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Soft Focus Effects: Natural Particles for Optimum Skin Care

C. Diaz Quijano, A. Hecker

abstract

Omyaskin® is a COSMOS and NaTrue certified high purity mineral ingredient for colour cosmetics and skin care. The particles have a lamellar surface, enabling sebum absorption, a mattifying effect and fast drying time. This innovative structured mineral significantly improves skin texture; its highly efficacious smoothening effect becomes evident after only 15 minutes and lasts for at least four hours. The percentage addition to a skin care or colour cosmetics formulation varies between 1 and 10%, depending on final application and desired effect, and it can also be used as a viscosity controlling agent, due to its high absorption power.

Today, there are a variety of colour cosmetic products available, offering multiple functionalities. Single ingredients can provide good coverage while blurring imperfections, thus improving the skin's appearance. Multiple ingredients for foundations or concealers, meanwhile, provide effective coverage but can appear unnaturally opaque or even chalky. So the current challenge for formulators is to develop a foundation that effectively reproduces the visual properties of healthy, youthful skin.

New product developments are focusing on coverage with enhanced naturalness, both of which can be achieved with light-scattering particles. Yet while conventional materials such as titanium dioxide and iron oxides are suitable for hiding spots and freckles, they can also draw attention to fine lines and wrinkles. In fact, particles offering strong coverage tend to be opaque and are therefore perceived as unnatural in appearance: Skin imperfections are visible to the human eye as a result of the contrasting way in which light is absorbed through wrinkles or pores. Conversely, 'soft focus'

materials have a low refractive index, and thus reduce the appearance of imperfections. These light-scattering particles are well suited to colour cosmetics, as well as skin care products, and provide an immediate perception of improved texture and fine line reduction. That's because the reduction of light contrast on the skin is vital for minimizing the appearance of imperfections.

As **Fig. 1** shows, light interacts with skin by being either reflected or transmitted. Both transmitted and reflected light have two components: direct and diffused. Soft focus, also called haze, is calculated using values of diffuse transmittance and total transmittance. Diffused transmission corresponds to skin imperfections, and total transmittance is linked to a natural appearance. Direct transmittance is only a portion of total transmittance. Total transmittance and haze are calculated as follows:

Total Transmittance (%) =

Direct Transmittance (%) + Diffuse Transmittance (%)

Haze (%) =

Diffuse Transmittance (%) / Total Transmittance (%) x 100

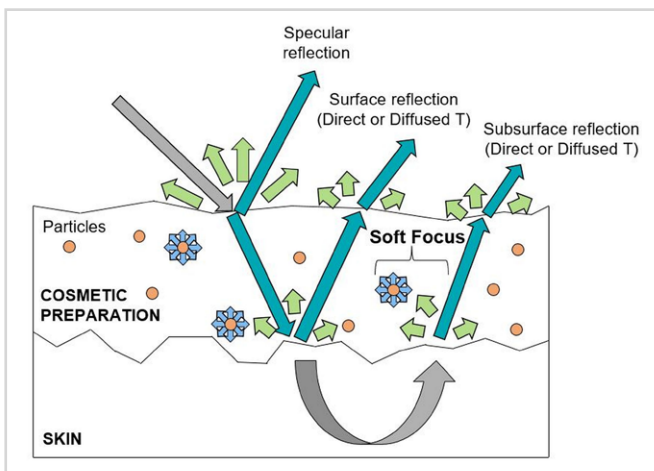


Fig. 1 Light interaction with skin. ©Omya

For optimal soft focus effects, particles dispersed in a cosmetic formulation must provide a combination of high total transmittance plus high diffuse transmittance. Thanks to high total transmittance, light can pass through the cosmetic preparation and reflect off the skin. This maintains the skin tone that is required in order to ensure a more natural look. If the included particles are able to reflect light and scatter it in all directions, reflection at many points on the skin is ensured, leading to a high proportion of diffuse transmittance. This optical effect helps to even out the appearance of skin imperfections. A soft focus ingredient can therefore produce a natural finish while softening fine features and mattifying skin.

Additionally, the thickness of the applied formulation, particle size distribution and viscosity all influence optical effects of a cosmetic formulation, as do concentration, shape, composition and porosity of the soft focus ingredients. However, the ability of particles to scatter light depends on their refractive index and the refraction of the surrounding media in which particles are dispersed. The greater the difference between particles and the medium, the greater the amount of scattering. A small difference in refractive index leads to almost no scattering and particles are not visible in the medium. A large difference will result in almost all scattered or diffused light, but leads to an unnatural appearance due to higher opacity.

Tab. 2 shows the main parameters of soft focus particles used in the study.

Comparing mineral particles

In a new study, Omyaskin®100-OG particles were tested against other commonly used ingredients for soft focus. Omyaskin® is a natural ingredient with good mattifying and sebum absorption properties, due to its high porosity. Made of hydroxyapatite and calcium carbonate, Omyaskin® has a circular shape and sponge-like structure, and leaves a soft finish on the skin. Its surface has light-scattering properties that help create a soft focus effect. The test design was based on an *in vitro* model* to demonstrate the soft focus potential of cosmetic formulations. Results of this study show the contrast-blurring performance of different soft focus materials. PET foils were used as substrate, and the soft focus was calculated after measuring total and diffuse transmittance.

	D50 (µm)	RI
Transparent formulation		1.39
Boron Nitride	2 - 5 ⁽¹⁾	1.8 - 2.1
Silica (TiO ₂ 25%, Silica 75%)	5 ca.	1.8
Nylon-12	7	1.52
PMMA	13	1.49
Omyaskin® 100 - OG	7.0	1.65

(1) d80 laser diffraction

Tab. 1 Refractive indexes of raw materials.

Optical properties measurement

A spectrophotometer (Lambda 950 from Perkin Elmer) allows for the determination of total transmittance and diffuse transmittance by calculating average values between 400 nm and 700 nm. Manipulating the transmission and diffusion of light from and into skin has a positive impact on optically blurring skin wrinkles and lines, also called soft focus.

Preparation of dispersion formulation

Samples were prepared by dispersing the dried powder in a transparent dispersion of known refractive index. Dispersions were drawn down on transparent, clear PET foils using 50 µm bar, and the light scattering was measured using a spectrophotometer. Concentrations of particles varied from 1 to 10%. Formulations tested are further described in **Tab. 1**. Formulations tested in addition to Omyaskin®100-OG were boron nitride, silicic acid, nylon-12 and polymethyl methacrylate (PMMA).

The ability of particles to scatter light depends on their refractive index plus the refractive index of the medium in which particles are dispersed. Large refractive differences between the particles and the medium cause greater scattering, resulting in an unnatural appearance of the skin. A similar refractive value leads to less scattering. The particles are hardly visible in the medium. **Tab. 2** shows the main parameters of the soft focus particles used in the study.

Total transmittance

Boron nitride showed a lower total transmittance which can be translated into high coverage of the skin, but a less natural appearance. This effect enlarged with increasing amounts of boron nitride. The other commercial products tested - silica, nylon-12 and PMMA - showed similar and higher total trans-

Ingredients	wt%
Cyclopentasiloxane and Cyclohexasiloxane	79.9 / 77.5 / 75.0 / 72.5 / 70.0
Dimethicone and Dimethiconol	10
Cyclopentasiloxane and Acrylates/Polytrimethylsiloxymethacrylate Copolymer	10
Soft Focus Filler	1.0 / 2.5 / 5.0 / 7.5 / 10.0

Tab. 2 Formulations of tested samples.

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mittance results, which were constant through the particle concentration range tested. Omyaskin® 100-OG provided high and stable values until 5% of addition. Above 5%, covering capacity of Omyaskin® 100-OG has an impact on transparency and, thus, total transmittance. (Fig. 2)

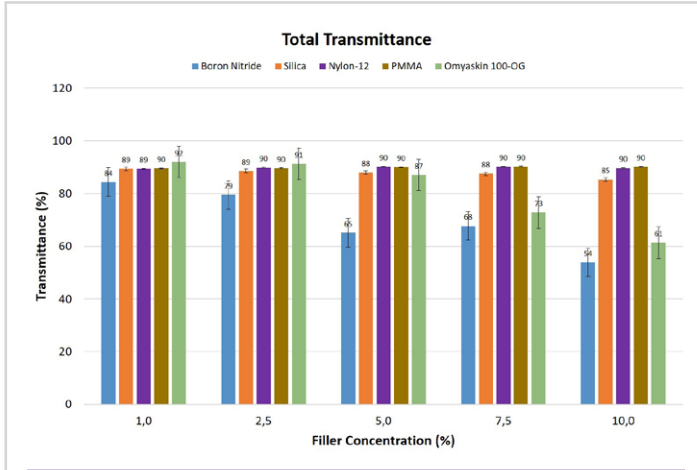


Fig. 2 Total transmission with soft focus particles. ©Omya

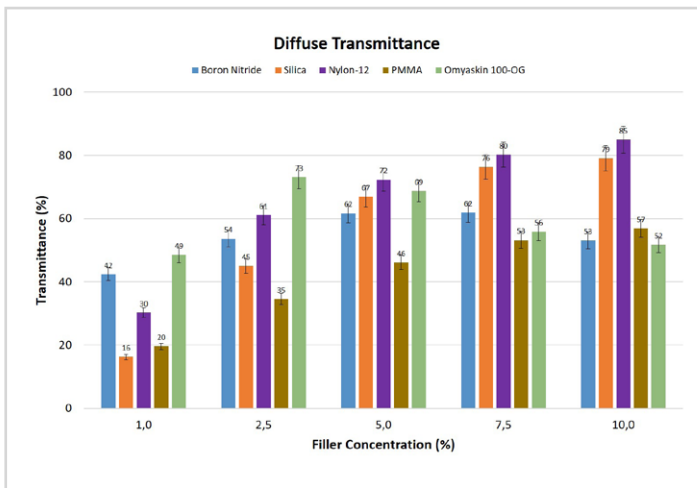


Fig. 3 Diffused transmission with soft focus particles. ©Omya

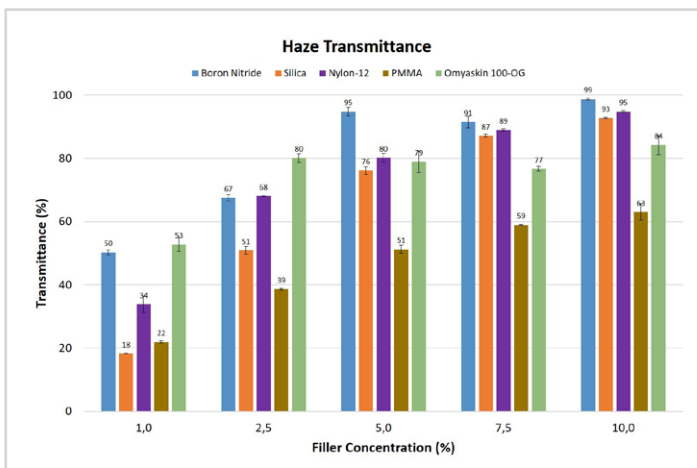


Fig. 4 Haze with soft focus particles. ©Omya

Diffuse transmittance

High diffuse transmittance indicates high blurring of the existing contrast in skin relief, and an optical reduction of imperfections. For most ingredients, the diffuse transmittance increased with higher concentrations. PMMA required a concentration of 10% to achieve 57% diffuse transmittance, while boron nitride reached 62% diffuse transmittance at 5% addition. Formulations containing silica or nylon-12 obtained the highest scores - 79% and 85% - in light scattering, although concentrations higher than 7.5% were required. Omyaskin® 100-OG performed better at 1% addition than all other ingredients and, at 2.5% addition, it achieved the same blurring power as nylon-12 at 5% or silica at 7.5%. (Fig. 3)

Haze

A high haze transmittance indicates the combination of natural appearance of the skin with high contrast blurring and, therefore, the desired soft focus effect. Omyaskin® 100-OG showed one of the highest soft focus effects at 1%, achieving 53% haze transmittance. At 2.5% addition, it reached its performance plateau at approximately 80%. Boron nitride, silica and nylon-12 achieved a higher haze transmittance plateau as Omyaskin® but also required a higher percentage of addition. (Fig. 4)

Highly efficient

The study provided scientific evidence supporting the use of Omyaskin® 100-OG as a soft focus agent for skin care and colour cosmetic products. Optical properties were examined through light-scattering measurement to establish efficacy as a soft focus ingredient. The results of this study indicate that Omyaskin® 100-OG has beneficial soft focus properties for skin at lower concentrations than silica, nylon-12, PMMA or boron nitride. It seems that optimal levels of addition of Omyaskin for soft focus effect range between 1 and 2.5%. Omyaskin® is therefore a highly efficient tool to enhance the naturalness of cosmetic formulations while effectively concealing skin imperfections.

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contact

Dr Carolina Diaz Quijano
Head of Technical Services Consumer Goods

Anais Hecker
Formulation Specialist Personal & Oral Care

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The Golgi Apparatus – Cellular Detox Super Hero

E. Besic Gyenge, S. Hettwer, B. Suter, S. Breitenbach, B. Obermayer

abstract

Our intracellular cleaning system is one of the most sophisticated mechanisms in our body. The long-lived skin cells such as fibroblasts and basal layer keratinocytes keep themselves and their environment clean and tidy every day through autophagy. This cellular self-digestion process is not only vital for cleaning the cells but also for maintaining cellular homeostasis and physiological cellular function.

Unfortunately, the efficiency of the cellular waste disposal systems deteriorates over time. Cells lose their functional identity, resulting in cellular senescence. Therefore, safely inducible autophagy and maintenance of proper autophagy processes will help to counteract age-accumulated impairments and keep keratinocytes and fibroblasts young.

REFORCYL®-AION targets the three major components involved in a healthy cellular cleaning process: the Golgi apparatus, the LC3 autophagy marker protein and mitochondrial fitness. It helps cells to reactivate the autophagy process, it supplies them with the necessary nutrition and its whole supply chain is carbon-neutral. It is thus a holistic concept that is both skin- and nature-friendly.

Introduction

The Golgi apparatus – the coordinator of autophagy and the cellular post office

The Golgi apparatus (**Fig. 1**) is a highly dynamic and multi-tasking cellular organelle, positioned exactly at the heart of the vesicular communication routes, namely between nucleus and membrane. It is made up of membrane-bound cisternae [1]. Under normal conditions, its functioning can be compared to that of a post office – it transfers packages/messages from one place to another.

Furthermore, it plays a pivotal role in the autophagy process. The proper disposal of dysfunctional cell organelles and macromolecules in the interior of cells requires autophagy and this process is dependent on reliable and dynamic membrane sources such as the Golgi apparatus [2]. The Golgi apparatus' stunning variety of functions and its multitasking vesicle coordination are evidence of the incredible importance of the Golgi apparatus in a wide range of cellular processes and even in connection with cellular survival.

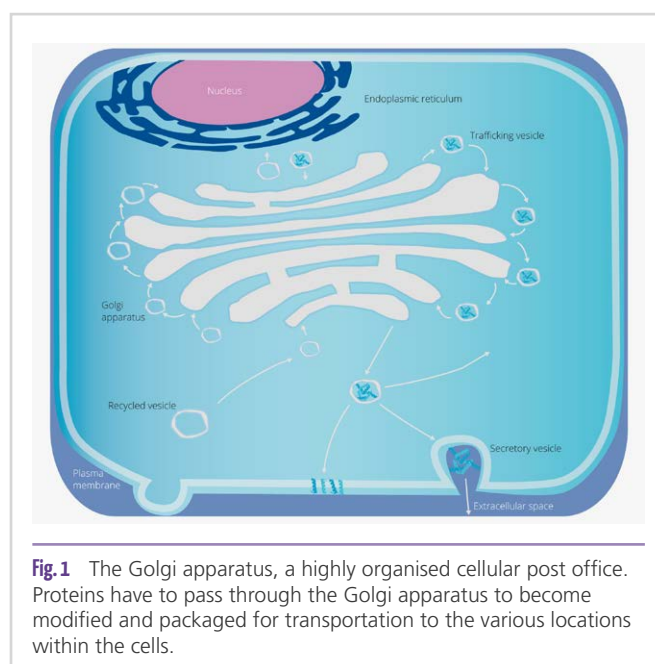


Fig. 1 The Golgi apparatus, a highly organised cellular post office. Proteins have to pass through the Golgi apparatus to become modified and packaged for transportation to the various locations within the cells.

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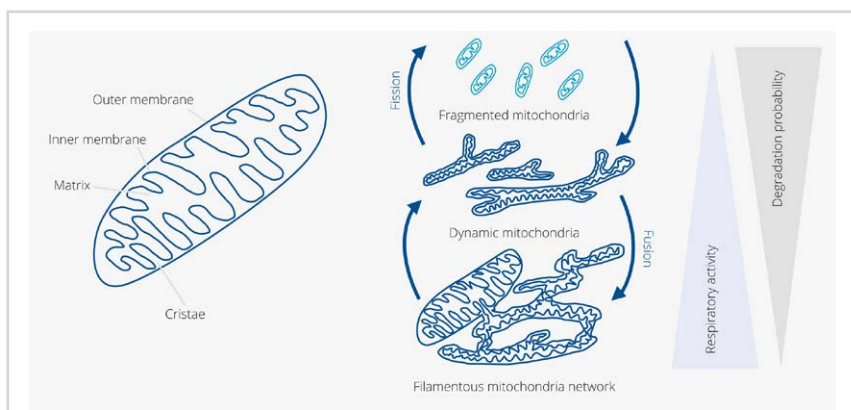


Fig. 2 The dynamic mitochondrial structure. The standard diagrammatic textbook representation of a mitochondrion does not actually portray the reality in the cell. Mitochondria in their physiological (healthy) state have a dynamic and filamentous morphology.

The mitochondrion – cellular and autophagy energy supplier

Mitochondria, found in almost all eukaryotic cells, are dynamic cell organelles surrounded by a double-membrane system separated by an intermembrane space (Fig. 2). The main purpose of mitochondria is to generate energy for cellular functions and processes with the aid of respiration. As shown in Fig. 2 (the middle panel) mitochondria are able to remodel themselves in response to environmental input. Furthermore, mitochondria are capable of fusing in an interconnected network that is able to spread over the entire volume of cells, thus enhancing their ATP production.

Autophagy determines the health of mitochondria and their intracellular concentrations and is required to maintain a physiological mitochondrial network [3]. These organelles are involved in every phase of autophagy, including autophagosome formation as an irreversible membrane source and autophagic flux, and this is controlled by energy levels [4]. Keeping mitochondria fully functional is important for cell survival and longevity.

Autophagy – the cellular upcycling plant

Cellular waste accumulation increases significantly with advancing age, while at the same time cellular activity and autophagy processes decline, causing cellular impairment and hence associated deterioration of the skin. Safe triggering of autophagy would thus appear to be an ideal anti-ageing technique.

Formation of autophagosomes, the key organelles in autophagy (Fig. 3) involves the membrane reorganisation of the Golgi apparatus, mitochondria, ER and the plasma membrane [5, 6]. During autophagy almost the whole Golgi apparatus is reversibly dissembled in favour of autophagosome formation. Only a few remaining residues, important for the reassembly of the Golgi apparatus, persist. The *de novo* constructed double membrane structures essentially wrap around the waste (in the form of phagophores), close and seal it (autophagosomes) and subsequently fuse with lysosomes (autolysosomes), resulting in enzymatic degradation of the contents. The molecular mechanisms involved in autophagosome formation are highly complex

but of particular interest is the final phase, namely cleavage of membranous LC3A protein. This protein is responsible for the proper fusion with lysosomes. The presence of LC3 is the hallmark of the autophagy process and serves as a biochemical marker of it.

The ingredients (amino acids, saccharides and spermidine/spermine) in REFORCYL®-AION (INCI: Propanediol, Water, Cucurbita Pepo (Pumpkin) Seed Extract, Citric Acid) – which contains an extract of the seeds of the special pumpkins grown in Styria in Austria – are able to induce autophagy, supply the cells with optimal nutrition and influence the cells and skin from within. A circular economy approach is

used for the production and processing of REFORCYL®-AION and generated CO₂ emissions are offset by investment in two climate-friendly projects, resulting in an exemplary pathway from cultivation to the final product.

Materials and Methods

Changes to LC3A gene expression: Normal human epidermal keratinocytes (NHEK) were cultivated under standard conditions. Next day, the medium was replaced by fresh one with serum (normal conditions) or without serum (starvation conditions), containing 0 or 1 % REFORCYL®-AION, for 24 hours. Subsequently, RNA was extracted from all samples and quantitative RT-PCR was performed to determine LC3 transcript levels.

In addition, cell viability was determined by means of MTT assay. Briefly, cells were treated with various REFORCYL®-AION concentrations ranging from 0 % to 1 % for 24 hours. Subsequently, the MTT solution was incubated for 3 hours and absorption at 550 nm was measured.

Statistical analysis: one-way ANOVA.

