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Literature List
Sebufix®/Corneofix®

V. Nobile, **Assessment of homogeneity and UV filter skin retention**, PERSONAL CARE MAGAZINE, June 2021

Sunscreens have been used for more than a century to protect the skin against the harmful effects of ultraviolet radiation. Although the beneficial role of sunscreens in protecting the skin, there is increasing evidence of UV filters' systemic absorption and environmental repercussions. Sunscreen formulators are now facing the challenge of increasing sunscreen performance while decreasing the UV filter concentration. In a collaborative study with a customer we evaluated the ability of a raw material in increasing the homogeneity of application and the retention on skin of UV filters. In order to reach this goal, a preliminary study on 6 subjects was carried out using two simple and reliable techniques: UV fluorescence emission and the skin stripping technique. The test product demonstrated a better homogeneity of application («50%) and a better retention on skin than the base formula containing only the UV filters. These results were confirmed by the SPF measurement (5.2 points higher than the base cream plus UV filters). UV fluorescence and skin stripping are a valuable tool to preliminarily assess sunscreen homogeneity of application and retention on skin. Further testing is in progress to standardise the study design.

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.

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.

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.

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.

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.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

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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.

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.

V. Ribet, V. Nobile, A.B. Rossi, **In situ antioxidant activity of a dermo cosmetic product: A randomized controlled clinical study,** Experimental Dermatology / Volume 28, Issue 11, 2019

Ultraviolet light enhances the generation of reactive oxygen species that are responsible for skin photoageing. The aim of this randomized, vehicle and active controlled double blind, intra individual monocentric study was to evaluate in situ the antioxidant activity of a dermo cosmetic product in photoaged skin. Twenty healthy volunteers had defined skin areas randomized to receive a topical product containing 3 antioxidants (pre tocopheryl®, retinaldehyde and glycylglycine ole amide), its vehicle and a positive antioxidant control cream. Theproducts were applied daily for 30 day period. The skin areas were exposed to a controlled dose of UVA rays, and the skin oxidative status was evaluated 4 and 24 hours post UVA exposure at DO (basal value) and after 15 and 30 days of product application. Skin layers were collected by stripping, and antioxidant capacity was measured using the ferric reducing ability of a plasma assay. Lipid peroxidation (LPO) was assessed using the malonyldialdehyde test. The tested product significantly improved the skin antioxidant capacity after 15 and 30 days and significantly decreased the basal level of the skin LPO. The skin LPO level significantly decreased 4 and 24 hours after UVA exposure at 15 and 30 days. These findings were comparable to positive control treated sites and were significantly different from the vehicle and untreated sites. This minimally invasive methodology enabled a quantitative evaluation of potent antioxidant activity in situ in the *stratum*

corneum reflecting real life skin conditions and confirming the benefits of the topical application of a product containing 3 antioxidants in the prevention of UVA induced oxidative damage.

C. Uhl, G. Lanzendörfer-Yu, ***How effective is your anti-acne product?,*** SPC December 2018

For assessing, treatment analysis and documentation, acne has to be either graded or lesion scoring has to be done. Both methods strongly depend on the skills of the examiner and bear high inter-individual deviations. Biophysical measurements using sebumetry, porphyrin fluorescence, and standardized photographic images of the face can overcome these disadvantages. Additionally, they can be used for comprehensive evaluation of the treatment protocol.

S. Hettwer, E. Besic Gyenge, B. Suter, S. Breitenbach, B. Obermayer, **Eine multifunktionale Lösung für zu Akne neigender Haut mit einem einzigen natürlichen kosmetischen Wirkstoff**, SÖFW Journal 10/2018

Die Vorbeugung gegen Akne und die Linderung fettiger Haut stellen für die Kosmetikindustrie herausfordernde Aufgaben dar. Salicylsäure, Benzoylperoxid und Retinoide sind jeweils spezialisierte Wirkstoffe zur Kontrolle der Desquamation, der Mikroflora oder der Neuprogrammierung der Biochemie der Zeilen. Sie sind effiziente Spezialisten, aber keine Allrounder. Bei der Entwicklung einer Akne gibt es jedoch mindestens vier auslosende Faktoren: Aktivität der Sebozyten, Dihydrotestosteron-Spiegel, Entzündungen und Mikrobiota der Haut. Es ist schwierig, kosmetische Wirkstoffe zu entwickeln, die geeignet sind, alle notwendigen Bedürfnisse zur Verbesserung fettiger Haut abzudecken. Daher sind sie auf dem Markt auch kaum zu finden. Darüber hinaus können effektive Substanzen die Haut irritieren und sind wie Retinsäure in den meisten Ländern in wirksamer Konzentration nur als vom Hautarzt zu verschreibende Medikamente erhältlich.

