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

Literature List
Sebufix®/Corneofix®

K.C. Kwon, M.J. Kim, **Shake-Induced Temporary Ion-Pairing Between Lecithin and Glycolic Acid for Enhanced Exfoliation in a Novel Biphasic Serum: Comparative Ex Vivo and in Vivo Randomised Studies**, Skin Research and Technology , 2026; 32:e70349

Background: Chemical exfoliation efficacy is significantly limited by pH-dependent permeability reduction above the pKa of glycolic acid (3.83), constraining consumer product development. Objective: To develop and evaluate a biphasic serum utilizing temporary lecithin-glycolate ion-pairing to enhance stratum corneum permeation while maintaining safety at pH 3.9. Methods: A biphasic formulation containing 10 wt% (weight percent) glycolic acid and 0.1 wt% lecithin was developed. Temporary ion-pairing was characterized by FT-IR spectroscopy. Ex vivo permeation and exfoliation were evaluated using porcine skin models. A 2-week double-blind, split-face clinical study (n = 37) assessed efficacy using instrumental probes (Visioscan, Corneofix, VISIA- CR, and ANTERA 3D) for exfoliation-related parameters and sensitive skin compatibility. Results: FT-IR analysis confirmed lecithin-glycolate bonding via red-shifted C = O peaks, with spectral comparisons before and after shaking demonstrating the reversible nature of the change. The biphasic serum achieved 4.19-fold higher epidermal glycolic acid delivery compared to conventional formulations with minimal deep penetration. Clinical evaluation demonstrated superior exfoliation (45.52% improvement, $p < 0.001$), enhanced skin brightness, texture, and hydration. Redness and transepidermal water loss, assessed for sensitive skin suitability, showed significant improvements. Conclusion: The biphasic system successfully overcomes pH-dependent limitations of glycolic acid through temporary ion-pairing, providing enhanced exfoliation efficacy with a superior safety profile for consumer applications.

N. Shibagaki, M. Yano, A. Kaneshima, R. Kamezono, H. Manabe, **Revitalizing the potential of the skin microbiome for UV defense**, Proceedings of the 35th IFSCC Congress in Cannes, France, September 2025

Ultraviolet radiation (UVR) is a pervasive environmental factor known to significantly affect skin health. While its role in inducing oxidative stress and contributing to premature skin aging is well documented (1), the impact of UVR on the skin microbiome remains an emerging area of research. The skin microbiome, a complex community of microorganisms residing in the skin, plays a vital role in maintaining skin homeostasis and protecting against external aggressors, including UVR. This symbiotic relationship between the skin and its microbiome is crucial for preserving the skin's barrier function and immune responses. Understanding how UVR influences the composition and function of the skin microbiome is essential for developing strategies to mitigate its adverse effects. There are previous studies that report artificial one-shot exposure to medical UVR modifies the skin microbiome when checked 24 hours after exposure (2,3). We aimed to more deeply explore how the skin microbiome evolves under the effect of UVR exposure in daily life, since it evolves to reach a certain balance during the season of high UV when various factors affect the skin microbiome both positively and negatively (i.e., high UVR likely suppresses growth of the skin microbiome and immune system (4), and high temperatures cause increased sebum and sweat secretion in skin, which is favorable for skin microbiome propagation). Furthermore, we aimed to develop a postbiotic ingredient to compensate for the functions diminished in the UVR-altered skin microbiome in order to mitigate UVR-related skin damage.

S.A. Zainun Faqiha, D. Meutiah, N. Sapitri, N. Nazhifah, W. Annajiah, C. Young Kwan, K. Ki Baek, P.S. Rom, C.M. Kyoung, **A Novel Efficacy Evaluation Method for Lip Treatment Products in Improving Lip Hydration in Human Subjects with Dry Lips**, Proceedings of the 35th IFSCC Congress in Cannes, France, September 2025

The lips represent a unique and critical region of the face, both in terms of function and aesthetic appeal. The anatomical structure of the lips is distinct from other areas of the skin, as they are characterized by a thinner stratum corneum (SC), limited sebaceous and sweat glands, and a low melanin content, all of which contribute to their heightened susceptibility to environ-mental stressors.

Due to these characteristics, the lips have a compromised barrier function and reduced capacity to retain moisture, making them prone to conditions such as dryness, chapping, and peeling, particularly in response to external factors like cold weather, air pollution, and ultraviolet (UV) radiation exposure. Moreover, prolonged exposure to ultraviolet (UV) radiation often led to lip conditions including dryness, chapping, inflammation, and desquamation.

A. Rubio-Santoyo, R. Sanabria-de la Torre, T. Montero-Vílchez, M. Sierra Girón-Prieto, A. Gómez-Farto, S. Arias-Santiago, **Effects of Extra Virgin Olive Oil and Petrolatum on Skin Barrier Function and Microtopography**, J. Clin. Med. 2025, 14, 4675

Background/Objectives: Natural oils are widely promoted and used around the world as part of skincare. Among them, extra virgin olive oil (EVOO) stands out for its broad range of organic compositions and well-known moisturizing properties. This study aimed to evaluate the effects of topically applied EVOO compared to petrolatum on skin barrier function (SBF) and microtopography. Methods: A within-person randomized clinical trial was conducted in healthy adult volunteers. EVOO and petrolatum were applied to defined areas on the volar forearm. Parameters related to the SBF, including stratum corneum hydration (SCH), transepidermal water loss (TEWL), temperature, and erythema, were assessed. The skin microtopography was evaluated through two approaches: (1) topographic parameters—surface roughness, desquamation, smoothness, and wrinkles; and (2) stratum corneum (SC) composition—corneocytes subtypes and the desquamation index (DI). The participants completed a tolerability questionnaire for each product. Results: A total of 54 participants (50% female; mean age: 28.57 ± 11.02 years) completed the study. Both EVOO and petrolatum signifcantly improved the SBF by increasing SCH and reducing erythema and skin temperature. Petrolatum additionally reduced TEWL. Regarding the skin microtopography, both products decreased the desquamation index and reduced the prevalence of mature corneocyte types (types 2–5). These effects were more pronounced with petrolatum. Notably, EVOO signifcantly increased the proportion of early-stage corneocytes (type 1). Conclusions: Both EVOO and petrolatum effectively enhanced the SBF and improved the microtopographic features of the skin. While petrolatum exerted a stronger occlusive effect by reducing TEWL and desquamation, EVOO uniquely promoted epidermal renewal by increasing epidermal turnover.

