

COSMETICS
TRENDS
TECHNOLOGY

COSSMA



SUSTAINABILITY

Finding resource-saving solutions

p 38

MARKET INSIGHT

Target group generation Z

p 46

**“ECOLOGICAL
OPTIMISATION
WILL BE THE KEY
FOR CONSUMER”**

Christian Eisen, Vice President
Global Sales & Innovation,
Faber-Castell Cosmetics

p 58

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EDITORIAL



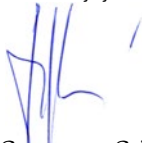
Responding to needs

According to a recent study conducted by PepsiCo with Ipsos in America, empathy and holistic (marketing) strategies play an important role in times of the coronavirus pandemic if brands want to increase customer loyalty. Two in three American consumers found that the brands' actions during the pandemic will have an impact on how they deal with those brands in the future. At the same time, 86% of the surveyed say it is important that brands help lift the mood. We know that many consumers like to use cosmetic and personal care products to do something good for themselves – preferably with highly effective, protective, and sustainable ingredients. Our Go future topic “New ways for actives” starting on page 8 introduces various new ingredients that meet these needs.

But sustainability is also still very important when it comes to packaging. Our spotlight focuses on recycling deals with precisely these topics. From page 38 you can find out more about resource-saving solutions and the possibilities of recycling and reusing plastic packaging.

I hope you enjoy reading these and other topics, and above all:
Stay healthy!

Sincerely yours,



Georg von Griesheim,
Managing Director

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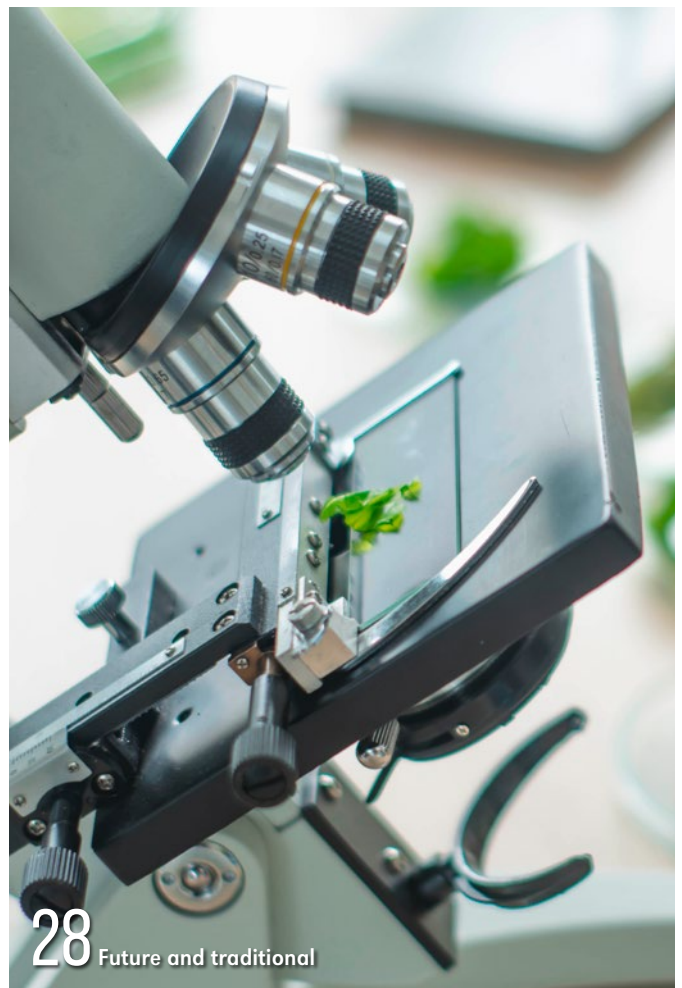
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Christian Eisen, Vice President Global Sales & Innovation, Faber-Castell Cosmetics, www.fc-cosmetics.de



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SIMONA ANTONINI

R&D BolognaFiere, Cosmoprof

about an entire production cycle of a product that is sustainable.



NICHOLAS MICALLEF

Analyst, Euromonitor

reports about current global market developments and current trends.



CAMILLA MARCUS-DEW

Co-Founder, The Soap

talks about a luxury skin care brand produced by people with disabilities.



JULIETTE SICOT-CREVET

VP Business, Firmenich

explains the company's overall sustainability strategy.



SAM FARMER

Founder of the eponymous brand

about his brand that offers unisex alternative products for teenagers.



ZEZE ORIAIKHI-SAO

Founder, Malée Natural Science

provides insights into her African luxury Indie brand.



LOG IN AND TAKE FULL ADVANTAGE!

On the COSSMA website, we post lots of additional information related to the topics covered in the magazine. You will find **more than 1,000 useful additional items** to extend your knowledge and understanding: more information on the ingredients and finished products that we cover; market data and statistics; supplier listings; literature references; scientific articles; product formulations and useful base formulations. Search for the topics you are interested in at www.cossma.com

NEWS

VIRTUAL OPENING EVENT

BASF | Toine Janssen, CEO of Isobionics formally opened the new Isobionics distillation plant at Brightlands Chemelot Campus in Geleen, Netherlands. Steffen Götz, Head of BASF's Aroma Ingredients business, Jurgen Hoekstra, Managing Director BASF Nederland, and Bert Kip, CEO of Brightlands Chemelot Campus, joined the event virtually. The Isobionics approach to producing natural fragrance and flavour ingredients is based on fermentation, a traditional technique well known from processes such as brewing beer and baking bread.

www.basf.com



The new distillation plant in Geleen, Netherlands now is open.

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Expanding in America

QUADPACK | The international beauty packaging manufacturer and provider has started an expansion drive, to broaden its operations in the Americas region. It aims to conquer one percent of the \$6 billion beauty packaging mar-



Quadpack America's leadership team: Anthony LeMinoux, Managing Director – Americas, Chris James, Vice-President Sales, and Chip Clayman, Vice-President Operations.

ket by 2025. Preparations include the integration of East Hill Industries into the brand, new sales offices in New York, Los Angeles and Miami, and a sourcing centre in Mexico. The portfolio includes both its own range and packaging solutions from its manufacturing partners.

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NEW WEBSITE

MARINO BELOTTI | The Italian company part of Lumson Group, presents its new website that has been totally renewed both in contents and in graphics, in a more concrete and captivating way, to guarantee the best user experience. It has been built to provide the users all the information and services with a widest and comprehensive language and with a simple and intuitive system. The structure, divided into macro sections, offers the users a completely overview of the company, providing all the key-information aimed to accentuate the emotional aspects of cosmetic packaging.

www.marinobelotti.it

photo: Lumson Group/Marino Belotti

A QUICK RESPONSE TO THE MARKET'S NEEDS

From the evergreen round line to the most unique and sophisticated square ones, the catalogue offers solutions for every type of powder products including baked formulas.