C. Uhl, **Efficacy testing of microbiome skin care**, PERSONAL CARE EUROPE, April 2019, p. 41-45

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.

S. Hettwer, E. Besic Gyenge, B. Suter, S. Breitenbach, B. Obermayer, **A personal Faraday shield for a radiant, high-tech world,** PERSONAL CARE EUROPE, April 2019, p. 63-69

Radiation outside the UV-range is one of the most unexplored threats for our skin. For sure, we protect ourselves against UV light but forget the high-energy visible light fraction. However, not only blue light increases the ROS load in keratinocytes leading to skin barrier damage and premature skin ageing. Our modern, highly connected world with permanent access to the internet and communication devices emits a tremendous amount of radiation. A large fraction is WiFi radiation in the range of microwaves. To protect our cell membranes and skin barrier, we need anti-oxidants active in the depth of the membranes to prevent deep lipid peroxidation, followed by functional impairment of these structures. Radicare®-Gold is the skin's personal Faraday shield made from natural carotenoids to reduce the ROS load provoked from any source.

P.M.B.G. Maia Campos, M.O. Melo, D.G. Mercurio, **Use of Advanced Imaging Techniques for the Characterization of Oily Skin**, Frontiers in Physiology, March 2019, Volume 10, Article 254

Excessively oily skin leads to clinical signs that cause discomfort to patients, such as excessive shine, enlarged pores, acne, and an imbalance of the hydrolipidic layer. In this context, a constant demand for the research and development of products that prevent these features, has been noted in the field of cosmetics and dermatology. Thus, the objective of this study is to evaluate the cutaneous characteristics of oily skin due an excessive production of sebum through biophysical and skin imaging techniques. 19 participants with different skin types were selected and the following parameters were evaluated: pore count, determination of the number of sebaceous glands and amount of sebum in infundibulum, determination of cutaneous microrelief, count of comedones, evaluation of epidermis thickness, characterization of the cellular, and comedone size and its characteristics. These evaluations were done through biophysical and skin imaging techniques. The obtained results showed that different regions of the face presented different characteristics related to oiliness, quantity, and the appearance of pores and comedones. The malar region had a lower epidermis thickness and a larger number of large pores. Moreover, in this region excessive sebum production, which can be related to pores, not

comedones, was noted. The nose region presented higher sebum content in the infundibulum and lower active sebaceous glands, showing a higher activity of sebaceous production in this region. The chin region presented a positive correlation between the sebum content, roughness parameter and the number of pores and comedones. As different skin properties are related and influence the appearance of undesirable clinical signs, we identified the need for a multifactorial approach for the effective treatment of oily skin. The rational development of multifunctional cosmetic products that promote the control of oily skin, that regulate the keratinization process, improve the microrelief and leads to a better epidermis and dermis structure, will not only improve oily skin conditions but will also allow for the reduction or disappearance of clinical signs that result from excessive oiliness, all of which causes concern and results in a relentless search for cosmetic and dermatological products that address the unaesthetic nature of these conditions.

C. Uhl, G. Lanzendörfer-Yu, ***How effective is your anti-acne product?,*** SPC December 2018

For assessing, treatment analysis and documentation, acne has to be either graded or lesion scoring has to be done. Both methods strongly depend on the skills of the examiner and bear high inter-individual deviations. Biophysical measurements using sebumetry, porphyrin fluorescence, and standardized photographic images of the face can overcome these disadvantages. Additionally, they can be used for comprehensive evaluation of the treatment protocol.

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V.H. Pacagnelli Infante, J. Migliati, P.M.B.G. Maia Campos, **Why should I use sunscreen? The impact of lifestyle on the hydrolipidic, structural and morphological characteristics 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.