Y. Xia, Y. Lyu, J. Yang, X. He, Y. Yi, J. Liu, Z. Zhu, Z. Du, Y. Chen, Y. Ai, **Effects of a Ceramide-Containing Glycinate-Based Cleanser on the Condition of Oily Skin and Skin Post-IPL Treatments**, Journal of Cosmetic Dermatology, 2025; 24:e70350

Background: Currently, many studies are exploring the effects of cleansers containing petrolatum and fatty acids on skin condition, but no research has yet investigated the impact of cleansers containing ceramides on skin condition. Aims: Therefore, this study aims to explore whether a ceramide-containing glycinate-based cleanser can improve the skin conditions of oily skin and skin post–intense pulsed light (IPL) treatments, with a particular focus on the skin barrier. Methods: In this study, 88 volunteers were recruited and divided into two groups. Group 1 (n = 44, oily skin) used ceramide-containing cleansers for 28 days, with subsequent assessment of skin hydration, TEWL (transepidermal water loss), sebum content, and pore count. Group 2 (n = 44) received IPL treatment prior to using the same cleansers, followed by evaluation of redness and self-reported symptoms. Results: The experimental results demonstrated that in Group 1, after 28 days of product application, skin hydration increased by 47.37%, TEWL decreased by 13.42%, pore number was reduced by 6.92%, and sebum content showed a 79.18% reduction. For Group 2, comparative analysis revealed that following the use of ceramide-containing cleansers after IPL treatment, skin redness significantly decreased by 14.62% compared to post-IPL measurements, with concurrent notable improvements in all self-reported symptoms, including itching and tightness. Conclusions: Overall, a ceramide-containing glycinate-based cleanser can effectively control sebum secretion, reduce pore size, and repair the skin barrier in oily skin. Additionally, it can help reduce redness in IPL-treated skin. For dermatologists and consumers, this formulation represents a promising option for people undergoing IPL procedures, combining cleansing with barrier repair to minimize post-treatment downtime.

V.C. Albarici, J. Rodrigues Pinto, G. Vannucci Nogueira, A.L. Tabarini Alves Pinheiro, J. Rampazo de Godoi, C.M. Bueno Custódio, C. Mariano. M.M. Ferreira, R. dos Anjos Neves, Gavioli dos Santos, N. Alves Ribeiro, A. da Silva Pinheiro, **Relation Between Tryptopan Intensity, Desquamation and Skin Smoothness in the Process of Cellular Proliferation**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Epidermal proliferation is a natural process that can be accelerated by skin injury. This study aimed to assess the epidermal proliferation induced by glycolic acid, correlating results obtained by fluorescence spectroscopy and micro-image analysis of the skin. Subjects were instructed to apply 5% glycolic acid (GA5%) to their forearms for 21 alternate days. The increase in cell proliferation induced

by GA5% was assessed using the 295 nm excitation band (tryptophan). Intensity of desquamation and skin smoothness were assessed using Visioscan®. After 7, 14 and 21 days, the intensity of tryptophan fluorescence from untreated skin remained unchanged, whereas the fluorescence intensity measured from sites treated with GA5% increased. After 3, 7, 14 and 21 days, a trend towards reduced skin smoothness was observed, while desquamation showed a significant increase after 7 days of application of GA5%. Both parameters reached the highest distinction after 7 days. A correlation was observed between intensity of tryptophan fluorescence, desquamation, and skin smoothness. The combination of the three techniques - spectroscopy, desquamation, and smoothness analysis – has proven to be an effective tool for understanding the action mechanism of products designed for cutaneous exfoliation and cell turnover.

M. Vilaça, R. Pinheiro, J. Amado, F. Chaves, **Assessment of the efficacy of a charcoal detox gel in the reduction in sebaceous secretion and cellular and cellular cohesion through images with Sebufix® Corneofix® and Visioscan®**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Skin oiliness and cellular cohesion are attributes assessed to better understand the effects of continuous application of cosmetic products. Cleansing gels have an important role in this matter, since it is necessary to clean without drying the skin, and it is mandatory to make sure the product will not cause any damage to the skin barrier. Besides that, the application of activated charcoal is widely used for skin detoxification, absorbing oil, and toxins, deeply cleansing the skin. The main objectives of this research were to assess the sebaceous secretion and cellular cohesion throughout measurements performed with Sebufix® SF 16, Corneofix® CF 20 and Visioscan® VC 20plus device in subjects presenting oily skin applying the Charcoal Detox Gel cosmeticproduct daily. Results showed a significant reduction on sebaceous glands' activity and a reduction on sebaceous secretion were observed after 28 days of investigational product use. In addition, a significant reduction was observed for desquamation after 28 days of investigational product use, indicating a higher cellular cohesion. Therefore, it could be concluded that the Charcoal Detox Gel was able to control the oiliness and stimulate skin renewal process, resulting in a healthier skin barrier with more cohesiveness among the cells.