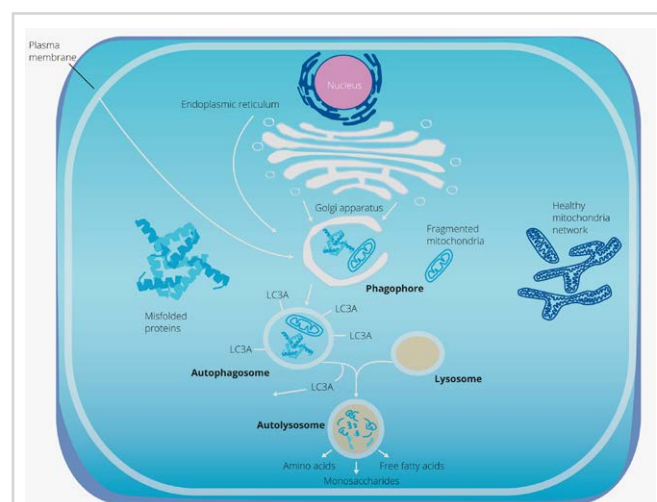


Fig. 3 Macroautophagy in mammalian cells. Diagrammatic representation of the most important type of autophagy.

Induction of autophagy in healthy cells and strengthening of mitochondria under stressed conditions: NHEK were cultivated on a coverslip for 24 hours. Afterwards, the medium was replaced by fresh medium with serum (control) or without serum (starvation) containing 0 or 1 % REFORCYL®-AION, for 24 hours. On completion of the incubation period, samples were immunostained with MitoTracker™ Deep Red FM staining for 45 minutes (mitochondria) and Anti-Giantin antibody (Golgi apparatus) overnight. Nuclei were stained with DAPI.

General improvement in skin conditions: The *in vivo* study was conducted in accordance with the World Medical Association's Declaration of Helsinki. A double blind, placebo-controlled, randomised study in 55 volunteers (female and male, equally distributed in number) was performed. Emulsion containing 0% or 3% REFORCYL®-AION was applied twice daily for 56 days to the skin of the face. To determine subjective impressions of efficacy, a five-point scale was employed (5: I strongly agree; 4: I agree; 3: I neither agree nor disagree; 2: I disagree; 1: I strongly disagree). Those volunteers who responded by selecting options 5 or 4 were considered to be satisfied with the results of treatment. Statistical analysis was performed using an unpaired Students' t-test.

Results

Upregulation of LC3A gene expression

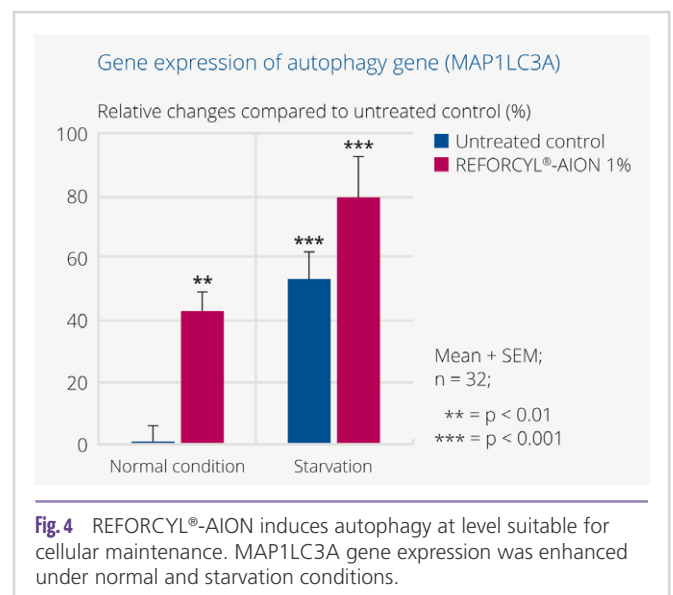
The presence of 1 % REFORCYL®-AION over 24 hours under normal conditions significantly increased MAP1LC3A gene expression by 43 % (Fig. 4, on the left – normal conditions) relative to the untreated control meaning that REFORCYL®-AION was able to induce autophagy.

In the NHEK that underwent prior starvation, a natural autophagy inducer (Fig. 4, on the right – starvation), the elevation of MAP1LC3A gene expression by 54 % confirmed the induction of autophagy. When cells were concurrently exposed to starvation and treatment with 1 % REFORCYL®-AION, the significant additional increase in MAP1LC3A gene expression of 26 % (80 % in total; Fig. 4, on the right) underlined the power of REFORCYL®-AION to induce autophagy.

Since autophagy and cell death are intimately linked, a cell viability assay was performed. The results showed that REFORCYL®-AION did not induce apoptosis in NHEK cells but kept them alive at concentrations up to 1 % during 24 hours of exposure (data not shown).

Morphological manifestations of autophagy in healthy cells

Under normal conditions, cells exhibited a prominent juxtannuclear Golgi apparatus (stained in green, Fig. 5, upper left panel). With exposure to 1 % REFORCYL®-AION, there was an extensive decrease in Golgi apparatus staining, confirming progressive autophagy and increased autophagosome formation (Fig. 5, upper right panel) as suggested by elevated LC3. This was also observed in the case of the samples exposed to starvation, or starvation and concurrent 1 % REFORCYL®-AION, as shown in the lower panels of Fig. 5. It is noteworthy that the remaining residues of the Golgi apparatus in the starvation control were scattered over the cytoplasm, resembling the type of distribution seen during cellular death [15], while the remaining residues in the REFORCYL®-AION samples remained at the juxtannuclear location, suggesting a highly organised disassembly process as seen in living and healthy cells.



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The well dispersed mitochondrial tubular network under normal conditions is shown in **Fig. 5** (upper left panel) in magenta. Following exposure to 1 % REFORCYL®-AION, mitochondria staining decreased slightly in comparison with the untreated control (**Fig. 5**, upper right panel). Although not apparent to the naked eye, it becomes clear following quantification of fluorescence intensity (**Fig. 7**). Interestingly, mitochondrial morphology resembled that of untreated cells (control). Thanks to their healthy distribution over the whole cytoplasm, autophagosomes could be clearly detected as black “holes” in the mitochondrial staining (**Fig. 5**, upper right panel, enlarged section). Cells exposed to starvation displayed undefined, cloudy mitochondrial staining, suggesting extensive fission of the organelles, which in general leads to enhanced mitochondrial degradation and low energy production. Samples exposed to starvation and concurrent REFORCYL®-AION (**Fig. 5**, lower right panel) exhibited a high-energy interconnected network architecture. Such a mitochondrial morphology is only possible if mitochondria are healthy. Filamentous mitochondrial architecture plays a pivotal role in preventing total degradation and at the same time it provides enough energy for the process of autophagy and is capable of compensating for nutritional deficits. Also here vacuolisation (autophagosomes, black “holes”) was clearly observable (**Fig. 5**, lower right panel,

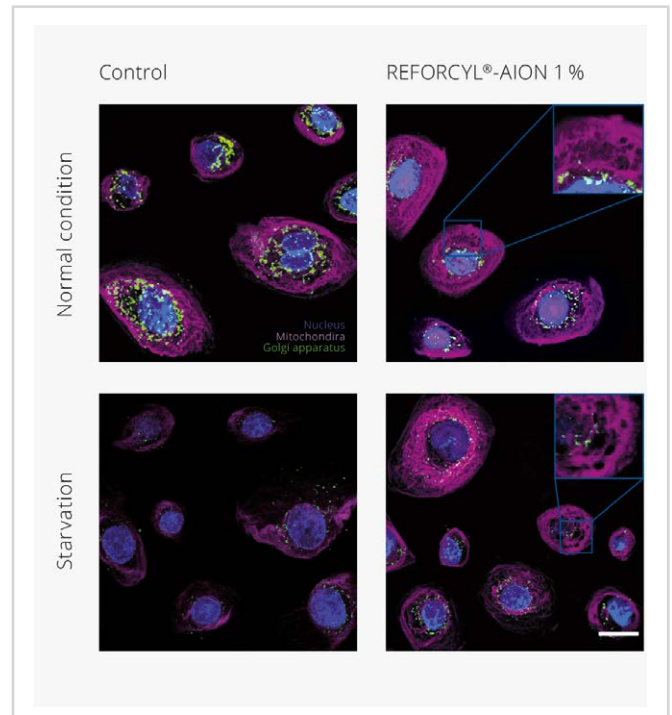


Fig. 5 REFORCYL®-AION is able to induce autophagy by means of Golgi apparatus disintegration but preserves mitochondrial activity and integrity. Immunofluorescence images showing the Golgi apparatus (green) and mitochondria (magenta) and nucleus (blue) in NHEK. Scalebar: 20 µm.

The advertisement features a central illustration of a male scientist with a beard and glasses, wearing a white lab coat and holding a tablet and a vial. To the left is the proDERM logo. To the right is a banner celebrating 25 years of proDERM. Below the scientist are three statistics: +10,000 studies conducted, +50,000 products tested, and +225,000 subjects enrolled. The slogan 'Research to rely on.' is written in a cursive font on the right.

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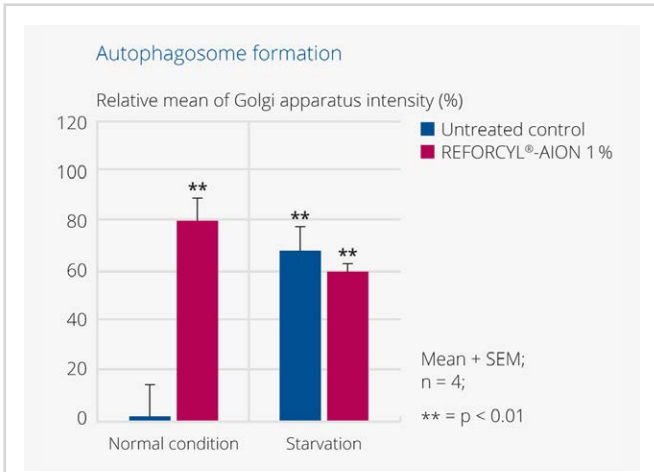


Fig. 6 Quantification of Golgi apparatus immunofluorescence intensity. Exposure to 1 % REFORCYL®-AION resulted in an 80 % increase in autophagosome formation under normal condition.

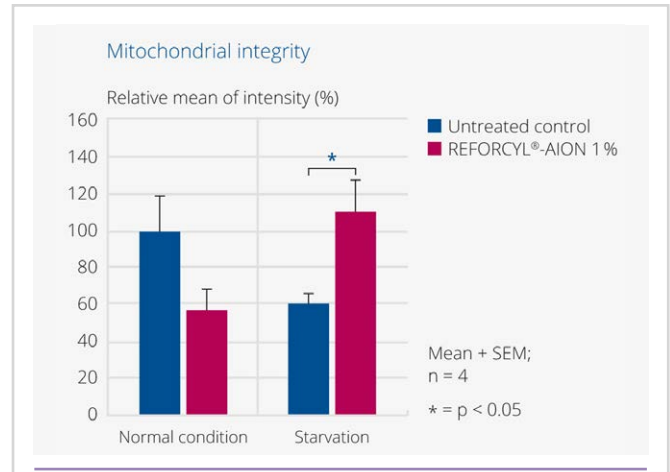


Fig. 7 Quantification of mitochondrial activity. Mitochondrial activity is an indicator of mitochondrial health. Incubation with 1 % REFORCYL®-AION and starvation in combination resulted in an increase in mitochondrial activity by 51 % compared with the starvation control.

enlarged section). In principle, autophagy should result in a decrease of the mitochondrial network as can be seen from a comparison of the normal condition samples with the starvation condition samples. This, however, was not the case when REFORCYL®-AION was present. The only explanation is that, although autophagy was definitely induced, REFORCYL®-AION helped ensure that mitochondria remained in a healthy state with high energy levels. The results of quantification of Golgi apparatus immunofluorescence intensity are shown in Fig. 6. Here, the untreated control was set at 0 %, meaning no autophagosome formation. In cells exposed to 1 % REFORCYL®-AION, there was enhanced autophagosome formation by up to 80 %, while starvation alone resulted in enhancement by 68 % and starvation and concomitant 1 % REFORCYL®-AION led to enhancement by almost 60 %. The experiment confirms that in all conditions there was maximum induction of autophagy.

Strengthening mitochondria under stressed conditions

The results of quantification of mitochondrial immunofluorescence intensity are shown in Fig. 7. The control sample was set to 100 %. A decrease of 43 % was observed in cells exposed to REFORCYL®-AION. Quantification of immunofluorescence revealed a reduction of mitochondrial activity similar to that in starved samples (40 %). This clearly indicates an on-going autophagic process during which damaged and impaired mitochondria were engulfed and degraded in autophagosomes. Quantification of immunofluorescence after concurrent starvation and 1 % REFORCYL®-AION revealed better activity than that seen in control samples. Compared to the starvation samples, mito-

chondrial activity was significantly enhanced by 51 %. This phenomenon of a high ATP-producing interconnected mitochondrial network is observed in cell division before cells enter the energy-costly DNA replication phase. This means REFORCYL®-AION is able to deliver the necessary nutrition and strengthen the mitochondria under stressed conditions such as starvation, providing enough energy for autophagy and the survival process.

General improvement in skin appearance

A survey of the 55 various subjects, female and male, regarding their personal perception of effects on various skin conditions revealed a significant difference between placebo emulsion and emulsion with 3 % REFORCYL®-AION after 56 days of use for most of the parameters under investigation (Fig. 8). Remarkably, the verum treatment was associated with significant improvements in almost all surveyed parameters. At

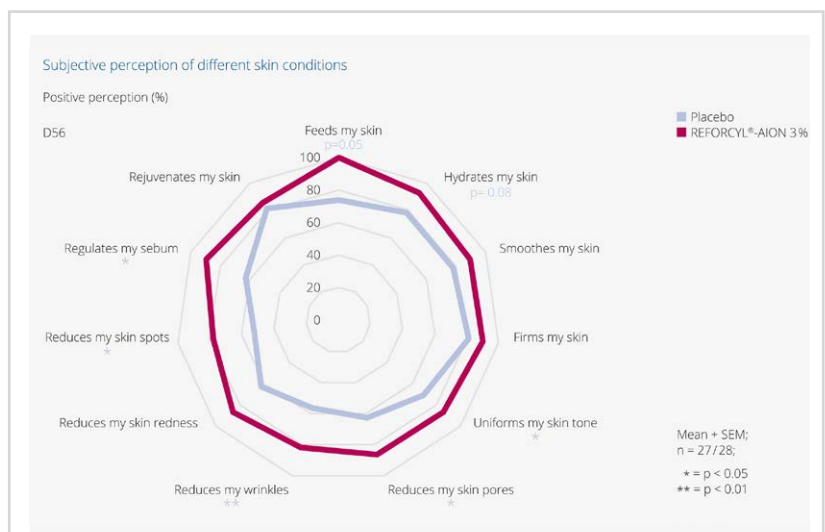


Fig. 8 Subjective perception of various skin parameters. The results revealed significant differences between placebo and verum treatment.

least 80 % of the volunteers using REFORCYL®-AION emulsion were satisfied with the results of treatment. Noteworthy is the fact that 100 % of the verum users described their skin as being better fed. Around 90 % of the subjects evaluated skin hydration, smoothness, firmness and sebum regulation as positive while 86 % in general were satisfied with results in terms of skin uniformity, skin redness, pore reduction and skin rejuvenation.

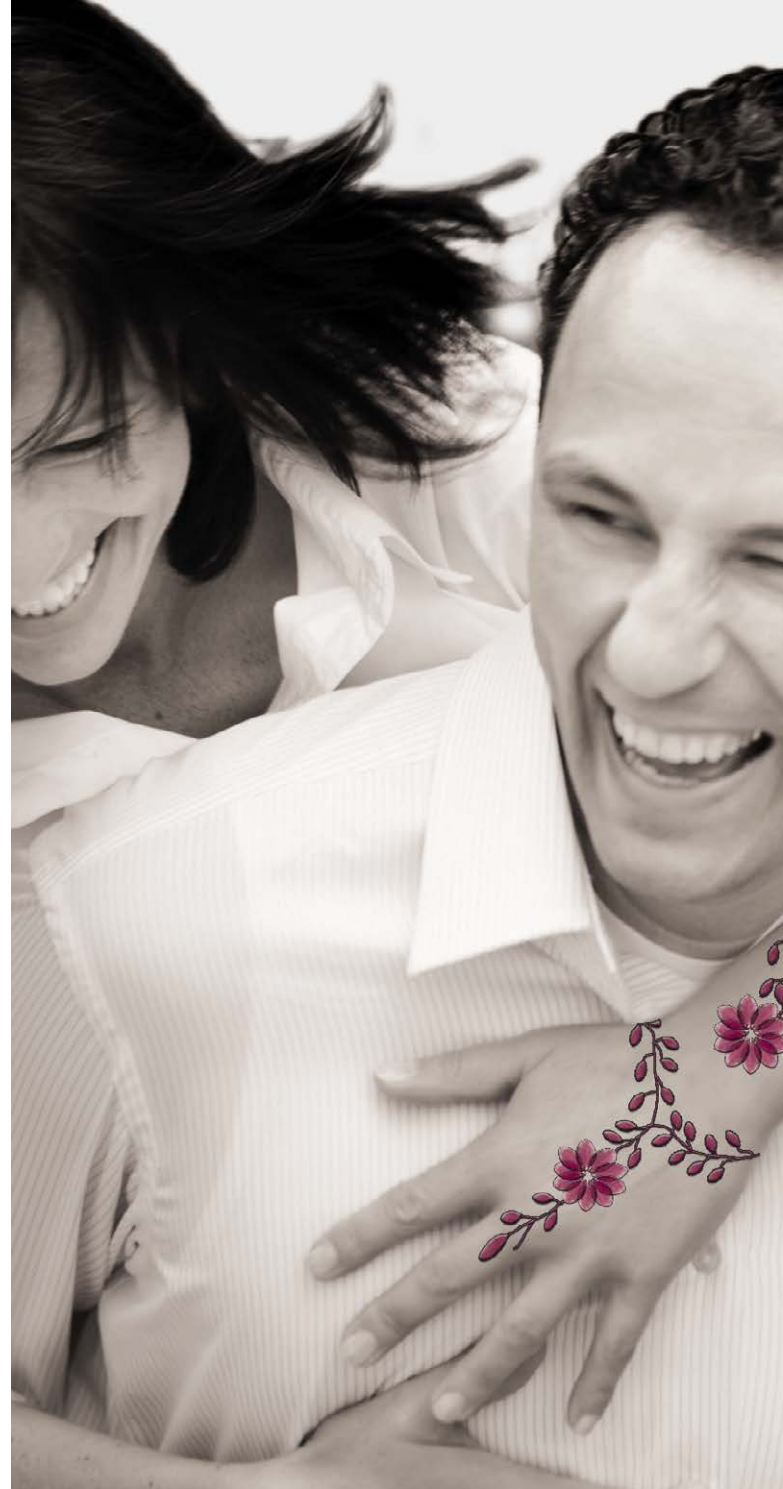
Conclusion and Discussion

In view of the overall results, it can be concluded that REFORCYL®-AION is able to induce autophagy under normal conditions, employing 80 % of the Golgi apparatus' cisternae and resulting in the degrading of impaired mitochondria. Interestingly, when autophagy is induced by starvation, an emergency reserve of rapidly available amino acids, proteins and carbohydrates is released, transferring mitochondria into a high-energy fused network that serves as a defence against apoptosis and at the same time provides enough energy for an effective autophagy process.

REFORCYL®-AION combines cutting-edge molecular findings with the principles of carbon-neutrality and it represents a holistic upcycling concept beneficial for the skin and our environment.

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contact

Emina Besic Gyenge
Stefan Hettwer
Brigit Suter
Sandra Breitenbach
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Green Extraction with a New Solvent for Performant Biomimetic Skin Actives

A. Lhermitte, A. Rossignol-Castera, A. Cao

abstract

Hallstar France has succeeded in extracting plant metabolites with a patented process named Oléo-éco-extraction (OEE). OEE is an eco-process intensified by high energy microwaves (MW) and low frequency ultrasound (US) using natural triglyceridic oils as green, safe and bioactive extractants. To increase extraction efficiency and reduce production time, an innovative biomimetic solvent OSMOST™ (Oléo-Supra-Molecular Solvent) was developed. It is inspired both from plant membrane and skin cell chemistry. Using OSMOST™ allows us to increase the extraction yield of phyto-molecules from natural plant raw materials while at the same time functioning as a delivery system for the active phyto-molecules to enhance their bioavailability to the skin.

Improve our process to enhance cosmetic efficacies

There has been strong interest in extracting natural antioxidant molecules from plants and to solubilize them in formulations for medical, cosmetic and food applications. Many common plant-derived antioxidant molecules are polar, such as ascorbic acid. Others are nonpolar, such as tocopherols. Conventional solid-liquid extraction processes will favor either one kind or the other depending on the extraction solvent used.

Ionic liquids have been proposed as new extraction media with the capacity to solubilize efficiently both polar and nonpolar compounds. Vegetable triglyceridic oils, in particular virgin oils, naturally contain nonpolar compounds but also some polar or amphiphilic compounds that are seemingly also good candidates as a liquid matrix for extracting both types of compounds, with the added advantage of being natural and compatible with market trends and new environmental regulations.

In order to maximize the solvent properties of vegetable oils, Hallstar France applied its patented “Oléo-éco-extraction” process which utilizes both ultrasound and microwaves energies. This process fulfills the criteria of green and sustainable extraction methods of natural products. To enhance the polarity of the natural oils so that we can solubilize a rather large amount of more polar species, an auxiliary amphiphilic agent was introduced into the natural oil to increase the affinity between polar antioxidants and vegetable oils.