S. Hettwer, E. Besic Gyenge, B. Suter, S. Breitenbach, B. Obermayer, **Mother Nature's solution for acne-prone skin,** SPC July 2018

The strength of Mother Nature is her ability to cope with threats of all kinds. Plants have developed a complex biochemistry to synthesise an incredible number of secondary plant metabolites to fight bacteria, viruses, insects and even animals. As such, an advantage of developing natural cosmetic actives is that we can use the cornucopia of active molecules from the plant kingdom. The challenge is just to find the right plant for the corresponding application. Seboclear-MP (INCI: Propanediol, bioflavonoids) was developed to act on impure and acne-prone skin. As this is a challenging field with multiple variables, a special set of effective molecules had to be found. Diprenylated isoflavones from Madura cochmdiinensis can regulate multiple key enzymes and pathways, which are important for the biology of impure skin. They inhibit the 5a-reductase, COX- 1 and COX-2 and 5-LOX enzymes and, by agonistic binding to the RAR/RXR receptors, exhibit retinoic acid-like activity. Furthermore, they are able to selectively suppress the growth of unwanted skin bacteria such as Propionibacterium acmes and coryneform bacteria

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.

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. Thiemann, M. Salmina-Petersen, S. Grone and J. Jdnichen, **For Blemish-free Skin,** C0SSMA 4 2017, p. 36-40

Dr. Straetmans' experience in alternative cosmetic preservation, especially with the company's Dermosoft Antimicrobials, led to the development of the range Dermosoft Decalact, a series of cosmetic raw materials with proven efficacies against skin disorders caused by certain microorganisms

C. Oliveira, A. Silva, L. Fagundes, ***N. Raposo, .A. Ferreira, M. A. F. Brandão, H. Polonini,*** **Development and Preliminary Cosmetic Potential Evaluation of *Melaleuca alternifolia* cheel (Myrtaceae) Oil and Resveratrol for Oily Skin,** J Dermatol Res Ther 2016, 2:032, Volume 2, Issue 4

Background: Oily skin presents shine in excess, as well as increased pores and acne. For this reason, people with oily skin have more difficulty using cosmetics in general. This is the first report in literature to evaluate a multi-purpose dermatological emulsion containing *Melaleuca alternifolia* Cheel (Myrtaceae) (tea tree) oil and resveratrol for oily skin.

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.

Dr. S. Bänziger, B. Suter, B. Obermayer; **Fixing age with lipids: improvement of the epidermal lipid synthesis in mature skin;** H & PC vol. 11 (2) March/April 2016

Abstract: Epidermal lipids constitute the seal for the outermost skin layers and the glue for the corneocytes. Epidermal lipids, however, are reduced in mature skin and may represent the underlying cause of increased susceptibility, diminished capacity to recover, and chronic dryness of mature skin. Hence reactivating epidermal lipid synthesis represents a promising anti-ageing strategy for mature skin. Earlier *in-vitro* experiments implied that *Gynostemma pentaphyllum* extract reactivates lipid synthesis via the Liver X receptor (LXR). Here we show that the cosmetic active REFORCYL®, which is based on a *Gynostemma pentaphyllum* extract, positively impacts mature skin *in-vivo*, and that the reactivation of lipid synthesis translates into improved barrier integrity and repair.

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. Zanzottera, A. Cominetti, **Olive as a natural carrier and skin-feel enhancer,** Personal Care, April 2015

Inspired by nature and designed from its environment-friendly philosophy, Brasca introduces Oilfeel TD 7525, a patented innovative soft touch oil with an interesting and unique sensorial profile. The present study submits a summary of performed tests to assess the skin penetration ability.

G.E. Piérard, C. Piérard-Franchimont, S. Piérard, **Visioscan-Driven ULEV Method,** Non Invasive Diagnostic Techniques in Clinical Dermatology; Springer Berlin Heidelberg 2014; ISBN 978-3-642-32108-5

Introduction: Melanocytes and their melanins govern the phototype-related color palette of the skin. Indeed, the color palette of the skin largely depends on the molecular nature and amount of melanins (eumelanin and pheomelanin) and on the size, shape, and distribution of melanosomes produced by melanocytes and transferred into keratinocytes. Such combinations define what could be called the individual melanotype. The epidermal melanin unit refers to a microscopic functional entity composed of one single melanocyte and its adjacent keratinocytes into which the melanosomes are transferred. Chronic ultraviolet (UV) light exposures represent positive stimulatory signals to the epidermal melanin units. In such instance, both the active melanocytes are increased in number, and each individual melanocyte is stressed to produce more melanins. In addtion, melanosome transfer from melanocytes to adjacent kerationocytes is boosted through the intervention of the protease-activated receptor 2 [1].

