now, there is no widely accepted model. Main difficulties reside in the wide range of possible irritants and in the obvious need to reproduce the frequent repetition of a low-grade exposure.

Ch. Münzberger, U.F. Haustein, U. Elefant, **Effects of UVA- and UVB-radiation on transepidermal water loss, water content of the horny layer and skin surface lipids**, Second International Symposium on Irritant Contact Dermatitis (ISICD), Zurich, April 14-16, 1994

In the last year many studies have provided important new knowledge concerning the benefits and risks of skin exposure to sunlight and ultraviolet radiation, among them the acute and chronic effects on damage of the skin barrier. We examined the transepidermal water loss, the water content of the horny layer and the amount of skin surface lipids in relation to low dose UV-radiation. The transepidermal water loss was measured with the TEWAMETER TM 210, the water content of the horny layer with the CORNEOMETER CM 820 and the skin surface lipids with the SEBUMETER SM 810 PC (all from Courage and Khazaka GmbH). The ultraviolet radiation of 25 healthy adults was performed with UVA (Philips TL-K 40W/09N) and UVB (Philips TL 20W/01). One time radiation with UVA as well as with UVB did not show significant changes on all measured biophysical parameters. Transepidermal water loss, the water content of the horny layer and the amount of skin surface lipids were not different before radiation and 5 minutes, 1, 2 and 24 hours after radiation. On the contrary cumulative radiations 4 times per week resulted in damage of the skin barrier and showed changes of the biophysical parameters measured.

L.A. Scott, S.A. Pitts, P.S. Horn, C.K. Kappes, **Use of instrumental techniques for skin safety applications,** Second International Symposium on Irritant Contact Dermatitis (ISICD), Zurich, April 14-16, 1994

When properly conducted and interpreted, patch testing is a valuable tool for predicting the allergenic and irritant potential of a test material. Patch test results are currently evaluated via the use of visual grading schemes which require trained clinical graders to obtain accurate and reproducible results. Due to the element of subjectivity associated with any visual grading technique and the potential for interlaboratory variation despite common visual descriptors, alternative nonsubjective methods were evaluated. This study was initiated to evaluate the sensitivity of various non-invasive instrumental techniques to detect the skin response following repeat patch test exposure to mild skin irritants. The instruments evaluated including the ServoMed Evaporimeter, Minolta Chroma Meter, DiaStron Dermal Erythema Meter, IBS Skicon, Corneometer and Nova Dermal Phase Meter. A repeat patch test was conducted with 0.0% to 0.15% Sodium Lauryl Sulfate applied to the outer aspect of the upper arm in a randomized fashion. Following acclimation to room conditions maintained at 20-25°C and a relative humidity of 30-35%, baseline instrumental values were established at each patch test site prior to treatment. Patches were applied for a 24 hour exposure duration each, on Friday, Monday and Wednesday. Instrumental and visual measurements were obtained daily. Colorimetric and transepidermal water loss (TEWL) measurements correlated highly ($r^2>0.95$) with our historic visual grading scheme, successfully detecting treatment differences in a dose dependent fashion. Minolta

Chroma Meter (a*) results agreed with both the DiaStron Erythema meter and TEWL measures with Pearson correlation coefficients of 0.99 and 0.97, respectively. In contrast, skin hydration measures failed to detect treatment differences predicted by other quantitative methods. Given the ease of use, the Minolta Chroma Meter was further validated for patch test applications under non-acclimated room conditions. Minolta a* values, assessed as the difference from baseline (a* post treatment-a* at baseline), have accurately detected treatment differences for a variety of surfactant formulations. Historically, the Minolta a* value has been the sole endpoint used to evaluate the skin response. To increase the sensitivity of the Minolta Chroma Meter for patch test applications, alternative models are being explored which utilize the L*, a* and b* co-ordinates of the CIE system as a function of repeated patch test exposure. This program supports the use of the Minolta Chroma Meter for patch test applications and provides a strong opportunity to standardise patch test results.

P. Treffel, B. Gabard, E. Bieli, **Stratum corneum (SC) dynamical function measurements after irritant and moisturizer application,** Second International Symposium on Irritant Contact Dermatitis (ISICD), Zurich, April 14-16, 1994

This study was conducted on the ventral forearm of 6 healthy volunteers. Sorption-Desorpiton Test (SDT) and Moisture Accumulation Test (MAT) were performed with a Nova ™ DPM 9003. Each test was quantified by 3 parameters. SDT: Pre-Hydration State (PHS), Hygroscopicity (H), Water Holding Capacity (WHC). MAT: PHS, Water Accumulation Velocity (WAV), Water Accumulation (WA).

W. Matthies, **Assessment of skin compatibility of consumer products - Current strategy and methods in industry (exemplified on a dishwashing liquid),** Second International Symposium on Irritant Contact Dermatitis (ISICD), Zurich, April 14-16, 1994

Improvement of skin compatibility is a priority task in formulating consumer products. Experience shows that control of typical skin diseases like desiccation eczema of the hands may be reached by adequate protection and skin care, but these proportions being not always followed by the consumer. Therefore, it is a special task for industry to optimize products with respect to skin compatibility using milder surfactants, refattening agents, or other caring substances, whenever possible. Decisive instruments for improvement of formulations are standardised test models, which help comparing characterising and quantifying effects of formulations for their differentiation, and generating use related data. Modern laboratories work with in vitro secreening, e.g. cell culture techniques, skin explants or physiologic membranes in order to evaluate toxic effects of substances and formulations (Neutreal red test, skin culture, HET-CAM Model on the Chorioallantoic membrane of hen's eggs). After generating those screening data, further investigation can be performed directly in human volunteers, if general toxicity for man can be assessed as negligible and local tolerance is foreseeable good. In humans maximal short term exposition (contact with undiluted product) can be tested in an open epicutaneous test after Burckhardt. This model is suitable for classification of products according to their irritation potential, but also for assessment of use conditions, when the product is intended to be used for short time contact with the skin, only. Occlusive patch test techniques are useful for comparison of numerous variants in the same individual regarding primary irritation and kinetics of local toxic effects. Besides primary irritation mainly chapping and dryness reactions give hints for different mechanisms of action of substances on or in the stratum corneum. Assessment of the in-use situation needs test methods, which reflect the foreseeable overuse/misuse or the real home use condition. Measurements of physiologic function with physical methods (Laser Doppler Flow, TEWL, Capacity, pH-value measurement, image analysis etc) enable the investigator to objectify results and to survey studies with larger numbers of participants who are using products under real use conditions. As an example results with a new dishwashing liquid show, that this procedure is suitable to demonstrate improvement of products towards better compatibility which also can be experienced by the consumer condition.

P. J. Frosch, A. Kurte, **Efficacy of skin barrier creams (IV). The repetitive irritation test (RIT) with a set of 4 standard irritants**, Contact Dermatitis, 1994. 31. 161-168

An improved human model for the quantification of skin barrier creams (BCs) is described. In contrast to the previously published procedure, the back, instead of the forearm, and a total of 4 irritants are used. Due to the larger area, 3 BC formulations can be simultaneously compared to the control field, which receives the irritant only, without BC-pre-treatment. On 10 human volunteers, the irritants 10% sodium lauryl sulfate (SLS), 1% sodium hydroxide (NaOH), 30% lactic acid (LA) and undiluted toluene (TOL) were applied via large Finn Chambers for 30 min, 5 x during the 1st week and 4x during the 2nd week. Taktosan Salbe (water-in-oil emulsion) and RAWI Speerschutzcreme (oil-in-water emulsion) were applied 30 min before contact with the irritants. In order to assess reproducibility and interindividual variation, the BC RAWI was tested in duplicate. Irritant cutaneous reactions were quantified by 4 parameters: erythema score, transepidermal water loss, blood flow volume and stratum corneum

hydration by measuring capacitance. The results showed marked differences in efficacy. Taktosan significantly suppressed irritation by SLS. NaOH and LA, which was apparent in nearly all parameters. RAWI caused significant inhibition of SLS irritation, and a positive trend against the NaOH and LA was observed. Both BCs failed against TOL. The results of duplicate testing with RAWI showed good reproducibility. The dogma that oil-in-water emulsions are primarily effective against lipophilic irritants, and water-in-oil emulsions against hydrophilic irritants, needs to be re-evaluated on this basis of our fndings. This model seems to have potential for further studies on BCs and might elucidate the complex interaction of BCs with irritants.

W. Courage, **Hardware and Measuring Principle: Corneometer,** Biogengineering of the Skin: Water and the Stratum Corneum", edited by: Peter Elsner, Enzo Berardesca, Howard I. Maibach, 1994.
The degree of moisture of the stratum corneum (SC) is an important factor when medically evaluating the skin function. The importance of this parameter in dermatology has already been described and discussed in detail in the literature. Generally, four different measuring methods for skin moisture are practiced: infrared spectroscopy, resonance frequency, impedance, and the Corneometer® capacitance methods. Impedance and Corneometer® methods are widely used today.