GO FUTURE

NEW WAYS FOR ACTIVES

Natural and safe	p 10
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More energy for hair follicles	p 22
International launches	p 25





NATURAL AND SAFE

Perfuming | Natural ingredients are not automatically without risk. Fragrances of a natural origin can have allergic potential or, on the other hand, be susceptible to contamination. Markus Nahrwold explains the approaches that green chemistry offers.



▶ **Markus Nahrwold,**
Technical Director, Minasolve,
Louvain-la-Neuve, Belgium,
www.minasolve.com

Consumers often perceive aromatic plant extracts as “better” than synthetic fragrances. Yet, experts in the field of natural and chemical fragrances are well aware of the potential cocktail of allergens and sensitizers in natural extracts. To ensure

safety in essential oils and stability in hydrolats, two solutions are proposed for natural fragrances in cosmetics:

- 1 Purification and green chemical transformation
- 2 Dilution combined with careful quality control

Risks of natural fragrances in cosmetics

The most diverse type of natural fragrances are probably essential oils, whose long history dates back about 800 years to the golden Arabian age. Current annual production worldwide is estimated at 100,000t.¹

Essential oils are traditionally obtained by steam distillation: hot water vapour is passed through fresh or dried plant material, thereby taking

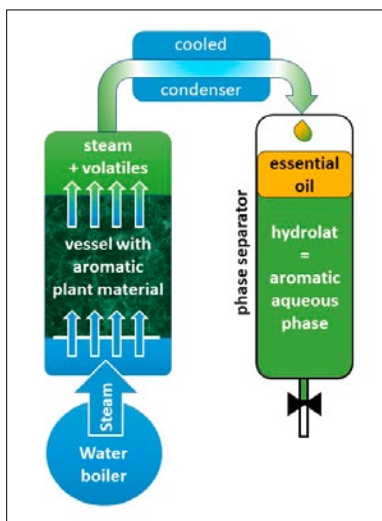


figure 1: Scheme of the traditional production of essential oils and hydrolats by steam distillation of plants.

up the volatile components. The distillate is allowed to settle, and two phases are collected: A small lipophilic phase – the essential oil – and a large water phase, also known as hydrosol, hydrolat or “floral water” (figure 1).

“CATALYTIC HYDROGENATION IS A CHEMICAL STEP THAT IS IN LINE WITH THE TWELVE PRINCIPLES OF GREEN CHEMISTRY.”

Markus Nahrwold, Minasolve

Either phase can be used for perfuming personal care products. However, the problem is that the essential oil may contain sensitizers and can cause skin allergies. Hydrolats are often unstable and almost always sensitive to microbial contamination.

One striking example of a safety risk is “cinnamon bark oil”, obtained by steam distillation from the bark of cinnamon or cassia trees. Its main component is cinnamaldehyde, a fragrance allergen listed in Annex III of the European Cosmetics Regulation, so limiting its concentration in products intended for use on human skin is recommended. In such cases, green chemical conversion offers advantages.

Minimizing risk with “green chemistry”

“Catalytic hydrogenation” is a chemical step that is in line with the twelve principles of green chemistry.² Such processes are typically short, selective, and atom-economic, hence generating little waste. Hydrogenation of cinnamaldehyde affords 3-phenylpropan-1-ol (INCI name: Phenylpropanol). The allergenic po-

tential of phenylpropanol is much lower than that of cinnamaldehyde.³ This makes phenylpropanol particularly attractive as an ingredient for personal care applications.

Phenylpropanol is found in nature, for example in hyacinths and ripe strawberries, and is therefore considered as a “natural” fragrance. Its odour is described as balsamic and flowery with an oriental note, reminiscent of hyacinths.

Its broad-spectrum antimicrobial properties can also help to generate self-preserving natural cosmetics. This activity is almost independent of the pH value, which is of interest for natural formulations with neutral or alkaline pH values.

Phenylpropanol is usually produced starting from petrochemically derived cinnamaldehyde. However, in recent times a version of phenylpropanol being produced directly from the natural essential oil is available (figure 2).

Isolation of cinnamaldehyde from cinnamon oil by fractional distillation is disturbed by formation of various azeotropic mixtures with other components of the essential oil.⁴ ▶



figure 2: Production of phenylpropanol from cassia bark oil.

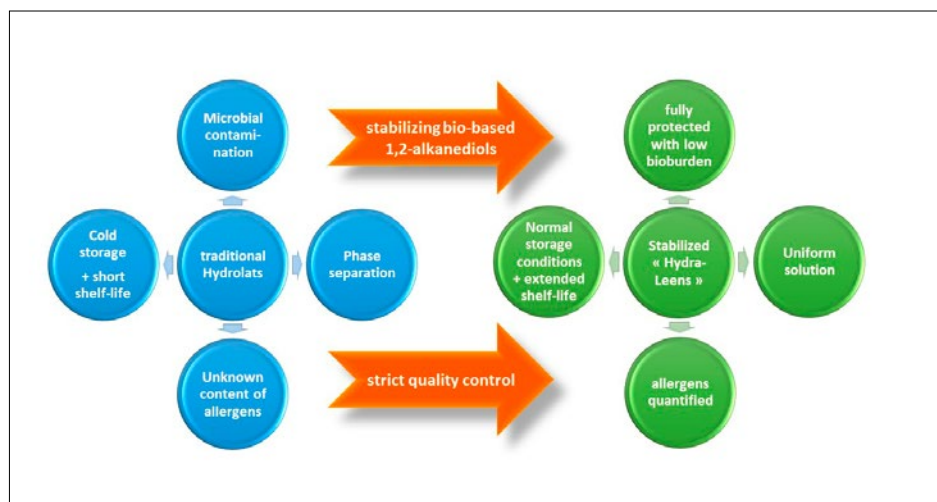


figure 3: The benefits of stabilised hydrolats.

Fortunately, all undesired impurities are “saturated” during the hydrogenation process, which simplifies their removal.

The obtained nature-derived phenylpropanol is therefore essentially free of listed allergens. The first of its kind natural phenylpropanol on the market, “A-Leen Aroma-3”, is Cosmos and Natrue approved and USDA-certified bio-based. Its natural raw material is sustainably produced

in cooperatives which cultivate the Cassia trees, isolate the essential oil, and valorise all remaining parts of the tree.

But it is just one example for the possibility of creating natural, yet low-allergen fragrance ingredients.