For most of Hallstar Beauty's existing Oléoactif® Active Naturals products for the cosmetic market, polyglyceryl-3-diisostearate (PG3DS) was used as the auxiliary amphiphilic agent. This bio-based auxiliary agent is known for its emulsifying properties and is commonly used in cosmetic cream formulation. It was shown that vegetable oils can become structured (colloidal organization) with this component, depending on its concentration. Moreover, a correlation between an onset of structuration and an enhancement in the polyphenol's recovery was shown above a critical PG3DS concentration. However, the characterization of the aggregation in oils is not straightforward because monomers

or dimers coexist with larger aggregates at high concentrations. X-ray scattering techniques and molecular dynamics simulations have been used to study the extraction process to elucidate the mechanism for increased efficiency. Equipped with the knowledge of the structures formed by bio-compatible amphiphiles in natural oils, Hallstar Beauty proceeded to develop our next generation of oil-based solvent, OSMOST™.

OSMOST™ is designed to capture with high efficiency the phytocompounds inside the vegetable cells and to transfer these molecules inside the skin. We select and balance two amphiphilic compounds, oleic acid and phosphatidyl choline, to create a lipidic solvent with high affinity for the plant cell membranes to facilitate the extraction of the phytocompounds contained in these cells. Furthermore, because OSMOST™ is analogous to the phospholipidic bilayers of skin cell membranes and to the *stratum corneum* lipid lamellar regions, penetration of the extracted phytocompounds inside the skin is facilitated.

Composition and properties of OSMOST™

OSMOST™ is therefore the third generation of oil-based solvent developed by Hallstar Beauty. For high extraction power, we tested ingredients that are naturally present in the plant cells and can create links or interactions with other molecules. For instance, the mechanism of hydrogen-bond donor and acceptor is commonly applied in antioxidation. An antioxidant can give a hydrogen to a peroxide that is able to accept it. For good transferability through skin and bioavailability, the OSMOST™ ingredients must be present in lipids of *stratum corneum*, hydro-lipidic film and cell membranes. Oleic acid (Fig. 1) is an unsaturated fatty acid with 18 atoms of car-

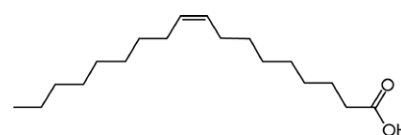


Fig. 1 Oleic Acid.

bon. It contains a double bond in its carbon chain structure, creating an angle which increase the fluidity of the molecule. Its acid function, the carboxyl group, provides reactivity. It is a non-polar and protic solvent. It is the most abundant monounsaturated fatty acid. It has low melting point (liquid at room temperature), low color, and good oxidative stability. These are good qualities for a solvent of extraction. Oleic acid is a natural hydrogen-bond donor present in all cells and is able to modify the trans-epidermal flow by increasing the intercellular disorder of the *stratum corneum*. It acts as an enhancer of cutaneous penetration and contributes to skin hydration. There are three types of lipids in *stratum corneum*: ceramides (40%), fatty acids (25%) including oleic acid, and cholesterol/cholesterol sulfate (35%) (Fig. 2). They have crucial roles in skin barrier function. Several research teams studied the lipids' function in the *stratum corneum* and more precisely in the cutaneous penetration [1], [2], [3]. A dual mechanism has been identified: *in vivo*, this fatty acid is able to "disorganize" the intercellular lipids, facilitating the intercellular penetration route. The second mechanism is the creation of lacunae by phase separation. This is the creation of areas rich in oleic acid in which penetration is facilitated, which shows that the cutaneous barrier can be modified by the application of exogeneous lipids like oleic acid.

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Phosphatidyl-Choline (PC) (Fig. 3) is a hydrogen-bond acceptor with a high affinity for cells membranes. PC is an amphiphilic compound; it is aprotic which means that it can accept a hydrogen atom and create a hydrogen bond. PC is present in the phospholipidic bilayers of plant and skin cell membranes where it contributes to membrane fluidity. Studies have demonstrated that PC diffuses into the *stratum corneum* and enhances transdermal penetration by increasing the elasticity of the lipid bilayers [5], [6]. This capacity should be effective on lipid bilayers of both intercellular cement and cells. That is

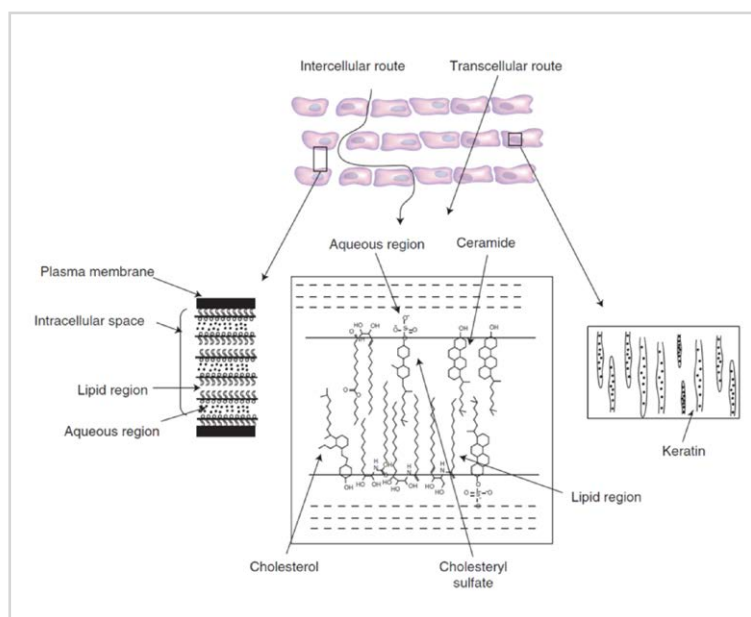


Fig. 2 Diagrammatic representation of the *stratum corneum* and the intercellular and transcellular routes of penetration. Figure reprinted from [4].

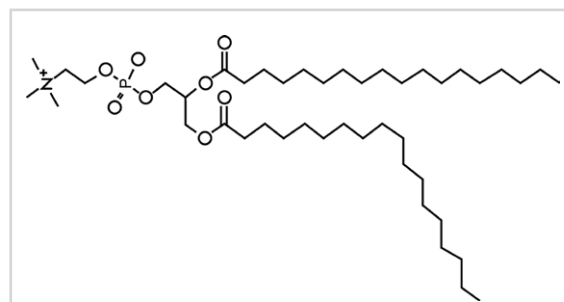


Fig. 3 Phosphatidyl-Choline (PC).

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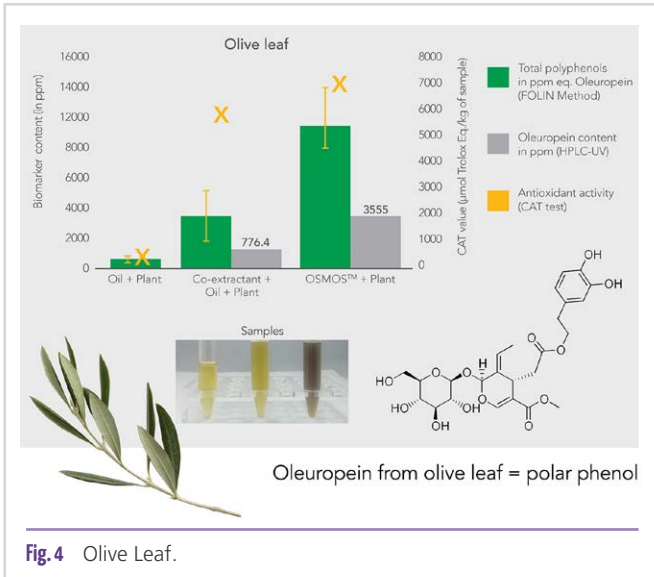


Fig. 4 Olive Leaf.

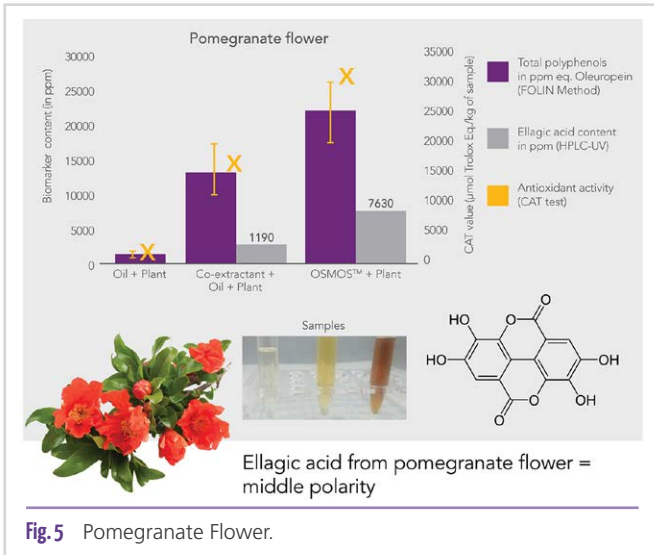


Fig. 5 Pomegranate Flower.

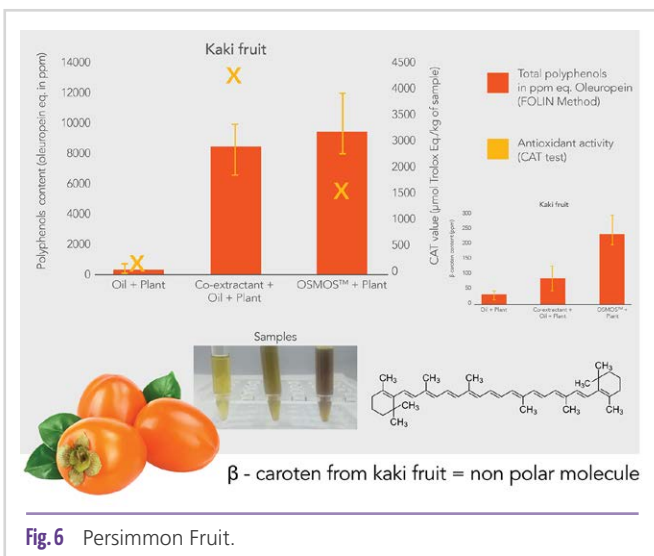


Fig. 6 Persimmon Fruit.

why PC could promote intercellular and to a lesser extent the transcellular penetration route (Fig. 2).

Optimize extraction yields

We have demonstrated that OSMOS™ gives a better yield extraction of anti-free-radical polar and nonpolar molecules (flavonoids, phenolic acids, carotenoids,...) from leaves, flowers and fruits with co-intensified [MW+US] system, versus classical OEE with a vegetable oil without or with co-extractant (i.e., auxiliary amphiphilic agent).

We applied the OSMOS™ OEE process to three different plants and compared the results together with the classic OEE process using a vegetable oil with and without a co-extractant:

- 1) Olive leaves as model for polar phenols like oleuropein (Fig. 4)
- 2) Pomegranate flowers as a model for medium polarity phenols like ellagic acid (Fig. 5)
- 3) Persimmon fruit as model for nonpolar molecules like a carotenoid, beta-carotene (Fig. 6)

The total phenols analysis was conducted using the Folin-Ciocalteu method. The CAT test evaluates anti-free radical/antioxidant properties. The Biomarker analyses were conducted using a HPCL Method. The vegetable oil used is deodorized rapeseed oil and the co-extractant is PG3DS.

We can see that the results are plant and molecule dependents. In each case, OSMOS™ is the best solvent for extracting the antioxidant compounds, whether polar or nonpolar.

Reduce Trans Epidermal Water Loss (TEWL)

To test the ability of an OSMOS™ oil-based active to restore the cutaneous barrier, we carried out ex vivo tests on irritated human skin samples and evaluated the TEWL after one single application. We compared an OSMOS™ oil-based active (LOOK Oléoactif®) to an aqueous extract of the same plant at equal concentration of total polyphenols.

As early as 30 minutes after the product's application, the OSMOS™ oil-based active shows a strong TEWL reduction of - 59% versus T0 (Fig. 7). The action is maintained for up to 4 hours. This positive effect of skin barrier restoration is mainly due to the lipidic nature of OSMOS™. But as OSMOS is a solvent, we should keep in mind that its purpose is to extract a wide range of plant active molecules and transfer them to the skin cells. This vectorization of the extracted plant compounds inside the skin will maximize their biological activity.

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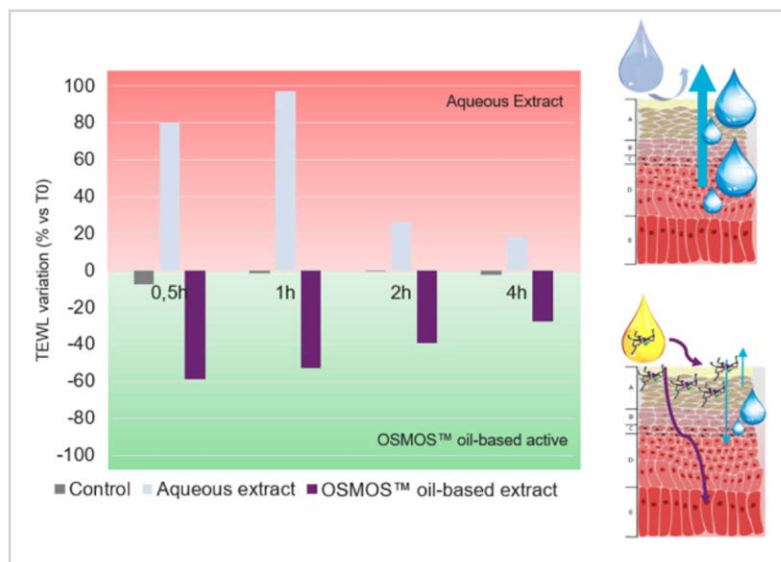


Fig. 7 TEWL variations.

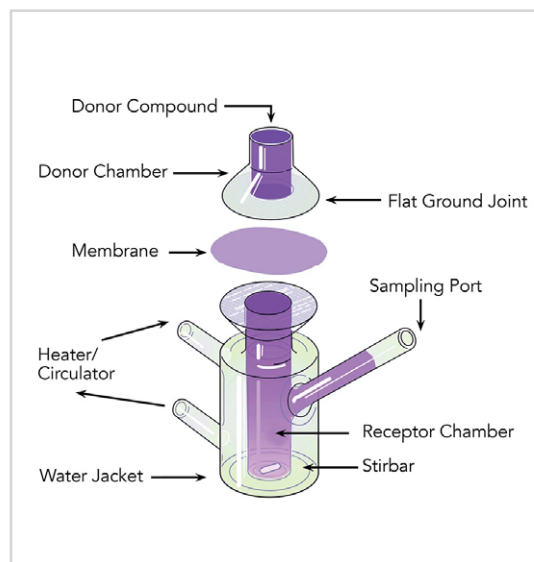


Fig. 8 Diagram of a Franz diffusion cell.

Enhance skin penetration

The enhanced skin penetration is demonstrated with Franz diffusion cells studies.

We conducted *ex vivo* transdermal delivery experiments. Franz diffusion cells (Fig. 8) were used with human skin explants, held in contact with the active ingredient for 24 hours. Skin sections were sprayed with a specific reagent for flavonoids. The occurrence of blue fluorescence spots indicates the presence of flavonoids. We compared the OSMOS™ oil-based active (LOOK Oléoactif®) (Fig. 9) to an aqueous extract of the same plant at equal concentration of total polyphenols.

The skin section treated with the OSMOS™ oil-based active presents an intense blue fluorescence signal located in the epidermis while for the skin treated with the aqueous extract, the signal is nearly invisible. Flavonoids extracted in the OSMOS™ oil-based active have been delivered to the skin cells.

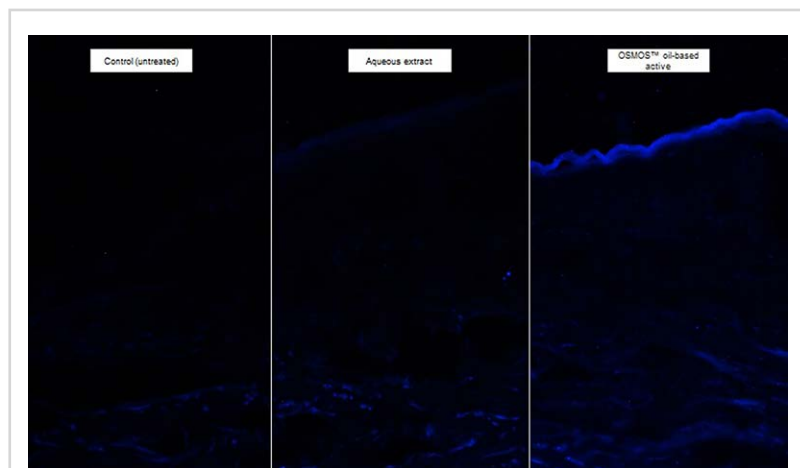


Fig. 8 Microscopic observations of skin sections sprayed with specific reagent for flavonoids.

Be inspired by plant and skin lipidic compounds to restore skin barrier and maximize biological efficacy

OSMOS™ provides the opportunity to create a new plant and skin biomimetic system for green intensified eco-extraction of cosmetic actives that are safe, non-oxidized, stable, dry-touch, organic-certified and highly bioavailable. Its biomimetic approach provides high yields of extraction, restoration of skin barrier and enhanced skin penetration for more effective cosmetic actives.

Hallstar Beauty has successfully commercialized an eye-care active, LOOK Oléoactif® using the OSMOS™ solvent. The efficacy of the award-winning LOOK Oléoactif® was validated using *in vitro* and *in vivo* tests on anti-dark circle and microcirculation activity.

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authors

Annabelle Lhermitte
Anna Rossignol-Castera

Hallstar France
50 rue du Rajol
Fréjorgues Est
34 130 Mauguio | France

Ethyl Macadamiate as a Botanical Silicone Alternative in Hair Conditioners

T. Quinn

abstract

This research explores the hair conditioning benefits of ethyl macadamiate compared to commonly used low viscosity silicones. Ethyl macadamiate is a macadamia oil derived ester used in cosmetics and personal care products for its silky silicone-like after feel, oxidative stability, and dispersion abilities. It continues to be challenging to find botanically derived ingredients that provide the same efficacy and feel as silicones. Silicones are used in hair conditioning and treatment products to provide heat protection, reduce wet and dry comb force, and deliver shine without weighing down the hair during use. A series of *ex vivo*, vehicle-controlled studies were carried out to determine the performance benefits of incorporating ethyl macadamiate as compared to silicones into leave-in hair conditioners. The results show that ethyl macadamiate functioned similarly to or better than phenyl trimethicone and cyclopentasiloxane, and was able to provide the following statistically significant benefits: reductions in wet and dry comb force and hair breakage, heat protection, increased shine, and increased consumer perception of smoothness/sleekness, shine, and softness. Ethyl macadamiate provides formulators with an effective natural silicone alternative.

Introduction

Ethyl macadamiate is a botanically derived ester that has been proven to mimic the feel and function of silicones on the skin. It can be used alone or in combination with other ingredients to deliver moisturization and radiance to the skin with a silky, smooth after feel [1]. Silicones used in skin care products also function in hair care products to condition hair. This research explores the conditioning benefits (*i.e.* comb force, heat protection, and shine) of ethyl macadamiate compared to the commonly used cyclopentasiloxane and phenyl trimethicone in hair conditioners (see **Tab. 1**) at low and high loading levels of the respective conditioning agents. Consumer perception of these benefits provided by ethyl macadamiate as compared to phenyl trimethicone was also confirmed in both tress and take-home use studies in order to further demonstrate that ethyl macadamiate can also be used as a silicone alternative in hair care products.

Materials and Methods

All studies were randomized, conducted single- or double-blind, as applicable, and carried out under controlled temperature and humidity conditions.

Wet and Dry Comb Force

Naturally curly, brown hair tresses (De Meo Brothers, Inc.) were double-bleached (90 minutes per bleach cycle) using the Radical Bleach Kit (Beyond the Zone, Seattle, WA) and

Hair Cream

Ingredient	%wt./wt.
Water	87.51
Conditioning Agent	5.00
Hydrogenated Sunflower Seed Oil Polyglyceryl-3 Esters (and) Hydrogenated Sunflower Seed Oil Glyceryl Esters (and) Cetearyl Alcohol (and) Sodium Stearoyl Lactylate	3.00
Citric Acid (and) Water	1.20
Cyclopentasiloxane	1.00
Phenoxyethanol (and) Ethylhexylglycerin	0.90
Hydrolyzed Soy Protein	0.65
Carbomer	0.25
Aminomethyl Propanol	0.24
Fragrance	0.15
Disodium EDTA	0.10

Hair Serum

Ingredient	%wt./wt.
Conditioning Agent	86.70
Glyceryl Tribehenate / Isostearate / Eicosandioate	10.00
Polyglyceryl-3 Beeswax	2.70
Phenoxyethanol	0.60

Tab. 1 Test Article Compositions (%wt./wt.).

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washed with a 10% sodium lauryl sulfate (SLS) solution prior to use in the study. This was done to remove any oils present on the hair fibers.

