Courage + Khazaka electronic GmbH
Mathias-Brüggen-Str. 91 * 50829 Köln, Germany
Phone: +49-221-956499-0 * Fax: +49-221-956499-1

Literature List
Skin-Glossymeter

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.

M. Gorcea, M.R. Davis, J. Anderson, **Tranexamic acid: next-gen skin depigmenting active**, PERSONAL CARE MAGAZINE, March 2024, p. 90-93

Tranexamic acid (TXA) is a traditional hemostatic, anti-inflammatory and antiallergenic ingredient used as an oral supplement for treatment of melasma. Recently, it is used in topical cosmetic and dermatological applications for skin pigmentation disorders and vascular related pigmentation issues.1'7 ViaDerm® TXA (INCI: Tranexamic acid) is a next generation skin depigmenting active that delivers a multi-targeted mode of action to address multiple concerns of skin pigmentation. Its biological mode of action impacts plasminogen/plasmin activity associated with melanogenesis and angiogenesis pathways. In vivo clinical efficacy study results demonstrate that it lightens dark spots/hyperpigmentation, imparts an even skin tone and enhances skin radiance and brightness. It also reduces red spots and redness associated with vascular pigmentation problems

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.

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 and increase with age. R5 showed a weak negative correlation with age, R2, R7, and sebum content 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.

Q. Wang, Y. Zhong, N. Li, L. Du, R. Ye, Y. Xie, F. Hu, **Combination of dimethylmethoxy chromanol and turmeric root extract synergically attenuates ultraviolet-induced oxidative damage by increasing endogenous antioxidants in HaCaT cells**, Skin Research & Technology, 2023;29:e13539

Background: Repeated exposure to UV generates excessive reactive oxygen species (ROS) and damages the enzymatic antioxidant defense system including quinone oxidoreductase 1 (NQO1) and superoxide dismutase (SOD) in skin. Topical application of antioxidants may prevent the undesired damage of cellular proteins, lipids and DNA in skin. Dimethylmethoxy chromanol (DMC) is a bioinspired molecule, designed to be a structural analog to the γ–tocopherol that is naturally present in vegetables and plants. Turmeric root extract (TRE) is from a plant in South Asia extensively used as a food spice & vegetable, and its main components are turmerones. As both DMC and TRE are strong antioxidants with complementary antioxidation mechanisms, the aim of this study was to investigate the enhanced protective effects of their combination on oxidative damage in HaCaT cells following UVB exposure. Materials and methods: The effects of single and combined administrations of DMC and TRE on the SOD activity of HaCaT cells were evaluated by the SOD assay and qPCR. The NQO1 expression in the UVB-treated HaCaT cells was analyzed by the Western Blot. Furthermore, a clinical test involving 24 subjects was conducted to evaluate the in vivo antioxidation efficacies of the serum formulated with the combination of DMC and TRE at the optimal weight ratio. Results: SOD assay showed that pretreatingDMC or TRE alone could not preserve the impaired HaCaT SOD activity after UVB treatment. DMC and TRE at 1:1 weight ratio was the optimal combination to enhance the HaCaT SOD activity by approximately more than 1-fold compared with either of the single treated groups. No enhancement effect was observed at other mixing ratios. The 1:1 weight ratio was further proved to be optimal as this combination boosted the NQO1 expression by more than 50%, whereas no boosting effect was observed at other mixing ratios. The clinical test of the serum containing this optimal antioxidant combination demonstrated promising in vivo antioxidation efficacies after 4-week use, including 7.16% improvement in skin lightening,18.29% reduction in skin redness, 35.68% decrease in TEWL, 19.05% increase in skin glo ss and 32.04% enhancement in skin firmness. Conclusion: Collectively, our results indicated that the combination of DMC and TRE at 1:1weight ratio attenuated the UV-induced oxidative damage by synergistically boosting endogenous antioxidant enzyme activity in HaCaT cells. Therefore, this optimal antioxidant combination is a promising treatment to boost skin antioxidation defense system.