M.B. Berlim, C.R.A. Malafaia, S. Fanan, N.C.C.Silva, D.W. Barreto, **Retionol-Like Activity of Selected Macroalgae Extract**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Ocean sustainable farms are more environmentally conscious compared to land-based agriculture because cultivation of seaweeds requires no fresh water and chemical fertilizer. Thus, the aim of this study is to explore the potential activity of natural extract macroalgae as a cosmetic ingredient with retinol-like benefits using gene expression mapping of activated keratinocytes and fibroblasts, along with several clinical tests. The clinical trials presented a reduction of wrinkles/fine lines visibility and size, improvement in skin homogeneity and higher skin density after 28 and 56 days of use. All parameters analyzed during the clinical trial demonstrated a similar efficacy to the mixture of algae extract and retinol, indicating that the mixture of algae extract exhibited comparable effectiveness. The activated keratinocytes also release cohesion proteins such as filaggrins, generating a better-structured stratum corneum. A measurement of skin clinical and physiological parameters was also carried out, showing significant correlations with the anti-inflammatory response and skin integrity, as well as barrier formation in vitro assays. The results indicate the remarkable activity of this specific combination of Hypnea musciformis and Sargassum filipendula aqueous extract in improving wrinkles, as supported by image analysis, self-assessment and in enhancing dermal density.

A. Charpentier, **K-Beauty- New challenges around claims & substantiation**, Cosmetic Business, September 2024

Korean beauty emerged as a major actor in product cosmetics, setting new standards for efficacy, ingredients and product diversity. Fueled by social media and a growing interest in skin care, K-beauty blends centuries-old tradition, culture and ancient practices with modem scientific advancements in research and formulations. Additionally, Korean brands, as well as OEM/ODMs, are the driving force behind new marketing concepts, quickly picking up on the weak signals of the expectations of well-informed beauty consumers.

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

Background: Skincare and makeup "pilling" is an unsightly and undesirable phenomenon whereby skincare such as moisturizers or foundation ball up to form flakes on the skin. To date, the causes of skincare product pilling have not been studied. This study aimed to examine the relationship between skin physiology and pilling potential of sunscreen and foundation (the two products most

reported by consumers to cause pilling). This study also examined the effects of product applicationmethods on pilling. Materials and methods: 528 female volunteers fromGuangzhou, China, aged between 20 and 49 years, underwent various clinical skin assessments, followed by three steps of product layering. Pilling was assessed after each product application step. Results: 217 volunteers (41%) experienced pilling. The majority of pilling (n = 655 events) occurred following sunscreen application, while only a few pilling events (n = 35) occurred with foundation. Foundation improved pilling caused by sunscreen in 98.9% of cases. Volunteers experiencing pilling with both sunscreen and foundation had significantly lower facial skin hydration and oiliness, higher pH, and smoother skin texture ($P < 0.05$). Two application methods, rubbing of products in circular and linear motions, yielded the highest numbers of pilling events. Conclusion: This study has provided the first insights into the causes of pilling. Sunscreen is a promoter of pilling, while foundation may resolve sunscreen-induced pilling in many cases. Skin physiology, particularly drier, smoother skin with higher pH, and product application methods are likely contributing factors to this undesirable phenomenon.

A. Guerra-Tapia, H. Martínez, C. Nieto, C. Ruiz Alonso, R. Bermejo, N. Carrón, S. Garcia-Segura, P. Gonzalez-Torres, D. Palacios-Martínez, L. Bou, M. Pérez, R. de Lucas, **A new topical biotechnological phytocomplex for truncal mild-moderate acne restores skin microbiota balance**, Skin Res Technol. May 2024

Background: The disruption of the microbial community or dysbiosis alters the functional composition, metabolic activity, and local distribution of the microbiota leading the development of acne. The aim of this study is to evaluate the effect of a lotion containing a biotechnological phytocomplex, niacinamide, and succinic acid in the bacterial diversity of subjects with truncal mild-moderate acne and its clinical benefits due to microbiota changes. Materials and Methods: Open, clinical study in 43 subjects with truncal mild-moderate acne treated with a lotion for 8 weeks. Bacterial diversity was analyzed by 16S rRNA gene sequencing of skin samples. Clinical effects were evaluated through IGA acne severity scale, biometric measurements, and safety. Results: After 56 days of product's use, an increase in richness alpha diversity was found ($p = 0.005$), with a decrease in Cutibacterium acnes relative abundance (66.43% vs. 58.11%, $p = 0.009$). The clinical results showed a decrease in IGA score (27.59% decrease; $p = 0.001$), the inflammatory lesions (52.12% decrease, $p = 0.006$) and erythema (18.33% decrease, $p = 0.007$), and desquamation index (63.83% decrease, $p = 0.02$). The responder analysis of the IGA score showed that 60.47% of patients improved by at least one point at day 56. The product was well tolerated along the study. Conclusion: The use of the lotion on acneic skin was effective on rebalancing the microbiota, inhibiting biofilm formation and other virulence factors, reducing erythema and desquamation, and improving acne's severity.

A.F. Afandi, S.H. Lee, R.P. Prajnamitra, J. Chan, **The pursuit to understand skin ceramides' metabolism in atopic dermatitis: Workflow optimization for collection, extraction, and analysis of skin tape strips**, Poster presentation at SISC (Singapore International Skin Conference, March 13-15, 2024

Skin ceramide abnormalities are a recognized hallmark of atopic dermatitis (AD), where both subclasses composition and acyl chain length can be altered. Such pathological changes suggest perturbation of biosynthetic or degradation pathways of ceramides in the skin of AD patients. Understanding ceramides' metabolism will yield clarity in the molecular mechanisms of AD and advance development of targeted therapeutics. In this study, we optimized a simple and non-invasive approach using tape stripping on skin to measure 500 ceramides across 20 subclasses via liquid chromatography–mass spectrometry (LC-MS). Several key enzymatic activities such as acid ceramidase and sphingomyelin deacylase were chosen to focus on the development of enzymatic assays for a juxtaposed analysis with the data obtained from LC-MS. From an inhouse pilot, comparison between two tape brands (DSquame®, CorneoFix®) showed the latter to give a better sampling efficiency in terms of consistency, skin adherence and biomass yield. We optimized a comprehensive extraction method to obtain both free and protein-bound ceramides, the latter which are covalently bound to corneocyte surface proteins and are essential for skin barrier function. Our preliminary findings show that the subclasses of non-hydroxyphytosphingosine (NP) and non-hydroxy-6- hydroxysphingosine (NH) are the most abundant in human skin, aligned with published literature. A prospective cohort of AD subjects (n=60) is currently in recruitment (Feb 2024 – Feb 2025, DSRB 2023/00890), which will reveal a detailed biochemical mapping of the ceramide pathway. In summary, our streamlined workflow is poised to elucidate human skin ceramides' metabolism and pathogenesis of AD.