Test article treatment consisted of a 30 second rinse with running lukewarm (30–32°C) tap water with constant pressure (100% flow) using the Intellifaucet Batch and Temperature Control System (Hass Manufacturing Company, Averill Park, NY), one application of the leave-in hair cream or serum test article (1.0 ml/1.5 g of hair or 0.5 ml/1.5 g of hair, respectively), combing to detangle hair and distribute the conditioner, two to four minutes of blow drying, and six passes of a flat iron at 450°F (232°C). Eight tresses per test article were evaluated. Peak wet and dry comb force (gram-force) measurements were made before and after test article treatment using a Test Resources Q Series (100Q) Universal Testing Machine (TestResources, Inc), and percent reduction in comb force was calculated. (The hair cream and hair serum test article compositions can be found in **Tab. 1.**)

Heat Protection

For the leave-in hair cream, naturally curly, brown hair tresses (International Hair Importers & Products) were washed with a 10% SLS solution prior to use in the study. Test article treatment consisted of a 30 second rinse with running lukewarm (32–36°C) tap water with constant pressure (100% flow) using the Intellifaucet Batch and Temperature Control System, one application of the leave-in hair cream test article (1.0 ml/1.5 g of hair), combing to detangle hair and distribute the conditioner, two to four minutes of blow drying, and 100 passes of a flat iron at 450°F (232°C). Eight tresses per test article were evaluated. Tresses then underwent a reversion period (*i.e.* the hair reverts back to a naturally curly state due to humidity exposure) in controlled temperature and elevated humidity conditions (30–36°C and 94–99% relative humidity) for four (4) hours. [2] The hair tresses were then allowed to acclimate overnight in controlled temperature and humidity conditions (22–24°C and ≤21% relative humidity). Grooming consisted of approximately one thousand (1000) controlled combs; broken hair fibers were collected and visually counted.

For the leave-in hair serum, naturally curly, brown hair tresses (De Meo Brothers. Inc.) were double-bleached (90 minutes per bleach) using the Radical Bleach Kit and washed with a 10% SLS solution prior to use in the study. Test article treatment consisted of a 30 second rinse with running (20–22°C) tap water with constant pressure (100% flow) using the Intellifaucet Batch and Temperature Control System, one application of the leave-in hair serum test article (0.2 ml/1.5 g of hair), combing to detangle hair and distribute the conditioner, two to four minutes of blow drying, and 100 passes of a flat iron at 450°F (232°C). Eight tresses per test article were evaluated. Tresses then underwent a reversion period in controlled temperature and elevated humidity conditions (27–35°C and 94–99% relative humidity) for four (4) hours. The hair tresses were then allowed to acclimate overnight in controlled tem-

perature and humidity conditions (21–24°C and 21–45% relative humidity). Grooming consisted of approximately one thousand (1000) controlled combs; broken hair fibers were collected and visually counted.

Shine Analysis

Naturally straight, brown hair tresses (De Meo Brothers. Inc.) were washed with a 10% SLS solution prior to use in the study. Test article treatment consisted of dampening hair, one application of the leave-in hair cream or serum test article (0.5 ml/1.5 g of hair), combing to detangle hair and distribute the conditioner, air-drying overnight, and five passes with a flat iron at 450°F (232°C). Five tresses per test article were evaluated. Hair shine measurements were made using a Glossymeter GL 200 (Courage+Khazaka, Köln, Germany) on untreated hair/no heat, untreated hair/with heat, treated hair/no heat, and treated hair/with heat, and percent change in hair shine was calculated as compared to untreated hair.

Consumer Perception

For the leave-in hair cream, naturally curly, brown hair tresses (International Hair Importers & Products) were washed with a 10% SLS solution prior to use in the study. Test article treatment consisted of one application of the test article (0.5 ml/1.5 g of hair), combing to detangle hair and distribute the conditioner, and air-drying overnight. Three tresses per test article were evaluated, and hair tresses were prepared no more than seven days before Day 1 of the study.

Prior to the start of the study, each tress was combed with five repetitions with the fine-toothed end of a comb. On Day 1, female subjects (n=25) reported to the clinical site to read and sign an Informed Consent Form and complete a short Eligibility Questionnaire. The subjects were given the opportunity to ask any questions about the study and were then given a copy of the Informed Consent Form along with the Subject Instructions.

Upon completion of the required paperwork, subjects were instructed to wash their hands to remove excess skin oils. Subjects then entered the testing room individually to evaluate each set of tresses and record their evaluations on the Consumer Preference Questionnaire. (Percent preference was calculated using the data of the subjects that indicated a preference.) Subjects were only able to perform tactile evaluations on one of the three treated tresses per test article (*i.e.* this was the only tress that subjects could physically touch). Subjects were also asked to wash their hands between evaluations to prevent carryover between test articles. One tress that underwent the pre-treatment phase, but that did not receive treatment, served as a visual comparator. No evaluations were conducted on this tress.

The leave-in hair serum was evaluated using a split-head, consumer use study comparing the two test articles for their ability to effectively condition hair as evaluated by consumer perception. Female subjects (n=24) underwent a one day wash



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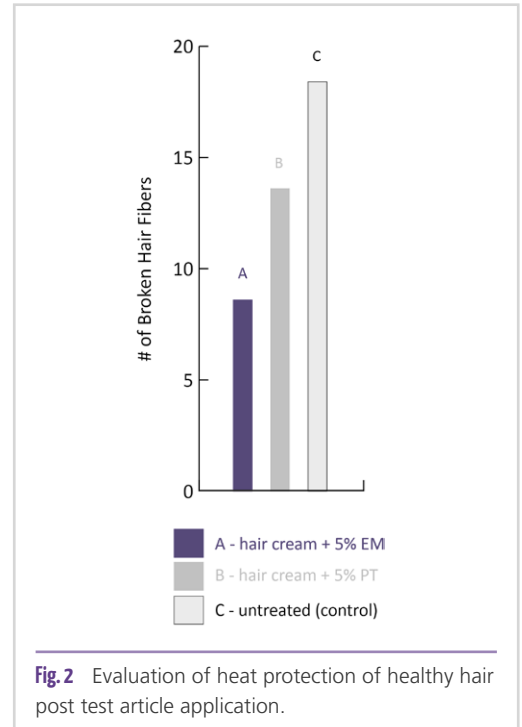
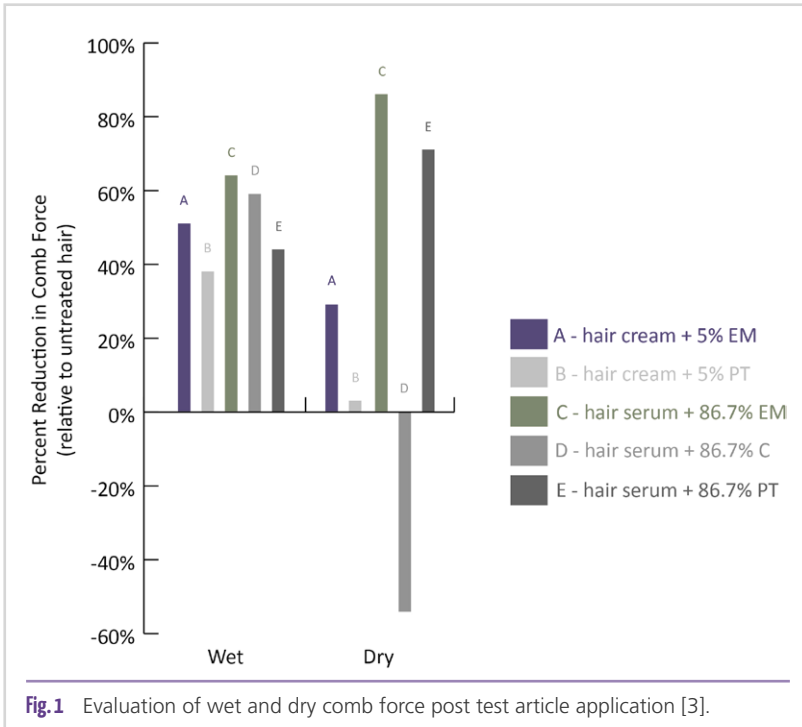
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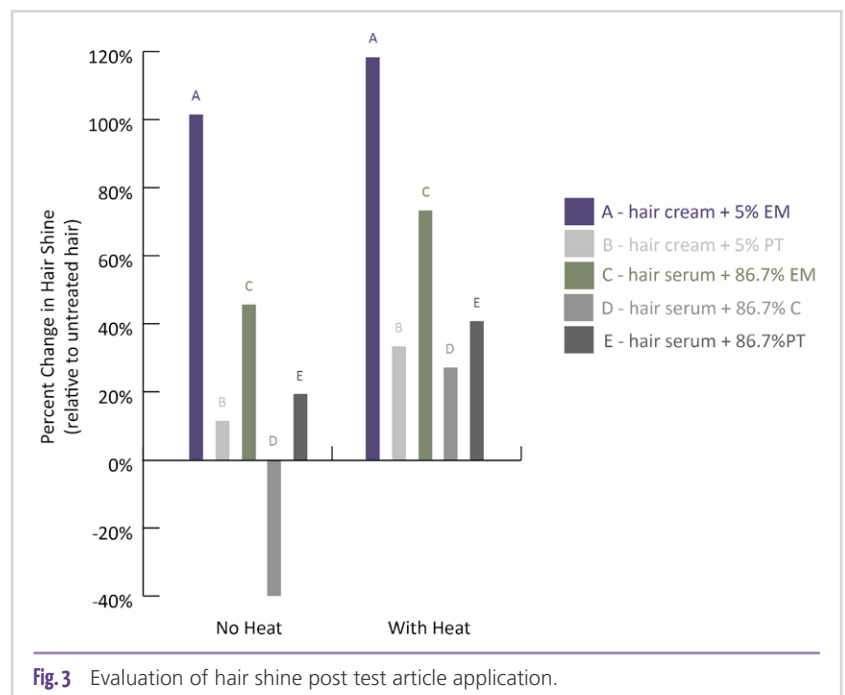


out in which they were not allowed to wash or condition their hair (e.g. shampoos, conditioners, hair serums, or hair oils). Subjects were then given the two leave-in hair serums, to be used on the right or left side of their head as assigned, and a standard shampoo [Garnier Fructis, Pure Clean Shampoo (L'Oréal, Paris, France)], to be used every other day for one week. Subjects were instructed to wash their hair with the provided standard shampoo followed by application of the test article leave-in hair serums by applying a 1/2 dime sized amount of serum to the hair on the assigned side of the head. This was done by rubbing the test article between their hands, then pulling through the hair to the ends, avoiding the roots. Subjects reported back to the testing facility after four total test article uses, where they were required to complete a Consumer Perception Questionnaire. Percent preference was calculated using the data of the subjects that indicated a preference.

Results

It was determined that ethyl macadamiate performed similar to or better than commonly used silicones in hair care products. At low concentrations, ethyl macadamiate produced a significant ($p < 0.05$) reduction in wet and dry comb force as compared to phenyl trimethicone and compared to baseline (**Fig. 1**). Ethyl macadamiate also provided heat protection of healthy hair thus reducing hair breakage 37% better than phenyl trimethicone ($p < 0.10$) and 53% better than untreated hair ($p < 0.05$) (**Fig. 2**). With re-

gard to hair shine, ethyl macadamiate increased hair shine almost eight times more than the hair cream with 5% phenyl trimethicone without the use of heat ($p < 0.05$), and greater than two and a half times more with the use of heat ($p < 0.05$) (**Fig. 3**). These results were also perceived by consumers, who indicated at least an 88% preference for ethyl macadamiate over the phenyl trimethicone with regard to smoothness, shine, and softness of hair ($p < 0.05$) (**Fig. 4**). At higher concentrations, ethyl macadamiate produced very similar results to lower concentrations, demonstrating a 45% greater reduction in wet comb force than phenyl trimethicone ($p < 0.05$), and larger reductions in dry comb



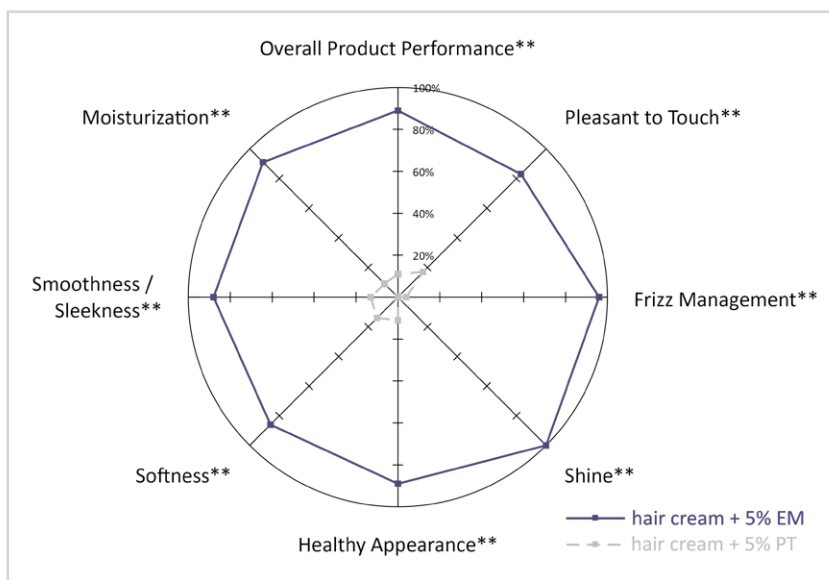


Fig. 4 Consumer perception evaluation of hair tresses post test article application [4].

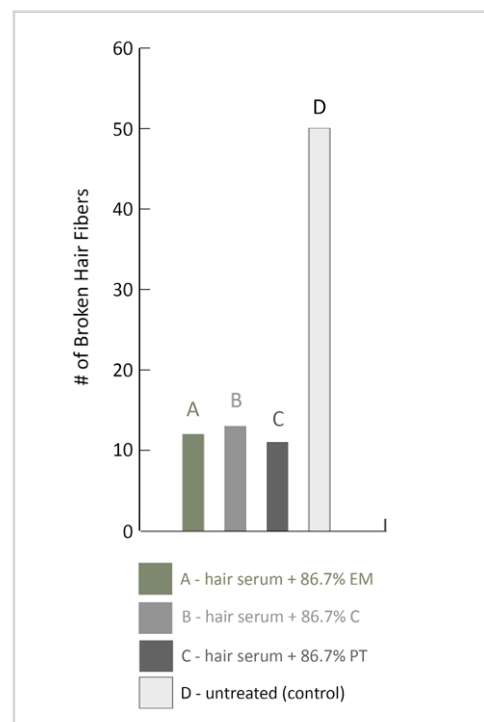


Fig. 5 Evaluation of heat protection of damaged hair post test article application.

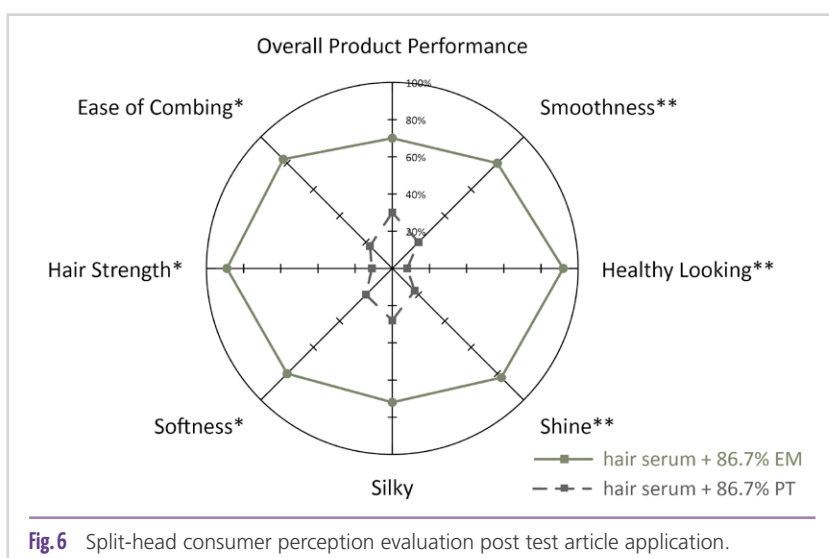


Fig. 6 Split-head consumer perception evaluation post test article application.

force than both phenyl trimethicone and cyclopentasiloxane ($p < 0.05$) (Fig. 1). Ethyl macadamiate provided similar heat protection to damaged hair as phenyl trimethicone and cyclopentasiloxane ($p < 0.05$ relative to untreated hair for all test articles) (Fig. 5). Ethyl macadamiate also provided up to two times more shine than the silicones without the use of heat ($p < 0.05$) and almost two times more shine than cyclopentasiloxane with the use of heat ($p < 0.05$) (Fig. 3). Additionally, when consumers utilized the hair serums in the take-home use study, at least 80% of them preferred ethyl macadamiate over phenyl trimethicone for smoothness, shine ($p < 0.05$), softness, and ease of combing ($p < 0.10$) (Fig. 6).

Discussion

Previous research demonstrated the ability of ethyl macadamiate to mimic the sensory profile and function of silicones in skin care products. [1] Its light, silky emolliency gives it a skin and hair feel similar to that of low viscosity silicones

without the volatility. Ethyl macadamiate has excellent oxidative stability allowing for the formulation of stable finished products. Current research indicates that ethyl macadamiate is also an ideal silicone alternative for hair care applications. Its ability to reduce comb force and breakage can be attributed to its high spread; and its lack of volatility allows it to lightly coat the hair, providing heat protection without weighing the hair down. Additionally, the high refractive index of ethyl macadamiate lends to its ability to increase shine even more so than silicones. The instrumental results were also perceivable to consumers on both tresses and in actual use of the product, resulting in a higher preference for smoothness/sleekness, softness, shine, and ease of combing. The characteristics of ethyl macadamiate shown in this research qualify it as a substitute for low viscosity silicones in leave-in hair care products.

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- [3] For all figures EM = ethyl macadamiate, PT = phenyl trimethicone, and C = cyclopentasiloxane.
- [4] For Figures 5 and 6, statistical (**) and directional (*) significance was apparent where indicated ($p < 0.05$ and $p < 0.1$, respectively). The preference data does not include subjects that indicated no preference.

contact

Tiffany Quinn
tiffany.quinn@floratech.com

Floratech
291 E El Prado Court
Chandler, AZ 85225
USA

Combination of Lactic Acid with 1,2-hexanediol – a New Possibility to Stabilise Rinse-off Formulations

K. von Nessen, F. Weiher, M. Neubauer, T. Kerl, J. Preuschen

abstract

In recent years the demand from consumers for natural preservation systems for personal care products has increased significantly. Since many preservatives are not sufficiently effective against all microbes when used alone, more and more often a combination with preservation boosters such as 1,2-hexanediol is required. One well-established natural preservative is lactic acid, which is known to reduce bacteria in aqueous systems. In this study, preservation stress tests according to the European Pharmacopeia (Ph. Eur. or EP) were carried out for single ingredients and combinations of lactic acid with 1,2-hexanediol in an aqueous solution of sodium laureth sulfate (SLES) as a basic system. Sufficient preservation of the basic system could not be achieved with the individual substances alone. In contrast, in combination the two showed a synergistic effect and the test was passed. This synergistic effect of the combination of lactic acid and 1,2-hexanediol was verified in a shower gel formulation.

Introduction

Most rinse-off products like shampoos and liquid soaps are formulated using sodium laureth sulfate (SLES). This widely used surfactant is very efficient for cleaning but aqueous systems based on it are challenging to preserve.

For this reason paraben mixtures and preservative systems based on methylisothiazolinone and chloromethylisothiazolinone are widely used to ensure product stability. However, both the parabens and the isothiazolinones are suspected to be allergenic and sensitising, leading to a consumer-driven pressure on formulators to look for alternative preservation systems. Consequently phenoxyethanol has become the main preservative being used in personal care products today [1]. Although many consumers would prefer more natural alternative preservation systems, sustainable replacements such as lactic acid alone cannot guarantee sufficient stabilisation in highly aqueous systems with neutral pH levels, such as shampoos and liquid soaps.

Multifunctional actives such as 1,2-hexanediol and caprylyl glycol (1,2-octanediol) have long been used in personal care products in high concentrations for “preservative-free” formulations. These demonstrate antimicrobial activity in addition to their moisturising properties. Unfortunately, the level of preservation they provide is not sufficient in personal care products when they are used alone.

The cosmetics industry has therefore developed many combinations of 1,2-alkanediols and other preservative systems to meet this need. These include synergistic combinations of 1,2-alkanediols in mixtures with other 1,2-alkanediols [2], with parabens [3], with glyceryl ethers [4], with hydroxyacetophenone [5] and with many other preservatives. Interestingly the combination with lactic acid is not well known in the literature.

It would inevitably take some time to develop new preservatives and register them. Hence formulators urgently require new combinations of currently available preservative boosters to replace existing preservatives which might soon be banned.

1,2-Hexanediol / WeylCare® HexaPB from WeylChem Performance Products GmbH

1,2-Hexanediol is sold as a preservative booster to reduce the required concentration of common preservatives such as parabens and phenoxyethanol. It deactivates microbes via penetration of their lipid cell walls. 1,2-Hexanediol works over a broad pH range and achieves transparent formulations with 1 wt% concentration.