G. Marti-Mestres, J. Passet, H .Maillols, V. van Sam, J.J. Guilhous, J.P. Mestres, B. Guillot, **Evaluation expérimentale de l'hydratation et du pouvoir occlusif in vivo et in vitro d'excipients lipophiles et de leurs émulsions phase huile continue,** Int. Journal of Cosmetic Science 16, 161-170, 1994

Une étude a été réalisée sur trois émulsions eau dans huile et leurs phases grasses respectives, vaseline, huile de paraffine et huile d'amande douce, en vue de comparer luers propriétiés occlusives et par voie de conséquence leur influence sure l'hydratation cutanée. Une méthode in vitro utilisant des cellules de type 'Patel' a permis dans un premier temps de classer les différentes émulsions et leurs phases grasses en fonction de leur perméabilité à la vapeur d'eau, ce qui conduit par ordre croissant de degré d'occulsion à: huile d'amande douce, huile de paraffine et vaseline. Pour les études in vivo chez l'homme, l'influence de l'application des mémes substances sur la petere insensible d'eau (PIE) et l'hydratation cutanée a été mesurée avec un évaporimètre et un cornéomètre. Les différentes pahses grasses, utilisées pures, augmentent l'hydratation par effet occlusif, ce phénomène étant objectivè par les mesures de PIE. Par contre pour les èmulsions correspondantes, il semblerait que l'augmentations de l'hydratation ne fasse pas intervenir de mécanisme occlusif.

R.A. Tupker, **Prediction of Irritancy,** Bioengeneering of the Skin: Water and the Stratum Corneum, 1994, Chapter 7

"All substances are damaging to some people under some circumstances." This statement by Kligman stresses the importance of extrinsic and intrinsic factors in skin irritancy. The dichotomy of "extrinsic" and "intrinsic" also appears in the theory concerning the pathogenesis of chronic irritant dermatitis. Wether or not this type of dermatitis will develop depends on the balance between the sum of all harmful influences. (detergents, shampoos, solvents, dry wind, blow heaters, etc.) on the one hand, and the repair capacity of the skin on the other hand. Chronic irritant contact dermatitis is one of the most frequently encountered skin diseases and constitutes the ultimate purpose of performing predictive irritancy testing, division into extrinsic and intrinsic yields two main categories: (1) predictive irritance testing of various substances aimed to select the least irritating substance and (2) predictive irritancy testing with one or more standard irritant(s) aimed to select a population that is at risk for chronic irritant contact dermatitis. This chapter deals with some methodological considerations in predictive irritancy testing. Animal irritancy tests such as the Draize assay are still commonly used. However, it is known that different species exhibit varying reactivity, especially toward agents with low irritant potency. This chapter focuses therefore on human skin testing.

B. Gabard, P. Treffel, **Hardware and Measuring Principle: The Nova^{tm} DPM 9003,** Bioengeneering of the Skin: Water and the Stratum Corneum, 1994, Chapter 15

Standard methods used to evaluate the hydration state of the skin surface have focused on visible skin characteristics such as rough, scaly surface. Besides the fact that only "dryness" and not "hydration" can be evaluated by this method, clinical evaluation of the severity of the lesions is subject to two main criticisms: variation between observers and nonparametric description (i.e. ordinal data) for quantification. Therefore, development of commercially available measurement devices that allow for quantitative evaluation of the skin function and provide continuous data is an important advance in experimental dermatology. In particular case of the hydration of the stratum corneum (SC), most instruments use electrical methods to quantify moisturization, such as the Skicon® and the Corneometer® which have gained acceptance. A third is now available, the NOVATMDPM 9003, which will be described here.

M. Lodén, M. Lindberg, **Product Testing-Testing of Moisturizers,** Bioengineering of the Skin: Water and the Stratum Corneum, 275-288, 1994

Moisturizers are used to restore and/or to maintain a normal function of the stratum corneum (SC). Mostly they are used on the indication of so-called dry skin. When performing product testing of moisturizers, bioengineering devices are used for evaluating how these products affect the function of SC, the main diffusion barrier in the skin. Biophysical measurements of dry skin need to be carefully evaluated. A number of highly developed noninvasive methods for the study of skin physiology have appeared during recent years and a number of papers on the use of these methods are now being published.

D. van Neste, **Skin Hydration in Detergent-Induced Irritant Dermatitis**, Bioengineering of the Skin: Water and the Stratum Corneum, 223-232, 1994

It is a thermodynamic rule that water escapes "passively" through the body surface of a homeothermic living organism and returns into a cool and dry environment. There is a consensus in viewing the primary role of the epidermis as a producer of a structurally highly ordered hydrophobic domain usually confined to the extracellular spaces within the stratum corneum (SC). Indeed, after terminal differentiation, corneocytes are embedded in a continuous meshwork of lipid bilayers. The aim of the specialized domain is to prevent desiccation of the body. In this concept, programmed cell death of SC cells makes them like missiles with a lipid load synthesized in the cell after launching and extruding from the cell after completion of the differentiation program. Recently it became clear that flux of water through the SC is a regulatory mechanism for cell proliferation.

J.Bettinger, M. Gloor, W. Gehring, **Influence of a pretreatment with emulsions on the dehydration of the skin by surfactants,** Int. Journal of Cosmetic Science 16, p. 53-50, 1994

Improving the water content of the horny layer of the skin is of great importance in dermatology (atopic dermatitis, ichthyosis etc.) and in cosmetics (to soften the skin surface
[1]. It is believed that emulsion bases lead to hydration of the stratum corneum [2]. The hydration is believed to last a few minutes if an o/w-emulsion is used [3] and a few hours in the case of w/o-emulsions [4].The present study addresses whether the hydrating effect really does last for such a short time. Literature also proposes an increase in water content by using urea, which is a component of many dermatological skin-care ointments [3, 5-8].

A. Teglia, G. Secchi, **New protein ingredients for skin detergency: native wheat protein-surfactant complexes**, Int. Journal of Cosmetic Science 16, p. 235-246, 1994

The cutaneous tolerability of detergent formulations can be improved by means of suitable additives. Exogenous proteins, for example, are able to reduce the skin irritation potential of surfactants according to a double mechanism: they complex the surfactant molecules lowering the concentration of their free monomeric species; they link to the skin keratin forming a protective colloidal layer that shields the denaturing attack of surfactants. Protein derivatives used as additives for detergency are usually prepared by partial hydrolysis of animal sclero-proteins or plant reserve proteins. The main purpose of the hydrolytic cleavage is to make them water soluble and suitable for liquid products. Native, non hydrolysed wheat proteins have been recently introduced as active ingredients for detergents. Water solubility and stability are obtained by means of complexion with surfactants which also increases their actual hydrophobicity, an important parameter affecting cosmetic properties of proteins.

G. Borroni, C. Zaccone, G. Vignati, G.P. Vignoli, E. Berardesca, G. Rabbiosi, **Dynamic Measurements: Sorption-Desorption Test,** Int. Journal of Cosmetic Science 16, p. 217-222, 1994

Probably no concept in physiology of the skin has been so improperly used as the term "hydration of the stratum corneum (SC)", for the simple reason that the SC is physiologically poor in water and is one of the tissues in the human body with the lowest water content. The SC of the human skin is dry. Despite the frequent use of the term "hydration" with regard to the SC, this is not even exceptional when compared with the most external layers of the integument of many other animal species. Rather than hydration of the SC, we need to speak about "critical or optimal dehydration", given the progressive but controlled tendency of water in the human skin to decrease from the innermost to the outmost layers of the SC. The SC's dryness is a factor favouring the integrity of the underlying organism and is a means through which the skin's barrier function is carried out. The exceptional poverty of water in the SC, and hence its high hygroscopicity, has encouraged the development of a simple but ingenious research approach: bathing the SC with water and seeing for how long it remains damp.

P. Clarys, C. Eeckhout, J. Taeymans, P. Gross, A.O. Barel, **Influence of short daily exposure to**

thermal water on the hydration state of the skin, Threat to the Skin, p. 333-337, 1994

The thermal Kurzentrum of Lenk (Switzerland) is one of the spas recognized by the Department of Health of Switzerland as a centre specialized in the treatment of rheumatic patients. Part of the typical 3-week cure in the centre consist of daily bathing in hot thermal water containing high concentrations of salts and sulphur (sulphates and hydrogen sulphide). According to recent data from balneo-therapeutic treatments, the sulphur which penetrates the skin is oxidized and provokes various physiological responses in the skin: vasodilatation in the microcirculation, an analgesic influence on the pain receptors and inhibition of the immune response.

R. Bimczok, A. Ansmann, S. Bielfeldt, D. Billek, H. Driller, G. Feistkorn, F. Heinze, R. Huttinger, B. Komp, H. Lautenschläger, M.-C. Leneveeu-Duchemin, L. Motitschke, L. Pohl, A. Reng, H.-J. Schulze, B. Thomaskamp, K. Tolkiehn, H. Tronnier, H.-U. Wekel, K.P. Wittern, **A multicenter comparison of different test methods for the assessment of the efficacy of skin care products with 368 human volunteers**, J. Soc. Cosmet. Chem., 45, 1-19 (January/February 1994)

In a mulricenter study, commonly used objective and subjective methods for the assessment of the efficacy of skin care products were compared. The study was performed with two different all-purpose skin care creams at eleven centers in Germany, with a total of 368 healthy female volunteers. Measurement of skin hydration with the comeometer demonstrates a fundamental improvement of skin condition and correlates with subjective assessment by the volunteers. Results are statistically highly significant, and there is a fair correlation between the different centers. The methylene blue method, surfometry, and image analysis are also suitable for performance measurements, but show broader standard deviations and lower statistical significance. Under the chosen conditions, results for TEWL and skin surface lipid measurements were not significant at the $p < 0.05$ level.