L. Cheng, J. Guo, Y. Lu, ***Lotus corniculatus* extract to inhibit lipogenesis**, PERSONAL CARE MAGAZINE, March 2024, p. 78-82

In recent years, excess oil secretion on the skin surface has become a more and more common skin problem with the acceleration of the pace of life. Oily skin is frequently accompanied by large pores,

and contributes to the development of acne. The sebaceous glands are an important organ for synthesizing lipids and an important source of sebum for oily skin. Sebum can maintain the integrity of the cutaneous lipid barrier, transport antioxidants to the skin surface, and have antimicrobial, antiinflammatory activity. Although their function is important, excess oil secretion on the skin surface cause great discomfort and should be treated.

R. Sanabria-de la Torre, M. Ceres-Muñoz, C. Pretel-Lara, T. Montero-Vílchez, S. Arias-Santiago, **Microtopography and Barrier Function in Healthy Skin: Differences between Forearm, Cheek and Palm**, Cosmetics 2024, 11, 5

Background: Skin barrier function resides mostly in the stratum corneum, which consists of a protein component, the corneocyte (bricks), which provides a scaffold for the second component, the extracellular matrix, consisting of multilayers of lipids (mortar). These two components closely interact and this could be the basis for the differences in the biophysical properties of the skin between anatomical regions. So, the aim of this study was to compare skin microstructural properties between body sites. Methods: A comparative study was conducted that included healthy individuals without previous skin diseases. Skin barrier function parameters and microtopography parameters (smoothness, roughness, desquamation, wrinkles, surface, volume, contrast, variance, homogeneity, anisotropy, total cell count, flaking index, skin surface hardness, brightness, deformability and friction) were measured on the forearm, cheek and palm. (3) Results: 44 participants were included in this study, with a mean age of 38.8 ± 15.0 years. Significant differences were found between body sites for 14 of the 15 parameters evaluated. Smoothness was higher on the forearm than on the cheek and palm (240.02 Sems vs. 348.16 vs. 408.19 Sems, $p < 0.05$). Hardness was higher on the palm than on the forearm and cheek (13.22 AU vs. 9.44 AU vs. 7.94 AU, $p < 0.05$). Moreover, we observed that sociodemographic characteristics such as age, sex, tobacco and/or alcohol use, influenced the parameters evaluated. (4) Conclusions: The differences in skin barrier function and microtopography between anatomical regions reflects the different structure of skin in each body part and could help to understand the influence of the sociodemographic characteristics on theses parameters. This information could be useful for comparison with pathological skin characteristics and for targeting new treatments.

S. Glücklich, **Der transformative Einfluss von intradermalem Incobotulinumtoxin A auf die Hautqualität: Möglichkeiten und Grenzen**, Dissertation zur Erlangung des Doctor philosophiae (Dr. phil.) an der Universität Hamburg, Fakultät für Mathematik, Informatik und Naturwissenschaften, Fachbereich Chemie, Abteilung Biochemie und Molekularbiologie, Fachrichtung Kosmetikwissenschaft, Januar 2024

Die Schönheitsindustrie hat in den letzten Jahren kaum eine Bezeichnung häufiger verwendet als ‚Glow'. Der Begriff bezieht sich auf einen jugendlichen und ebenmäßigen Teint, der frei von Hautrauigkeiten oder Rötungen ist. Der Wunsch nach glatter, fester und ebenmäßiger Gesichtshaut ist jedoch nicht neu, es war schon immer ein wesentlicher Aspekt des eigenen Aussehens angesichts der Bedeutung einer optimalen Hautbeschaffenheit und einer makellosen Ästhetik, Schönheit und Attraktivität. Dabei zeigte sich aber in den letzten Jahren ein wachsender Trend zur Verbesserung der allgemeinen Hautqualität, nicht nur zur Retusche von Alterserscheinungen wie Falten. Trotz der bedeutenden Rolle, die die Hautqualität für die allgemeine Attraktivität spielt, gibt es derzeit keine allgemein akzeptierte Definition oder kein globales Messinstrument für diesen Begriff. Allerdings definieren Goldie und Kerscher in ihrer neusten Publikation „Skin Quality – A Holistic 360° View: Consensus Results" aus dem Jahr 2021 vier emergente Wahrnehmungskategorien (EPCs), die die Hautqualität, das Selbstwertgefühl und die Attraktivität einer Person maßgeblich beeinflussen. Die EPCs, die für alle Ethnien gelten, sind ‚Einheitlichkeit des Hauttons', ‚Glätte der Hautoberfläche', ‚Hautfestigkeit' und ‚Hautglanz'. Diese EPCs bestehen aus einzelnen Parametern wie Elastizität, Hydratation, Porengröße, Hautdichte, Falten, Narben, Haare, Pigmentierung, Rötung und Helligkeit. Mittels unterschiedlicher Methoden ist es heutzutage möglich, diese Parameter zu optimieren. Dabei wird neuerdings auch BoNT-A, das intradermal injiziert wird, zur Verbesserung der Hautqualität in Betracht gezogen. In den meisten Studien werden zur intradermalen Injektion die BoNT-A Typen ABO und ONA verwendet. Eine Studie von Park et al. deutet darauf hin, dass auch INCO die Talgproduktion reduzieren und die Gesichtsporen verbessern könnte. Es fehlen jedoch noch ausreichende Untersuchungen zur Anwendung von INCO zur Verbesserung der Hautqualität und der EPCs. Das Ziel dieser Projektarbeiten ist es zu ermitteln, ob die Parameter der vier EPCs durch die intradermale Injektion mit INCO verbessert werden können.