S. Ham, Y.I. Lee, I.A. Kim, J. Suk, I. Jung, J.-M. Jeong, J.H. Lee, **Efficacy and safety of persimmon leaf formulated with green tea and sophora fruit extracts (BLH308) on hair growth: A randomized, double-blind, placebo-controlled clinical trial**, Skin Research & Technology, Volume 29, Issue 9, September 2023

Background: Recent research suggests that persimmon leaf extract (PLE) has an effect on inflammatory skin diseases. Previously, PLE is revealed to inhibit not only nitric oxide production but also inducible nitric oxide synthase (iNOS) and cyclooxygenase2 (COX-2) expression levels in mouse macrophages in vitro. Moreover, it significantly reduced IL-6 production and 5α-reductase expression in human follicle dermal papilla cells (HFDPCs). This study aimed to determine whether the PLE-containing BLH308 complex improves hair growth in clinical trials. Materials and Methods: A total of 88

participants were recruited, and were instructed to orally take BLH308 or the placebo twice a day for 24 weeks. The mean age of the test group was 38.52 ± 7.98 years and that of placebo group was 38.98 ± 8.80 years. The study was conducted for 24 weeks, and hair density, thickness, and gloss were evaluated. All participants completed a satisfaction survey questionnaire. Results: The test group showed significantly increased hair density and hair diameter at week 24 compared with the placebo group ($p = 0.0015$ and $p = 0.0001$, respectively). Although not statistically significant, the degree of gloss also showed higher improvement in the test group compared to the placebo group. Conclusions: Our data demonstrated that oral consumption of the BLH308 complex containing PLE significantly increased hair density and thickness compared to the placebo group, showing its possible role in promoting hair growth.

Y. Ye, L. Sun, Y. Li, X. Wei, J. He, **The study of permeability, tolerability, and efficacy of a serum containing 12.5% L-ascorbic acid**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Ascorbic acid is a powerful antioxidant ingredient due to its biological functions in maintaining and improving skin health. Maintaining the stability and facilitating percutaneous absorption of ascorbic acid remains the biggest challenge in cosmetics. We designed a serum containing 12.5% pure L-ascorbic acid in powder-liquid separation ampoules with low pH to provide maximum stability and efficacy, and carried out the following experiments: the permeability of L-ascorbic acid in serum was determined by a Franz diffusion cell; the safety and tolerance of serum were tested by 48-hour closed patch test and a 4-week safety evaluation; a 4-week clinical research was finally conducted to verify the efficacy of serum. The ampoules which separated L-ascorbic acid powder from the solution to ensure stability before application, and the low pH of serum after mixing to help percutaneous absorption. The permeation results showed that the serum had better permeability, the serum passed the 48-hour closed patch test and safety evaluation, indicating it was safe and well tolerated. Clinical research demonstrated that 12.5% L-ascorbic acid provided a significant improvement in skin texture, wrinkles and skin color, shown by an increase in skin glossiness, whiteness, elasticity parameters, as well as a decrease in wrinkle parameters.

S. Zhao, Y. Mao, Y. Li, M. Zhang, X. Wie, **In-vitro and in-vivo evaluation on the anti-oxidation and anti-glycation efficacy of a formulation**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Oxidation and glycation are prominent factors contributing to skin aging, characterized by clinical manifestations such as diminished skin elasticity, wrinkles and skin yellowing. Consequently, there is an urgent demand for the development of products that possess dual, antioxidant and anti-glycation properties. In this investigation, we examined the efficacy of a formulation EBE consisting of astaxanthin, sulforaphane, dimethylmethoxy chromanol, decarboxylated peptides, niacinamide, and *Salvia miltiorrhiza* extract in alleviating skin manifestations associated with oxidation and glycation. To assess the effectiveness of EBE, we utilized flow cytometry to evaluate the in vitro scavenging activity of reactive oxygen species (ROS), performed immunohistochemical analysis carboxymethyl lysine (CML) in methylglyoxal (MGO) stimulated glycation models, and conducted clinical studies. The results revealed that EBE exhibited superior ROS scavenging activity in comparison to positive control (alpha-tocopherol). Furthermore, EBE impeded CML induced by MGO, showing a good antiglycation effect in vitro. Human efficacy tests involving 32 Chinese female participants corroborated significant improvements in skin yellowness, wrinkle appearance, elasticity, and proportion of pigmentation area to the application of EBE. The essence EBE developed in this study, incorporating a scientifically balanced amalgamation of antioxidant and anti-glycation ingredients, demonstrates effective mitigation of skin issues attributable to oxidation and glycation.

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.