G. Yosipovitch , E. Tur, G. Morduchowicz, G. Boner, **Skin surface pH, moisture, and pruritus in haemodialysis patients**, Nephrol Dial Transplant. 1993; 8(10): p. 1129-32

Pruritus is one of the most common complaints of haemodialysed patients. However, its pathogenesis remains unclear. Dryness of the skin and the effects of pH changes on the nerve endings in the skin have been suggested as related factors. In the present study we measured skin pH using a skin pH meter and skin moisture using a corneometer at four different sites in 41 haemodialysis patients, before and after dialysis, and in 40 healthy controls. Thirty patients (73%) complained of pruritus, six severe constant, 12 moderate and 12 mild. Skin surface pH was higher in patients than in controls in the upper back (5.54 +/- 0.14 versus 5.22 +/- 0.08, $P < 0.02$), forearm (5.5 +/- 0.1 versus 5.13 +/- 0.1, $P < 0.01$) and forehead (5.35 +/- 0.08 versus 5.04 +/- 0.07, $P < 0.004$), whereas there was no difference in the axilla. Haemodialysis had no effect on skin pH, and there was no correlation with blood pH, blood bicarbonate and serum electrolytes. There was no correlation between skin surface pH and pruritus. Skin moisture was lower in haemodialysis patients than in controls in the forehead and axilla. There was no correlation with pruritus. Skin surface pH is higher in haemodialysed patients than in healthy controls in most areas of the body, despite the fact that these patients have a decreased blood pH. Thus, the skin pH is not related to systemic acid-base balance. It is possible that the uraemic state affects the ability of the dermal cells to secrete acid, making the skin more susceptible to bacterial and fungal infections.

P.J. Frosch, A. Kurte, **Efficacy of Skin Barrier Creams,** Contact Dermatitis, 1993

An improved human model for the quantification of skin barrier creme (BC) is described. In contrast to the previously published procedure the back instead of the forearm and a total of 4 irritants are used. Due to the larger area 3 BC formulations can be simulaneously compared to the control field which received the irritant only without BC-pretreatment. On 10 human volunteers the irritants 10% sodium lauryl sulfate (SLS), 1% sodium hydroxide (NaOH), 30% lactic acid (LA) and undiluted toluene (TOL) were applied via large Finn chambers for 30min, 5x during the first week and 4x during the second one. Taktosan Salbe (water-in-oil emulsion) and RAWI speerschutzcreme (oil-in-water emulsion) had been applied 30 min before contact with the irritants. In order to assess reproducibility and interindividual variation the BC RAWI was tested in duplicate. Irritant cutaneous reactions were quantified by 4 parameters: erythema score, transepidermal water loss, blood flow volume and stratum corneum hydration by measuring capacitance. The results showed marked differences in efficacy. Taktosan suppressed significantly the irritation of SLS, NaOH and LA, apparent in nearly all parameters. RAWI caused significant inhibition of the SLS irritation and a positive trend against NaOH and LA was observed. Both BC failed against TOL. The results of the suplicate testing with RAWI showed a good reproducibility. The dogma that oil-in-water emulsions are primarily effective against lipophilic irritants and water-in-oil emulsions against hydrophilic ones needs to be re-evaluated on the basis of our findings.

This model seems to have potential for further studies on BC and might elucidate the complex interaction of BC with irritants.

A. Triebskorn, M. Gloor, **Noninvasive Methods for the Determination of Skin Hydration,** "Noninvasive Methods for Quantification of Skin Functions", 1993

In 1953, Blank showed that water makes up 10%-20% of the stratum corneum. As soon as the amount of water decreases below 10%, the skin develops a rough and dry looking appearance. Kligman in 1963, maintained that the lipids of the skin surface were of no essential significance for the appearance of the horny layer, rather that the appearance of the skin is mainly due to the water content of the horny layer. Based on the postulated affiliation between stratum corneum hydration and the macroscopic aspect of the skin, diverse methods for assessing horny layer hydration have been developed.

V. Bousquet, D. Redoules, I. Raynal, G. Dahlem, Y. Gall, **Les principales techniques d'objectivation des effets des dermo-cosmétiques,** Cosmétologie, 1993

La mise au point de produits dermo-cosmétiques de plus en plus performants grâce aux progrès de la galénique a entraîné le développement d'un ensemble de méthodes d'évaluation visant à mesurer leurs effets directement sur la peau et de la manière la plus objective.

R. Marks, C. Edwards, **Methods to aid the coice of shade from a range of colour disguise cosmetics,** University of Wales College of Medicine, 26 May 1993

The range of cosmetic camouflage products for major disfiguring skin conditions are well known, and are available in a wide range of shades. They require considerable skill and training for their blending and application which also needs a finishing layer of powder for best effect. These products are admirably suited to their use on major blemishes, but would be difficult to apply by a consumer at home for minor blemishes.

H. Tronnier, **Wirksamkeitsnachweis für Kosmetika,** SOFW-Journal, 119. Jahrgang, 5/1993

Ein Wirksamkeitsnachweis ist, wie zahlreiche Publikationen beweisen, oftmals selbst in der Medizin nicht einfach. Gelingt er noch bei einem Vergleich eines wirkstoffhaltingen Präparates gegen ein Placebo, so ist oft ein Unterschied in der Effektivität zwischen zwei wirkstoffhaltigen Präparaten nicht mehr zu finden oder wenigstens nicht mehr statistisch zu sichern.

J.P. Marty, C.M. Vincent, E. Fiquet, **Études des proprétés hydratante de la Crème Hydratante Visage Neutrogena,** Réalités Thérapeutiques en Dermato-Vénérologie N. 15, Feb. 1992

La créme Hydratenate Visage Neutrogena est une émulsion huile/eau dont les propriétés hydratantes peuvent être liées d'une part à un effet occlusif et d'autre part à une action humetante directe sur les cellules cornées.

A. Cohen-Letessier, *E. Fiquet*, *J.P. Marty*, *C.M. Vincent*, **Évaluation des propriétés de la crème hydrophile lipophile (Evaluation of a water/oil emulsion (Effadiane))**, Les Nouvelles, 11/92

Effadiane is a water/oil emulsion, its effect on the skin hydration has been investigated in human volunteers by non invasive technics: the transepidermal water loss measurement to verify and occlusive effect, the corneometric measurement to demonstrate the direct water uptake by the horny layer. The emulsion persistency on the skin surface has been evaluated by sebumetry. Good correlation has been established between the hydration power and the persistency of the emulsion over time.

E. Fiquet, C.M. Vincent, A. Cohen-Letessier, J.P. Marty, **Evaluation des propriétés de la crème hydrophile lipophile (Effadiane™),** Nouv. Dertol. 1992: 11 p. 429-431

Effadiane™ is a water/oil emulsion, its effect on the skin hydration has been investiagetd in human volunteers by non-invasive techniques: the transepidermal waterloss to verify occlusive effects, the corneometric measurement to demonstarte a a direct water uptake by the horny layer.

A. Teglia, G. Mazzola, *G.F. Secchi*, **Relationship between Chemical Characteristics and Cosmetic Properties of Protein Hydrolysates**, 17th IFSCC Congress, Yokohama/Japan, 10/92

More than 20 protein hydrolysates, taken from the market or especially prepared for the test, of animal and vegetable origin and with significantly different molecular characteristics were tested and compared with respect to three cosmetic properties: substantivity to hair, reduction of sodium laurylsulfate (SLS) irritation and foaming. Peptide adsorption on hair was evaluated on virgin and damaged tresses after incubation with 2.5% hydrolysate solutions, re-extraction with 50°C hot water and high ionic strength solution and quantification after fluorescamine reaction. Inhibition of induced SLS

skin and eye irritation was evaluated by visual scoring, moisture content of the horny layer (Electric Capacitance, EC) and transepidermal water loss (TEWL) measurements after skin chamber application and by Eytex methodology. Foaming properties were evaluated by standard Ross-Miles method. Molecular size, net charge and hydrophobicity were studied as important parameters affecting these cosmetic properties and were related to the origin of hydrolysates and the characteristics of the manufacturing process.

A.O. Barel, *P. Clarys*, *A. Romsée*, *B. Wessels*, **Misurazioni ellectriche non invasive per la misurazioni dell´idratazione dello strato corneo: confronto tra misure di capacià (capacitanza) e di conductibilità**, Cosmetics & Toiletries 04/92

La misura dell'idratazine dello strato corneo è un fatto importante nella ricerca dermo-cosmetica.

V. Rogiers, **Capacitance and TEWL Measurements: The Need for Standardisation,** Dep. of Toxicology, Vrije Universiteit Brussels

Stratum corneum moisturisation can be assessed both *in vivo* as well as *in vitro*. The past few years, several practical, simple, quick and non invasive in vivo methods based on the electric and di-electric properties of the skin have been developed. Interest for such techniques is broad and varied: for example for dermatological research (regional variations, ageing, burns, etc.) and also in efficiency tests of the hydrating capacity of dermato-cosmetic preparations on human volunteers.