J. Viegas, S. Dias, A.M. Carvalho, B. Sarmento, **Characterization of a human lesioned-skin model to assess the influence of skin integrity on drug permeability**, Biomedicine & Pharmacotherapy 169 (2023)

The *stratum corneum* (SC) is the skin's outermost layer, organized by clusters of corneocytes among a lipid matrix, acting as a barrier. This "brick and mortar" organization is modifed in many skin diseases. We proposed a lesioned-skin model for assessing the permeability of topical formulations and the impact of skin integrity on the permeability of molecules. We anticipate that removal of the SC compromises the skin barrier function, making it more permeable, affecting the biopharmaceutics of topical formulations. By stripping with 25 strips (Corneofix®), the thickness of the SC was considerably reduced, exposing the viable epidermis. Transversal and upper views of the skin by electronic microscopy and histology confrm the removal of the SC. After, we evaluated the permeability of tacrolimus (Protopic®, 0.1 % and 0.03 %) by HPLC-UV. The non-lesioned skin presented 20–25 % of tacrolimus in the SC and no drug permeated through the skin's inner layers. Contrary, the lesioned-skin model allowed the permeation of tacrolimus to the epidermis, dermis, and also in the receptor medium. These results highlight the importance of using diseased skin tissue as opposed to normal skin when assessing the permeability of pharmaceutical formulations for local topical delivery, closely mimicking the occurred events in clinical scenario.

I. de Decker, T. Klotz, P. Vu, H. Hoeksema, K. de Mey, A. Beeckman, B. Vermeulen, M. Speeckaert, P. Blondeel, M. Wagstaff, S. Monstrey, K.E.Y. Claes, **Influence of Moisturizers on Skin Microcirculation: An Assessment Study Using Laser Speckle Contrast Imaging**, J. Pers. Med. 2023, 13, 1507

Non-invasive scar management typically involves pressure therapy, hydration with silicones or moisturizers, and UV protection. Moisture loss from scars can lead to hypertrophic scar formation. Pressure therapy reduces blood flow, fibroblast activity, and transforming growth factor beta 1 (TGF-_1) release. This study examined various moisturizers and liquid silicone gel's impact on microcirculation. 40 volunteers participated in a study where superficial abrasions were created to induce trans epidermal water loss (TEWL). Five moisturizers (TEDRA®, TEDRA® NT1, TEDRA® NT3, Alhydran®, Lipikar®) and BAP Scar Care® silicone gel were tested. TEWL, hydration, and blood flow were measured up to 4 h post-application. Results showed that silicone had the least impact on occlusion and hydration. Alhydran® reduced blood flow the most, while Lipikar® increased it the most. TEDRA® NT1 had reduced flow compared to TEDRA® and TEDRA® NT3. All TEDRA® products exhibited high hydration, and all but silicone showed good occlusion. Moisturizers influenced skin microcirculation, with some causing decrease, while others increased flow. However, the clinical impact on scarring remains unclear compared to the evident effects of hydration and occlusion. More research is necessary to study moisturizers alone and with pressure therapy on scars, along with potential adverse effects of increased microcirculation on scars.

G. Rodríguez Delgado, L. Barbosa-Barros, M. Vázquez-González, L. Rubio, O. López, **Multi-active vehicle concept for an integral restoring of the skin and scalp microbiome**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The skin microbiome is a complex ecosystem that collaborates in the protective function of cutaneous tissue. Many factors, such as pollution, unbalanced diet, and stress, can hinder the skin-microbiome equilibrium and worsen disorders such as acne and dandruff. In these conditions, excessive sebum production, deficient cell turnover, microbiome imbalance and inflammation are intensified compromising microbiome balance and making more challenging the skin and scalp recovery. In this work, we developed a multi-active lipid system that combines three different agents (sebostatic, postbiotic and keratolytic) that focus on working in each step of the acne and dandruff cycles. Two clinical studies are performed to evaluate the efficacy of a multi-active lipid system formulated in a topical delivery system. Our results demonstrate that this multi-active lipid system improving remarkably acne and dandruff restoring the skin's health and natural homeostasis.

L. Rubio, G. Rodriguez, L. Barbosa-Barros, **Multi-targeted Delivery System Restores Scalp Microbiome to Reduce Dandruff**, Cosmetics & Toiletries May 2023

The skin structure of the scalp is like other body parts but with some particularities. These include more hair follicles with terminal hair, vascularization and more sebaceous and sweat glands than other skin areas. These characteristics provide a favorable environment for microbial growth, which can cause scalp disorders.

R. Duroux, A. Jain, M. Tabert, J. Attia, **An upcycled fraction of Melaleuca alternifolia essential oil regenerates the skin through the skin melatonin pathway and improves sleep quality**, International Journal of Pharmaceutics 638 (2023)

Trans-epidermal water loss (TEWL) has been the most widely used method to assess the integrity of the skin barrier and evaluate the irritation potential or the protective properties of topical products for many years. It detects the amount of water that diffuses across the stratum corneum (SC)

to the external environment. As one of the most important functions of the skin is to keep water inside the body, an increase in TEWL is used to indicate the skin's impaired barrier function. So far, a variety of commercial instruments are available to measure the TEWL. Their applications mainly focus on the in-vivo TEWL measurements for dermatological examinations or formulation development. Recently, an in-vitro TEWL probe has also been commercially released enabling preliminary tests with excised skin samples. In our study, we first aimed to optimize the experimental procedures for detecting the in-vitro TEWL of porcine skin. Secondly, different kinds of emulsifiers were applied to the skin, including polyethylene glycol-containing emulsifiers (PEG-ylated emulsifiers), sorbitan esters, cholesterol, and lecithin. Sodium lauryl sulfate (SLS) was used as a positive control, and water as a negative control. Based on the findings, we established a protocol for accurately measuring the in-vitro TEWL values, emphasizing that the temperature of the skin sample should be constantly maintained at 32 ℃. Subsequently, the influences of emulsifiers on the in-vitro TEWL were analyzed. They indicated a significant skin barrier impairment of PEG-20 cetyl ether, PEG-20 stearyl ether, and SLS on in-vitro skin. Furthermore, we interestingly found that there consistently was an alteration of the TEWL values, even after the application of water to the skin. Our findings are of special interest, as the European Medicines Agency (EMA) recommends the use of in-vitro TEWL to determine skin barrier intactness during Franz cell experiments. Thus, this study provides a validated protocol for measuring the in-vitro TEWL and elucidates the impact of emulsifiers on the skin barrier. It also improves the understanding of tolerable variations of in-vitro TEWL and offers recommendations for its use in research.