The preservative booster can help to solubilise hydrophobic molecules, stabilise surfactant-containing formulations and



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prevent crystallisation of highly concentrated formulations. It has a moisturising effect when used in personal care products.

L(+)-Lactic Acid from Jungbunzlauer

L(+)-lactic acid occurs naturally in fermented foods or as part of the human metabolism. It is an approved food ingredient and readily biodegradable. Industrial production is typically based on the fermentation of renewable raw materials such as corn, thus lactic acid is of natural origin. Due to its antimicrobial properties lactic acid is used, inter alia, in acidic cleaners and hand soaps for disinfection purposes. In its neutralised form, as sodium or potassium lactate, it is a well-known and widely used preservation agent in processed meat and other foodstuffs. Furthermore, lactates are efficient moisturisers. Due to its bacteriostatic properties and because it addresses major trends in cosmetics such as naturalness, safety and sustainability, lactic acid is the ideal candidate to be explored for supporting the preservation of personal care formulations. It is known that lactic acid is mainly active against bacteria, while yeast and mould are less susceptible to its biocidal effect. Therefore, to achieve reliable and broad spectrum efficacy, in particular at pH values typical of cosmetic formulations (skin pH neutral), lactic acid needs a synergistic partner or booster.

Results

During the development of a personal care product, a preservation efficacy test or challenge test is in general required to analyse the efficacy and the stability of the preservative system over time.

Analysis of antimicrobial preservation efficacy

Preservation tests according to the European Pharmacopoeia (Ph. Eur. or EP) were performed in this study to probe antimicrobial preservation efficacy. These tests involve the inoculation of a defined amount of product with a known amount of microorganisms comprising bacteria, yeasts and moulds. For this test, five different test germs including *Staphylococcus aureus* (gram-positive coccus), *Pseudomonas aeruginosa* (gram-negative bacillus), *Escherichia coli* (gram-negative bacillus), *Candida albicans* (yeast), and *Aspergillus brasiliensis* (mould) were used. To prevent additional contamination, all tests were performed in the original product packaging. In addition, the containers were protected from light and incubated at room temperature for 28 days prior to inoculation. The count plate method was used to determine the number of viable microorganisms existent in the inoculated suspension versus the ini-

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	Test criteria	Log reduction (Rx), NI = no increase vs. previous			
		2d	7d	14d	28d
Bacteria	A	2	3	-	NI
	B	-	-	3	NI
Fungi	A	-	-	2	NI
	B	-	-	1	NI

Tab.1 Criteria of acceptance for Ph. Eur. test.

tial concentration of colony forming units (CFU)/g in the test product. The containers were analysed 2, 7, 14 and 28 days after inoculation and the decay rate of the microorganisms was measured over this period in relation to the acceptance criteria. Based on the number of microorganisms (CFU/g) their percentage relative to the initial concentration could be calculated at each time interval.

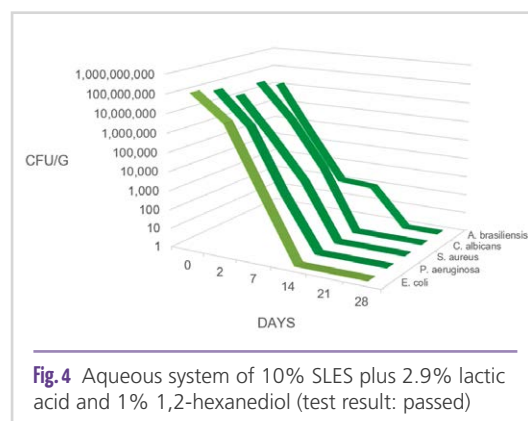
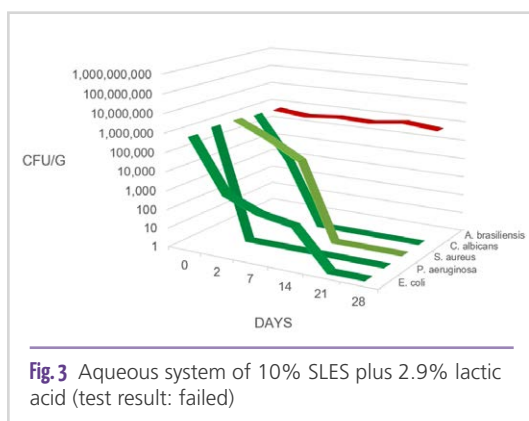
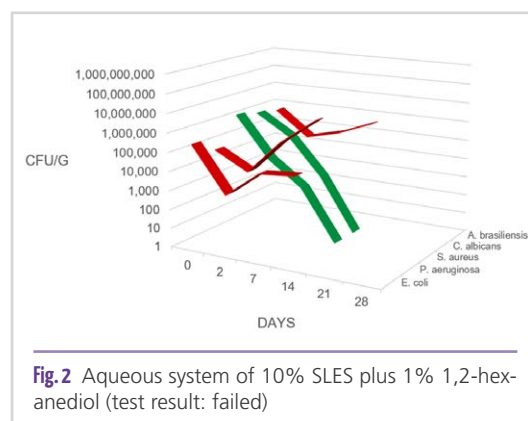
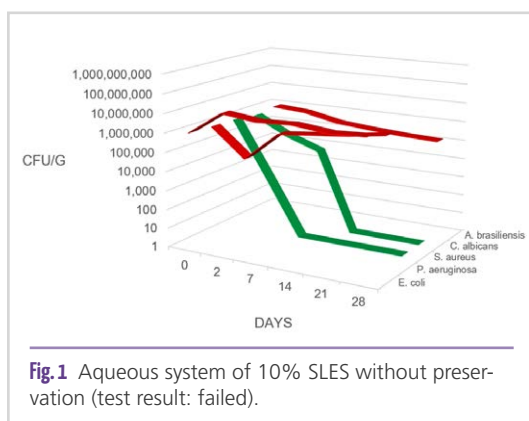
Criteria of acceptance

Tab. 1 shows the criteria for the evaluation of the antimicrobial efficacy. The log reduction in the number of viable microorganisms is shown against the value obtained for the inoculum. Compared to USP and DIN EN ISO 11930, the Ph. Eur. preservation effectiveness test has very strict acceptance criteria. It distinguishes between criteria A and B. If one of the two criteria is fulfilled, the test is considered as passed. Criterion A is difficult to satisfy with many preservative systems since it requires a log reduction of 2 after 2 days and a log reduction of 3 after 7 days for bacteria. Products for sensitive applications are significantly limited as to the maximum concentration of preservatives they can contain, as the preservatives might alter the product properties at higher levels or, in the worst case, cause unwanted side effects upon application. In particular, care materials with direct exposure to human skin require such low preservation concentrations that criterion A cannot be met. For such applications, criterion B must be met to pass the test. It is considered mandatory by

EU regulatory agencies and is in fact more achievable. In this case, after 14 days the log reduction must be at least 3 for bacteria and there shall be no re-growth throughout the 28 day period.

Antimicrobial Preservation Efficacy Tests for Single Substances

In a first step, antimicrobial preservation efficacy tests for the single substances were performed. Here, aqueous solutions based on 10% sodium laureth sulfate (SLES), 10% SLES with 2.9% lactic acid (active concentration) and 10% SLES with 1% 1,2-hexanediol were analysed. In addition, the combination of lactic acid (2.9%), hexanediol (1%) and SLES (10%) was investigated to check for a synergistic effect of the two substances. The pH of all solutions was adjusted to 5.5. The results of these tests are shown in Figs. 1–4.



The test results show that the single test substances cannot be used for preservation purposes at pH 5.5. The aqueous SLES test solution failed the preservation test for the test germs *E. coli*, *P. aeruginosa* and *A. brasiliensis*, indicating that this anionic surfactant has no influence on antimicrobial properties. The same result was observed for the aqueous solution with 1% 1,2-hexanediol. For the aqueous solution with lactic acid, preservation failed in the case of the test germ *A. brasiliensis*. However, good results were obtained for *E. coli*, *P. aeruginosa*, *S. aureus* and *C. albicans*. It was therefore decided to test the combination of lactic acid with 1,2-hexanediol. The combination passed the preservation test for criterion B. This outcome clearly suggests a synergistic effect between lactic acid and hexanediol.

Antimicrobial Preservation Efficacy Tests in a Real Formulation

In a second step, the preservation efficacy of the combination based on lactic acid and 1,2-hexanediol was demonstrated in a real product formulation (a premium shower gel). The recipe consisted of five phases, A–E, and is shown in **Tab. 2**. Indicated concentrations refer to the commercially available product. The components of phase A were thoroughly mixed using a propeller stirrer. After that, phase B was added and stirred at room temperature until a clear solution was obtained. Then phase C with the fragrance and colour was added. Finally, the pH of the solution was adjusted to 5.5 with phase D and the viscosity was set to the desired range with phase E.

The results for the unpreserved and the preserved shower gel formulation are shown in **Figs. 5** and **6**. As expected, the unpreserved shower gel formulation failed the preservation test and an increase in microbial growth was observed. The shower gel formulation with lactic acid and hexanediol passed the test successfully according to criterion B. This underlines the synergistic effect of lactic acid with 1,2-hexanediol, rendering the combination perfectly suitable as a stabilising system for sensitive and personal care applications.

Conclusion

With this test series it has been demonstrated that 1,2-alkane-diols such as 1,2-hexanediol and lactic acid show interesting synergistic effects in terms of stabilisation for rinse-off systems. The test setup included a standard single-surfactant system with a base surfactant used in almost every formulation and a typical shower gel formulation based on SLES and betaines. Test results indicate that 1,2-hexanediol and lactic acid when used in combination have a synergistic effect and could represent a new, high-potential stabilising system for rinse-off formulations in personal care. Such a combination addresses the growing demand to replace common hazardous or critical ingredients and to create more gentle and natural cosmetics.

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- [6] European Pharmacopeia 7th edition, 5.1.3. Efficacy of antimicrobial preservation

Phase	Ingredients	INCI	Supplier	%
A	Water, deionised	Aqua		Qs to 100
	L(+)-Lactic Acid 90% Personal Care Grade	Lactic Acid	Jungbunzlauer	3.22
	WeylCare® HexaPB	1,2-Hexanediol	WeylChem	1.00
B	Texapon N 70	Sodium Laureth Sulfate	BASF	18.50
	Tego Betain F 50	Cocamidopropyl Betaine	Evonik	10.00
	Lamesoft PO 65	Coco-Glucoside, Glycerol Oleate	BASF	2.00
C	Perfume, Colour			Qs
D	NaOH	Sodium Hydroxide		Qs
E	Sodium Chloride	Sodium Chloride	Merck	Qs

Tab. 2 Shower gel formulation with 2.9% lactic acid and 1% 1,2-hexanediol.

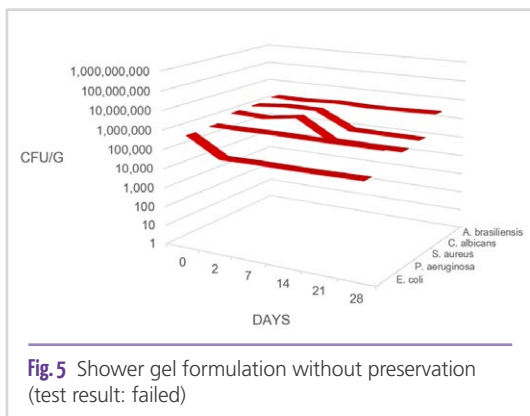


Fig. 5 Shower gel formulation without preservation (test result: failed)

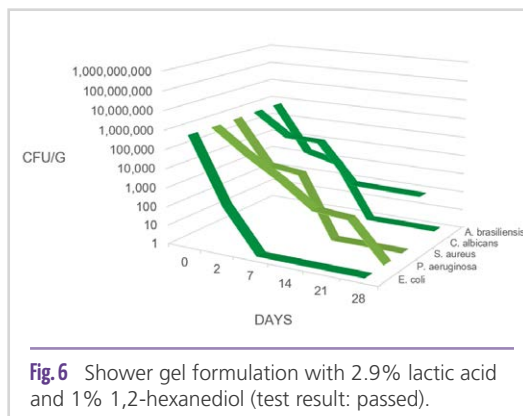


Fig. 6 Shower gel formulation with 2.9% lactic acid and 1% 1,2-hexanediol (test result: passed).

contact

Dr. Katja von Nessen
katja.vonnessen@jungbunzlauer.com
Dr. Felix Weiher | felix.weiher@jungbunzlauer.com

Jungbunzlauer Ladenburg GmbH
Application Technology
Dr.-Albert-Reimann-Str. 18
D-68526 Ladenburg | Germany

Dr. Martin Neubauer
martin.neubauer@jungbunzlauer.com

Jungbunzlauer International AG
St. Alban-Vorstadt 90
CH-4002 Basel | Switzerland

Thomas Kerl | Thomas.Kerl@weylchem.com
Dr. Judith Preuschen | Judith.Preuschen@weylchem.com

WeylChem Performance Products GmbH
Kasteler Straße 45
D-65203 Wiesbaden | Germany

EU-harmonized Product Notification, Obligations and Deadlines

G. Scholz

abstract

The EU harmonized product notification is mandatory for new or modified consumer products and professional products with physical or harmful health hazard characteristics as of January 1st, 2021. For industrial products, a reduced notification obligation is required as of January 1st, 2024 plus 24h/7d call service [1, 2]. Cosmetic products are not affected.

For product notification, a PCN (Poison Center Notification) dossier with harmonized information is submitted under a unique recipe identifier – the UFI (Unique Formula Identifier) to the appointed body of the respective EEA state. The UFI is a 16-digit alphanumeric code consisting of numbers and letters, generated from VAT + individual recipe number and is part of the label or, for industrial products, to be mentioned on the SDS. The data file for registration in PCN format and UFI generator are available on the ECHA website.

Each company that markets dangerous products in the EEA has an obligation, depending on its role as formulator, toll-formulator, importer, distributor, private label, re-brander and re-labeler. The distributor does not have to notify but must ensure that the product notification was done by the supplier in the relevant target countries.

National product notifications are valid until December 31st, 2024.

Introduction

Regulation (EC) 2017/542 adds a new Annex VIII to the CLP Regulation (EC) 1272/2008 (Classification, Labeling, Packaging) [3] on harmonized information on emergency health response and provides the legal framework for requirements on product notifications within the EEA.

The product notification obligations in the individual EU countries had been regulated differently before this regulation comes into force. The regulation creates a uniform notification procedure that brings simplification and cost savings to companies operating in several EU countries.

Legal Basis

According to the definition of the REACH Regulation [4], a mixture is a blend, mixture or solution that consists of two or more substances. A substance is subject to REACH registration, a mixture is subject to product notification if the mixture is classified as dangerous according to CLP Regulation (EC) 1272/2008 due to its effects on health and/or physical effects.

On basis of Regulation (EC) 2017/542, harmonized information requirements apply to companies that place dangerous mixtures on the market in the European Economic Area (EU member states as well as Iceland, Liechtenstein and Norway). "Placing on the market" is the "transfer to a third party through payment or free of charge or provision for third parties". "Importing" is considered as "placing on the market."

Purpose

The competent authorities of the Member States (appointed bodies) and poison centers have to be provided with the information on dangerous mixtures placed on the market as set out in Annex VIII of the CLP Regulation, so that in the event of accidental exposure due to improper use or accidents, immediate access to relevant information about the mixture is guaranteed for medical personnel and emergency services in the case of medical emergencies.

Who is Responsible for Harmonized Product Notifications in Accordance with Regulation (EC) 2017/542?

Each company that markets dangerous mixtures in the European Economic Area (EEA) has an obligation, depending on its role as a formulator, toll-formulator, importer, distributor, private labeler, re-brander and re-labeler.

Distributors who only store and place a dangerous mixture on the market are generally not required to notify. However, they are obliged to ensure that the product notification for the mixture with all necessary information, particularly product identification and use, has been made in the respective EEA member country. This applies particularly to distributors who change the product identification of the mixture and/or sell the mixture in Member States other than the Member State in which the distributor was supplied by the formulator or importer.

Missing information must be made available to the notified bodies. This can be done by an updated notification of the upstream applicant in the supply chain.

However, if the distributor does not want to disclose the information in advance or if the original notification responsible refuses to include the distributor's information in his notification, the distributor must do its own notification.

The roles of *"re-branding"* and *"re-labeling"* are defined differently in the individual Member States.

In Belgium, Germany, Greece and France "Re-branding" and "Re-labeling" are seen in the role of a downstream user, other member states, however, follow the ECHA guideline, where "Re-branding" and "Re-labeling" are seen in the distributor role.

Importers who import a dangerous mixture into the European Economic Area (EEA) are obliged to make the product notification because the import is defined as "placing on the market".

A **formulator** produces a dangerous mixture and places it on the market in the EEA. In this case, the formulator is obliged to make the product notification.

The **toll-formulator** produces a dangerous mixture on behalf of another company and, like the formulator, is obliged to notify, even if he is not the owner of the mixture or the intellectual property rights.

A company that formulates a dangerous mixture but does not place it on the market in the EEA and that is formulated only with the intention of exporting in the role of an **exporter**, is not obliged to notify. If the dangerous mixture is temporarily stored before exporting ex EU, this may be considered as placing on the market, and the obligations in Annex VIII apply. This is the case, for example, if the formulator makes the dangerous mixture available to a third party, whether for payment or free of charge, who keeps the mixture in the warehouse before delivering of the dangerous mixture to a non-EU company.

The transfer of a dangerous mixture from one container to another (and either retains or changes the information on the original label) by a **re-packager** is classified as downstream user activity according to the CLP regulation, even if no other activity is carried out, e.g. no change in composition.

Since the re-packager places a dangerous mixture on the market, which is chemically identical to that of his supplier, he can request his supplier to make a notification on his behalf (a contractual agreement would be required in this case). However, if the supplier does not include the information about the re-packager in his notification, the re-packager must notify by himself. The re-packaging company can use the same UFI as the supplier or alternatively create its own UFI.

Which Mixtures are Subject to the Notification Obligation?

- Mixtures that are classified as dangerous to health and/or as physically dangerous according to CLP regulation, i.e. at least marked with an H phrase of 2xx or 3xx.

Not Subject to the Notification Obligation according to Appendix VIII of the CLP Regulation are:

- Mixtures that only have environmentally hazardous properties
- Cosmetic products (a separate notification portal CPNP applies to these)
- Gaseous mixtures under pressure and explosive mixtures
- Mixtures for scientific research and development
- Mixtures for process-oriented research and development
- Radioactive mixtures
- Mixtures that are subject to customs supervision, if they are neither treated nor processed and which are in temporary storage or in free zones or in free warehouses for re-export or transit;
- Waste
- Mixtures intended for the end user, which are subject to separate regulations, e.g. pharmaceuticals, veterinary medical products, food and animal feed.

Caution! The obligation in Germany to notify washing and cleaning agents (WRM) that are not classified (§ 10 WRMG) remains valid!



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What Harmonized Information is Required for Product Notification?

- Identification of a mixture (trade name, UFI)
- Name, contact address of the company responsible for notification and emergency call number (24d/7h)
- Information on the classification of the mixture, H-phrases, P-phrases, pictogram and signal word
- Listing of all ingredients with harmful effects, in concentrations higher than or equal to 0.1%
- Listing of all harmless ingredients, which are present in concentrations higher than or equal to 1%
- Exact information on concentration or concentration ranges of dangerous ingredients
- Exact information on concentration or concentration ranges of ingredients, not classified as dangerous
- Requirements for “mixture in mixture”; Identification by UFI
- Intended use through a product categorization system EuPCS
- Use (consumer, professional, industrial)
- Additional information: color, pH value, physical state (solid, liquid, gaseous), packaging (type, size)

Ingredients from the group perfume, fragrance and coloring agents do not have to be characterized in more detail if the following requirements are met:

- no harmful effects
- the concentration of the sum of perfume and fragrance in the mixture must not exceed 5%
- the concentration of the colorant in the mixture must not exceed 25%

Notification Bodies in the EEA Member States

Member States designate one or more bodies (“appointed bodies”) that are responsible for product notification. A list of national notified bodies is available on the ECHA Poison Control Centers website: <https://poisoncentres.echa.europa.eu> The decision on how the transfer should be organized and in which language the product notification must be available is determined by the respective Member State.

A table listing the Member States and the language(s) accepted for the communication can be found on ECHA’s Poison Control Center website: <https://poisoncentres.echa.europa.eu/echa-submission-portal>

The BfR (Bundesanstalt für Risikobewertung) is the notification body in Germany. The transfer can be done both directly to the BfR portal or via the ECHA PCN portal (PCNP). The PCN dossier can be written in German or English. The BfR transfers the product information to the federal state authorities responsible for monitoring (name + contact details of the responsible for notification, trade name(s) and unique formulation identifier [UFI code]).

The fees and the language are defined by the respective Member State.

The product notifications transferred via the PCN portal are subject to a technical validation; the respective na-

tional notification body is responsible for quality assurance.

The BfR does not provide expert emergency advice. This must still be done by the Poison Control Center, which has been authorized by the notification responsible. Alternatively, expert emergency advice can be given via a company’s own emergency number (24/7) or through a knowledgeable service provider.

Reduced Notification for Industrial Products

For hazardous mixtures used for industrial purposes only, the notification requirements for mixture components are reduced to the information in the safety data sheet.