R. Wolf, E.Tur, D. Wolf, M. Landau, **The effect of smoking on skin moisture and on surface lipids,** International Journal of Cosmetic Science 14/92

In the present retrospective study we investigated the effect of smoking on the moisture and surface lipid levels of the skin. We analysed data from the files of 576 female clients treated in a Tel-Aviv cosmetic parlour. Measurements have been conducted by the same cosmetician, by commercially available equipment, on every client receiving cosmetic treatment, regardless of the nature of the treatment. Results demonstrated a significant difference of skin moisture in the various smoking groups: women who smoked 11-20 cigarettes per day showed significantly lower mean values than the non-smoker group, as expected. Moreover, women before or after menopause showed no significant differences in their moisture measurements. The surface lipid variables showed no significant differences in mean over the four smoking groups. We believe that the objective of the study was achieved, and that the results, indicating decreased skin moisture in smokers, will serve well in anti-smoking campaigns. We also believe that the present study will stimulate other investigators to conduct similar studies that will provide answers to many questions which still remain open.

D. Wilhelm, P. Elsner, H.I. Maibach, **Standardized Trauma (Tape Stripping) in Human Vulvar and Forearm Skin**, Acta Derm Venereol (Stockh) 1991; 71: 123-126

Mechanical trauma to genital skin may favor the transmission of sexually transmitted diseases. To study differences between vulvar and forearm skin in epidermal repair after standardized trauma, transepidermal water loss, capacitance and pH of forearm and vulvar skin in 10 healthy premenopausal women were monitored for 7 days after a standardized trauma induced by tape stripping to glistening. Vulvar and forearm skin showed similar responses immediately after tape stripping: a sudden increase in transepidermal water loss and capacitance. Forearm skin, however, reacted more intensely than vulvar skin; forearm skin readings remained significantly higher than normal values for 2 days after tape stripping, whereas vulvar skin readings were not significantly different from normal. Thus, vulvar skin did not respond as extensively as forearm skin, presumably because it is a less complete barrier against excess body water loss. On the other hand, vulvar skin seemed to recover faster from skin damage than forearm skin, probably because of its higher epidermal cell turnover.

Vittel continue d'innover: création d'un Espace Beauté et d'une Centre de Dermo-Cosmétologie, Vittel Magazine, N° 29, 1991

Sous la galene thermale à quelques pas griffon de la Grande Source dans le prolongement des Thermes dont la restructuration a été réalisée.

P. Agache, *P. Creidi*, *B. Faivre*, **Assessment of skin hydration and softening effects of colloidal oat fraction containing cream**, J. Appl. Cosmet. 1-6, Jan.- March 1992

A concentrated colloidal oat fraction in a O/W cream has been compared with a reference O/W emollient cream for stratum corneum hydrating and skin surface softening effects in a double-blind randomized study in 10 healthy female volunteers whose skin had been made dry and irritated by repeated applications of sodium dodecylsulfate.
Stratum corneum hydration was assessed through conductance measurements. Skin surface

smoothness was evaluated through a visual plus tactile subjective assay and by profilometry of skin surface casts. All methods demonstrated recovery of the skin following one week's treatment with either product. This improvement was sustained a week later. It is concluded that the tested oat extract enriched cream has a hydrating and softening effect on the skin surface which is "similar or superior to that of a conventional O/W strongly moisturizing cream".

D. van Neste, **Evaluation d'état Fonctionelle de la peau par des methodes non invasives**, Skinterface, Blgium 1991

Intérêt des mesurees capacitance, de perte transépidermic d'eau, de flux sanguin et de leur évaluation combinée pour quantifier des processus inflammatoires cutanés chez l'homme.

D. van Neste, **Comparative study of normal and rough human skin hydration in vivo: Evaluation with four different instruments**, Journal of Dermatological Science, 1991

Appropriate monitoring of skin hydration during clinical and/or experimental trials needs devices with acceptable reproducibility and sensitivity under conditions ranging from increased, and normal to low hydration. The aim of this study was to compare the variation of electrometric data generated by 4 different instruments (Skicon Hygrometer, 2 CM420 and a CM820 corneometer) in normal and experimentally damaged skin displaying surface roughness. Rough skin sites were observed during the healing process after repeated tape stripping of stratum corneum in humans (e.g. 10-14 days after insult). They displayed lower conductance and /or capacitance levels as compared to normal skin sites of the same subjects. The Skicon hygrometer showed higher variability as compared to the corneometers and was less sensitive, in relative terms, in the rough skin sites. This device also showed a moderate zero drift and re-zeroing was repeatedly utilized during the experiment. When the corneometer data were plotted against the hygrometer data, the slope of the regression line generated by the CM420a was different from CM420b and from CM820; the two latter were not significantly different from each other. Hence, comparison of absolute data obtained under comparable conditions (in this case CM420a and CM420b) in a single laboratory should not be made without prior calibration. Standards for evaluating interinstrumental variation are currently unavailable. This aspect of the measurement of electrical properties of the skin has not been investigated in great details and has often been neglected in the past. Our findings also indicate that a constant control over the performances of a particular device should further improve the reliability of the data.

A. del Pozo, *C. Cosa*, **Dispensacion dermofarmaceutica: Apoyo technologico al rol del Farmaceutico**, Departemento de farmacia, Unitad docente de Farmacia Galenica, Universidad de Barcelona, 1991

El concepto "dermofarmacia" resulta en ocasiones, poco preciso, resultando a veces difficil delimitar su contenido y ámbito de actuación en relación, por un lado, al de la "dermatologia", y por estrictame el extremo opuesto, al dela "comotòlogia".

Check-up Cosmetologique et Biometrologie Cutanée, Actualités Pharmaceutiques, Jul. 1991, Special Dermo-cosmétologie, No. 289

La notion de "Check-Up" cutane a toujours exprime un souci de rigueur pour definir des besoins cutanes et des reponses performantes. Une logique, aujourd'hui scientifique, qui s'assuie sur des connaissances precises de la physiologie cutanee pour interpreter les differents etats de la peau et proposer de veritables methodes de correction; c'est l'avenement d'une cosmetologie de soins, rigoureuse.

R. Böhm, *M. Ghyczy*, *S. Hager*, **The influence of liposomes from Soybean, lecithin on the efficacity of fungicides**, Internationales Symposium über Pflanzenschutz, University Gent/Belgium, 07.05.1991

Lecithin is a mixture of phospholipids and oil that arises during the processing of oil seeds. Phospholipids are components of all living organism. They fulfill two functions: the emulsification of water insoluble substances, for example in blood and in the digestive tract and the formation of compartments as the major component of biological membranes. Phospholipids are one of the most commonly used emulsifiers in foodstuffs. Liposomes are vesicles in water comprised of phospholipids organized in double membranes, the same organization as occurs in biological membranes. Liposomes have become of practical significance in medicine and cosmetics. In this study, liposomes were produced from soya lecithin and were tested in the treatment of grape vines. The liposome dispersion was used as an additive in the spray cocktail at a concentration of 0,4%.

A.O. Barel, *P. Clarys*, B. *Wessels*, *A. de Romsée*, **Non-invasive electrical measurements for evaluating the water content of the horny layer: comparison between capacitance and**

conductance measurements, Abstracts of the Conference on Prediction of Percutaneous Penetration, Brussels, 10.-12.04.1991

The measurement of the hydration state of the stratum corneum is an important factor in dermato-cosmetic research. This parameter is used for characterization of skin surface and for the evaluation of the efficacy of skin moisturing products. Different electrical measurements were developed for studying skin hydration. When applying an alternating voltage to the skin, the horny layer behaves similar to a simple electric circuit where a resistor and a capacitor are connected in parallel. The sensitivity, performance and practical use of one instrument which measures mainly the contribution of the capacitance properties of the skin (**Corneometer**) was compared with an instrument which measures the contribution of the conductance properties of the skin (Skicon). An evaluation of the efficacy of moisturing preparations (O/W and W/O emulsions) on the skin was carried out in vivo using two types of instruments. The influence of environmental factors such as the relative humidity was evaluated by measuring the same skin under increasing relative humidity (from 30 to 80%).

P. Elsner, *H.I. Maibach*, **AT-based Data Aquisition and Analysis System for the Skin Bioengineering Laboratory**, Dermatosen 39, Heft 4 1991

In recent years, bioengineering instruments have found wide application for the non-invasive evaluation of functional properties of human skin. These devices measure transepidermal water loss (evaporimetry), skin hydration (methods based on conduction, impedance, and capacitance), skin blood flow (laser Doppler velocimetry, photoplethysmography), friction (friction meter), and mechanical properties (e.g. twistometer, suction devices), and allow the investigator to generate considerable data which requires documentation and analysis. Although some instruments meanwhile offer interfaces for the transfer of data into personal computers, integrated data acquisition systems supporting the whole spectrum of instruments used in the laboratory are lacking. We have developed an inexpensive data acquisition and analysis system for our skin bioengineering laboratory which allows the acquisition of data from several instruments simultaneously or in sequence. The data are fed into a spreadsheet on a personal computer and conversions and basic statistics are computed automatically. The system consists of an AT-compatible PC with two serial interfaces and an analog-digital conversion board. The software is an industry-standard spreadsheet (Lotus 1-2-3) with an instrument set (Lotus Measure). Using this system, we considerably improved the precision of our measurements and the scientific productivity in our skin bioengineering laboratory.