R. Reynaud, Y. Rolland, B. Sennelier-Portet, A. Scandolera, M. Meunier, E. Chapuis, C. Lambert, **Upcycled patchouli for active scalp care**, PERSONAL CARE MAGAZINE, April 2023

Pogostemon coblin (patchouli) is highly prized for use in perfumery due to its woody and earthy scent with tobacco inflexions and camphor facets. To develop Patchoul'Up , hereafter the patchouli leaf active, Givaudan Active Beauty employed clean extraction processes on patchouli leaves that had already been distillated to extract essential oils for the fragrance industry.

L. Cheng, J. Guo, Y. Lu, **Inhibition of lipogenesis and sebum secretion for Lotus corniculatus seed extract in vitro and in vivo**, Int J Cosmet Sci 2023 Feb;45(1): p. 62-72

Background: Botanical ingredients are widely used in hair- and skin-care products. However, few studies have investigated the effectiveness of botanical products on counteracting sebum synthesis and secretion. Objective: To investigate the composition of Lotus corniculatus seed extract (LC) and its potential inhibition of lipogenesis in SZ95 sebocytes and oily human skin. Methods: The active components of LC solutions were identified by high-performance liquid chromatography (HPLC) and nuclear magnetic resonance (NMR). The in vitro effects of LC were evaluated using SZ95 cells treated with linoleic acid (LA) and dihydrotestosterone (DHT) and incubated with LCs for 24 h and 72 h. Lipogenesis was assessed by Oil Red O and Nile Red staining of the cells. In vivo effects were assessed on 30 subjects with oily skin who were enrolled in a randomized, blank-controlled trial and were treated with LC solution for 6 h and 4 weeks. The skin sebum contents and area on the forehead and cheeks were evaluated using a Sebumeter SM815 and Sebfix sebutape with Visioscan VC98. In addition, VISIA was used to collect half-face photos for analysis. Results: A novel active molecule, 5'-o-rhamnosyl uridine, was identified in LC. LC exhibited a dose-dependent inhibitory effect on LA and DHT-induced lipid synthesis. When 5% LC was applied for 3 h, the skin sebum contents and area were significantly reduced compared with the vehicle control, with an obvious reductionb after 6 h. Continued use of the serum containing 5% LC for 4 weeks resulted in a significant reduction in the skin sebum contents and area. No adverse reactions were reported during the study. Conclusions: Topical application of LC resulted in an immediate and long-lasting reduction of the sebum contents and area of oily human skin by reducing sebaceous lipogenesis through the LA and DHT pathways. This indicates the potential of LC as a new biological treatment for oily skin.

C. Uhl, G. Khazaka, **Ins Bild gesetzt – Bilddiagnostische Testverfahren in der Dermatologie,** Medical by Beauty Forum, 2, 2023

Hautveränderungen sind für Dermatologen mit dem bloßen Auge gut erkennbar. Die Unterschiede über einen gewissen Zeitraum objektiv zu erfassen und die Grunde für Hautveränderungen sind es meist nicht. Dafür gibt es verschiedene bilddiagnostische Testverfahren, die wir hier vorstellen.

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

When the Human Genome Project 1 was launched in autumn 1990 with the aim of identifying and mapping all of the genes of the human genome, no-one would have thought that we would discover a new microcosmos revolving around and mingling with our human cells. Of course, already long before this project, it was well-known that our body is not sterile and there are many bacteria living within and

on it. These bacteria were however mainly classified as being malicious, threatening our health and causing problems. Until the 70s of the last century, a germ-free personal environment was considered as most desirable, and strong cleaning products became quite popular. Only starting in the early 1980s, these ideas and information were carefully reevaluated.

D.J. Jo, J.Y. Shin, S.J. Na, **Evaluation of changes for sebum, skin pore, texture, and redness before and after sleep in oily and nonoily skin**, Skin Research & Technology, Volume 28, Issue 6, November 2022, p. 851-855

Background: People whose skin type is oily have experienced an esthetic and hygienic discomfort due to the excessive secretion of the sebum during the day and night time, and therefore sebum control is required. In this study, we aimed to find out whether the skin status between the oily and nonoily skin indicates a significant difference before and after sleep. Materials and methods: Forty Korean males and females whose skin type was oily or nonoily participated in this study. To investigate the difference of the skin between oily and nonoily skin before and after sleep, we measured the sebum, skin pore, texture, and redness on their cheek at baseline and after 4-h sleep. Moreover, the significant level was determined at $p < 0.05$. Results: Parameters of sebum and skin pore significantly increased after 4-h sleep compared with baseline in the oily and nonoily skin ($p < 0.05$). Moreover, the increment of sebum and pore parameters in the oily skin was significantly higher than those in the nonoily skin ($p < 0.05$). In the case of skin texture and redness, parameters of them were significantly changed after 4-h sleep compared with baseline only in the oily skin ($p < 0.05$), and there was no significant difference among groups. Conclusions: We found that the change rates of the sebum secretion and skin pore in oily skin were significantly higher than those in nonoily skin after 4-h sleep. These results suggest the necessity of the skin care depending on the skin type before sleeping.