Minimizing risk with dilution

One can also directly use plant extracts as perfumes, without green chemical transformations, particu-

larly when organic certifications are targeted. Here, hydrolats obtained via steam distillation of natural materials can be a convenient option.

One major advantage of hydrolats is paradoxically their low content of aroma ingredients. The high dilution makes an over-dosage almost impossible. Nonetheless, the content of fragrance allergens should be closely monitored and known hazardous contaminants should be also quantified. Prominent examples are furocoumarins inside orange extracts and methyl eugenol in rose water.

The composition of hydrolats is similar to the corresponding essential oils, with two major differences: The concentration of aroma components is as low as 0.1%, and mainly the water-soluble components of the essential oil are enriched in the hydrolat.

As an example, the major aroma ingredient of rose water is the water-soluble phenylethyl alcohol (PEA), while rose oil contains almost no PEA. The aroma of natural rose water is therefore quite similar to rose flowers, while the odour of rose oil differs from the original flowers.⁵

Storage and stability risks of hydrolats

Despite being cost-effective and safe, natural perfumed waters are not always taken into consideration because of the risk for infections by microorganisms, which can represent a health risk and lead to olfactory off-notes. **While many hydrolats are self-preserving against bacteria, they are mostly not self-preserving against fungi.**

Cold storage may preserve the freshness of hydrolats for a while, but a short shelf-life of about six months is quite common – imposing an economic risk and a logistic constraint, if hydrolats are transported over longer distances or through tropical areas.

This is why hydrolats are often preserved with antimicrobial additives or subjected to sterile filtration or irradiation, which however need special equipment.

Hydrolat	Additive	TAMC	TYMC	Challenge test, ISO 11930
Cedrus atlantica (Cedar) bark water	–	> 1000	> 1000	Failed
Citrus aurantium amara (Neroli) flower water	–	> 1000	> 1000	Passed (B)
Rosa damascena (Rose) flower water	–	> 1000	> 1000	Failed
Hydra-Leen 5 Rose	Pentylene Glycol	< 10	< 10	Passed (A)
Hydra-Leen 8 Rose	Caprylyl Glycol	< 10	< 10	Passed (A)
Hydra-Leen 8 Cedar	Caprylyl Glycol	< 10	< 10	Passed (A)
Hydra-Leen 8 Neroli	Caprylyl Glycol	< 10	< 10	Passed (A)

table 1: Comparison of the bioburden and resistance to microbial contamination of unprotected and protected hydrolats (TAMC: Total Aerobic Microbial Count; TYMC: Total Yeast/Mould Count)

Another compounding problem linked to hydrolats is the **potential presence of excess essential oil**. The oil can form a separate phase, usually upon prolonged storage in a cold area.

This inhomogeneity can eventually lead to an overdose of the lipophilic fragrances, resulting in an inconsistent odour, incomplete solubility in water or even skin irritation or sensitisation.

Reducing risks

All the above risks can be avoided by using 1,2-alkanediols, such as bio-based 1,2-pentanediol or 1,2-octanediol. Such additives act as solubilizers and dispersing agents that keep the hydrolats homogenous.

Furthermore, the diols have anti-microbial properties and therefore avoid or even cure microbial contamination. The bio-based origin of the diol additives makes it possible to obtain eco-certifications such as Cosmos or Natrue.

Table 1 shows the differences in the bio-burden of stabilised versus non-treated hydrolats. Even microbial challenge tests according to ISO 11930 are passed, which enables a direct application on skin.

Rigorous testing of aromatic plant extracts

In summary, green chemical conversion and high dilution combined with strict quality control are two ways of obtaining natural fragrances with a low content of allergens. A detailed risk assessment according to the guidelines of the International Fragrance Association (IFRA) is recommended in any case. The reward of all this effort are safe and pleasant-smelling natural formulations. □

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NATURAL BOOSTING POWER

Ingredients | In the course of the increasingly popular “clean beauty” movement, additives are falling into disrepute. Boosters of natural origin are a way of reducing the use of additives and still ensuring the safety of the products.



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Technical Director Europe, La Plaine
Saint-Denis Cedex, France

The term “Clean Cosmetics” is the foundation of “Clean Beauty”, a lifestyle trend to support our wellbeing without compromising health or the environment¹. Nontoxic ingredients are the key, it does not necessarily have to be green^{2,3}. Most important is that clean cosmetics have a good influence on skin and hair. Healthy skin means that the skin functions (protection, sensa-

tion, heat regulation, control of water evaporation, aesthetics and communication, storage and synthesis of Vitamin D and proteins, excretion of water, minerals, sebum and microbes, absorption and water resistance) and the skin flora (our individual microbiome) are in a good shape and work synergistically⁴. However, more consumers recognise environmental aspects, which include an environmentally friendly

supply chain and no harm to the environment¹. Since there is a common understanding about those, e.g. local sources for raw material and degradability/natural recycling without harming the biosphere, we should look closer at the benefits of certain raw materials related to their impact on skin. Good care provides a healthy barrier function, helping to maintain and re-establish a healthy microbiome.

The microbiome

Although we know that synergies of a well-kept microbiome and the skin is essential, we can only conclude, that the mildest impact on the natural microbiome is possibly the best. Even pathogenic microorganisms, like moulds, yeasts, bacteria, and viruses can be found in the human microbiome, which can play a role in the overall consideration⁴.

In this light, the skin barrier needs to always be functional and not additionally contaminated by pathogenic microbes. Cosmetics industry well reflects these demands for clean cosmetic ingredients.

With the help of boosters

Preservatives which are accepted by law are essential ingredients to avoid contamination of cosmetics by pathogenic microorganisms⁵. However, the selection is getting more and more restricted by blacklisting certain ingredients⁶, although there is sometimes no scientific substantiation to do so. Therefore, the cosmetics industry is constantly developing natural ingredient concepts that work as preservative boosters, which help decreasing the in-use concentration of established preservatives.

Methylheptylglycerin, a brand-new ingredient, which can be purchased as “Lexgard Natural MHG MB” from Inolex⁷, covers multiple functions as an emollient with anti-soaping effect in emulsions and simultaneously as a deodorising ingredient as well as a preservative booster.

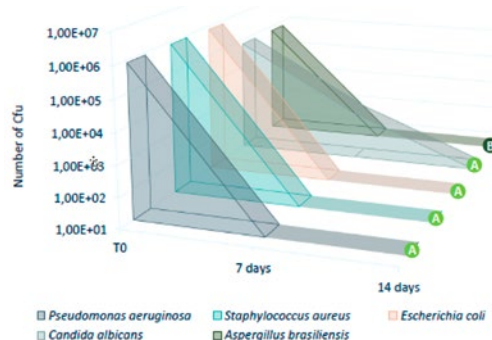
The ingredient interacts with gram-positive bacteria, e.g. *Staphylococcus hominis*, the gram-positive bacteria in the underarm area

that is responsible for excreting the malodour-causing thioalcohol. It is NaTrue approved and certified readily biodegradable.