L. Du, P. Ma, Y. Zhou, X. Cai, L. Shen, G. Huo, **Insights into the inhibition performance of glabridin against melanin via a clinical and in vitro study,** Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Melasma is a common skin disorder characterized by alterations in normal skin pigmentation. Glabridin has been confirmed to have anti-melanogenesis activity in skins. However, the clinical whitening effects of glabridin still remain to be investigated. The present work aimed to elucidate the clinical whitening performance in melasma and non-melasma areas by the whitening serum containing glabridin. Furthermore, the inhibitory mechanisms on melanogenesis of the whitening serum containing glabridin was also evaluated by 3D skin model. The whitening serum effectively improved apparent chromaticity of the melanin model, increased the L* value and regulated the content and distribution of melanin. A 56 day clinical experiment showed that glabridin effectively improved the skin glossiness and ITA value in both melasma and non-melasma areas. Meanwhile, a remarkable reduced melasma area proportion and the melanin content was observed in melasma area and non-melasma area, respectively. This work suggested that a formula containing glabridin could effectively improve pigmentation by 3D skin model and clinical results.

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.

Y. Jiang, Z. Xu, Y. Qiu, X. Zheng, **Comparative study of instrumental measurement and sensory evaluation methods for the repairing effect of mildly damaged hair bundles**, Skin Research & Technology, June 2023

Objective: This study explores the applicability and scientific accuracy of instrument measurements in repairing hair products on slightly damaged hair bundles. Materials and method: Sixty hair bundles mildly damaged with hydrogen peroxide and ammonia standards were divided into two groups: the treatment and control groups (30 hair bundles each). The treatment group used commercial hair care essential oil, whereas the control group used tap water to treat the damage. The two groups were measured using an instrument before and after the product application. The objective indicators included the gloss of hair, along with hair cuticle dynamic friction coefficient, and against hair cuticle dynamic friction coefficient. At the same time, two evaluators conducted sensory evaluations on the gloss and frizz levels of the hair bundles. Therefore, data comparison and verification were carried out together with instrumental measurement data. Results: We verified that the instrumental measurement methods could obtain data trends that are consistent with sensory assessment methods; hence, they have the advantages of accuracy, convenience, and quantifiability. Conclusion: Thus, the instrumental measurement methods we verified can provide objective evidence for the efficacy of hair care products in repairing hair.

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. Uhl, D. Khazaka, A. Pouladi, **Is hair care the new skin care? Use of "classic" biophysical methods for hair & scalp measurement. A review,** EURO COSMETICS, 4-2023

Hair diversity (style, shape, growth pattern or color) is one of the most important features to define us physically. Therefore, it is no surprise that the market of hair care products with a value of 93-5 billion US $ 1 (Statistica, September 2020) is one of the most important sectors in the complete area of cosmetic products. Hair care products for women are the most frequently bought and used cosmetic products of all. Shampoos and conditioners are leading the field. For men, hair care is the most important and favored sector of all cosmetics.

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.

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.

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.

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.

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.

L. Shao, S. Jiang, Y. Li, Y. Shi, M. Wang, T. Liu, S. Yang, L. Ma, **Regular Late Bedtime Significantly 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 significant decrease in skin hydration content, skin firmness (F4) and elasticity (R2), while TEWL, sebum and wrinkle significantly increased. The result indicated that late bedtime significantly 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 significantly, while *Streptococcus*, *Stenotrophomonas*, *Acinetobacter, Haemophilus, Actinomyces* and *Neisseria* decreased signifcantly. In addition, Spearman correlation analysis revealed strong correlations between the microbiota and the physiological parameters. Notably, the abundance of *Pseudomonas* significantly positively correlated with skin firmness and elasticity, but significantly 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.

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.

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.

E. Besic Gyenge, S. Hettwer, B. Obermayer, **Minimal Care – Spa-Feeling für Haut und Haare**, SOFW

Journal 11/21, 147 Jahrgang, 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.