W.O. Seiler, **Rückfettung: Balsam für die Altershaut**, Moderne Geriatrie, 03/91

Ältere Patienten schätzen oft Wasser und Seife wenig. Sie ahnen vielleicht besser als wir Ärtzte: Wasser, Scheuern und waschaktive Substanzen (Seife, Tenside) zur Hautreinigung entfernen die physiologischen Hautoberflächentenside.

K. Klein, H.-W. Voss, M. Voss, **Untersuchungen zur Oberflächencharakteristik der menschlichen Haut – Teil 1**, Umwelt & Gesundheit aktuell

In der Kosmetik begnügt man sich häufig bei der Beurteilung des Charakters der menschlichen Haut bzw. der Zuordnung zu bestimmten Hauttypen zumeist nur mit einer (subjektiven) visuellen Begutachtung.

P. Elsner, H.I. Maibach, **The Effect of Prolonged Drying on Transepidermal Water Loss, Capacitance and pH of Human Vulvar and Forearm Skin**, Acta Derm Venereol (Stockh) 1990; 70: 105-109

The effect of prolonged drying on transepidermal water loss (TEWL), capacitance and pH of vulvar and forearm skin was studied in 15 healthy female volunteers. A desiccation chamber that absorbed water evaporating from the skin surface was applied to the forearm and labia majora skin daily for 4 days. Skin TEWL, capacitance and pH were measured daily and 4 days after removal of the desiccation chamber at the site of drying and at a symmetrical control site. Under desiccation, TEWL both of forearm and of vulvar skin showed an increase during the first days of drying, followed by a gradual decrease. After 4 days of drying, forearm TEWL was reduced to 91 % of the control value, without reaching significance. Vulvar TEWL was significantly reduced to 80 % of the control value. Although relative reduction of vulvar TEW L was higher than that of forearm TEW L, the absolute value of vulvar TEWL after drying remained significantly higher than that of forearm TEWL. Skin capacitance significantly decreased under drying both in forearm and vulvar skin. Skin pH was significantly reduced by drying at the vulva, but not at the forearm. It is concluded that although changes in physiological parameters during drying seem to be more pronounced in vulvar than in forearm skin, differences suggest that the specific properties of vulvar skin are not explained by anatomically related occlusion alone.

D. Doughty, J. Jamillo, E. Spengler, **Methods for Assessing the Mildness of Facial Cleansing Products**, 16th IFSCC Congress, New York, 1990

The mildness of a facial cleansing product was assessed in studies using exaggerated use conditions on the forearm as well as on the face.

V. Rogiers, M.P. Derde, G. Verleye, D. Roseeuw; **Standardized Conditions Needed for Skin Surface Hydration Measurements,** Cosmetics & Toiletries, Vol. 105, October 1990

Stratum corneum moisturization can be assessed by various in vitro and in vivo instrumental testing techniques. Simple, quick and noninvasive in vivo methods based on the electric and dielectric properties of the skin have been developed. Methods working in the lower part of the MHz zone seem to be very useful. A comparison between two commercially available electrical methods, measuring electrical conductance (Skicon-100) and electrical capacitance (Corneometer CM 420) respectively, showed that both are very suitable methods for measuring the hydration state of the superficial epidermis.

F. Pouzaud, **Pharmaskin ou la reconquête de la cosmétologie**, PraxiPharm, 04.10.1990

K.H. Schrader, **Criteria for practical dermatophysiological investigations of soaps and detergents**, Parfümerie + Kosmetik, 10/90

To begin with the aim of skin and hair cleansing is treated also from the physico-chemical point of view. Then the advantages and disadvantages of syndets and soaps are brought out. The effects of surface-active agents on skin and hair are described. In the main part field efficacy tests are discussed in detail. First of all the general prerequisites for these tests are described taking into special account the climatic influences. In particular, simulated skin cleansing tests are presented as well as the determination of methylene blue adsorbed to the skin. Moreover, the measurement of transepidermal water loss caused by the action of surfactants is explained and an in-vitro test estimating the compatibility with the ophtalmic mucosa is described. The investigation was carried out with a number of well-known surfactants of different chemical structures. In the tests molar concentrations were compared instead of the actual concentrations. The results are explained and interpreted in detail with special regard to the interdependence of all results obtained. This leads to the conclusion that it seems appropriate to compare a number of dermatophysiological parameters in order to eventually judge the effect of these products on the skin.

Frank Hevert, **Kenngrößen eines betrieblichen Hautreinigungsmittels**, Arbeitsmedizin, Sozialmedizin, Präventivmedizin, 08/90

G. Jemec, **Relation between scaling evaluated by the D-SQUAME™ Tape and skin hydration evaluated by capacitance measurement**, 8th international symposium "Bioengineering and the skin", Stresa / Italia, June 1990

A.B. Cua, *H.I. Maibach*, *K.P. Wilhelm*, **Elastic properties of human skin: relation to age, sex and anatomical region**, Dermatologica Research, 1990

Using a recently developed noninvasive, in vivo suction device for measuring skin elasticity, we evaluated age, sex, and regional differences in the visco-elastic properties of skin. A total of 33 volunteers participated in the study consisting of (a) 8 young females, (b) 9 old females, (c) 8 young males and (d) 8 old males. Measurements were performed on 11 anatomical regions; three different loads were applied: 100, 200, and 500mbar. The parameters used were: immediate distension (Ue); delayed distension (Uv); immediate retraction (Ur) ; and, final deformation (Uf).
To compare between subjects and anatomical regions, relative parameters independent of skin thickness were calculated: Uv/Ue, the ratio between the viscoelastic properties of skin and immediate distension, and Ur/Uf, which measures the ability of the skin to regain its initial position after deformation. Generally, Uv/Ue increased while Ur/Uf decreased with aging. Responses were variable with respect to load applied. Variability, within anatomical regions was also noted. However, differences between the sexes were not statistically significant for most regions. These findings are in congruence with earlier studies suggesting the differences are mainly attributable to alterations in the elastic fiber network. This procedure provides a simple, quantitative assessment of elastic properties of the skin. Its application may help in future investigations of other connective tissue disorders.

C. Artmann, *M. Ghyczy*, *H.G. Pratzel*, *J. Röding*, **Influence of various liposome preparations on skin humidity,** Parfümerie + Kosmetik, 05/90

The influence of similar liposome dispersions with varying phospholipid composition on the hydration of the skin was investigated by measurements of the capacitive resistance in human skin. The phospholipids influence the hydration behaviour of the liposomes on the skin.

V. Rogiers, **Assessment of skin surface hydration: the need for standardized conditions in capacitance measurements,** Lecture held at the congress of CIE Cosmetic Ingredients Europe, 21.-23.03.1990, Wiesbaden

The practical usefulness of the CORNEOMETER CM 820, a commercially available apparatus for measuring stratum corneum moisture content, has been evaluated on the skin of normal volunteers. Factors such as cleaning procedure intragroup and regional variations, temperature and humidity have been examined. Under well-defined conditions of skin cleaning, environmental temperature and relative humidity large site-to-site variations occurred. However when selected areas, 1/4, 2/4 and 3/4 on the forearm, were studied, constant hydration values were measured for the individual spots for at least 1 month, although they differed significantly among each other. On the contrary, corresponding areas on the right and left forearm had exactly the same hydration value for at least 1 month. When the efficacy of moisturizing creams has to be tested, well-defined areas of one forearm may serve as controls, whereas on the corresponding areas of the other forearm the samples may be applied. Age seemed to be an important additional factor influencing skin hydration, whereas gender had no effect. When the efficacy of moisturizing creams was tested it appeared that some w/o creams had a significantly higher effect than o/w creams and this was dependent on the skin type involved. Creams with 10% glycerol exhibited significantly higher hydration values than those without. In conclusion, simple capacitance measurements are very useful for assessment of skin surface hydration on the condition that standardized conditions are rigorously taken into account.

Celleno, **Valutazione dermatologica dei prodotti per la detersione della cute,** Cosmesi Dermatologica, 30/1990

The authors report the results and the methods of the dermatological and cosmetological evaluation of 16 solid products for cleaning the skin (traditional soaps, neutral soaps, syndets).There is a growing need for valid and reliable tests to evaluate the cosmetic properties and the safety of cosmetics. Data obtained in this field will contribute to the protection of both the consumer and the cosmetic industry.

A.O. Barel, **Protocole of the experimental determinationof the efficacy of hydrating products on the human skin by measurements of the hydration of the horny layer with a Corneometer CM 820 PC (Courage + Khazaka)**, Vrije Universiteit Brussel, Algemene Biologische Scheikunde, Brussel 1989

K.-H. Schrader, **Optimierung eines kosmetischen Pflegeproduktes auf die menschliche Haut,** H+G Zeitschrift für Hautkrankheiten 12/89

After explaining the idea and purpose of cosmetic products, we report on the course of development these products usually take: marketing briefing, selection of the raw materials, serial experiments and stability tests, and finally, dermatophysiological efficacy tests. In particular, we deal with the application of adenosine triphosphate (ATP) and its moisturing and smoothing effect on human skin. Our results are discussed in details.

M. Rieger, **Skin, water and moisturization,** Cosmetics & Toiletries Vol. 104, 12/89

The well-know British dermatologist, John Cotterill, recently (Int. J. Dermatol. 27 (X), 682-683 (1988)) took cometic publications (and the industry) to task for providing conflicting messages.