A new solution to help to preserve cosmetics comes from Roquette Beauté, enhancing the effects of preservatives such as potassium sorbate, sodium benzoate and others. Beauté by Roquette LS 007 is a **compound which comprises fully plant-based ingredients (Gluconic Acid, Caprylyl / Capryl Glucoside and Cymbopogon Citratus (Lemon Grass) Leaf Oil)** and is Cosmos approved. It acts as a preservative booster and reveals, from 1% in use concentration, synergistic effects against bacterial and fungal microbes at pH from 4.5 to 6.

Less is more

Good care requires profound knowledge of the composition of the products applied on the skin. The skin



0.4 % potassium sorbate + 1% Beauté by Roquette LS 007.
A: Challenge test result, fulfils criteria A of ISO 11930;
B: Challenge test result, fulfils criteria B of ISO 11930

barrier is too often compromised because of the excessive use of skincare products that contain too complex combinations of harsh ingredients. An option to decrease the multiple use of aggressive materials in a formula could be **to use a single and mild multifunctional material**. As an example, the use of a functional ▶

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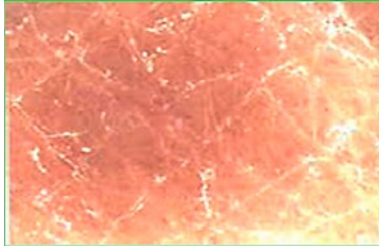
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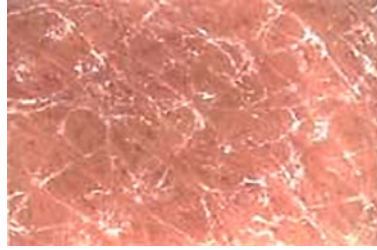
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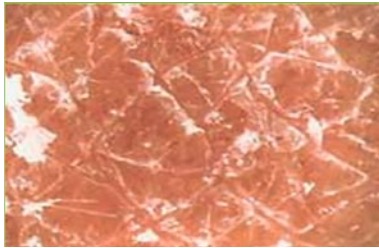
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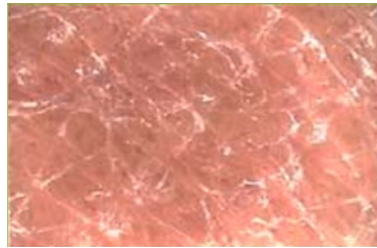
Before treatment with solvent



Ethoxylated surfactant cream: does not remove skin roughness



After treatment with solvent: skin becomes rough



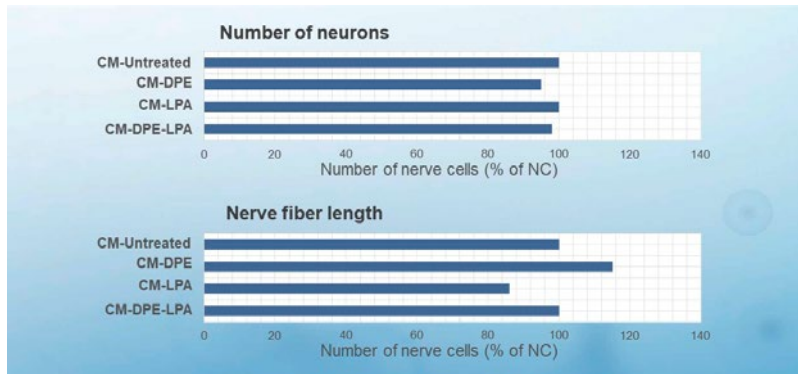
Treated with "Nikkol Nikkolipid 81 S" cream

lipidic complex having a strong skin affinity and emulsification ability with anti-inflammatory effect, rough skin improvement and moisturisation properties can be an asset in the fight against skin barrier disruption.

Various possibilities

"Nikkol Nikkolipid 81S" from Nikko Chemicals Co., Ltd.⁹ is based on **Batyl Alcohol** (naturally derived lipid and known for its skin affinity and anti-inflammatory properties) and Lecithin (one component of the cell membrane) is a good example. At natural origin index of 0,90 (ISO 16128) it is also recommended for nature-derived formulas.

Anti-inflammatory function substantiated by effect on UVB induced damaged normal human keratinocytes (NHK) pre-treated with Batyl Alcohol and irradiated after 24 hours for 2 hours by UVB. Evaluation via comet assay test. Treated cells show less damage.



Numerical data: air pollutant (DPE) exposure, nerve cells after LPA treatment

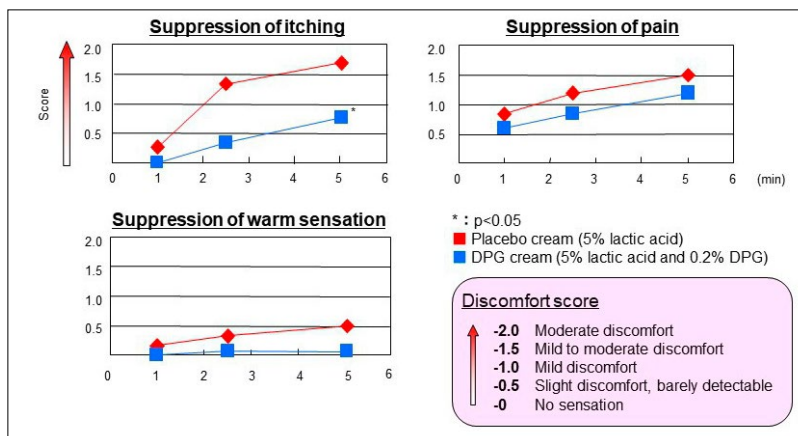
Improvement of the skin barrier function

Skin integrity and skin sensitivity belong together. Nerve fibres populate the epidermis to create sensitive skin. The Nerve Elongation Factor (NFG) and Nerve Repulsion Factor (Semaforin3A) are known to indicate disorders in the function of nerve neurites. External inductors like pollutants disrupt the balance by increasing NGF and lowering Sema3A expression.

Lysolecithin (LPA) from Nikko Chemicals Co., Ltd¹⁰ reinstates the balance of nerve fibres elongation after disruption by pollutants, e.g. DPE (Diesel Particulate Extract).

Dipotassium Glycyrrhizinate (DPG), also from Maruzen Pharmaceuticals Ltd.¹¹, is one of the most recognised active ingredients to balance skin sensitivity in relation to atopic dermatitis, allergies, and/or sensitivity caused by environmental factors.