I. Micek, J. Nawrot, A. Seraszek-Jaros, D. Jenerowicz, G. Schroeder, T. Spizewsk, A. Suchan, M. Pawlaczyk, J. Gornowicz-Porowska, **Taxifolin as a Promising Ingredient of Cosmetics for Adult Skin**, Antioxidants 2021, 10, 1625

Active substances, effective in the reduction in or delay of skin changes caused by aging occurring in natural compounds, are desirable. Taxifolin (TXF), a flavonoid of strong antioxidant activity found in the plant Stizolophus balsamita (S. balsamita), has been tested for its biological effects on adult human skin. The aim of the study was to investigate the effects of two creams: 3% S. balsamita extract and 3% TXF on the function of adult skin. In total, 97 Caucasian women with clinical signs of skin aging were investigated. The biophysical and biomechanical skin parameters were measured before and after applying the creams, using Colorimeter CL400, Mexameter MX16, Skin-pH-Meter PH900, Skin-Thermometer ST 500, Glossymeter GL200, and Cutiscan SC100. Patch tests were performed with the investigated products to assess their potential irritant properties. The percutaneous penetration of creams was examined with the use of electrospray ionization mass spectrometry (ESI-MS) and confocal Raman spectroscopy. The 3% S. balsamita extract cream reduced hyperpigmentation, erythema, and elevated pH. All the tested preparations were proven to be nonirritant. A higher penetration rate was revealed for the 3% TXF cream than for the 3% S. balsamita extract cream. A total of 3% TXF cream improved skin viscoelasticity. The obtained results suggested that S. balsamita extract and TXF may be considered as ingredients of skincare products for adults.

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. 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

L. Sanchez, C. Thiebaut, **The natural solution for damaged and curly hair**, PERSONAL CARE, April 2021, p. 57-60

Curly hair has particular characteristics in elasticity and shape that require a special and different care. Curly hair is more fragile than straight hair and therefore requires specific care. Every day, hair is exposed to a series of external aggressions: brushing, friction, straightening treatments, heat irons, colouring, perms, pollution, UV radiation, etc... Ethomega, with high content in Omega 3, is an excellent natural active ingredient for promoting faster and healthier hair growth, nourishing the follicles to stimulate their growth and shine. Ethomega has proven to restore the hair lipids barrier, increase gloss and avoid hair colour fade after UV irradiation, making hair more resistant to breakage and split ends. Ethomega has high concentrations of delta and gamma-tocopherol, difficult to find in other botanical oils. Both PUFA and tocopherol content, shield the hair fibres creating a protective film that prevents protein loss caused by UV damage, retaining moisture, preventing photooxidation, and providing the necessary lipids for the specificities of this type of hair.

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.

C. Uhl, D. Khazaka, A. Pouladi, **"Classic" biophysical methods for hair & scalp**, PERSONAL CARE, March 2021, p. 23-26 and **Métodos biofísicos 'clásicos' de análisis capilar,** Revista técnica de la Industria Cosmética, Perfumería e Higiene Personal, Primavera 2021 No. 018, p. 34-37

Hair is not only strands of horn made mainly of keratin. Hair indicates someone's personal beliefs or social status. The matter of hair care / grooming is not entirely all about women. For men, a well-kept, thick head of hair brings added good looks. However, there is more to it. Nowadays, social media, most of all Instagram, influences different generations. Besides skin, hair is the characteristic attribute for health, youth and attraction. Hair can even be a communication and political instrument. Just take as an example the men who let grow a moustache of their own style every November of a year, the so called Movember, to raise funds for men's health. Plenty of products and treatments are ready to fit the modern hair care market for thin, thick, curly, dry, oily, blonde, coloured, ethnic, young, or old hair. Imagine a claim, the product is already invented. As hair is unique, personalised products

flood the hair care market. Respectively, a great number of claims around the various products exists. Hair care rituals can be complemented with food supplements and treatment devices.

Además de la piel, el cabello representa un atributo social característico de la salud, la juventud y la atracción. Multitud de productos y tratamientos están listos para ser adaptados al nuevo mercado de cuidado del cabello, específicamente para tratar cabellos finos, gruesos, rizados, secos, grasos, coloreados, jóvenes, envejecidos... Existe un gran número de afirmaciones en torno a los distintos productos existentes en el ámbito del cuidado capilar.

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.

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.

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.