M. Guo, J. Zhang, Z. Zhou, Y. Guo, F. Yang, **Multifunctional Effects of Lactococcus Ferment Lysate care for healthy scalp**, 32nd IFSCC Congress London, September 2022

Scalp health is meaning the length, lustre and health of your hair depends on the skin that covers your head. With stress and pollution levels consistently creeping up and up. It's hardly surprising we've all got scalp issues on our mind. Each hair grows from, and through, an individual follicle which surfaces on your scalp. Sebum is also produced by each individual follicle via the sebaceous gland, the amount of which will vary from person to person. It is essential that the follicle and the scalp, at point of exit, are clean, clear, healthy and maintained. Follicles that are full of sebum (oil) or blocked by dead or flaking skin will have an impact on the quality of hair growth. In this study, we screened the cosmetic substances which improve scalp environment. In the result, we found Lactococcus Ferment Lysate addresses those processes of particular importance for the scalp. Making the scalp more robust will make it less sensitive. Improving its barrier function helps it lock in water much more effectively. Scalp becomes more moisturized. Lactococcus Ferment Lysate also addresses excessive sebum production, which is another important concern for many consumers.

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.

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

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

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

Background: The mainstay of non-invasive scar management, consists of pressure therapy with customized pressure garments often combined with inlays, hydration by means of silicones and/or moisturizers as well as UV protection. It is generally accepted that scar dehydration resulting from impaired barrier function of the stratum corneum and expressed by raised transepidermal water loss (TEWL) values, can lead to increased fibroblast activity and thereby hypertrophic scar formation. However, we have reached no consensus on exactly what optimal scar hydration is nor on barrier function repair: by means of silicone sheets, liquid silicone gels or moisturizers. Occlusive silicone sheets almost completely prevent TEWL and have been shown to be effective. Nevertheless, many important disadvantages due to excessive occlusion such as difficulties in applying the sheets exceeding 10-12 h, pruritus, irritation, and maceration of the skin are limiting factors for its use. To avoid these complications and to facilitate the application, liquid silicone gels were developed. Despite a reduced occlusion, various studies have shown that the effects are comparable to these of the silicone sheets. However, major limiting factors for general use are the long drying time, the shiny aspect after application, and the high cost especially when used for larger scars. Based on excellent clinical results after using three specific moisturizers for scar treatment in our patients, we wanted to investigate

whether these moisturizers induce comparable occlusion and hydration compared to both each other and the widely recognized liquid silicone gels. We wanted to provide a more scientific basis for the kind of moisturizers that can be used as a full-fledged and cost-effective alternative to silicone gel. Methods: A total of 36 healthy volunteers participated in this study. Increased TEWL was created by inducing superficial abrasions by rigorous (20x) skin stripping with Corneofix® adhesive tape in squares of 4 cm². Three moisturizers and a fluid silicone gel were tested: DermaCress, Alhydran, Lipikar and BAP Scar Care silicone gel respectively. TEWL reducing capacities and both absolute (AAH) and cumulative (CAAH) absolute added hydration were assessed using a Tewameter® TM300 and a Corneometer® CM825 at different time points for up to 4 h after application. Results: We found an immediate TEWL increase in all the zones that underwent superficial abrasions by stripping. Controls remained stable over time, relative to the ambient condition. The mean percentage reduction (MPR) in TEWL kept increasing over time with Alhydran and DermaCress, reaching a maximum effect 4 h after application. Silicone gel reached maximal MPR almost immediately after application and only declined thereafter. The silicone gel never reached the minimal MPR of Alhydran or DermaCress. Hydration capacity assessed through CAAH as measured by the Corneometer was significantly less with silicone gel compared to the moisturizers. Compared to silicone gel Lipikar provided similar occlusion and the improvement in hydration was highly significant 4 h after application. Conclusion: Based on the results of both our previous research and this study it is clearly demonstrated that the occlusive and hydrative effect of fluid silicone gel is inferior to the moisturizers used in our center. Lipikar hydrates well but is less suitable for scar treatment due to the lack of occlusion. A well-balanced occlusion and hydration, in this study only provided by Alhydran and DermaCress, suggests that moisturizers can be used as a scar hydration therapy that replaces silicone products, is more cost-effective and has a more patient-friendly application.

B. Kyoung Hwang, S. Lee, J.-O. Myoung, S.J. Hwang, J.M. Lim, E.T. Jeong, S.G. Park, S.H. Youn, **Effect of the skincare product on facial skin microbial structure and biophysical parameters: A pilot study**, MicrobiologyOpen. 2021

Daily use of cosmetics is known to affect the skin microbiome. This study aimed to determine the bacterial community structure and skin biophysical parameters following the daily application of a skincare product on the face. Twenty-five Korean women, who used the same skincare product for four weeks participated in the study. During this period, skin hydration, texture, sebum content, and pH were measured, and skin swab samples were collected on the cheeks. The microbiota was analyzedusing the MiSeq system. Through these experiments, bacterial diversity in facial skin increased and the microbial community changed after four weeks of skincare product application. The relative abundance of Cutibacterium and Staphylococcus increased, significant changes in specific bacterial modules of the skin microbial network wereobserved, and skin hydration and texture improved. It was suggested that daily use of skincare products could affect the microbial structure of facial skin as well as the biophysical properties of the facial skin. These findings expand our understanding of the role of skincare products on the skin environment.

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.