This **molecule extracted from licorice root** reduces stinging effects (itching, pain, and warm sensation), induced by treatment with 5% lactic acid, at only the low in use concentration of 0,2%. It is recommended for scalp treatment and other types of



DPG cream reduced the stinging sensation even with a single application. Thus, DPB is strongly recommended for formulation in sensitive skin cosmetics.

formulae to prevent and/or reduce the consequences of inflammation. Additionally, it enhances skin hydration.

Another good example of a multi-functional ingredient is Shiso, e.g. from Nikko Chemicals Co., Ltd.¹². It contains flavonoids, like luteolin, rosmarinic acid or apigenin with excellent anti-allergenic and anti-inflammatory effect. Specifically, it recovers the skin barrier function after the aggression of pollen or dust. It reduces inflammation and stinging caused by allergens or harsh surfactants, decreasing pro-inflammatory cytokins.

Many more natural ingredients are being revisited for their possible use as multi-functional active ingredients. In this light we might expect a lot of news about natural ingredients, which protect and support the skin barrier and its microbiome soon.

Conclusions

Examples demonstrate that there are natural ingredients, which have multiple functions, providing mild effects. This is essential, when we think about the impact on the balance between the skin and its microbiome. Different concepts leverage the gifts of both nature and science to support a healthy skin barrier. □

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- 6 <https://www.google.com: Cosmetic Ingredients Black-listed>
- 7 Inolex Inc. – Product presentation on Lexgard Natural MHG MB
- 8 Roquette Frères – Product presentation on Beauté by Roquette LS 007
- 9 NIKKO CHEMICALS Co., Ltd. – Product presentation on NIKKOL NIKKOLIPID 81S
- 10 NIKKO CHEMICALS Co., Ltd. – Product presentation on LPA
- 11 Maruzen Pharmaceuticals Ltd. – Product presentation on Dipotassium Glycyrrhizinate
- 12 NIKKO CHEMICALS Co. Ltd. – Product presentation on Shiso Extract Powder CS



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RED AGAINST BLUE

Natural ingredient | Light rays of any kind have an impact on the skin - including the artificially generated blue radiation, which mainly comes from technical devices with screens. The ingredients of the red bell pepper help to avoid and reduce the damage it causes.



» **Emmanuelle Morillon,**
Communication Manager,
Solabia, Pantin Cedex, France,
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The ultra-connected world in which we live, a sign of our advanced society, is not without danger. It has now been proven that intensive screen use has a negative impact on our health: sleep disorders, disrupted circadian rhythms, eye damage, and even accelerated skin ageing (wrinkles, pigment spots, etc.).

The blue light emitted (400 – 510 nm) by these artificial sources is the cause of these hazards. Blue light, in fact, causes oxidation and inflammation, but also disrupts essential physiological mechanisms, from DNA to photoreceptors (opsins).

Overexposure to blue rays is now inevitable, owing to our dependence on digital devices (60% of individuals spend more than six hours a day in front of a digital device). Hence, this is perceived as a new form of indoor pollution, for which protective measures are essential.

Although sunscreens can offer a certain degree of protection against blue light, plant molecules, particularly carotenoids, have proven to be highly effective. Studies have thus demonstrated that lutein and beta-carotene are able to protect the eyes from the harmful effects of blue light.

Carotenoids: Source of inspiration

Our group research team has specifically identified potent, but relatively under-exploited, carotenoids in red bell peppers, capsanthin and its esters, to combat blue light-induced ageing.

This discovery has led to the creation of an eco-friendly active ingredient¹, rich in capsanthin and its esters, specific, powerful carotenoids. It is obtained by pressing/grinding red bell peppers and stabilised with vegetable glycerine and xanthan gum.

This active ingredient is the fruit of expertise in natural science and ▶

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After 56 days (right) use of red bell pepper extract, a reduction of up to 48% in deep skin pigmentation compared to D0 (left) can be seen.

biology applied to combating ageing induced by blue light, a new source of indoor pollution.

Mild but powerful

Like tomatoes and eggplants, bell peppers belong to the nightshades

family and were given the generic name Capsicum by the Swedish botanist Carl von Linné, from the Latin “capsa” meaning “box” referring to its fruit which resembles a chest containing seeds. The English name “bell pepper” refers to the shape of the fruit, made up of three or four large lobes resembling a bell.

The bell pepper belongs to the same species as certain other peppers, Capsicum annuum, but is a mild variety since it does not contain capsaicin (molecule responsible for the pungency of peppers). The bell pepper is thus rated 0 on the Scoville scale, invented in 1912 to define the pungency of peppers.

Owing to their common scientific name, the history of bell peppers (“sweet peppers”) and chili peppers has been so intertwined that it is now difficult to trace their true origins. Most likely native to Central America, chili peppers and bell peppers arrived in Europe in the 16th century, but they did not start to be widely cultivated until the 18th century. The Capsicum genus includes four main domesticated and cultivated species (Capsicum annuum, Capsicum baccatum, Capsicum chinense and Cap-

sicum pubescens), although Capsicum annuum is the most extensively cultivated throughout the world.

Widely appreciated and used, bell peppers can have different colours depending on their ripeness: green bell peppers are picked before they are fully ripe, and turn yellow, then orange and finally red when fully ripened. The red bell pepper has the richest and most interesting phytochemical profile.

Red for photoprotection

The bell pepper is low in proteins and lipids and has a low sugar content. However, what makes it more remarkable is its vitamin content (C, B2, B3, B5, B6, A and E), mineral content (potassium, magnesium, calcium, phosphorus, etc.), but especially its flavonoid content (myricetin, apigenin, luteolin, etc.) and carotenoids (capsanthin, carotenes, lutein, lycopene, etc.).