K. de Paepe, Y.V. Heyden, V. Rogiers, **Biophysical Assessment of Skin Desquamation and Scaliness Using Tape Strips and Adhesive Discs,** Non Invasive Diagnostic Techniques in Clinical Dermatology; Springer Berlin Heidelberg 2014; ISBN 978-3-642-32108-5

Introduction: The outer part of the human skin is the epidermis, which consists of different layers that continuously renew themselves due to cell proliferation and differentiation, finally leading to the formation of the stratum corneum (SC). Eventually, flat corneocytes desquamate from the surface as single cells or small scales. In healthy skin, the total process takes approximately 1 month [13]. The SC forms an effective barrier against transepidermal water loss. Indeed, corneocytes are tightly joined by

lamellar lipid bilayers – mainly consisting of ceramides free fatty acids, and cholesterol – which are covalently bound to cell membrane proteins [27].

L. Schlüter, **Reinheit aus der Natur,** Cossma 5 – 2014

Es gibt zwei Trends, die bei kosmetischen Produkten zurzeit sehr präsent sind: zum einen ein „reiner, ebenmäßiger Teint" und zum anderen „Nachhaltigkeit". Den Wunsch nach einem ebenmäßigen Teint hat es, denken wir nur einmal an das Grimmsche Schneewittchen mit seiner Haut „so weiß wie Schnee", schon immer gegeben. Und da es immer wichtiger wird, Ressourcen zu erhalten und zu schonen, rückt der Aspekt der Nachhaltigkeit beim Konsumenten immer stärker ins Bewusstsein. Eine Produktkategorie, die das Thema Ebenmäßigkeit und mehr Leuchtkraft des Teints aufgreift, sind die BB, CC, DD usw. Cremes. Mittlerweile findet man auch abseits dieser getönten Hautpflegevertreter immer häufiger Produkte im Regal, die genau dieselben Effekte versprechen.

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.

Y. Gao, X. Wang, S. Chen, S. Li, X. Liu, **Acute skin barrier disruption with repeated tape stripping: an in vivo model for damage skin barrier,** Skin Research and Technology 2013; 19: 162-168

Purpose: To establish a model of standardized acute barrier disruption, investigate the response of normal human to repeated tape stripping, and analyze the change of damaged skin with non-invasive examination techniques for skin, such as TEWL and squamometry. Methods: Repeated tape stripping with corneofix was applied on three different anatomical sites, the measurement of TEWL was performed on the baseline and after every 5 strips. Then the samples of corneofix were analyzed using Visioscan VC98 and squamometry.

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, trans epidermal 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.

J.H. Kim, B.Y Kim, J.W. Choi, S.O. Kim, H.S. Lee, K.C. Park, S.W. Youn, **The objective evaluation of the severity of psoriatic scales with desquamation collecting tapes and image analysis**, Skin Research and Technology, May 2012; 18: p. 143–150

Background: Assessment of psoriatic scales is important to determine the severity of psoriasis. However, there are very limited numbers of objective, quantitative and observerindependent tools for

measuring the severity of psoriasis. Objective: To determine whether the bioengineering parameters of the psoriatic scale can be used to assess the severity of psoriasis instead of the psoriatic severity index of scales (PSIs) score. Methods: Thirty-four patients with psoriasis were included. A representative lesion from each patient was selected and bioengineering parameters were measured using the Corneofixs. Simultaneously, the severity of the scales was assessed by the PSIs score using clinical photographs of the lesions. In addition, skin color and elasticity parameters were also measured using the Colorimeters, the Mexameters and the Cutometers. Results: Statistical differences in the scale parameters were observed between the PSIs 2 and 3 scores. Among the scale parameters, the percent area and area in mm2 were negatively correlated with the PSIs score. In addition, the Colorimeters a, b parameters and the Cutometers R9 parameters were significantly correlated with the PSIs score. Conclusions: The results of this study showed that the severity of psoriatic scales could be measured objectively using the Corneofixs.