Precondition is that detailed product information is quickly available on request in case of an emergency. A competent person, capable of the respective language must be available under an emergency number 24h/7d, who can provide all information about dangerous mixtures placed on the market, so that preventive and healing measures can be taken in the event of an accident.

Group Submission

Information on several hazardous mixtures with minor differences in composition can be submitted in the same notice; this is called “Group Submission”. Mixtures can be included in one PCN dossier if they

- have the same health and physical hazard classification
- belong to the same product category
- have a very similar composition
- the same components with the same concentration or the same concentration range is listed

How is the Product Notification to be Carried Out?

ECHA provides a notification file in PCN format (Poison Center Notification), which must be filled in with the harmonized information in the language required for the respective Member State (PCN dossier).

The PCN dossier can be submitted to the web portal of the appointed body of the respective EEA member state or centrally to the PCN portal (Poison Center Notification) of ECHA. Transfer via the PCNP is a simplification for companies that market in several Member States. After a technical review, ECHA makes the product notification available to the appointed bodies.

Who can Perform a Product Notification?

The submission of a PCN dossier to the PCNP or to the web portal of the appointed body of the respective EEA member state can be carried out by a third party on behalf of the party obliged. This can be done by the parent company/head office, which makes the notification on behalf of a subsidiary, or by a consultant on behalf of the obligated party.

Poison Control Center and Emergency Number

Through a unique formulation identifier (UFI), the Poison Control Centers (GIZ) can clearly determine the composition of the mixture and, in the event of poisoning, to propose appropriate medical treatment. Before submitting, the applicant must conclude a contract with the Poison Information Center and can then refer to the GIZ number.

If there is a public advice center in the Member State in which the mixture is marketed, its telephone number must be given, which should be enough.

Some appointed bodies (e.g. BfR) do not provide emergency advice. In such cases, a company-specific emergency number or the number of a knowledgeable service provider who can provide expert emergency advice, preferably in the language of the caller, must be provided.

UFI (Unique Formula Identifier) – a Unique Recipe Identifier of the Mixture

The UFI is a 16-digit alphanumeric code with numbers and letters, generated from VAT + the company's internal formulation code.

The UFI generator is available on the ECHA website. Companies can start generating their UFIs and can take internal actions, such as the reference to internal formulation codes. It is possible to create several UFIs for the same mixture if all UFIs are transferred and linked to the notification.

Attaching, Arranging and Placing of UFI

The UFI must be printed or attached to the label of the dangerous mixture. If the mixture is intended for industrial use, the UFI can alternatively be specified in section 1.1 of the SDS. Also, if mixtures are sold unpacked, the UFI must be specified in section 1.1 of the SDS. The UFI code itself, preceded by the acronym "UFI" must be designed in the following way: in capital letters and marked clearly visible, legible and indelibly. The abbreviation "UFI" must always be used in the Latin alphabet, regardless of country, language and national alphabet.

For practical reasons, the UFI could also be printed on the packaging if it is still close to the other label elements and is easy to be read.

Deadlines

The following deadlines apply for the EU harmonized notification requirement for dangerous mixtures with UFI labeling of the mixtures:

January 01, 2021 mixtures for consumer
January 01, 2021 mixtures for professional use
January 01, 2024 mixtures for industrial use

Until December 31, 2024, the transitional protection applies to product notifications that have already been notified nationally. This period does not apply to relevant changes to the mixture. If the formulation of the mixture changes or its classification changes as a result of new data, an immediate EU harmonized product notification is mandatory.

As of January 1st, 2025, an EU-harmonized product notification is mandatory for all affected.

In Germany, an electronic product notification to the BfR or a simplified product notification in the form of a simplified ISI notification is possible according to the deadlines mentioned. With the simplified notification, the current safety data sheet is provided to the ISI database in the IFA. The information system for safety data sheets (ISI) is a cooperation between the Association of the Chemical Industry (VCI) and the Institute for Occupational Safety and Health of the German Accident Insurance (IFA).

Caution! If only the simplified ISI notification has been made, the transitional protection does not apply until December 31st, 2024.

With the Regulation (EC) 2017/542 on the EU harmonized product notification becoming into force, new requirements are set on "Product Compliance" of hazardous mixtures. With the obligation to put the formulator identifier UFI on a label or SDS, transparency and traceability are increased, both for consumers as well as for industry and for the responsible authorities.

IPPM GmbH will be happy to offer consultancy regarding the impact of the product notification on your products and to support you in the implementation of a product compliance management system as well as additional services.

IPPM GmbH can be contacted for further information (www.ippm.eu; scholz@ippm.eu).

The following regulations are relevant:

- [1] Regulation (EC) 2017/542
- [2] Regulation (EC) 2020/11
- [3] CLP Regulation (EC) 1272/2008
- [4] REACH-VO (EC) 1907/2006

contact

Dr. Gertraud Scholz
 General Manager | scholz@ippm.eu

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Lightweight & Sweat Proof O/W Foundation | Baycusan® C 1004/1

Phase	Ingredients	Raw Materials	% by wt.
A	Aqua		59.60
	Glycerin		5.00
	Disodium EDTA		0.20
B	Isononyl Isononanoate	Dub ININ, Stearinerie Dubois	10.00
	Cetyl Ethylhexanoate	Tegosoft® CO, Evonik	7.00
	Glyceryl Stearate		2.00
	Polyglyceryl-3 Stearate		3.00
	Sodium Stearoyl Lactylate		2.00
	Tocopheryl Acetate		0.20
C	Titanium Dioxide	SunPuro® C475001, SunChemical	3.70
	Iron Oxide	SunPuro® C339001 (Yellow Iron Oxide), SunChemical	1.00
	Iron Oxide	SunPuro® C338001 (Red Iron Oxide), SunChemical	0.20
	Iron Oxide	SunPuro® C337001 (Black Iron Oxide), SunChemical	0.10
D	Phenoxyethanol (and) Ethylhexylglycerin	Euxyl®PE 9010, schuelke	1.00
	Baycusan® C 1004/1		5.00
			100.00

Processing:

Phase A is stirred at 70°C.

Phase C is added and homogenized.

Phase B is heated to 70°C and added to phase A/C while homogenizing.

The system is cooled down to 35-40°C and phase D is added.

pH is checked and adjusted to 5.5-6.0 with Citric Acid (10% sol.) or NaOH (10% sol)

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Smart Formulation (expected SPF 15) | BSC 95.1-2.1-1118

Foundation for dry skin – smooth touch – comfortable to wear – even appearance of the skin

Phase	Ingredient	INCI	Supplier	% ww
A	Deionised Water	Aqua		40.98
	Palmera® G865V	Glycerin, Aqua	KLK Oleo	3.00
	Zemea®	Propanediol	DuPont Tate&Lyle Bio Prod.	3.00
	Sodium Chloride	Sodium Chloride		1.00
	Verstatil® PC	Phenoxyethanol, Caprylyl Glycol	Evonik Dr. Straetmans	0.80
B	Dowasil™ ES-5600 Silicone Glycerol Emulsifier	Cetyl Diglyceryl Tris (Trimethylsiloxy) Silylthyl Dimethicone	Dow Consumer Solutions	5.00
	MIGLYOL® Gel B (*)	Caprylic/Capric Triglyceride, Stearalkonium Hectorite, Propylene Carbonate	IOI Oleo	4.00
	Shea Butter	Butyrospermum Parkii Butter		2.00
	MIGLYOL® 829 Eco (*)	Caprylic/Capric/Succinic Triglyceride	IOI Oleo	4.00
	PHYTOSQUALANE, veg. grade	Squalane	Sophim	4.00
	SOFTISAN® 649 (*)	Bis-Diglyceryl Polyacyladipate-2	IOI Oleo	1.00
	Dowasil™ FZ-3196	Caprylyl Methicone	Dow Consumer Solutions	5.00
	Dowasil™ 9576 Smooth Away Elastomer	Dimethicone, Dimethicone/Vinyl Dimethicone Crosspolymer, Dimethicone Crosspolymer, Beeswax, Silica, Silica Silyate	Dow Consumer Solutions	10.00
	Synovea® EL	Ethyl Linoleate	Sytheon	2.00
B1	Parsol® TX	Titanium Dioxide (Nano), Silica, Dimethicone	DSM	6.00
	Z-Cote® HP1	Zinc Oxide (Nano), Triethoxycaprylylsilane	BASF	5.00
B2	SDI Black IO AS	Iron Oxides Black (CI 77499)	Sandream	0.07
	SDI Red IO AS	Iron Oxides Red (CI 77491)	Sandream	0.25
	SDI TiO2 AS	Titanium Dioxide (CI 77891)	Sandream	2.00
	SDI Yellow IO AS	Iron Oxides Yellow (CI 77491)	Sandream	0.60
C	Comp. 72.0319 Fovea	Parfum	Lothar Streeck	0.30
				100.00

(*) = RSPO CERTIFIED, MASS BALANCE

Product Features:

Appearance: Brown emulsion

Viscosity: Approx. 20,000-40,000 mPas (Brookfield TF, speed 10) Stability: Stable for more than 3 months at 4°C, 20°C and 40°C.

Manufacturing Procedure:

1. Heat ingredients of phase A to 50°C and stir until dissolved.
2. Place phase B into the vessel and heat to 50°C while stirring. Add ingredients of phase B1 in given order.
3. Grind phase B2 and add to B/ B1. Homogenize completed phase B.
4. Emulsify phase A slowly to phase B while stirring.
5. Homogenize. Cool down to room temperature while stirring. Add part C below 40°C.

Security advice: Cosmetic sample formulations are provided herein for illustrative purposes only. Such formulations are not for commercial formulations and have not been subject to comprehensive testing.

For more information please contact: Biesterfeld Spezialchemie GmbH, Bettina Heick, Phone: +49 40 32008-293, <https://www.biesterfeld.com/de/>, E-Mail: beauty@biesterfeld.com Security advice: Cosmetic sample formulations are provided herein for illustrative purposes only.

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Caring Lip Gloss Mother-of-Pearl | S 21-12



Phase	Ingredients	Art. No.	INCI (CTFA)	[%]
A	Xirona® Nordic Sunset	1.17112 (1)	SILICA, CI 77891 (TITANIUM DIOXIDE), TIN OXIDE	3.90
	Ronastar® Red Allure	1.17304 (1)	CI 77491 (IRON OXIDES), CI 77891 (TITANIUM DIOXIDE), SILICA, MICA	0.10
B	RonaCare® Bisabolol nat.	1.30170 (1)	BISABOLOL	0.40
	RonaCare® AP	1.30163 (1)	BIS-ETHYLHEXYL HYDROXYDIMETHOXY BENZYL MALONATE	0.50
	Sensiva® PA 20	(2)	PHENETHYL ALCOHOL, ETHYLHEXYL GLYCERIN	1.00
	Crodamol ISIS-LQ-(MV)	(3)	ISOSTEARYL ISOSTEARATE	3.00
	Sebumol ODPC	(4)	OCTYLDODECYL PCA	4.00
	Miglyol® 812 N	(5)	CAPRYLIC/CAPRIC TRIGLYCERIDE	5.00
	Cegesoft C 24	(6)	ETHYLHEXYL PALMITATE (OCTYL PALMITATE)	8.00
Versagel® ME 750	(7)	HYDROGENATED POLYISOBUTENE, ETHYLENE/PROPYLENE/STYRENE COPOLYMER, BUTYLENE/ETHYLENE/STYRENE COPOLYMER, BHT	74.10	

Procedure:

Combine all ingredients of phase B while stirring until the mass is homogeneous. Add the pearlescent pigments (and optional color dispersion) of phase A while stirring. Fill the bulk into containers with an applicator.

Notes:

This caring lip gloss Mother-of-Pearl is a very transparent formulation with a chic and intense holographic touch brought by Xirona® Nordic Sunset. The subtle red background color created by Ronastar® Red Allure matches the lip color and brings the extraordinary color travel effect to life. RonaCare® AP provides an antioxidative effect while RonaCare® Bisabolol nat. supports a skin soothing effect.

Suppliers:

- (1) Merck KGaA, Darmstadt, Germany / EMD Performance Materials
- (2) Schülke & Mayr GmbH
- (3) Croda
- (4) Zschimmer & Schwarz GmbH & Co
- (5) IOI Oleo GmbH
- (6) BASF AG
- (7) Penreco

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Metallic Make-Up

Jyle Cäcilie Garleff, Product Manager Personal Care & Cleaning, Biesterfeld Spezialchemie GmbH
Kimberly Kern, Director of R&D, Sandream Impact



Jyle Garleff

Jyle Garleff, you are working with a new principal – Sandream Impact. Can you briefly introduce this company?

Sandream Impact is a leading manufacturer and supplier of innovative effect pigments and unique cosmetic active ingredients, based in the U.S., offering colour matching, new colour development, formulation advice, dispersion and blending and surface treatment services. We were appointed as distributor of Sandream Impact for the cosmetic markets in the German-speaking DACH region, Eastern

Europe and Turkey in 2018. Sandream's portfolio includes more than 800 products, representing an incredible variety including natural and synthetic mica, borosilicate glasses, bismuth oxychloride and aluminium as pigment substrates. It also comprises Ecoperse product range, which are pigment dispersions based on ECOCERT-certified octyldodecyl olivate. As a distributor, we stay up to date with current trends; for example, metallic makeup is experiencing a remarkable comeback from the nineties and is a trend here to stay. Partnering with Sandream Impact enables us to build upon this demand to include an extremely interesting range of pigments.

Kimberly Kern, you are the director of R&D at Sandream Impact. Can you explain what creates metallic finishes in cosmetic applications and what exactly 'metallic' means?

Metallic appearances can be developed through several avenues – whether it be by utilizing small particle high chroma pearlescent pigments, colour shifting pearls composed of synthetic fluorophlogopite or borosilicate substrates, aluminium-based pigments, or super-sized iridescent silica flakes, to name a few. Sometimes the final effect is a result of combining different types of colourants to achieve a synergistic multilevel phenomenon. Whatever the customer's choice may be, we provide highly innovative and cosmetically approved pathways of achieving dramatic looks.



Kimberly Kern

Which parameters are critical to a pigment's appearance?

There are three parameters critical to a pigment's appearance: type of substrate, metal oxide layer thickness, and the lateral size of a particle. The smaller the particle size, the more opaque the coverage. The larger the particle size, the more transparent and sparkly the finish will be. The thickness of the metal oxide layer determines the reflected interference colour. A wide variety of shades and degrees of lustre may be produced by incorporating multiple surfaces and layers of reflection. Certain substrates, such as glass, synthetic fluorophlogopite or silica-based pearls, also possess more inherent shine and transparency to produce metallic finishes.

Ms Garleff, how can you assist formulators who need pigments at every price range?

As a distributor of speciality chemicals, we work closely with our customers to meet their requirements. Thanks to our technical know-how and our laboratory work, as well as our decades of experience, we can offer advice and tailored support to find the right pigment for our customer's application – at every price range, of course. If a lower-cost metallic finish is what is desired, our Sandream Impact portfolio has plenty of natural mica-based pearls that will do the job well. Available in every colour group and particle size, mica pearls can deliver high sheen and reflectivity. Interference mica pigments can be used in conjunction with straight colour pearls to enhance the chroma effect. The traditional metallic colours are abundant in this category: golds, coppers, bronzes, silvers, etc., and Sandream Impact provides the truest and brightest shades which can be utilized across all makeup and personal care applications.



SilikMira ICE GTV



SilikMira Ice VRO



How do you meet the ever-changing needs of the cosmetic and personal care industry?

At Biesterfeld we are in a unique position, working both with the manufacturing raw material suppliers and also with manufacturers for the personal care industry. It is part of our DNA to monitor market developments and work with our innovative partners to meet the current market demands. It is one thing to stay fashionable, but quite another to provide state-of-the-art products that are manufactured effectively and comply with current regulations. Last year, Sandream Impact introduced two innovative pigment collections – SilikMira Variable and SilikMira Ice. One of the first of its kind, it is globally approved for cosmetic use and we are already experiencing a strong demand.

Mrs Kern, what is special about the pigment collections SilikMira Variable and SilikMira Ice?

These are mesmerizing saturated colour travel silica-based pigments, produced via vacuum deposition, delivering unheralded colour shifts that flow seamlessly into one another. The fine particle size and high chroma effect create ground-breaking flops which are intensified in liquid and cream systems. The SilikMira Variable collection consists of six unique and dramatic shades. The use of vacuum deposition allows thin layers of metal oxides to be vaporized and deposited onto a silica substrate. The result is an exquisitely smooth finish created by the stacking of multiple thin layers. Variations in structure (silica thickness/metal oxide thickness and combination) will lead to a range of pigments with a variety of colour travel behaviours.

Jyle Garleff: We are thrilled to be working with this ground-breaking collection as well as all of Sandream Impact's innovative pearlescent pigment lines.

www.biesterfeld-spezialchemie.com



SilikMira Ice ROG



SilikMira Ice YGB



The metallic nature of SilikMira Variable line



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Interview with Matthias Hentz

Senior Head of Marketing, schülke



Matthias Hentz

You recently joined schülke – again. What made you take on the position as head of global marketing?

schülke is a remarkable company looking at the rich heritage and its brand reputation that is well perceived by our customers globally. I personally believe that the market leader for antimicrobial blends with strong assets looking at production sites and sales offices in all relevant markets should determine the pace of innovation. Though we could set a global benchmark with Ethylhexylglycerin it is important to focus on what lies ahead of us and prepare schülke and our product offer for the years to come. For me being experienced in global sales and marketing within the personal care industry an opportunity like this couldn't be any more exciting.

What will be schülke's position being experts in preservatives?

By September 2019 schülke divested the former technical biocides business in order to fully focus on where we are experts in: preservatives and antimicrobials for personal care products.

Our interpretation of expertise however involves more than just offering state-of-the-art products. We act responsibly and believe in the protection of well-established preservatives when available safety data convince us to do so. In the past there has been a certain trend of opportunism in the markets prejudicate established molecules based on data not always resilient or acknowledged. This is to say, to us it is crucial to appreciate the bigger picture comprising legal or environmental aspects.

Technically speaking we also believe in the very same idea. Our established MQM concept therefore considers the entire lifecycle of a cosmetic product. Beginning with advisory and testing support during formula development, we compile manufacturing and production hygiene plans making sure that cosmetic products are safe from day one protected with the best suitable preservative or antimicrobial.

As a pioneer in our field we of course follow trends closely. This is why we are striving to stay ahead and bring together established and safe high quality products with innovations developed by our R&D teams.

schülke recently launched its latest product innovation euxyl ECO 910. What is so special about it and what was the driving force behind?

The driving force behind our latest launch was to provide our customers with broad functionality, safety and ingredients be-

ing inspired by nature. To us the symbiosis of well-established antimicrobials with trend-setting materials is truly desirable. For euxyl ECO 910 we found lemongrass being the perfect addition to our portfolio. This easy to grow plant can be found in many cosmetic products but is a very popular food ingredient, too.

euxyl ECO 910 brings together an enhanced antimicrobial efficacy at an acceptable low dosage among a broad pH range with scenting properties creating a very unique and appealing cosmetic product.

And there is much more to come in 2020.

Do you perceive naturally inspired cosmetics being the future or just a niche?

Looking at the market figures for natural or naturally inspired personal care products it might have been a niche market twenty years ago but became the most appealing and fastest growing market segment within our business field. Though there always was a small number of companies focusing on naturals it was only 20 years ago when natural personal care products conquered the world. Today we see most products coming from Europe and the US whereas consumption happens to two thirds in the US and Asia. Due to central Europe being the most influential producing region, popular European standards that define what's natural in our industry are perceived highly and followed internationally.

As usual a trend is there to follow. To us however it is to find the balance between what's established and safe with ingredients sustainably sourced from nature.

What is your outlook for personal care ingredients?

It is great to see an ever increasing transparency due to more and more consumers interacting with cosmetic products and producers of those. This will consequently lead to a growing demand for naturally inspired but safe raw materials. Globally speaking, rising awareness of the importance of personal hygiene regimes is going hand in hand with increasing opportunities for companies like schülke. Certainly China and India are by far not yet saturated and countries like Japan, Korea or the US always seek for innovations.

Our outlook is very positive but this is certainly also due to our new products that are to come within the next few years.