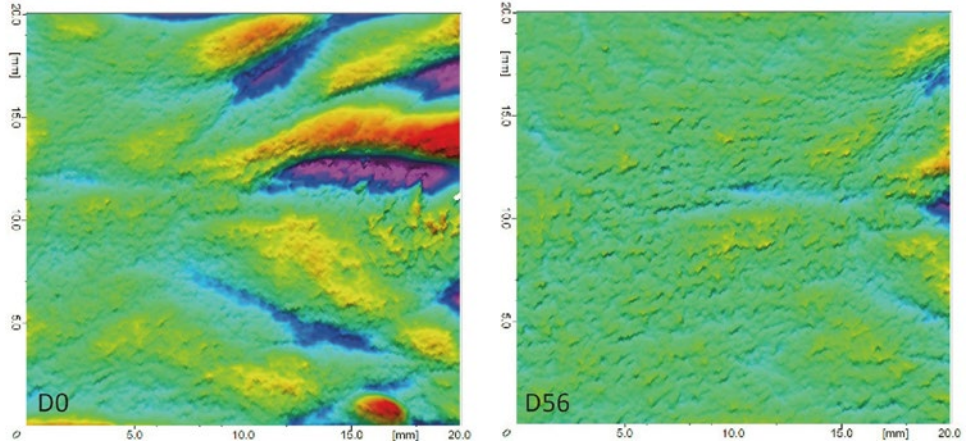
Carotenoids are a class of natural pigments which have a protective role for the plant, which are produced in bell peppers as they ripen, reaching their peak concentration when fully ripe. Also, the riper and therefore redder the bell pepper, the



The flavonoids and carotenoids contained in red bell pepper help protect the skin from blue light.

illustrations: Solobio; photo: Julia Tsokur/Shutterstock.com

higher its concentration of photo-protective antioxidants. Hence, according to a comparative study, a red bell pepper was said to contain nine times more carotenoids than a green bell pepper (45 mg/100 g fresh bell pepper versus 5 mg/100 g fresh bell pepper)³. Fresh bell pepper was also shown to contain more polyphenols¹. Out of the carotenoids present in bell peppers, one is of particular interest and specific in nature (since it is not found in green bell peppers): capsanthin, representing more than 50% of total carotenoids in red bell peppers³. Furthermore, greenhouse cultivation optimises the capsanthin content of red bell peppers, compared with cultivation in open fields². Capsanthin is esterified, to a greater extent, by lauric, myristic or palmitic acids when the bell pepper is ripe (hence red), thus giving these molecules greater stability and allowing them to be incorporated more effectively into its lipid membranes, to protect its cells against sun rays. Furthermore, capsanthin and its esters have more powerful anti-radical properties than the popular beta-carotene⁴. Blue light generates numerous free radicals, responsible for oxidation but also the degradation of numerous vital cell constituents. Therefore, capsanthin and its esters are of major interest for skin photoprotection against digital pollution. In addition to their anti-radical properties, these molecules and, more specifically, capsanthin have demonstrated a novel capacity for



The wrinkle depth is also significantly reduced after 56 days of use, as the wrinkle test shows.

absorbing blue light, giving them photoprotective filter properties to counter its harmful effects.

Blocking blue light

With its combination of biological shield and anti-radical protection, the active ingredient¹ offers a broad spectrum of actions against the harmful effects of blue light. Its effectiveness stems from capsanthin and its esters, highly potent carotenoids specifically found in red bell peppers. Hence, it helps defend skin against photo-oxidation and photo-receptor disruption, the two main types of damage induced by blue rays. In practice, it protects cellular DNA and collagen against oxidation and degradation, and protects opsins against stress, while reducing disruptive effects on pigmentation. It is used to improve forehead lines, crow's feet, and also deep pigmentation in the skin, the most visible

consequences of overexposure to artificial blue light.

To conclude, by preserving the skin's vital functions associated with DNA, the extracellular matrix and phototransduction, a mechanism which controls factors such as pigmentation and circadian rhythms, bell pepper extract is able to prevent and correct digital pollution-induced ageing. □

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MORE ENERGY FOR HAIR FOLLICLES

Ingredient | Hair and especially the hair follicles react when they are exposed to bad and harmful influences on a daily basis. A shortening of important hair growth phases can be the result. A new active ingredient based on Yerba Santa has a stimulating effect, which Dr Christina Pickel explains.



► **Dr Christina Pickel,**
Study Manager, Mibelle
Biochemistry, Buchs, Switzerland,
www.mibellegroup.com

Not only the skin, but also the hair and scalp are exposed to a range of harmful factors every day. Many of these cause the formation of reactive oxygen species (ROS), which further damage cellular proteins and lipids, but also cause oxidative DNA damage in the sensitive hair follicle cells. The intrinsic defence mechanism against ROS involves the protein

Nrf2, a so-called transcription factor. This master regulator of the oxidative stress response activates the synthesis of cell protecting enzymes that fight oxidants and replenish used cellular antioxidants such as glutathione. However, this cellular self-protection system is unable to cope with excess oxidative stress and its activity was shown to decline with age.

photos: Diana Indiana, Sundry Photography/Shutterstock.com

Specifics of the scalp

In the scalp in particular, Nrf2 was shown to be activated upon stress, to decrease ROS levels, and to prevent lipid peroxidation. Thereby, Nrf2 activation reduces the premature progression to the catagen growth regression phase and ultimately ameliorates hair growth inhibition caused by oxidative stress.

To support the cellular self-protection system, to prevent UV-induced oxidative damage and to energise the hair follicles, Mibelle Biochemistry has developed a new active ingredient (SantEnergy). It is a distinct, polyphenol-rich extract of Yerba Santa (*Eriodictyon californicum*), a plant native to the pacific coast regions of North America. The leaves of this plant have traditionally been used to treat upper respiratory infections as well as asthma and have numerous recorded health benefits including anti-oxidant, anti-inflammatory, anti-bacterial and neuroprotective effects.

Antioxidant effect

In vitro studies showed that the novel active has a caffeine-like energising effect by **engaging the adenosine receptor** which is also targeted by caffeine. Moreover, it increases the movement score of *Caenorhabditis elegans*, a model organism which reacts similarly to caffeine. In cellular assays, treatment with this active ingredient resulted in a reduction of ROS both inside the cell and at the cell membrane.

The antioxidant activity of the Yerba Santa extract was shown to be in the same order of magnitude as quercetin, one of the most powerful and well-known antioxidants. These beneficial effects were further assessed in isolated human hair follicles, a model culture ideally suited for such investigations in the context of a full mini organ.

Influence of UV radiation

While UVB irradiation led to the depletion of Nrf2 in various areas of

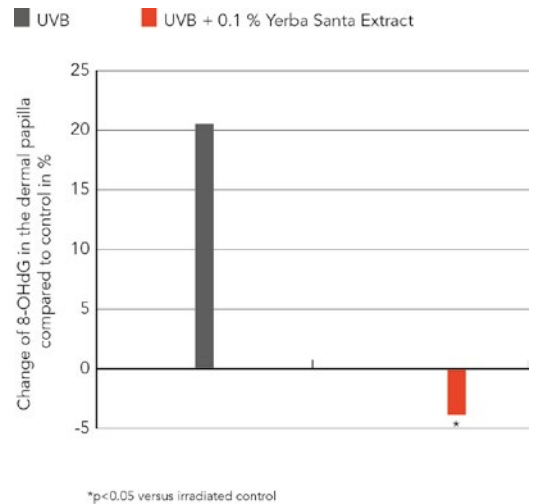


figure 1: Reduction of oxidative DNA damage in the dermal papilla, as assessed through the formation of 8-hydroxy-2'-deoxyguanosine (8-OHdG).

the hair follicle, treatment with the active ingredient significantly reduced this depletion, therefore supporting the hair follicles in protecting themselves from oxidative stress. Moreover, oxidative DNA damage ▶

figures: Mibelle Biochemistry

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The extract of Yerba Santa (*Eriodictyon californicum*) forms the basis for the active ingredient that energizes the hair follicles.