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. Wojcik, E. Budzisz, H. Rotsztejn, **Skin surface lipids and their measurements**, Post Dermatol Alergol 2011; XXVIII, 6: 498-505,

On the surface of the corneal layer there is a skin lipid coat, which is a mixture of sebum secreted by sebaceous glands and epidermal lipids synthesized by keratinocytes. The mixture of these substances mixed with the secretion of sweat glands makes up water in oil (W/O) emulsion, called a hydrolipid coat. It acts as a barrier and regulates processes of absorption and skin penetration of substances soluble in water and fats.

*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.

J.M. Sainhillier, S. Mac, C. Tarrit, P. Mermet, D. Mougin, **Assessment of the Nourishing Effect of a Lip Balm. Exploratory Study,** Société Skinexigence SAS CHU Saint Jacques, Besancon, France

The main characteristics of the lips are their fragility and sensitivity to dryness and exposure to UV. This phenomenon is an issue for many people, more specifically with the presence of chapped lips in winter. The aim of this study was to objectivate and illustrate the nourishing effect off a lip balm in the winter season (November to December 2008) after repeated applications during 28 days.

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.

H. Dobrev, **Clinical and instrumental study of the efficacy of a new multi-action topical product in acneic skin,** Household and Personal Care TODAY, No. 1/2009

Many people suffer from oily, acne prone skin. This type of skin is characterized by increased oily secretion, greasy looking rough skin surface with dilated pores, comedones and tendency to inflammation manifested by erythema, papules and pustules. It can be observed in both men and women

and often is a serious cosmetic problem. Oily skin and acne formation are related to the overproduction of sebum and abnormal keratinisation of the sebaceous follicle epithelium stimulated by male sex hormones (androgens).

S. Sisalli, N. Voisin, F. Venturoli, A. Adao, S. Gardinier, M. Isoir, J. Jacqueline-Bessière, D. Mougin, **A new and sensitive method to assess the NMF content of Stratum Corneum in vivo - Evaluation of a topical moisturizing product**, IFSCC Barcelona 2008

As far as the existence of the Natural Moisturizing Factor has been known, the need for in vivo and non invasive methods to evaluate the NMF content has been required. The purpose of this paper is to present a new method for the analysis of some NMF compounds sampled by tape stripping. This method allows the simultaneous determination of 2-pyrrolidone-5-carboxylique acid (PCA) and of the 3 main amino acids of the NMF: SERine, GLYcine and ALAnine. It also allows, in the same time, the determination of glycerol (GOL) content, which was recently underlined as an important component in the understanding of cutaneous hydration.

H. Dobrev, **Treatment of acne with a new topical product. A clinical and instrumental study,** Journal Household and Personal Care Today

We studied the efficacy of a new topical product containing a combination of lipoaminoacid capryloyl glycine, sarcosinde, and Cinnamon zeylanicum bark extract in 19 subjects with mild to moderate acne after twice daily application for a 7-week treatment period. Determination of efficacy included clinical assessment using acne lesion counting and desease severity scoring, bioengineering measurements of sebum on the facial skin using a photometric device and sebum collector foils.

H. Dobrev, **Treatment of Acne with a New Topical Preparation. A Clinical and Instrumental Study,** Department of Dermatology, Medical University, Plovdiv, Bulgaria

Background: Sepicontrol A5 is a cosmetic active ingredient designated to improve the appearance of oily, acne prone facial skin. Aim: To evaluate the sebum regulation activity, clinical efficacy and safety of a 3% and 4% Sepicontrol A5 containing cream and gel in subjects with mild to moderate acne.

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.

H. Dobrev, **Clinical and instrumental study of the sebum regulation efficacy of REGU®-SEB**, Poster Presentation at the EADV in London, October 2005

Excessively oily facial skin is due to overactive sebaceous glands and can occur in both males and females. The skin is greasy and shiny, with large open pores, feels unpleasant and may be a serious cosmetic problem. Moreover, this type of skin is sensitive and much more prone to acne and seborrhoeic dermatitis. That is why the control over the excessive oiliness is very important.

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.

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)

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.