R. Reynaud, Y. Rolland, B. Sennelier-Portet, A. Scandolera, M. Pélican, M. de Tollenaere, E. Chapuis, **Talgregulierung, der ethische Weg!**, sofw journal, 147, 05/21

Mangixyl™ (auch als " wonnen und ist ein wirksamer kosmetischer Inhaltsstoff, der mikrobiomfreundlich ist und nachweislich durch Talgregulation *Mangifera Indica* Blätter aktiv" bezeichnet) wird aus der grünen Fraktionierung von Mangoblättern gegegen Ölhaut wirkt. Die kosmetische Innovation aktiviert spezifsche Rezeptoren des Genweges, der normalerweise durch die hochwirksame Retinsäure reguliert wird. In einer Zeit, in der Nachhaltigkeit und Rückverfolgbarkeit für die Verbraucher im Vordergrund stehen, unterstreicht die Sourcing-Geschichte von Mangixyl™ unser Engagement für unseren Unternehmenszweck. Die Mangoblätter werden in Zusammenarbeit mit der Association Bendia aus dem Dorf Koro (Burkina Faso, Afrika) gesammelt. Der Verein ist eine von Frauen geführte Initiative, um zur Verbesserung der Lebensbedingungen der Gemeinde beizutragen. So ist *Mangifera Indica* Leaves Active eine Zutat, die gut für die Verbraucher, gut für den Planeten und gut für die Menschen ist. Dieser Inhaltsstoff soll die Verbraucher von den Beschwerden befreien, die durch fettige Haut verursacht werden. Es aktiviert einige Rezeptoren des Retinsäure-regulierten Genweges und verringert *in vitro*, *ex vivo* und *in vivo* die Synthese von Lipiden bei allen Hautethnien. Zusätzliche klinische Daten zeigten eine Wirksamkeit gegen zu Akne neigende Haut und zur Regulierung von Talg auf der Kopfhaut. Inmitten der aktuellen COVID-19-Krise bietet es auch eine wirksame Antwort auf das Phänomen der „Maskne", das in letzter Zeit an Dynamik gewonnen hat

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

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.

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.

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.

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.

M. Flach, **Untersuchung von Einflußfaktoren auf den Stratum corneum-Klebestreifenabrißtest und deren Auswirkungen auf die hervorgerufene Stratum corneum-Barriere-Schädigung**, Dissertation an der Medical Faculty of the Friedrich-Schiller-University Jena, Germany, December 2010

Der Klebestreifenabrißtest (tape stripping) ist ein etabliertes hautphysiologisches Untersuchungsverfahren. Seine Hauptanwendungsgebiete sind Untersuchungen zur Barrierefunktion des Stratum corneum (SC) und pharmakokinetische Studien zur Penetration von Lokaltherapeutika und Fremdstoffen. Trotz oder gerade wegen seiner breiten Anwendung ist der Test nicht standardisiert und es existieren unterschiedliche Protokolle. Ziel dieser Arbeit war es, unterschiedliche Einflußfaktoren auf den Klebestreifenabrißtest und die hervorgerufene Barriereschädigung zu untersuchen und basierend auf diesen Ergebnissen einen Vorschlag für ein standardisiertes Protokoll für den Klebestreifenabrißtest zu entwerfen. Dazu wurden bei zwölf hautgesunden Probanden in vier unterschiedlichen Körperregionen (Unterarm, Oberarm, Rücken, Wange) Klebestreifenabrisse durchgeführt. Die Klebestreifen wurden mit verschiedenen Anpreßdrücken (2 N, 7 N) und Anpreßzeiten (2 sec, 10 sec) auf die Hautoberfläche aufgebracht. Zum Ausgleich der durch die Hautfelderung entstehenden Furchen innerhalb des SC kamen verschiedene Methoden zum Anpressen der Klebestreifen zur Anwendung (Stempel bei gleichzeitigem Straffen der Haut, Roller, Andrücken mit dem Daumen). Neben einem Haushaltsklebeband wurden zwei speziell für den Klebestreifenabrißtest entwickelte Klebescheiben (D-Squame®, Corneofix®) getestet. Das Ausmaß der SCBarriereschädigung wurde durch Messungen des transepidermalen Wasserverlustes (TEWL) zu definierten Zeitpunkten vor, während und nach den Klebestreifenabrissen bestimmt. Zusätzlich erfolgten Messungen der Hautfarbe, Hornhautfeuchte sowie des pH-Wertes auf der Hautoberfläche vor und nach den Klebestreifenabrissen.

J.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.

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.

M. Breternitz, M. Flach, J. Präßler, P. Elsner, J.W. Fluhr, **Acute barrier disruption by adhesive tapes is influenced by pressure, time and anatomical location: integrity and cohesion assessed by sequential tape stripping; a randomized, controlled study**, British Journal of Dermatology, Volume 156, Issue 2, February 2007, p. 231-240

Background: Tape stripping is an established procedure in stratum corneum (SC) physiology research. Adhesive films are pressed to the surface of the skin and then removed. The superficial layers of the SC adhere to the film and are accessible for further investigations. Although this method is widely used, only scant information about standardization is known. Various protocols are used but are difficult to compare. Objectives: The aim of the present study was to investigate the effects of the type of tape, pressure, time, anatomical site and type of applied pressure. Methods: Twelve healthy volunteers (age range 20–31 years) were entered in a randomized, controlled study with sequential tape stripping at the volar forearm, upper arm, cheek and back. Different methods (roller, stamp, thumb, stretched skin), total duration of applied pressure (2 s, 10 s), degrees of pressure (2 N stamp, 7 N stamp) and different tapes (D-Squame®, Corneofix®, Blenderm) were investigated and the impact on barrier function assessed by transepidermal water loss measurements. Furthermore, measurements of SC hydration, skin colour and skin surface pH were performed. Spectroscopic measurements and a Bradford protein assay to determine the mass of removed SC were carried out in parallel. Results: The degree of barrier disruption, irritation and SC cohesion is influenced by the character of adhesive tapes, total duration of applied pressure (2 s, 10 s; 2 N, 7 N), the kind of method for pressure application (roller, stamp, thumb, stretched skin), anatomical site and condition before stripping (occlusion vs. non-occlusion). The spectroscopic assessment and Bradford protein assay determination showed a significant correlation ($P < 0{\cdot}0001$; $r = 0{\cdot}7041$). Conclusions: The present study showed significant differences between different factors on controlled barrier disruption. The results indicate the importance of defining these factors when a study is initiated and when results of different studies should be compared. Based on our data we propose using a 2 N stamp for a duration of 2 s on 15 sequential D-Squame® tape strips on the volar forearm and then discarding the first and second strips. This approach allows the performance of a standardized study with a reasonable amount of resources.

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.