L. Nakamura Silva, M.G. Almeida Leite, P.M.B.G. Maia Campos, **Development of hair care formulations containing *Spirulina platensis* and *Ascophyllum nodosum* extracts**, International Journal of Phytocosmetics and Natural Ingredients 2019;6:13

Introduction: Considering that oily skin and hair is a constant concern, the search for active substances that helps skin and hair oiliness control it is a challenge in the Research & Development of cosmetics. Seaweeds are much known for its use as foods and microalgae are a type of seaweeds that convert solar light in bioactive compounds attractive for commercial interest. *Spirulina platensis* and *Ascophyllum nodosum* are microalgaes present potential to be applied in cosmetic formulations, due to its properties, such as antioxidant activity, skin hydration and skin and hair oiliness control. Thus, the aim of this study was to develop and evaluate the efficacy of hair care formulations containing *Spirulina platensis* and *Ascophyllum nodosum* extract. Methods: Shampoo and conditioner formulations supplement or not (vehicle) with *Spirulina platensis* and *Ascophyllum nodosum* extract were developed. Two hair samples of virgin brown hair with 10 g each were selected to perform the hair characterization tests and were evaluated in terms of Break force, combability and shine. After, 26 study participants were recruited for the clinical efficacy study and the sebum content were evaluated before and after 28 days of use. Results: After 28 days of application of the conditioner containing *Spirulina platensis* and *Ascophyllum nodosum*, a decrease of the combability force for the wet and dry hair sample and an increase of hair shine were observed. Conclusion: The formulation containing microalgae in combination presented benefits to the hair fiber, once the obtained results showed an improvement of hair mechanical properties and fibers surface.

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.

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.

P. Contreiras Pinto, R. Figueiredo, J. Pereira, A. Gomes, M. Fitas, **Evaluation of gloss with two different systems: Glossymeter and Visia - a comparative study**, IFSCC Congress, Munich, September 2018

Gloss is a crucial attribute of visual texture perception and more specifically, the visual appearance of human skin. A glossy and radiant skin induces a healthy and youthful appearance while a lack of gloss can generate a dull and unhealthy appearance. Normally, a radiant skin reflects the light in a specular way while a dull skin tends to diffuse light more. Therefore, light reflection is a key point in the assessment of skin gloss and radiance. The present work aims to compare two methods of Gloss evaluation: Glossymeter and Visia-CR.

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.

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.

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, β-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.

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.

A.C. da Silva Marques, **Biometrologic Evaluation of Cosmetic Products**, Dissertation in pharmaceutical sciences at the University of Coimbra, 2016

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.

A. Sirvent, C. Charmel, F. Girard-Ory, **Objectivation des produits maquillage,** Évaluation Des produits cosmétiques, Lavoisier Paris, Tec & Doc, chapter 7, p. 110-126, 2016

Les produits de maquillage font partie intégrante de la grande famille des produits cosmétiques. Appliqués sur les parties superficielles du corps humain (épiderme, lèvres, ongles, cils), ils en modifient l'aspect dans un but majoritaire d'embellissement. Le maquillage, ou la peinture corporelle, a été utilisé des la Préhistoire - pas seulement dans un but de séduction mais également pour des raisons rituelles ou guerrières. Du temps des pharaons, les égyptiens en ont fait une science sophistiquée, qui a été - par la suite- largement diffusée dans tout le bassin méditerranéen par les Grecs et les Phéniciens. Pour Charles Baudelaire, dans son «Éloge du maquillage» (1860), il permet aux femmes de «s'élever au-dessus de la nature pour mieux subjuguer les cœurs et frapper les esprits». L'industrie cosmétique moderne et le maquillage, tel qu'on le connait aujourd'hui, ont pris leur essor au début du XX^{e} siècle. L'invention du mascara date de 1913 et le fond de teint mis au point par Max Factor pour les starlettes du cinéma hollywoodien a été plébiscité ensuite par toutes leurs fans! De grandes compagnies telles que L'Oréal, Maybelline, Revlon, Helena Rubinstein ou encore Estée Lauder ont été créées a cette époque sur la base d'innovations majeures. Souvent présenté comme futile ou superficiel, le maquillage n'en reste pas moins efficace («qui remplit sa tâche, produit l'effet attendu» selon le dictionnaire Larousse). Personne ne contesterait le changement visuel produit par application d'un rouge á lèvres ou d'un vernis a ongles. Cette modification de aspect physique peut même revêtir un aspect thérapeutique, comme c'est le cas du maquillage correcteur, également dit de «camouflage», sur des lésions dermatologiques de type brûlures, cicatrices, angiomes, etc. Il faut également noter que, ces dernières années, le maquillage s'est adjoint une dimension «soin» avec la présence d'actifs hydratant, lissant, nourrissant, anti-UV, etc. Certains maquillages se positionnent également sur le marché des produits haute tolérance. Ces aspects n'étant pas spécifiques de cette catégorie de produits, nous focaliserons ce chapitre uniquement sur l'éfficacite «decorative». Aussi, l'évaluation d'un produit de maquillage va reposer sur l'étude de: - son aspect sur la peau (couleur, brillance, homogéneité); - sa tenue dans le temps ou dans divers conditions d'environnement; - son impact sur la psyché de l'individu. Ce chapitre présente, dans un premier temps, la démarche d'approche globale pour d'évaluation du maquillage puis, dans un second temps, des méthodes d'évaluation des différentes catégories de produits de maquillage en fonction des revendications.