H. Dobrev, **Evaluation of the efficacy of a Rooibos Extract containing anti-wrinkle cream**, EADV, May 2005, Sofia, Bulgaria (abstract and poster)

Background: Rooibos plant possesses scientifically proven anti-oxidative, anti-allergic, anti-microbial and anti-inflammatory features. Aim: To evaluate the efficacy of a Rooibos extract containing cream on aged facial skin using *in vivo* skin bioengineering techniques. Methods: Measurements were carried out on 21 healthy female volunteers (from 35 to 63 years old) before and after twice-daily applications for 4 weeks. Images of the skin surface at eye corners were obtained with video camera Visioscope and then analyzed with the software SELS (Surface Evaluation of the Living Skin). Skin mechanical properties on five anatomic regions (forehead, eye corners and cheeks) were measured with a suction device Cutometer SEM 474. In addition, a subjective evaluation questionnaire regarding the organoleptic characteristics, tolerance and efficacy of the product was given to the volunteers.

N. Piccardi, J.-C. Choulot, M. Philippe, **Butyl avocadate: Managing Hyper-Seborrhoea**, Personal Care, November 2004

Hyper-seborrhoea, acne and alopecia are among the most common diseases encountered by dermatologists in daily practice. These pathologies are in part related to the hyper-activity of the 5-alpha reductase (5-αR), the enzyme that metabolises (Fig. 1) testosterone into 5α-dihydrotestosterone (5α-DHT), a major potent androgen in human skin.

S. Grippon, S. Leclère, J.-F. Molina, J.-L. Philbé, **Interactive Polysaccharide "Second Skin" Film Protector to Combat Cutaneous Agression,** Personal Care Ingredients Asia, Guangzhou, March 2004

Sugars do not cease to amaze us with their numerous, varied properties. They have mainly displayed their contribution to skin protection and beauty in the form of polysaccharides and oligosaccharides. They are involved at all levels in the body and their efficacy depends on their composition and structure. Whether involved in the complex process of cell communication, stimulating neuromediator synthesis, as sensorial moisturising agents or even protectors of the microbial ecosystem of the skin, they can also fulfil their role as a genuine defence against external aggression.

H. Tronnier, **Nicht invasive Testverfahren am behaarten Kopf**, 10. MFDK München, 04.12.2004 (PPT)

Enleitung: *Messung der (seborrhoischen) Kopfschuppung;* Photo-Trichogramm; Messung von Haardichte und –qualität …

C. Piérard-Franchimont, G.E. Piérard, **Postmenopausal Aging of the Sebaceous Follicle: A Comparison between Women Receiving Hormone Replacement Therapy or Not**, Dermatology 07/2002

The endocrine control of sebaceous follicles is complex in women. During aging, a decline in sebum output is often experienced. However, some women report increased seborrhoea after the menopause.

C. Piérard-Franchimont, G.E. Piérard, **Beyond a Glimpse at Seasonal Dry Skin**, Exogenous Dermatology, 2002

On clinical grounds, the so called dry skin corresponds in reality to a rough, sometimes flaky and scaly stratum corneum.

*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.

W.D. Becker, J.S. Bajor, K. Hoyberg, S. Hillmer, D. Thiboutot, H. Knaggs, **Measurement Of Human Surface Sebum Levels.** The Journal of Investigative Dermatology, Vol. 110, No. 4, April 1998

P.M. Clarys, A.O. Barel, **Sebumetry: A comparison between Lipid Collection Techniques,** Skin Research and Technology, Vol.2, No.4, Nov.1996

Recently, several methods have been developed for the collection of skin surface lipids. We compared 3 of those measurement techniques: the Sebutape, the Sebufix, and the Sebumeter. Lipid sampling with the Sebufix and with the Sebumeter takes only 30 seconds while lipid sampling with the Sebutape takes 1 hour. As demonstrated by several authors application of a film on the skin surface may interfere with several skin properties such as skin temperature, skin hydration, and skin surface

water loss. Our experimental set was designed in order to make a comparison between the 3 measurement techniquesand in order to evaluate the effect of Sebutape application on the above skin parameters. Comparison of the lipid quantification with the 3 techniques delivered a good correlation. The Sebutape seems to have no or only a minor influence on skin temperature and TEWL. The hydration state of the statum corneum increased significantly during the Sebutape application.