D. van Neste, *L. Ghys*, *J.L. Antoine*, *J.P. Riboux*, **Pharmacological modulation by Cetirizine and Atropine of the Histamine - and Methacholine- Induced wheals and flares in human skin,** Skin Pharmacology Reprint, Vol. 2 No. 2 (pp. 93 - 102) 1989

This study was planned to verify wether different methods for the measurement of skin reactivity, i.e., wheal and flare area, wheal trickness, skin capacitance and transepidermal water loss, were or were not able to discriminate between intradermally injected agonists (histamine and methacholine). For evaluating agonist/antagonist interactions, we adopted a cross-over, double- blind, placedo-controlled study designed to compare the effects of cetirizine and atropine. The intradermal injection of agonists elicited the appearance of wheal and flare reactions and, after histamine, the skinfold thickness was significantly increased. Skin capacitance and transepidermal water loss measurements reflected sweat gland activation after methacholine injection but were, respectively, not or less affected by histamine dry skin prick test or saline; hence, both methods appear very sensitive for in vivo testing of cholinomimetic agents. Cetirizine inhibited all the specific skin modifications induced by histamine challenge, wheals,

flares and increase thickness, without affecting the methacholine-induced perspiration. This would further support the H1 specificity of this anti-H1 agent in vivo. However, at the agonist/antagonist ratios tested in view of the safety of the test persons, we were unable to objectivate methacholine blockade by atropine.

S. Bonazzi, *G.C. Gazzaniga*, **Skin plastoelasticity modifications due to application of a reconstructed moisturizing compound,** 3rd international congress on cosmetic dermatology, Wien, 27.-29.10.1989

P. Elsner, H.I. *Maibach*, **Ein PC/AT - gestütztes Datenerfassungssystem für das Hautphysiologielabor,** Workshop "Computer in der Dermatologie", 6.10.1989

Für die quantitative Untersuchung physiologischer Parameter des Hautorgans wurde eine Reihe nichtinvasiver Methoden entwickelt, die Anwendung v.a in der Dermatopharmakologie und der Dermatotoxikologie gefunden haben. Zu diesen Methoden zählen die Evaporimetrie zur Messung des transepidermalen Wasserverlustes, konduktive und kapazitative Verfahren zur Messung des epidermalen Wassergehaltes und die Messung der Hautdurchblutung mittels des Laser-Doppler-Verfahrens. Die Reproduzierbarkeit von Evaporimeter- und Laser-Doppler-Messungen wird durch dynamische Veränderungen der Meßgrößen beeinträchtigt. Ferner fallen bei experimentellen Studien mit den genannten Geräten erhebliche Datenmengen an, deren manuelle Erfassung unökonomisch ist. Wir haben daher ein Datenerfassungssystem emtwickelt, mit dem die Meßwerte von Hautoberflächen-Thermistor, Evaporimeter, Kapazitometer, pH-Meter und Laser-Doppler direkt in ein Spreadsheet auf einem PC eingelesen und sofort statistisch ausgewertet werden können. Hardwareseitig besteht das System aus einem AT-kompatiblen Computer mit 2 seriellen Schnittstellen und einem Metrabyte DAS-16-A/D-Board, das die simultane Erfassung von bis zu 16 Datenkanälen erlaubt. An Software werden Lotus 1-2-3 und Lotus Measure eingesetzt. Der Aufbau des Systems und Einsatzmöglichkeiten werden erläutert.

F. Hevert, *U. Stelbrink*, *B. Bush*, *K.H. Schrader,* **Hautschutz mit abdruckfreier Hautcreme,** Arbeitsmedizin, Sozialmedizin, Präventivmedizin, 10/89

A new barrier cream without lipids in the formulation is particularly suited for skin protection of workers in the fields of electronics and light engineering. In addition the cream protects the components and articles to be worked on: no fat- or- silicone-oil containing fingerprints are transferred. Excellent skin-tolerance, high-acceptance, easiness on the skin and healing properties on already damaged skin add to the product's attributes. The efficacy was investigated on subjects in industrial plants. Objective data on the protective effect and tolerance were determined experimentally under controlled laboratory conditions.

L. Nogueira, *D. Gabrielle*, **New techniques to assay skin care products,** D & CI 09/88
The skin is a complex organ with numerous functions, some remarkable subtle. Cosmetic products play an important role in maintaining the integrity of the skin, including restoration of the skin's slightly acidic pH (average 5 to 5.5).

Vor Übertreibung wird gewarnt, Stiftung Warentest, 07/89

P. Morganti, *S.D. Randozzo*, **Gli indici di idratazione e di emolienza per la verifica dello stato cutaneo,** Incontri di Cosmetologia No. 3, 07/89

Per la misurazione sia del sebo di superficie che dell'idrazione cutanea ci si è serviti di un sistema computerizzato denominato Dermotest Hytech dato dall'unione del Sebometer SM 810 PC et del CORNEOMETER CM 820 PC, opportunamente collegati ad un PC mediante un adeguato programma di utilizzazione. Utilizzando il Dermotest Hytech è possibile ottenere direttamente sia i valori sebometrici espressi in mg/cm

E. Berardesca, *G. Borroni*, *L. Rigano, G.F. Secchi*, **Valutazioni dermatologiche e misurazioni cutanee nella detersione con latte di soia atomizzato,** Incontri di cosmetologia, 06/89

La detersione come processo di eliminazione dello sporco superficiale e dell'accesso die secrezioni sebacee e sudorifere, di riduzione della carica betterica a microtica epidermaica, di normalizzazione degli scambi cutanei con l'ambiente ha spesso come inconveniente pricipale la dissoluzione del film hydrolipidica e làumento della perdita d'acqua transepidermica (TEWL), la combinatione…[2] che i valori della idratazione cutanea espressi in CV (corneometer values).

Desai, **Kosmetische Spezialprodukte aus nachwachsenden Rohstoffen**, Vortrag anläßlich des SCC

annual meeting, New York, 02.-04.12.1988, Parfümerie und Kosmetik, 6/89

Special cosmetic products bases on regrowing raw materials. Some new cosmetic specialities based on "regrowing raw materials" are introduced. These chemicals are harmless from the toxicological and dermatological point of view. Moreover, they possess interesting cosmetic properties such as gentleness, anti-irritation, emolliency and moisture regulation. The new bio-raw materials presented here offer various possibilities for a wide use in all fields of the grooming cosmetics.

T. Frödin, **Specific determination of epidermal water by optothermal infrared spectometry,** Regional Symposium, Copenhagen, 15.06.89

Optothermal infrared spectrometry (OTIS) is recently introduced technique shown to be useful for assessment of the water content of human stratum corneum in vivo.

C. W. Blichmann, **Effects of single application of a moisturizer,** Regional Symposium, Copenhagen, 15.06.89

Effects of single application of an oil in water emulsion were studied on the forearm skin of 12 healthy volunteers.

A. Winther, **Effects of repeated application of a moisturizer,** Regional Symposium, Copenhagen, 15.06.89

Skin hydration and scale pattern on forearm skin was studied after one week application (twice daily) of a moisturizer (Decubal lotion), with follow-up after one week with no treatment.

P. Morganti, *S.D. Randazzo*, **L´utilizzazione degli indici di correzione per il trattamento cosmetico della cute secca e desidratata,** Il Prodotto Chimico, April 1989

La normale funzione prottetiva della cute è strettamente legata all'azione prottetiva svolta dal film lipidico di superficie che la ricopre come una barriere, difendendola dalle agressioni dell'ambiente esterno, e dal suo contentunuto del acqua, indispensabile per manterla morbida elestica a hydratata.

J.L. Antoine, *J.L. Contreras*, *D. van Neste*, **ph Influence on surfactant-induced skin irritation,** Dermatosen in Beruf und Umwelt, Band 37, 1989, 3, p. 96 - 100

Even though various experimental methods have been proposed for in vitro testing of detergents such as SLS (sodium laurylsulfate) no absolutely relevant clinical information can be inferred from them as to the irritancy of a given compound. In particular the relative importance of pH needs further assessment. This study reports on in vivo evaluation of skin function changes under given experimental conditions with SLS applied at 3 different pH values. There is a dramatic increase of transepidermal water loss (TEWL), i.e. a substantial reduction in the barrier function of the skin, when SLS is applied under occlusion for 48 H. The alkaline control solution (NaOH pH 9) induced low-grade, but significant TEWL increases, as compared to the other controls (distilled water pH7; HCl pH5), which had no influence on TEWL. The changes obtained with the controls were much lower than those observed with SLS. The barrier-function changes induced by the surfactant SLS could, however, promote transepidermal passage of acid and/or alkaline molecules, hence increasing toxic damage of the skin; yet no such effects could be observed, indicating that the main effects are due to detergency. Assessment of cutaneous blood flow values (CBFV) by laser Doppler velocimetry showed increased values after SLS. When pH-adjusted SLS solutions were compared, there was neither a difference in relation to pH nor did the control solutions induce any significant CBFV change. This study reveals that TEWL and CBFV are probably the most reliable methods to investigate acute irritancy by SLS. Accordingly, pH cannot be considered as a major contributive factor of irritancy when SLS solutions are applied under occlusion (48H). The current level of sebaceous secretion and the electrical properties of the skin surface were not parameters to evaluate acute SLS-induced skin damage, but longitudinal studies are presently being conducted in order to assess their significance in monitoring epidermal repair after SLS insults.