P. Humbert, A. Jeudy, F. Fanian, T.Lihoreau, **Évaluation de l'éclat du teint**, in: A.-M. Pénse-Lhéritier (Editor): Évaluation des produits cosmétiques, Lavoisier Paris, Tec & Doc, chapter 6, p. 98-109, 2016

L'éclat de la peau est difficile à définir car c'est un aspect de la peau qui reflète le bien-être. Le langage populaire parle de «bonne» ou de «mauvaise mine», qui est le reflet de l'existence, d'une souffrance ou d'une maladie sous-jacente. Les différents termes employés en anglais sont plus parlants: *complexion*, *radiance*, *glow of health.* Il est vrai que la peau est le reflet des émotions et son aspect fournit beaucoup d'informations au regard. Puisque la cosmétologie a pour vocation de protéger, réparer, parfumer, mais aussi parfaire la peau, il est logique que des produits cosmétiques revendiquent une efficacité dans ce domaine. En 2002, A. Petitjean, de l'equipe du Professeur Humbert (CHRU de Besançon), écrivait: «Nous sommes au début d'une nouvelle ère s'agissant de la prise en compte et de la mesure de l'éclat du teint», rappelant que la texture de la peau évoque la jeunesse, la santé et la joie.

C. Uhl, D. Khazaka, **Claims and measurement methods for hair and scalp,** Personal Care March 2015

Hair diversity (style, shape, growth pattern or colour) is one of the most important features to define us physically. Therefore, it is no surprise that the market of hair care products with a value of US$39 billion is one of the most important sectors in the complete area of cosmetic products. Hair care products for women are the most frequently bought and used cosmetic products of all. Shampoos and conditioners are leading in the field. For men, hair care is the most important and favoured sector of all cosmetics.

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.

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.

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.

S. Manon, A. Mondelli, G. Secchi, **Hair Conditioning Effect of Vegetable Native Protein in Shampoo Formulations,** SOFW-Journal, 138, 1 / 2 -2012, p. 38-42

Repetitive aggressive hair treatments or environmental conditions, unsuitable hair care products as well as stress, tension and particular physiological states may disturb the skin and scalp equilibrium. The irritated scalp usually reacts with frequent itching, redness, dandruff or tightness; in these cases, it's very important to use very gentle, specifically designed non sensitizing hair care products especially for those people who must wash their hair daily. Unfortunately; impaired scalps are often subject to be

sensitized by commonly used surfactants and conditioning agents which have a high affinity for skin and hair and can cause or aggravate the symptoms of sensitive scalp and skin.

H. Dobrev, **Products for Impure, Acne-Like Skin,** J. Fluhr (ed.), Practical Aspects of Cosmetic Testing, Springer-Verlag Berlin Heidelberg 2011; p. 155-170

Many people suffer from impure, acne-like skin. This type of skin looks greasy and glossy, rough with enlarged pores, and has a tendency to develop comedones, pimples, and pustules. It feels unpleasant and may be a serious cosmetic problem. The effective control over the impure skin requires daily application of multifunctional cosmetic products for cleansing and intensive care of the skin. Market products should have a proven effect. Testing on human volunteers using sensorial self- and expert evaluation, instrumental skin bioengineering techniques, and questionnaires for quality-of-life assessment are the preferred ways to prove products claims.

A. Jeudy, J.-M. Sainthillier, T. Lihoreau, S. Mac-Mary, P. Humbert, **Biometrological Assessement of the Skin Radiance**, ISBS 2010, Buenos Aires, Argentina

Skin radiance is a clinical pattern without any precise definition and quantifiable data.