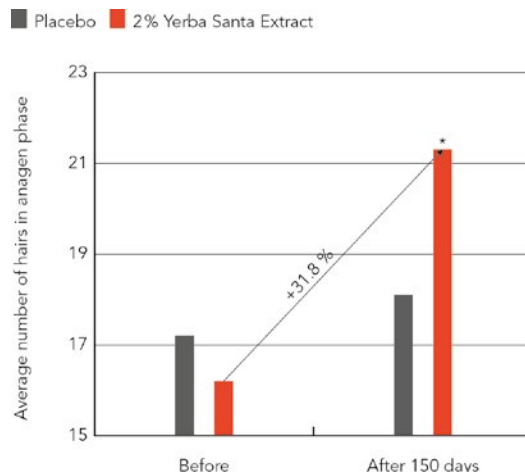


figure 2: Increase in the number of anagen hairs after five months of treatment with the active ingredient “SantEnergy”.

“THE ANTIOXIDANT ACTIVITY OF THE YERBA SANTA EXTRACT WAS SHOWN TO BE IN THE SAME ORDER OF MAGNITUDE AS QUERCETIN.”

Dr Christina Pickel, Mibelle Biochemistry

caused by the UVB irradiation in the dermal papilla was also prevented by the treatment (figure 1).

As a result of the oxidative stress caused by the UV radiation, the hair follicles had prematurely transitioned to the mid to late catagen phase of the hair growth cycle when compared to non-irradiated control follicles. The treatment prevented this premature transition to the regression phase.

Results proved by a study

In order to prove the efficacy, the novel active ingredient to reduce hair

loss, a clinical study was performed. For this, 56 volunteers suffering from hair loss (45 women and 11 men; aged 18 to 68 years) were enrolled and separated into two groups: one group applied a hair serum containing 2 % of the active ingredient “SantEnergy” once daily on the scalp for five months, while the other group used a corresponding placebo product.

The results of a cosmetic trichogram analysis showed that the active ingredient induced a **reduction of telogen hair by 20% and an increase of anagen hair by 31.8%** (figure 2). This

resulted in an increase of the hair growth coefficient, the anagen to telogen ration (A/T ratio), by 68%. As the A/T ratio is a direct indicator of the proportion of actively growing hair follicles, it directly impacts on the hair density.

Conclusion

Taken together, the new active ingredient is a powerful active ingredient, that energises the hair follicle cells, supports the cellular antioxidant system, and thereby protects the hair from oxidative damage and photo-ageing, starting at the hair root. □

► **GLOSSARY**

- ROS** Reactive Oxygen Species
- Nrf2** Nuclear factor erythroid 2-related factor 2
- Trichogram** Examination method of medicine that is supposed to determine the current hair root status or the hair distribution pattern.
- Eriodictyon californicum** Species of the Boraginaceae family, also known as Yerba Santa (sacred herb), is said to have a natural medicinal effect.



INTERNATIONAL LAUNCHES

Product development | This month Mintel is highlighting active ingredients that have a positive effect on the skin's microbiome. The microbiome offers endless possibilities for across mass and prestige markets and we highlight some latest examples below.

The microbiome is the first line of defence for the body, and according to Mintel it will play a crucial role in immunity and holistic health in the future. With increased hand-washing and over-sanitising, this issue may worsen as the threat of further infectious outbreaks remains high globally, so desired skincare solutions that maintain the natural functions of the skin microbiota will become an established beauty staple.

Probiotic complex

In Germany, Doctor Babor is described as a high-performance line that stands for clean formulas with more than 95% naturally derived ingredients. The vegan products are free of gluten, lactose, silicone, parabens, mineral oils, microplastics, and synthetic raw materials. It includes "CleanFormance Awakening Eye Cream", that is described as a moisturising eye cream that smoothes fine

lines, reduce puffiness and conceal dark circles while optically smoothing out irregularities and redness. The pleasantly light formula contains a highly concentrated complex of pre- and pro-biotics, sustainably derived ash bark extract, sustainably derived bark extract, hyaluronic acid, light-reflecting pigments, vitamin B3 and organic silicon.

Microbiome protection

In the USA, Symbiome offers modern skincare formulated with natural botanical ingredients from the past, inspired by the ancestral microbiome. The products are processed using less than ten clean, organic, traceable, sustainable and nutrient-rich ingredients sourced from a farm in Brazil. They are screened and reviewed by a team of dermatologists and microbiologists, and are vegan, non-GMO, hypoallergenic and cruelty free. Included is "The Renewal Daily Cleanser", described as a hybrid gel-to-milk daily cleanser with an almondy, supple, smooth, soft, pastry scent. The product is claimed to remove makeup, dirt and excess sebum, and is formulated with seven ingredients, including: Oenocarpus bataua fruit oil, Croton cajucara leaf oil, Turnera ulmifolia flower and leaf oil, and sucrose laurate.

Balancing

In France, Nini Organics is designed to create superfood for skin, which is made with 100% natural and organic ingredients. All products are vegan, cruelty free, and free from gluten, parabens, phthalates, dyes, phenoxyethanol, potassium sorbate, preservatives, GMOs, fillers, syn-

NINI ORGANICS

Two green biotech ingredients help bring the skin back into balance.



thetic ingredients, or artificial fragrances. Included is "Crimson Beauty Face Serum", which is said to have a water-based formula that boosts moisture levels, balances the skin's flora, enhances the absorption of other skincare products, and offers the benefits of cucumber hydro-sol, glycerin and vegan hyaluronic acid, vitamins from hibiscus extract, as well as two green biotech ingredients, including Quora Noni and Arabian Cotton. According to the manufacturer, Quora Noni acts as a treatment for oily acne-prone skin by helping regulate oil production, and offers protection to the skin's epidermal barrier. □



Michelle Strutton,
Global Research Manager
Beauty & Personal Care, Mintel,
London, UK, www.mintel.com

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INGREDIENTS

Future-ready but traditional..... p 28
Care of yellow and grey p 32
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FUTURE-READY BUT TRADITIONAL

Further development | In these turbulent times, the skin is also exposed to stressful factors: increased cleaning and disinfection of the hands, but also irritation from wearing masks in everyday life. There is a longing for old, quieter times. Well-known and proven active ingredients further improve care of the skin and give the user a good feeling.