M. Rimpler, **Zur Wirksamkeit von Kosmetika, Teil1: Messung der Hautfeuchtigkeit,** Beauty Nr. 2/89

Immer wieder wird die Möglichkeit diskutiert, wie sich Änderungen des Hautorgans sinnvoll erfassen und verwerten lassen.

H. Nougaigui, *J.L. Antoine*, *M.L. Masmudi*, D. *van Neste*, *J.M. Lachapelle*, **Étude invasive et non-invasive du pouvoir protecteur d´une crème siliconée et de son excipient vis-à-vis de l´irritation cutanée induite par le laurylsulfate de sodium,** Ann. Dermatol. Venereol. 116:1989, p. 389 - 398

Invasive and non-invasive studies of the protective effect of a silicone-containing cream and its vehicle on cutaneous irritation induced by sodium laurylsulphate. The purpose of our study was to

evaluate the protective effect of a new silicone-containing barrier-cream (Anthydro TM) and its vehicle (AnthydroTM without silicone) in the prevention of cutaneous irritation by detergents: We therefore planned a study in several stages, using an anionic surfactant well known for its irritant properties: sodium laurylsulphalte (SLS) in aqueous solution. In a first series of experiments, the protective effect of the Anthydro cream against SLS was studied by invasive methods on guinea-pigs in order to determine histologically the protective effect of the cream when a 10 p.100 SLS solution was applied on the skin under occlusion during 24 hours (Square chambersTm, Van der Bend). Typical and reproducible lesions were apparent, and the protected sites were compared with the unprotected sites. In parallel, we used non-invasive methods (conductivity, transepidermal water loss and cutaneous blood flow) to determine in humans the protective effect of Anthydro cream in comparison with unprotected sites after application during 24 hours of patches soaked with a 5 p. 100 SLS solution on the foreams of 13 adult and healthy volunteers (Silver patch testsTm, Van der Bend). In both experiments the Anthydro cream was effective in reducing the SLS- induced cutaneous irritation. In a second series of experiments, the Anthydro barrier-cream was compared with its "base" (Anthydro without silicone) in terms of effectiveness, following the same experimental procedure (invasive on guinea-pigs, and non-invasive on humans). The base was shown to be effective in protecting against irritation. However, the histological lesions were less intense when the skin was protected by Anthydro than by its vehicle. Concerning the non-invasive methods in humans, no signifiant statistical differences appeared in the measurement of various parameters between the sites protected by Anthydro and the sites protected by the vehicle. These results lead us to suggest the existence of an essentially mechanical protective effect in which the silicone plays a very small part in terms of effectiveness. These experimental results necessitates further investigations to be extrapolated to occupational conditions without test performed in industries and well-conducted epidemiological investigations.

K.-H. Schrader, S. Bielfeld, **Vergleichende experimentelle Untersuchungen zwischen Hautoberflächenprofil und der Hautfeuchtigkeit,** Parfümerie und Kosmetik, Nr 2/89
Kosmetische Wirkungen von Pflegeprodukten an der menschlichen Haut sind oft sehr gering und demzufolge auch nicht so einfach nachzuweisen. Häufig ist es deshalb nicht möglich, diese geringen Veränderungen anhand eines Prüfkriteriums zu dokumentieren. Zu den wichtigsten Parametern zur Charakterisierung der kosmetischen Hautwirkungen ist die Hautrauhigkeit sowie die Hautfeuchtigkeit von großer Bedeutung.

P. Nissen, **Physikalische Meßmethoden in der Kosmetik,** Kosmetik International, p. 18 - 22, 11/1988
Bei der Anwendung physikalischer Meßmethoden in der kosmetischen Praxis sind grundsätzliche Gesichtspunkte zur Messung sowohl hinsichtlich der Methoden als auch der Versuchsdurchführung zu beachten. Die anwendbaren Meßverfahren sollten einfach und ohne großen technischen, personellen und finanziellen Aufwand möglich sein. Diese Bedingungen werden von einigen Meßgeräten erfüllt. Mit ihrer Hilfe kann in kurzer Zeit eine exakte Hautdiagnose gestellt und die kosmetischen Wirkansprüche bestimmter Produkte überprüft werden.

K.-H. Schrader, *S. Bielfeldt*, **Die Beeinflussung der Hautfeuchtigkeit und Hautglätte durch den Biokatalysator Adenosintriphosphat (ATP),** Ärztliche Kosmetologie,1988, 372-378
Sehr geringe Mengen ATP-Dinatriumsalz (0,005%, 0,05%) wurden in einem feuchtigkeitsspendenden Gesichtstonic eingesetzt. Gemessen wurde die Beeinflussung der Hautfeuchtigkeit und der Hautglätte. Obwohl die Grundlage erwartungsgemäß bereits befriedigende Wirkungen, insbesondere was die Hautfeuchtigkeit anbelangt, erzielt, führt der Zusatz sehr geringer Mengen ATP noch zu einer dramatischen Wirkungssteigerung.

Blichman, *J. Serup*, **Assessment of skin moisture measurement of electrical conductance, capacitance and transepidermal water loss,** Acta Derm Venereol 1988
Experiments on skin moisture were undertaken using three different equipments, i.e. the Skicon 100 and Corneometer CM 420 hydrometers, and the ServoMed EP1 evaporimeter. Studies included ten healthy volunteers. Water was applicated to test sites on the forearm and the palm of the hand, and effects monitored by the three methods. Parallel increases in conductance, capacitance and transepidermal water loss were registered lasting about five min. The Skicon-100 was more sensitive for measurement of increased hydration while the Corneometer CM 420 might be more sensitive for measurement of decreased hydration. Inter- and intra- individual variations were minor with all instruments. According to reproducibility studies the Corneometer CM 420 was more accurate than the Skicon-100. Technical experiments indicated that the Corneometer CM 420 depicts changes of hydration down to a depth of 0.1 mm while the Skicon-100 measures very superficially. In conclusion,

both hydrometers were relevant and valid for assessment of skin moisture. The methods are supplementary, and their combined use is recommended.

Fiorentini, *Becheroni*, *Iorio*, **Hyaluronic acid: analytical procedures for purity determination, polymerization degrees and comparative instrumental tests "in vivo",** International Journal of cosmetic science 26.29/09/88

Recent studies have shown that hyaluronic acid is an important molecule in cosmetics, although there are different, sometimes controversial theories about its role. This work is an analytical contribution to the characterization and a control of hyaluronic acid. The main techniques used are UV, GCP or SEC, IR and corneometry. Surveys conducted with the aid of these techniques have allowed a better knowledge of the molecular weight determination and of the uniform quality of commercial supplies. These procedures may be of application for quality control and promote further investigation on the biological tissular role played by hualuronic acid in topical cosmetic products. The analytical results of a study of the evaluation of oil/water (o/w) emulsions containing hyaluronic acid of different origins are reported. The analytical data obtained from cutaneous hydratation control apparatuses were compared statistically. The choice of hyaluronic acid, made through screening and evaluation by the above-mentioned techniques, ensures the optimal formulation of the finished product and a quality standard of the active principle.

H. Tronnier, **Die Haut als Grenzschicht,** Kosmetik International 8/88

Als äußere Begrenzung des Organismus ist die menschliche Haut wie kein anderes Organ Umwelteinflüssen ausgesetzt. Eine seiner wesentlichsten Aufgaben ist es, diese Umwelteinflüsse abzuwehren, zu neutralisieren oder soweit zu modifizieren, daß sie den Organismus nicht gefährden. Einen Teil insbesondere akuter Schädigungen vermag die Haut über verschiedene Rezeptoren, die sie insgesamt auch zu einem Sinnesorgan machen, zu erkennen. Gegen andere, insbesondere relativ schwache und chronische Noxen vermag die Haut mit Anpassungsvorgängen, erwähnt sei nur die Hornschichtverdickung oder die Pigmentbildung, zu reagieren. In dem Thema "Die Haut als Grenzschicht" möchte ich zu drei Komplexen Stellung nehmen, die entweder zurzeit zum Teil kontrovers diskutiert werden oder von denen ich glaube, daß sie thematisch aus Ihrer Arbeitsrichtung von Interesse sein könnten.

D. van Neste, *J.L. Antoine*, **A vehicle controlled study of the effects of hydrating agents in a human model of rough dermatitic skin,** Bioengineering and the Skin, 4/1988

Rough dermatitic skin (RDS) sites induced by sodium laurylsulphate (SLS, aqueous solutions at 10%,5% and 1% left under occlusion for 48 hours, distilled water served as a 0% SLS control; ten subjects) showed increased transepidermal water loss (TEWL) and increase cutaneous blood flow values (CBFV) which lasted from day 1 to days 5 to 7. There were no significant changes of skin electrical properties (COND) 24 hours after removal of the SLS patches. However, this lag phase was followed by a gradual decrease of COND (days 2 to 5). Normal COND values were again recorded around day 7 after the initial insult, along with elimination of the superficial SLS induced flake. COND was correlated with clinical scores of roughness. Finally, almost complete recovery of RDS was observed by day 10 with normal TEWL, CBFV and COND. A time course study of TEWL, CBFV and COND showed epidermal repair after daily topical treatment with the vehicle alone tested or the vehicle with hydrating agents (HA) (10% urea and 5% lactic acid).When compared with untreated skin or vehicle treated RDS patches, COND was higher at HA treated sites. Under the experimental conditions proposed in this study, COND did not reflect the acute changes of barrier function of the skin as accurately as TEWL or CBFV measurements. It generated a signal closely related to the feeling of roughness, hence allowing instrumental monitoring of the epidermal healing underneath the superficial scale. Finally, it provided quantitative data in relation to substantivity of topically applied hydrating agents onto experimentally induced RDS in human skin.