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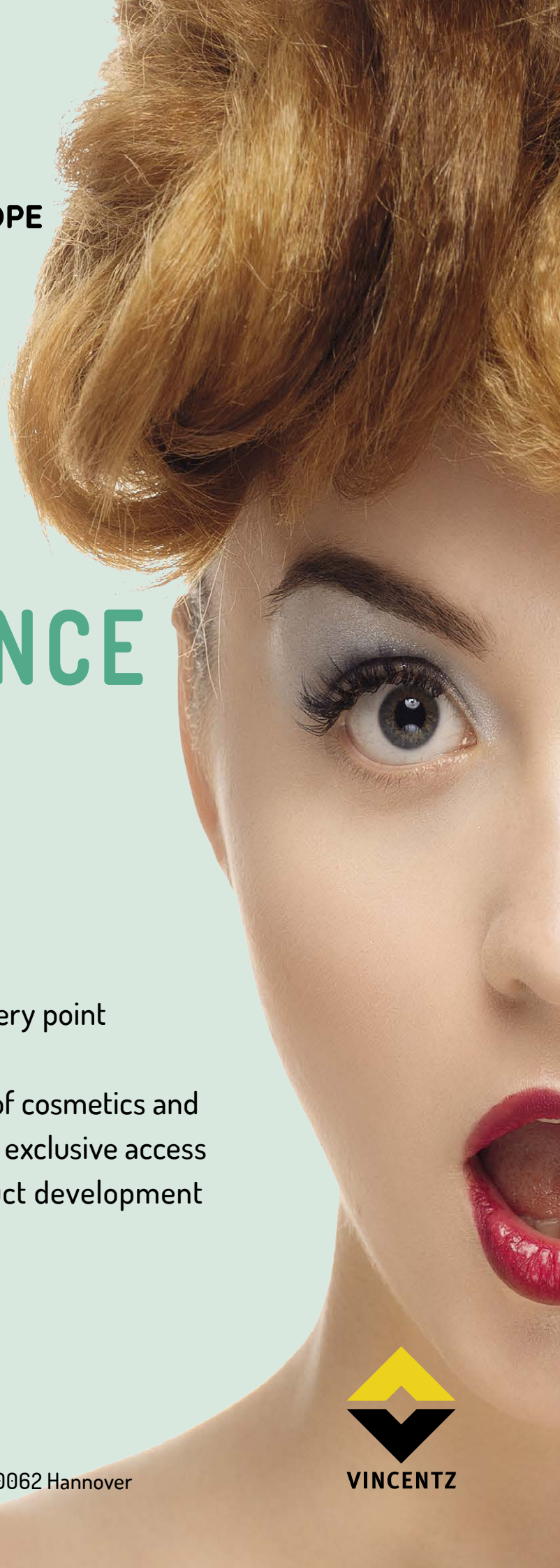
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VINCENTZ



How to Naturally Overcome the Undesirable Effects of Digital Stress on the Skin and Well-being

Interview with Mathias Fleury, Global Category Manager – Biotech. Actives, Givaudan Active Beauty



Mathias Fleury

Givaudan

Mr. Fleury, can you explain how the digital stress appeared in our daily life?

While the sun remains the first source of visible light, the artificial light of digital screens (characterised by a short wavelength, and a high energy, the so-called blue light) is damaging the skin daily through a prolonged exposure time. According to a recent study, Americans spend an average of 1,460 hours a year on their phone or tablet, or nearly 61 days! In France, people spend 1h42 per day in average on their smartphones. Almost 26 days [1] per year. And things are not going to get any better with the addiction caused by video games, social media or other content available 24/7 on those devices.

What kind of consequences can it have on our skin and well-being?

Blue light and digital stress in general bring some new challenges (decrease of skin defence mechanisms and premature ageing). One of them, and probably the most important one, is the difficulty to sleep perfectly and the disruption of sleep cycles. If some people can have FOMO symptoms, and don't want to fall asleep, for a large majority, bad sleep quality is a consequence of digital stress over-exposure. Using digital tools is a new way of life that gives the cosmetic industry an opportunity to fill a gap, and to find viable solutions, allowing to protect the skin from artificial light and digital stress, while providing restful sleep, so that skin can regenerate itself properly.

What is the link between digital stress and melatonin cycles?

It is now established that when exposed to digital stress, the production of melatonin in the skin is disturbed, resulting in a perturbation of sleep-related functions (difficulties falling asleep, multiple awakenings during the night, etc.). But melatonin also has amazing anti-ageing benefits thanks to its strong antioxidant properties and the cascade of biological processes that it can trigger within the skin (antioxidant response, repair mechanisms, fight against cell death, etc.). Therefore, digital stress results in a loss of protection against ageing, and a vicious circle when it comes to skin health in general with sleep deprivation.

If beauty products can give an answer to this new skincare issues, can it be based on natural ingredients?

Nature is an infinite source of inspiration when it comes to active ingredients with incredible benefits. Givaudan Ac-

tive Beauty has already shown that cherry blossom extract considerably improves the quality of the skin showing signs of ageing. As a true protector against blue light, it counteracts digital pollution, and this is what we highlighted in Eliorelys™. But as new biological discoveries are made, new generation of active ingredients are also making their entrance. This is how we crafted Synchronight™, a new botanical active offering happier nights and healthier skin to consumers.

Can you tell us more about Synchronight™?

Synchronight™ is a patent-pending stabilised extract of Gardenia fruits, able to protect the skin from the consequences of direct exposure to blue light (protection of antioxidant defences, preservation of the natural cycle of production of cutaneous melatonin), to slow down the premature ageing of the skin and improve the quality of sleep. Through clinical tests, we were able to demonstrate a significant reduction of wrinkles number (-21% compared to placebo) while drastically improving the sleep quality (-87% awakenings per night versus placebo, and significant improvement of the easiness to fall asleep). This is done through an innovative and unique double mode of action: using a botanical molecule to first filter blue light and avoid its deleterious consequences, and then converting this ingredient in situ into a melatonin-like molecule thanks to the skin microbiota, bringing additional benefits to the skin and well-being by reinforcing the ingredient activity.

Do you think the market is ready for such innovative products, closing the gap between skin and well-being?

In a world where 80% of people are not completely satisfied with their quality of sleep and where consumers are also convinced of the close link between quality of sleep and skin health (62% of women believe that sleep is the most important "internal" factor affecting the appearance of facial skin, largely before diet, stress or genetic predispositions), it has become clear that cosmetics can play a crucial role in satisfying customers. This can now be done at various levels, protecting their skin against the harm of digital stress, but also ensuring their quality of sleep and improving their well-being holistically.

www.givaudan.com

[1] <https://www.lci.fr/high-tech/les-francais-passent-en-moyenne-1h42-minutes-par-jour-sur-leurs-smartphones-2112883.html>



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The Return of the Forest

a Deep Connection, Spiritual Health & Sensuality

Forest bathing, forest events, magazines devoted to forests and a forest academy. You've probably guessed it: forests are hot property right now! But it's not all about a trendy lifestyle: at the root of the new interest in woods lies deep-seated human needs – plus hard science that underscores the importance of the sense of smell.

Our longing for an authentic re-engagement with nature has gained a new focus: forests are the new beaches. For a long time, the sea, the coast and beaches were the epitome of relaxation, recreation, fresh air and a healthy microclimate. Now, people are flocking to the forests to re-experience a side of nature that is obviously lacking in our everyday lives.

This renaissance comes as no great surprise. First, as our awareness of environmental issues rises, we are paying more attention to forests and woods as original ecosystems, and more aware of the stabilising effects that forests and trees have on air and water circulation, on temperature, climate, soil conservation and biological diversity. Forests convert carbon dioxide into oxygen and biomass, they purify water, protect against natural hazards such as flooding, and supply timber, one of our most important renewable resources.

Nature is the best recipe for many things, including recreation

But that's not all that forests have to offer. "Forests with their smells and dappled lighting are a pleasure for all the senses. The silence interspersed with natural sounds has a relaxing effect, the green is soothing for the eyes. And, most importantly, forests have a discernibly positive effect on our health", says *Christian Lüke*, Head of Marketing at the Hamburg-based fragrance house Düllberg Konzentra.

Forests have long occupied a special place in Japanese culture. *Shinrin Yoku*, "bathing in the atmosphere of the forest", is practically considered a form of individual preventive health care. In the 1980s, Japanese scientists started studying the beneficial medical effect of forest bathing, and Japanese universities now offer forest medicine as a specialisation for physicians.

The feel-good factor

Forests can offer considerable health benefits: studies have shown that a stroll through a forest can lower the heart rate

and blood pressure, and significantly reduce levels of the stress hormone cortisol... and what's best: all it takes to reap these benefits is twenty to thirty minutes daily. The immune system also benefits: after only one day in the woods, the number of defence cells in our blood rises by nearly 40%, and this result lasts for a week. Amongst other things, experts now recommend forest "bathing" to counteract high blood pressure, high stress levels and depression.

The Austrian biologist *Clemens Arvay* has coined the term "biophilia effect" to describe the benefits, stating that the "biochemical cocktail" of a forest has a healing effect on humans. This cocktail consists largely of terpenes, which are volatile organic substances. These botanical fragrances are found in herbs such as thyme or rosemary, as well as in conifers. Perfumer *Scott Moroschan*: "You can isolate these fragrances by steam distillation of needles, cones, twigs or shavings. The essential oils obtained in this way differ depending on the tree. Each of these trees has its own olfactory fingerprint. Cedar, Swiss stone pine, pine or silver fir – each variety conveys the idea of forest with an individual scent."

Essential oils bring the forest into our homes

Of course, these essential oils can have a beneficial effect even if you're not surrounded by trees. *Christian Lüke*: "Forests have arrived in Personal Care, Fine Fragrances and Home Care. On the market we are increasingly seeing fine fragrances with spruce notes, shower gels with a conifer fragrance or candles that bring the forest into the home."

As a specialist for essential oils, Düllberg Konzentra has developed a range of products that creatively harness this topic. "We call this series Deep Forest. The aim is to allow consumers to dive deep into the soothing fragrance universe of the forest," explains *Mr. Lüke*. In the Forest Bathing bath additive, essential oils of pine needles have been combined with juniper; Cool Pine Forest focuses on mountain pine.

Ingredients such as woodruff and spruce balm, laurel, tree moss and tree bark have been included in shower gels for men. Düllberg Konzentra's perfumers have also developed ideas for scented candles, which *Mr. Lüke* describes as "incredibly soothing and relaxing. It's like swimming in the forest in the comfort of your own home, and as they are based on natural essential oils, they are completely authentic."

So, if you want to forest bath, there's no need to book a flight to Japan. A scented bath oil, a shower gel or a candle can give you all the benefits, creating moments of relaxation and restoration at home. But if you do want to leave your own four walls and head for the forest, we recommend a holiday on the German island of Usedom, where Europe's very first medical and spa forest has opened – the perfect place to take a stroll and some deep, deep breaths.

www.duellberg-konzentra.de

“To make active ingredients bioavailable“

Polytrade Global GmbH takes over the exclusive distribution of the patented carrier systems SopharTops

Polytrade Global GmbH has a wealth of experience in the worldwide trade of over 25 years. The chemicals trade has long ceased to be the exclusive focus. In 2018, Polytrade set out for new markets ... one of them, the cosmetics segment. The main attention was to new and innovative products such as “Neosilk Kollagen“, obtained from silk cocoons.

Looking for further developments, Polytrade discovered the company Sopharcos. The intention was to encapsulate „Neosilk Kollagen“ in a carrier system to facilitate the penetration of the active ingredient into the skin. This project was the beginning of working together as partners and finally led to the decision to integrate Sopharcos products into the exclusive distribution of Polytrade Global GmbH.

Dr. Gabriele Blume has worked in the field of dermal carrier systems for over 25 years. The focus has been on the encapsulation of cosmetic active ingredients in different carrier system. The developments resulted in several patent registrations.

In 2010, *Dr. Gabriele Blume* founded the company “Sopharcos“, specialized in dermal carrier systems. The basis was the development of two new types of carrier systems to transport active ingredients into the skin. One system is optimized for the encapsulation of water-soluble and poorly soluble substances; the other system is for oil-soluble active ingredients and oils. Both systems are distributed under the tradename “SopharTops“ and are patented in Europe and the USA. A special advantage of



Cooperation between Sopharcos and Polytrade Global GmbH:
From left to right: Eduard Albrecht (Managing Director Polytrade Global GmbH),
Helena Bause (Product Manager, Polytrade) , Dr. Gabriele Blume (Owner Sopharcos),
Dr. Serk Naymann (Senior Business Development Manager, Polytrade)

Sopharcos is the close cooperation with the pharmaceuticals institute of the Friedrich Schiller University in Jena.

“The issue of the efficacy of the active ingredients in cosmetics is of increasing relevance. Our challenge was to find an answer to the question how collagen and other high-molecular substances can pass the skin barrier to ensure the bioavailability in deeper skin layers and hair follicles,” Eduard Albrecht, CEO of Polytrade Global GmbH, explains.

Numerous tests proved that the „SopharTops“ surpass traditional liposomes in their encapsulation efficiency and their intensity of skin penetration. Thanks to these favorable qualities, lower quantities of active ingredients can achieve the same performance.

The portfolio of SopharTops includes products like green tea extract, caffeine plus, niacinamide, Q10, tocopherol, and collagen. In addition, customers can order the encapsulation of individual products.

www.sopharcos.de

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POSTPONED

Forum Cosmeticum 2020 – Postponed

Thannhausen/Burg, Germany, March 13, 2020

In view of the current situation in connection with the Corona Virus, DGK e.V. has decided to postpone the Forum Cosmeticum to 28–29 October 2020.

It was not an easy decision, yet considering the responsibility towards the health of our visitors and speakers and the restrictions in travelling, we had to act. Now the Forum Cosmeticum will take place in the Estrel Congress Center in Berlin, alongside the SEPAWA Congress. Thus, our delegates not only can enjoy excellent scientific presentations, but also visit over 300 suppliers of the SEPAWA Exhibition.

Additionally, the registration fees have been reduced and adjusted to the entrance fees of SEPAWA e.V.

Registration will open on July 1, 2020. Mark your calendar!

Keep informed and visit our website for updates!

www.dgk-ev.de





BREAKING NEWS: NYSCC Suppliers' Day Announces Its New 2020 Dates

"Revolutionary Disruptors Call for Change & Innovation"

A MESSAGE FROM THE CHAIRMAN OF THE BOARD – NYSCC

As a follow-up to our announcement earlier this week, NYSCC has made the difficult decision to postpone Suppliers' Day (May 5-6) based on the State of Emergency recently announced by Governor Andrew Cuomo, travel restrictions imposed by government authorities that affect participating companies, as well as for the health, safety and well-being of all our attendees and members.

New dates for Suppliers' Day will be September 30 to October 1, 2020 at the Javits Center in New York.

There are many layers to producing an event on the scale of Suppliers' Day and we appreciate your patience and understanding as we work through all the logistics and finalize all future details. Please know, the NYSCC Board and Suppliers' Day team is committed to working even harder to deliver a high-quality, safe and relevant event in the Fall that the global ingredients and formulation industry deserves.

For questions related to exhibiting or registration, please contact: suppliersday@nyscc.org.
All other questions, please contact: jmcdermott@nyscc.org.

As it becomes available, additional information will be posted here: www.nyscc.org/suppliers-day

We appreciate this great industry's loyalty, support and trust of Suppliers' Day and look forward to seeing everyone in September!

Stay safe & healthy,

Sincerely, Giordino D. Macalino
Chairman of the Board
New York Society of Cosmetic Chemists 2020

www.nyscc.org/suppliers-day

in-cosmetics® global

Barcelona • 30 June - 2 July 2020

A Statement from REED EXHIBITIONS – Organisers of in-cosmetics Global

London/UK, March 5, 2020. Reed Exhibitions has today announced that in-cosmetics Global, which was planned to take place at the Fira Barcelona – Gran Via, Spain from 31 March to 2 April 2020, will be postponed to 30 June–2 July following the escalation of COVID-19 in Europe.

Speaking about the announcement, *Cathy Laporte*, Portfolio Director at Reed Exhibitions, said: "The health and safety of our exhibitors, visitors and staff is our number one priority. After many weeks monitoring the evolving situation around COVID-19 and the notices issued by the World Health Organisation and other relevant governments and local authorities, and in close coordination with all partners involved, we have postponed the event to June.

"This decision has been difficult because of the major importance of this event to the personal care industry. We believe it is the best course of action for all involved to ensure we can deliver a high-quality business event later in the year that offers value for both our exhibitors and attendees. We look forward to returning to Barcelona at the end of June and thank our exhibitors, partners, suppliers and visitors for their support during this challenging time."

For updates and further information, please visit the event website:

www.in-cosmetics.com/global

CosmeticBusiness will be Postponed

Due to the dynamic and increasing spread of the coronavirus (Covid-19), CosmeticBusiness 2020, which was to take place from 17 to 18 June, has been postponed. The new date of the international trade fair of the cosmetics supplying industry is from 30 September to 1 October 2020 at the MOC Munich.

All contracts with the exhibitors of CosmeticBusiness 2020 will remain valid for the new date. More than 400 exhibitors and represented companies offer inspiring ideas for tomorrow's cosmetic products during the international trade fair of the cosmetics supplying industry at the MOC Munich. Visitor tickets that were previously issued will also remain valid for the new trade show date.

"The health of our exhibitors, visitors and employees is our top priority. Given the dynamic and increasing spread of the coronavirus, we have decided, in consultation with the exhibitor advisory board, to postpone CosmeticBusiness 2020", reports *Markus Geisenberger*, Chief Executive Officer of Leipziger Messe. "It was important to us, to find an appointment in autumn 2020. This will enable our exhibitors to present their new products and innovations in Germany, the largest cosmetics market in Europe, before the end of this year. CosmeticBusiness will thus once again become the most important source of inspiration for cosmetics companies and their suppliers in the German-speaking area."

www.cosmetic-business.com



COSMOPROF India, North America & Worldwide Bologna 2020 Rescheduled

To secure the investments of companies and operators in the cosmetic industry, the events have been postponed

COSMOPROF Worldwide Bologna

New Date: 3–7 September 2020

The 53rd edition of Cosmoprof Worldwide Bologna has been rescheduled for September: it will be held in Bologna from **3 to 7 September 2020** with COSMOPACK and COSMOIPERFUMERY & COSMETICS from Thursday 3rd to Sunday 6th and COSMOHAIR NAIL & BEAUTY SALON from Friday 4th to Monday 7th. Following the release of the emergency decrees to limit the spread of Novel Coronavirus in Italy, as well as the latest restrictions confirmed by other countries in Europe, Asia and the American continent to limit international travels, BolognaFiere Cosmoprof SpA, the organizer of the event, has announced a further postponement of Cosmoprof Worldwide Bologna 2020.

“Since the beginning of the emergency linked to the outbreak of Coronavirus in Italy on 23 February, we have been constantly monitoring the situation, with the aim of identifying the best solutions to support the cosmetic industry, says *Gianpiero Calzolari*, President of BolognaFiere. The restrictions affecting our country and the limitations on international travels announced by other nations do not currently create the necessary preconditions for the business and networking activities at the basis of a global event such as Cosmoprof. The decision to further postpone the show in September, also based on evident prudential reasons related to the health emergency, is the result of a responsible dialogue with associations and institutions, with the common goal of creating the best scenario for the relaunch of the sector. “

“The news of the postponement of the 2020 edition of Cosmoprof Worldwide Bologna in June dates to 24 February, but the evolution of the emergency linked to the outbreak of Covid-19 made it necessary to further rethink the period of the event. Following a series of comparisons and analysis of the needs of companies and operators, we understand and agree with the decision taken by our partner BolognaFiere to reschedule the event for September. Never as at this time, comments *Renato Ancorotti*, President of Cosmetica Italia, Professional Care Association - do trade fair and industry need to act together for the appointment which – this is our wish – will represent one of the crucial stages of the recovery for the sector in the post-Coronavirus phase. In the next future, Cosmetica Italia will embody even more the values of a key sector for our country and a flagship of Made in Italy. It would be a success to see our companies confirming their presence at this extraordinary September edition of the most important event in the world for the beauty sector”. In the next months, BolognaFiere Cosmoprof will devote its attention to the reorganization of the scheduled business activities and initiatives, to guarantee companies and operators a high-quality edition of Cosmoprof, in the name of the prestige that the brand has been able to conquer worldwide in more than 50 years.

www.cosmoprof.com

COSMOPROF India

New Date: 29–31 October 2020

BolognaFiere Group S.p.A and Informa Markets in India, organisers of Cosmoprof India 2020, have decided to postpone the 2020 edition to the new date of **October 29-31, 2020** at Bombay Convention and Exhibition Centre. The event was originally scheduled to be held from September 2 to 4, 2020. Mr. *Gianpiero Calzolari*, President of BolognaFiere Group, said Mr. *Yogesh Mudras*, Managing Director, Informa Markets in India, said, “It is a difficult but necessary decision to postpone the event. The COVID-19 situation presents a mixed and constantly changing scenario for the organisers of exhibitions worldwide. With an unflinching focus on the well-being of our customers, partners and employees, we believe the new date will allow more time for normality and confidence to return to the marketplace, ease travel restrictions, and provide all-around better conditions for exhibitors and visitors to engage. This will ensure that our stakeholders know they can receive the same outstanding experience and business that they have come to expect from the reputed Cosmoprof India Show, a 360° platform for the domestic and international beauty community.” The Organisers continue to monitor the developing situation and remain in close communication with relevant local government bodies, the industry and other key stakeholders, and our goal is to invariably provide an enhanced trading experience for the beauty community in this region.

www.cosmoprofindia.com

COSMOPROF North America

New Date: 20–22 September 2020

Given the unprecedented health situation the world is currently facing with COVID-19, event organizers BolognaFiere and the Professional Beauty Association have postponed the 18th edition of Cosmoprof North America to **September 20–22, 2020**.

“We have decided that rescheduling the show is necessary to ensure we are providing our partners and guests with the safest and most fulfilling experience,” says *Enrico Zannini*, General Manager of BolognaFiere Cosmoprof SpA. “We have a responsibility to protect our exhibitors’ investments, while delivering a show that meets and exceeds our international guest’s expectations. This decision was not made lightly and follows careful consideration of the global health emergency at hand.”