E. Beradesca, *H.I. Maibach*, **Racial Differences in Sodium Lauryl Sulphate induced cutaneous irritation: black and white,** Contact Dermatitis 18: 65-70, 1988

The different reactivity of black and white skin after exposure to sodium lauryl sulphate (SLS) has been investigated. 9 white and 10 black male volunteers entered the study. The tests were performed on the back at 3 sites: untreated skin, skin pre-treated with occlusion and skin pre-delipidized. Irritant reactions were elicited applying 0.5% and 2.0% SLS via Finn chamber patch tests and monitored by means of laser Doppler velocimetry (LDV), transepidermal water loss (TEWL) and stratum corneum water content (WS).
Higher TEWL, LDV, and WC values were recorded for 2.0% SLS when compared to 0.5% SLS and baselines. Pre-treatment with short-term occlusion generally increased values, while delipidization

produced flattening of the data more detectable in whites than in blacks. Significant TEWL differences for two concentrations were recorded in whites for the occluded site (P<0.02) while in blacks in the untreated (P<0.04) and delipidized (P<0.03) sites. LDV revealed significant changes in the untreated and pre-occluded white skin (P<0.05 and 0.01, respectively). In blacks, the values were significantly different only in the pre-occluded skin (P<0.01). Water content correlated with the visual score and was greatly increased in sites with strongly positive reactions (P<0.01). It appears that there are significant differences in the modulation of irritation, in the behaviour of water barrier function and of the erythematous response between blacks and whites. Clinical correlations are discussed.

A.O. Barel, P. Clarys, B. Wessels, R. van Straat, **Quantitative Biophysical Measurements of the Mildness Properties of Cleaning and Detergent Products in Hand Immersion Test**, Algemene en Biologische Scheikunde, Vrije Univerteit Brussel, Belgium

Hevert, *Berz*, **Händewaschen ohne Wasser,** Arbeitsmedizin, Sozialmedizin, Präventivmedizin, 1987

Within the feasibility stage of ORDET (Prospective Study on Hormones and Diet in Breast Cancer Etiology) a reproducibility study on the measuring of cutaneous sebum has been carried out. The Schwarzhaupt SM410 Sebumeter was used for the assessment of the sebum production. 11 measurements were taken from the forehead, back and nape over 36 hr. period, on 9 women ranging in age from 28 to 61 years. A good reproducibility was observed for all measurements and sebumeter discrimination capacity for different levels of sebum production appears particularly high for the forehead. The use of forehead sebum measurement has proved to be suitable for epidemiological studies.

Morganti, *Randazzo*, *Cardillo*, **Role of insoluble and soluble collagen as skin moisturizer**, J. Appl. Cosmetol. 10-12/1986

The normal state of skin hydration depends mainly on the water content present at the stratum corneum level. In order to evaluate the water-binding property of soluble and insoluble animal collagen, and in order to compare its abilities in cutaneous hydratation, both the long and short-term water-binding capacity of human skin was tested "in vivo". First data shows that the presence of soluble native collagen is indispensable in order to obtain a long-lasting hydrating effect.

Dikstein, *Katz*, *Maibach*, **Instruments for measuring stratum corneum moisture content**, International Journal of Science,289-292, 1986, 8

Tronnier, **Dermatologische Bewertung von Kosmetika und Körperpflegemitteln,** Ärztliche Kosmetologie, p.374-398, 1987

The practitioning dermatologist is interested in body care products and cosmetics because of their potential side-effects which may be allergic or primarily toxic. In view of skin physiology also cosmetics and body care products having special effects, such as light and skin protective preparations, deodorants and antiperspirants, dandruff and hair removing products, washing products and preparations which are supposed to have an anti-wrinkle effect on the skin, are of interest to the dermatologist. These preparations claiming a certain effect are opposed to the series of cosmetics which to some extent also make this claim, but on the whole have general effects such as improvement of the hydration of the horny layer and influence on the pH-value of the skin effects which, however, are also assigned to some special products.
These preparations contain a number of active substances the effects of which are at least controversial and often difficult to prove. So, it is pointed out to the fact that just in case of body care products and cosmetics the effect of the basic substances used is essentially responsible for the effects of care.

M. Gloor, *M. Gehse*, *E. Wölfle*, **Beeinflussung der Hornschichtfeuchtigkeit durch waschaktive Substanzen,** Ärztliche Kosmetologie, 15/1985

Bei 32 hautgesunden Versuchspersonen wurde der Wassergehalt der Hornschicht vor und nach Anwendung einer 3-bzw.6%igen Tensidlösung (3mal täglich über 4 Tage) bestimmt. Bei weiteren 20 gesunden Versuchspersonen wurde die gleiche Untersuchung mit einer 3-bzw 6%igen Seifenlösung vorgenommen. Die Messungen erfolgten mit Hilfe der Infrarotspektroskopie und der Kapazitätsmessung der Hornschicht. Eindeutig war mit beiden Methoden ein Dehydratationseffekt sowohl durch die Seife als auch durch die Tensidlösung nachweisbar, der bei der Tensidlösung quantitativ weitgehend unabhängig von der Konzentration der waschaktiven Substanzen war, bei der Seifenlösung jedoch bei der 6%-Lösung weniger ausgeprägt als bei der 3% Lösung. In der zweiten Stunde nach der letzten Waschung kam es nach Anwendung der Tensidlösung zu einem deutlichen Rehydratationseffekt, der nach Anwendung der Seife nicht in gleichem Ausmaß zu beobachten war. Der Rehydratationseffekt war

unabhängig von der Konzentration der waschaktiven Substanz. Beim Vergleich der Methoden erwies sich der Rehydratationseffekt als eindrucksvoller, wenn man die infrarotspektroskopischen Meßwerte zugrunde legte. Wie infrarotspektroskopische Untersuchungen nach Strippen der Haut zeigen, erstreckt sich die Dehydratation der Hornschicht nur auf deren oberflächlichste Anteile.

Simon, **Cosmetic effect in relation to hydration of the skin proved by changed electric conductivity,** Ärztliche Kosmetologie, p. 256-259, 1984

Several skin care products have been investigated. The skin resistance was measured with a dermotest apparatus. Computer processing revealed that complex cosmetic treatment causes a decrease of skin resistance (i.e. an increase of the skin hydratation) as compared to the control side.The results are supported by the opinions of the treated subjects.

Y. Werner, **The water content of the stratum corneum in patients with atopic dermatitis**, Acta Derm Venereol 66:281-284, 1984

K. Mosler, **Hautfeuchtigkeitsmessung – kein Problem mit dem Corneometer CM 420,** Parfümerie + Kosmetik 64, 1983, p. 375-379

Der Hydratationsgrad der Hornschicht – das Stratum Corneum – und auch seine Beeinflussung durch Pharmaka und Kosmetika spielen eine wichtige Rolle, nicht nur in der Dermatologie, sondern auch in der allgemeinen Körperpflege

K.-H. Schrader, **Untersuchungen wasserretinierender Kosmetika auf der Haut,** Parfümerie + Kosmetik 62, 1981

Mit dem Corneometer zur Bestimmung der aktuellen Feuchtigkeit der oberen Hautschichten gelingt es, kosmetische Produkte auf ihren Hydratationseffekt - besonders im Stratum Corneum- zu überprüfen. Für diese Untersuchungen wurden eine W/O-Emulsion, eine O/W-Emulsion sowie ein Gesichtswasser herangezogen, die zugleich mit einem entsprechenden Wirkstoff der Haut auch Wasser zuführen. Es wurden alternativ geprüft - neben dem jeweiligen Placebo: Harnstoff, Desamidokollagen, Natriumsalz der Pyrrolidoncarbonsäure und Kollagenhydrolysat. Der Effekt bei einigen Wirkstoffen zeigt auch bei 120 Minuten nach der Applikation noch deutlich erhöhte Werte gegenüber der Kontrolle, während bei anderen eine Exsikkation gemessen wurde. Die Resultate dieser Prüfungen lassen weitere Untersuchungen mit anderen Wirkstoffen sinnvoll erscheinen.

H. Tronnier, **Differenzierte Feuchtigkeitsmessungen an der menschlichen Haut,** Ärzliche Kosmetologie 308, 1980

Differentiated moisture measurements on human skin are carried out by means of the demonstration of resonance frequency measurements, resistance measurements and condensor methods. Furthermore, the importance of applying the appropriate base in therapy and cosmetics depending on the individual hydration condition is demonstrated.

H. Tronnier, **Meßmethoden zur Prüfung kosmetischer Präparate und Grundstoffe,** Parfümerie + Kosmetik 61, 1980, p. 421 - 433

Unsere Kenntnisse über Reaktionsabläufe in der menschlichen Haut, insbesondere auch über die, die Schutz- und Abwehrfunktionen des Hautorgans bedingen, sind dem Dermatologen zum Teil aus pathologischen Störungen, also dermatologischen Krankheitsbildern, geläufig.