“The health and safety of our partners and guests is our number one priority, and we will continue to monitor this constantly evolving situation accordingly,” says *Steve Sleeper*, Executive Director of the Professional Beauty Association. “As the beauty industry as a whole is forced to physically separate during this time, there is no doubt that we will come together stronger in the months ahead to create a show experience that resonates and connects.

www.cosmoprofnorthamerica.com

PRODUCT
LAUNCH

SOFW

#sofwathomebutintouch

BRAND NEW

New at SOFW.com

Burg/Thannhausen, Germany | 23 March 2020

As all the major tradeshows are now being postponed or cancelled due to Covid-19 we would like to introduce a special service to you:

New Product Launch Pad

This is designed to help you showcase your **product launches** to our global database.

Submit your press releases on product launches, post videos and announce your special web launches. We make sure you reach your clients and potentials.

All this is free of charge for our advertising clients. For all others we make this available for a small fee.

See our **media data** for many other electronic and print communication tools on <https://www.sofw.com/en/sofw-journal/media-data>

Let's keep the industry running.

For more details please contact us in our home offices: westayathome@sofw.com

www.sofw.com

PRODUCT
LAUNCH
PAD

Givaudan Active Beauty Launches Synchronight™

A pioneering natural active cosmetic ingredient targeting the effects of digital stress on the skin

Genf, Switzerland | 13 March 2020



commitment to consumers who are searching for new ways to improve their lives with beauty products adapted to their digital lifestyles.

Laurent Bourdeau, Head of Active Beauty, said: “Our accomplished scientific team in skin research and microbiomics identified a unique opportunity to bring this ingredient to life. Creating a natural ingredient with the strength to fight the effects of digital stress and improve sleep quality is a turning point for innovation in the beauty space today. We look forward to collaborating with our customers to create new meaningful beauty products that bring moments of delight throughout the day and night.”

Givaudan Active Beauty is thrilled to launch its new breakthrough innovation called Synchronight™, an active cosmetic ingredient made from gardenia fruit extract designed to protect the skin from digital stress.

Synchronight™ is a powerful and dynamic ingredient, playing a significant role in protecting the skin to remain youthful and healthy. When the skin is exposed to digital stress such as blue light emitted by electronic devices, the ingredient acts as a shield against external aggressions allowing skin melatonin to play its natural role in regulating the sleep-wake cycle. **Synchronight™**, which is activated by the microbiome, stimulates skin rejuvenation and preserves the natural skin melatonin release cycle, resulting in younger skin and better sleep.

Developed at our Green Fractionation Centre of Excellence in Avignon, France, this new beauty innovation showcases our advanced scientific research capabilities and our

Maurizio Volpi, President of Givaudan’s Fragrance Division, said: “By combining our technologies in Active Beauty, we can respond to the demands of the market for more creative and versatile innovative solutions. Presenting new products to our customers is a priority for us and we’re proud to launch another active cosmetic ingredient that can inspire new collections with product differentiation. The launch of **Synchronight™** also perfectly reflects our commitment to our newly defined purpose, of creating for happier, healthier lives, with love for nature.”

Synchronight™ will be launched in the form of a night cream called, “My Blue Guard High Performance” also featuring DreamScenz™, a fragrance technology aimed to enhance the sleep experience.

www.givaudan.com



High Precision Measurement of TEWL and Beyond Tewameter® TM Hex



Cologne, Germany | 23 March 2020

Formulary Focus from Natural Plant Products

Salem (OR), USA | 24 March 2020



The worldwide acknowledged open chamber measurement method of the **Tewameter®** has reached a new level:

- **Thirty pairs of sensors** giving 15 times more information than the previous two pairs: the probe acts like a camera to detect temperature & humidity distribution
- **High amount of data** for each single measurement supplying extremely accurate, reproducible and quick results for the first time for skin and ambience above the probe

Explore new exciting parameters:

- **Local skin energy balance:** for the first time it is possible to separately measure the transepidermal heat loss by heat diffusion from the body and evaporation cooling through water vapor.
- **Water vapor concentration:** the actual drive of TEWL (skin and ambience)
- **Relative Humidity** of skin and ambience

www.courage-khazaka.de

For this month's Formulary Focus we have an exciting hair treatment mask to share with you.

This luxurious mask is real game changer for many different hair types. This moisturizing yet gentle mask can be used every day or once a week for a deep, hydrating treatment.

Meadowfoam XPR provides rich, moisturization and increases the oxidative stability of the formulation's less stable avocado oil and shea butter. Daikon Seed Extract smooths, strengthens, and adds shine. Hydrolyzed silk adds shine and barrier protection and increases styling ease.

Check out the formulation (<https://meadowfoam.com/formulations/nourishing-botanicals-hair-mask/>) as well as the rest of our Applications Library to help jumpstart your formulation work!

Wishing you well...

www.meadowfoam.com

COSMETIC INGREDIENTS & FORMULATIONS GUIDE 2020

»The Personal Care Almanac«

– Call for Papers –
Paper Submission: May 15, 2020



The "Cosmetic Ingredients and Formulations Guide 2020" is at the starting block.

Many exciting new developments and launches will be introduced this year.

All experts working in the personal care industry are invited to have a share in taking our readers on an excursion through innovations, developments, launches and trends.

Please feel free to offer papers pertaining to our subjects!

You are also invited to send your Formulations and Company Profiles for the respective sections of our guide.

Please contact us as soon as possible for suggestions and detailed information.

Paper Submission: May 15, 2020

Advertising Submission: June 3, 2020

Publication: October 2020

We are looking forward to hearing from you!

Contact

Daniela Neatu
Tel: +49 8281 79940-41
Fax: +49 8281 79940-50
✉ editorial@sofw.com

SOFW

We are looking for papers on latest developments in:

- Organic Ingredients
- Antipollution Cosmetics
- Multicultural Cosmetics
- Holistic Beauty
- Sensory Perception
- Probiotics
- Sustainability
- Cosmeceuticals
- Hair Care
- Preservatives
- Technology
- Regulatory Issues
- Market Trends
- Face Masks



Reduce and Boost! Clariant Launches New Natural Choice for Effective and Safe Cosmetics Preservation

Muttenz, Switzerland | 26 March 2020

- Reduce preservative amounts while keeping antimicrobial protection even in high aqueous formulations
- Derived natural next-generation preservation booster carries COSMOS certification
- 100% water soluble = ideal for micellar hydrogels and other transparent formulations

Clariant expands the Personal Care industry's increasingly-limited preservation options for both traditional and natural formulations with the launch of next generation preservation booster **Velsan® Flex**. The 93% RCI (Renewable Carbon Index) innovation is highly versatile and effective in combination with all preservative types, enabling a reduction of typical preservative by as much as 50% while still achieving safe antimicrobial protection for cosmetics.

Preservation is essential to the safety and longevity of cosmetics products. But it comes with many practical concerns for formulators due to heavy regulation and public scrutiny of ingredients. Formulations with water and water/oil content can become easily contaminated with bacteria, yeast and mold, however the number of approved preservatives currently considered safe for use has fallen considerably. Plus, not every preservative is suitable for every format. At the same time, there are increasing calls for less preservative use as well as a desire for natural ingredient alternatives, although both avenues deliver generally weaker performance.

Velsan Flex, the latest addition to Clariant's range of preservation boosters, steps in to offer formulators effective all-round support to these challenges.

Ensuring antimicrobial protection with up to 50% less traditional preservative, such as Benzoic acid, Benzyl alcohol or Phenoxyethanol, for a broad range of cosmetic formulations, Clariant demonstrates its exceptional versatility through sample formulations focused on on-trend natural formulations and clear formats which are particularly difficult to preserve. **Velsan Flex** overcomes the challenges of clear applications with extremely high water content, as in the case of micellar gel, those with both high water and active content, as for a tonic water formulation, and in clear aqueous formulations containing oil and fragrances with low preservative load, such as a nourishing shower gel.

CLARIANT



Natural content is increased in formulations from the outset as **Velsan Flex** is derived from the glucose syrup of renewable corn and palm kernel oil available in RSPO Mass Balance certified quality. The ingredient is ISO 16128 compliant and approved by COSMOS, supporting opportunities to boost the performance of preservatives accepted for naturally certified formulations.

Such formats are demanding to preserve because natural formats only allow a few selected preservatives that need a boost to have sufficient antimicrobial power. **Velsan Flex** has proven success in protecting natural formulations, including nutrient-rich formula, otherwise an active breeding ground for microorganisms, in the form of a COSMOS certifiable rose body lotion, and a Natural Sheet Mask, particularly challenging because of its exceptionally high water content and large surface.

Ralf Zerrer, Head of Innovation & Strategic Marketing, Business Unit Industrial & Consumer Specialties, comments: "Clariant's introduction of a new 93% renewable-based preservative booster for cosmetics is set to be welcomed by formulators and brands amid fewer and fewer available preservative options. It opens up more effective preservation systems and more environmentally friendly claims to a wide range of cosmetics formulations, where the amount of traditional preservative can be reduced, and also natural alternatives can reach required performance levels."

Velsan Flex carries Clariant's EcoTain® label in recognition of its renewable content and further sustainability advantages offered to Personal Care formulators through its combination of water solubility, oil solubilizing properties, and preservative boosting properties.

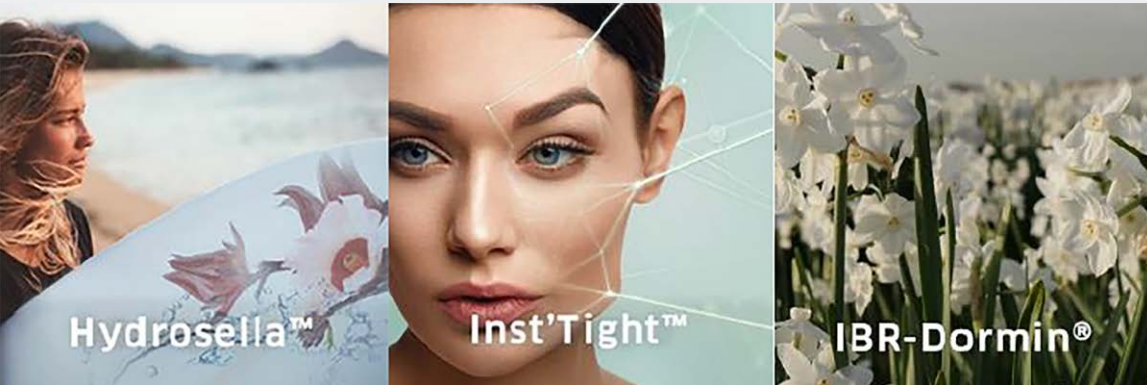
Details on key benefits and performance data are also available now at:

www.clariant.com/velsanflex

IFF/Lucas Meyer Cosmetics Product Launch



New York (NY), USA | 25 March 2020



HydroSELLA™

Skin hydration is of upmost importance to maintain a healthy skin. When skin gets dry, it becomes less resilient, looks dull, tends to lose its smoothness, suppleness and leads to the appearance of aging signs.

HydroSELLA™ is a new generation of natural hydration active ingredient. Stimulating the production of organic osmolytes and their specific transporter, it accelerates keratinocytes water recovery. Simultaneously, it restores skin barrier function by increasing lipid production and tight junction proteins. Clinically proven on active people, **HydroSELLA™** improves skin hydration by up to 56% and reduces water loss by up to -17%.

HydroSELLA™ is naturally extracted from a unique variety of Australian Hibiscus called Wild rosella, selected for its high natural betaine content. Organically grown in a subtropical rainforest environment and China compliant, this multi-target active ingredient acts on the root cause of skin dryness providing a rapid and continuous improvement of skin hydration and reducing skin water loss up to 72 hours after application.

Inst'Tight™

As a proof of efficacy, more and more cosmetic products claim a rapid action to satisfy consumers in quest of immediate visible results.

Inst'Tight™ is a flash beauty perfecter composed of concentrated specific honey locust seed polysaccharides, providing high mechanical skin tightening properties. This highly pure galactomannan fraction has been extracted with an innovative and sustainable water-based process compliant with the 6 principles of the Eco-Extraction chart, designed to follow our sustainable eco-responsible new product development strategy.

By forming a biopolymeric network at the surface of the skin, **Inst'Tight™** instantly and visibly minimizes the appearance of wrinkles from 3 minutes after application, with a long-lasting action up to 8 hours.

Inst'Tight™ can be used as a standard anti-aging ingredient, as well as a real-life Instagram filter. It is China compliant, Cosmos and vegan compliant.

IBR-Dormin®

IFF/Lucas Meyer Cosmetics is proposing an unconventional age-defying approach by preserving skin's youth capital. Skin cells are capable of a finite number of cell divisions, after which they enter an irreversible growth arrest called cellular senescence. Senescence is controlled by the shortening of chromosome terminal sequences, the telomers (internal aging clock). Critically shortened telomers activate the DNA damage response pathway, mTOR complex 1 (mTORC1), leading to senescence and dysfunction.

Narcissus tazetta (Galilee bulb), is an ornamental bulbous plant. The bulb allows the plant to cycle between growth and dormancy. When dormant, it produces DORMINs, growth inhibitors, that reversibly slow down cell proliferation.

IBR-Dormin® captures and transfers the plant dormancy concept to skin cells preserving their youthful healthy function. **IBR-Dormin®** slows down skin fibroblast cell proliferation, preserves telomers and delays entry into cellular senescence, thereby preserving the youth capital of the skin, reducing the appearance of wrinkles and improving elasticity.

www.lucasmeyercosmetics.com

Ashland Unlocks the Secret of Skin at Night, so Skin Awakens Re-set for the Day Ahead

Bridgewater/New Jersey, USA | 26 March 2020

Ashland announces the launch of **Nightessence™ biofunctional** – a natural extract from premium true lavender flowers using the patented and proprietary plant small RNA technology™. This is the first of its kind biofunctional tailored to optimize skin's nighttime needs and allow consumers to awaken with skin re-set for the day ahead. It helps restore skin overnight, so it looks rested, renewed and illuminated by morning.

Consumers understand the link between sleep and lifestyle factors with skin appearance, mental and physical health. „A recent Mintel* study reports that 80 percent of women in France, Germany, Italy and Spain all agree that getting enough sleep is an important part of looking after their skin,“ said *Justine Cotton*, global marketing manager and new business development, Ashland. The ‚beauty sleep‘ or ‚clean sleep‘ concept is extremely trendy. ‚Clean sleep‘ focuses on habits and behaviors that can improve the quality of sleep and help one feel better rested.

„Based on scientific research, Ashland has defined the biology of the skin at night as noctology™, which describes the needs of skin through essential nocturnal processes and molecules for night repair of daily damage,“ explains *Joel Mantelin*, vice president marketing and business development, Ashland. „Ashland's **Nightessence™ biofunctional** enhances skin's naturally occurring nocturnal process, dysregulated by hectic lifestyles, visible light and sun, and helps skin boost essential nighttime molecules such as timezyme and melatonin.“

The **Nightessence™ biofunctional** was clinically tested on a group of 36 Asian volunteers who worked the night shift or who stayed up very late. After using the product for a month, the volunteers showed a more rested skin with fewer dark circles.

Nightessence™ biofunctional was eco-consciously designed from field-to-skin. The company's *Lavandula angustifolia* premium lavender is grown sustainably, respecting nature in its cultivation and harvesting techniques on the mountain slopes in Provence, France, 140 kilometers from the Ashland bio-functional facility. It is extracted using green chemistry to offer a novel type of lavender essence to the cosmetic market.

* trademark owned by third party

www.ashland.com/nightessence

DSM Launches SYN-GLOW™

Kaiseraugst, Switzerland | March 25, 2020



We all love that natural sun-kissed glow that we get from a summer holiday, but our everyday busy lives can leave skin looking dull and tired.

With **SYN-GLOW™** you can get healthy, youthful, fresh-from-holiday look...all year round!

DSM developed a completely new small cosmetic peptide ingredient, partnering with skin to reveal its natural sun-kissed tone from within.

Exceptional efficacy on human skin after topical application within a cosmetic formulation.

Clinical studies reveal that **SYN-GLOW™** promotes:

- visible healthy glow in just 5 days (+90% vs control, high significance)
- long lasting result (up to 2.5 weeks proven visibility, highly significantly better than control)
- natural personalized effect

100% of volunteers noticed their skin fresher and more revitalized after application.

www.dsm.com

Introducing BIOME Oléoactif®, the Active Solution to Protect the [Skin-microbiome] Ecosystem

Chicago (Illinois), USA | 16 March 2020

BIOME Oléoactif® both reinforces the integrity of the epidermal barrier and preserves the microbiota of healthy skin to prevent cutaneous discomfort and disease.

Our newest active natural, **BIOME Oléoactif®** (INCI: Simmondsia Chinensis Seed Oil (and) Avena Sativa Kernel Oil (and) Bacillus Ferment), is the first ingredient obtained by capturing rare lipids from a wild extremophilic microorganism, then offering them to the skin and its microbiota. This strain was isolated from an underground thermal water source by French biotechnology company Deinove. After fermentation under controlled conditions, the biomass is extracted by Hallstar Beauty's patented green Oléo-éco-extraction. **BIOME Oléoactif®** is a COSMOS-certified natural beauty enhancer complex, totally safe with proven efficacy at low dose.

There are numerous possible origins for cosmetic ingredients claiming a protection of [skin-microbiome] ecosystem: from chemicals to various natural origins such as yeasts, bacteria, plants, and algae. The benefit of these types of ingredients is based on the presence of polar molecules such as amino acids, peptides, proteins, polyphenols, carbohydrates, organic acids, vitamins and minerals. **BIOME Oléoactif®** has been created by extracting bacterial lipids that represent a minor (thus precious) part of bacteria. Among these lipids, iso C15 fatty acid (which is specific to bacteria for their membrane integrity) has been identified and is used for the first time in cosmetics and personal care.

BIOME Oléoactif® is the first post-prebiotic fatty acids complex.

- **'Fatty acids complex'** because it is an innovative combination of fatty acids coming from the bacterial and vegetable worlds.
- **'Postbiotic'** because it contains non-viable fractions of bacteria that have a biological effect on the skin.
- **'Prebiotic'** because it confers a health benefit by supporting the maintenance of the normal skin microbiome associated with a modulation of some species of the microbiota related to healthier skin conditions.

To protect against intrinsic and extrinsic factors that can impair the skin and microbiota, experts recommend using cosmetics maintaining skin microbiota with an effective skin barrier function to prevent unbalanced skin conditions. Hallstar Beauty conducted a cosme-to-genomic *in vitro* test on skin as well as a clinical test on cutaneous microbiota (16S rDNA sequencing) that proved **BIOME Oléoactif®** preserves the bacterial diversity and microbiota global composition of healthy skin, thus balancing and protecting the critical [skin-microbiome] ecosystem.

www.hallstarbeauty.com

Mibelle Biochemistry Presents: PolyFructol Plus 48 h Hydration & More



Buchs, Switzerland | 23 March 2020



Looking for a moisturizer that hydrates skin for up to 48 hours while at the same time leaving it smoother, firmer and more elastic? How about a moisturizer that also increases skin hydration after just one application in a shower formulation and leads to an increased moisturization even after rinsing?

PolyFructol Plus:

- Immediately and deeply rehydrates dry skin (48 h)
- Enhances skin elasticity and firmness (48 h)
- Protects and regenerates the skin barrier (48 h)
- Even works in rinse-off products and after a single application

PolyFructol Plus is based on the oligosaccharide inulin that comes from chicory roots. This is combined with lecithin-derived liposomes to enhance its activity. Long-lasting and effective for up to 48 hours.

www.mibellebiochemistry.com

Do you want more?

Find the latest product launches of the industry on our website. www.sofw.com/product-launch-pad

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SEPAWA (Vereinigung der Seifen-, Parfüm- und Waschmittelfachleute e.V.)

Editor in Chief

Robert Fischer | robert.fischer@sofw.com

Editorial Content

editorial@sofw.com

Advertising

advertising@sofw.com

Subscriptions

subscription@sofw.com

Publisher

Verlag für chemische Industrie H. Ziolkowsky GmbH

Print

Holzmann Druck GmbH & Co. KG
Gewerbestraße 2 | 86825 Bad Wörishofen
Germany

Issues

10 issues per year + scheduled special issues

Address**SOFW**

Verlag für chemische Industrie H. Ziolkowsky GmbH
Dorfstr. 40 | 86470 Thannhausen
Germany

Phone

+49 8281 79940-0

Fax

+49 8281 79940-50

Email

vci@sofw.com

Internet

www.sofw.com

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Online Subscription

> EUR 195.00 (+ VAT where applicable)

Price/Issue

Germany: EUR 23.36 (+ postage, + VAT where applicable)

Other Countries: EUR 23.36 (+ postage, + VAT where applicable)

Picture Credits

Cover: BestPhotoStudio/shutterstock.com

p. 40: Serp/shutterstock.com

p. 27, 44: Aleksandar Mijatovic/shutterstock.com

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Verlag für chemische Industrie H. Ziolkowsky GmbH

Dorfstr. 40

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