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Times of uncertainty due to climate change, global pandemics, political and professional insecurity as well as increasing social isolation, lead to longing for comfort in our own homes. Nostalgia has traditionally emerged from troubled



times and immersion in childhood memories or cooking family recipes are some of the reassuring activities that bring us back to simpler times. Self-care has become predominant in every purchasing decision, and mental wellness management has taken a higher position in people's priorities. Wellness has been redefined. **Mental and physical well-being are at the forefront of people's concerns and beauty care has an important role to play.** Studies show that in the recent months more than ever, people have used beauty and personal care activities to reduce anxiety.

Renew traditional ingredients

As comforting as they are, traditions however have to be brought up to speed to answer to modern needs for scientifically proven efficacy and lower environmental impact. The shift towards more sustainability has not slowed down in the past months, indeed **the collective mind has found a renewed conscience regarding resources and consumerism.**

Reinventing old beauty regime classics, Clariant Active Ingredients has developed a new concept called "RetroFuture". The concept aims at inspiring by presenting three new

classics derived from a desirable past. The newly launched formulations are cross-generational and address the pressing need for total well-being with improved textures, new modes of applications and future-forward active ingredients.

An upgraded **face serum**¹ with a transparent jelly texture is applied with a brush and massaged into the face for a deep feeling of relaxation. The combination of active ingredients, including a circadian rhythm resynchronizer⁵, soothes stressed skin and gives it a pleasant feeling afterwards.

The **hand mask**² is a format twist built on the performances of classical hand creams. Caring for stressed and damaged skin overexposed to cleansing solutions, its rich and natural base includes a soothing and strengthening combination of active ingredients while bringing much needed moisturisation without stickiness.

And finally, the **skin oil**³ was inspired by the traditional use of natural oils in beauty rituals across the world. Supporting thin skin efforts, it brings strength to the most delicate areas of the face, especially the eye and lip contours that are currently exposed to physical stress due to the friction of protective masks. It contains a trilogy of actives built around the recharging and relaxing properties of an extract of *Luffa cylindrica*⁴ to ensure daily resilience to life itself.

Re-energise and protect stressed skin

Emotional stressors, like physical ones, demand high amounts of energy from the cells to maintain homeostasis and ensure proper functioning of the biological mechanisms required to adapt to this stress. They are also involved in ROS overproduction and impairment of the cellular antioxidant mechanism, leading to harmful effects. To boost cellular respiration and ATP production while protecting the cells against oxidative stress a special extract is used.

This **extract from the roots of *Luffa cylindrica*** was obtained thanks to the Plant Milking technology, a process ▶

allowing direct access to the roots via aeroponic cultivation. This makes it possible to stimulate the production of bryonolic acid, a secondary metabolite specific to these plant's roots. Bryonolic acid is known for its anti-inflammatory and antioxidant activities, therefore an extract rich in this molecule is a good candidate to protect cells against the deleterious effects of stress.

To demonstrate the supportive effect in the production of energy in stressed conditions, we exposed normal human dermal fibroblasts pretreated or not with the luffa cylindrica extract at 1% to a chemical stress.

Using the Seahorse technology, it was able to determine maximal respiration, spare capacity, and ATP production. As expected, the chemical stress impaired mitochondrial respiration as shown by the dramatic decrease of maximal respiration parameter (-93%), spare capacity parameter (-96%) and ATP production (-100%). In contrast, when cells are exposed

to the same stress but pre-treated with the luffa cylindrica extract, the mitochondrial respiration is preserved and even boosted, thus revealing the strong protective effect of the active ingredient, as shown in figure 1.

In addition, to demonstrate this protective effect, 0.5% of the extract was topically applied on a 3D reconstructed human epidermis model. The result **was a stimulation of the antioxidant intrinsic defence cellular mechanism at the transcription level.** Indeed, mRNA transcripts coding for two enzymes belonging to the intrinsic anti-oxidative system, glutathione peroxidase 2 and peroxiredoxin-2, were significantly upregulated as their expression was increased by 1.33-fold and 1.20-fold respectively. A proteomic analysis performed on a human skin explant model pre-treated topically at 1% confirmed these transcriptional results.

Thanks to its protective and energy boosting activities, the extract can **improve the skin quality of stressed women**, as demonstrated in a clinical

study enrolling 20 working women who described themselves as stressed and presented a lack of skin firmness and elasticity. Twice daily a formulation containing 1% extract was applied to half the face and a placebo was applied on the other half. After 62 days, skin firmness, tonicity and elasticity were all significantly improved by respectively 20%, 21% and 27%.

Resynchronise stressed skin

With the recent health crisis, mental stress has increased in the population. This mental stress can strongly impact the circadian rhythm by causing lack of sleep. In addition, it was shown that we've spent more time in front of screens during this period, thus increasing our exposition to blue-light radiations, known to be oxidative stressors and circadian rhythm disruptors. To help the skin cells resynchronise their circadian rhythm and improve their biological functions, the company developed an active ingredient from **Lespedeza**

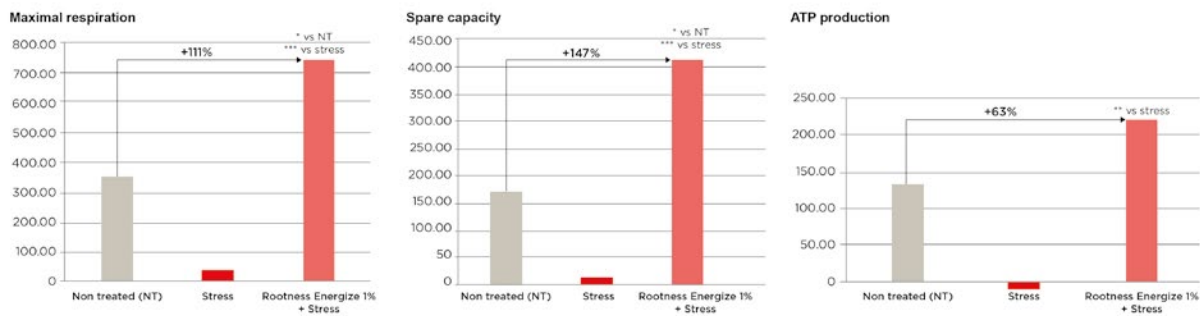


figure 1: Maximal respiration, spare respiration capacity and ATP production levels of mitochondria in NDHF from a 44 years old woman in basal conditions (grey), exposed to a chemical stress (red) or exposed to a chemical stress with an 18-hours treatment of the extract of Luffa cylindrica.

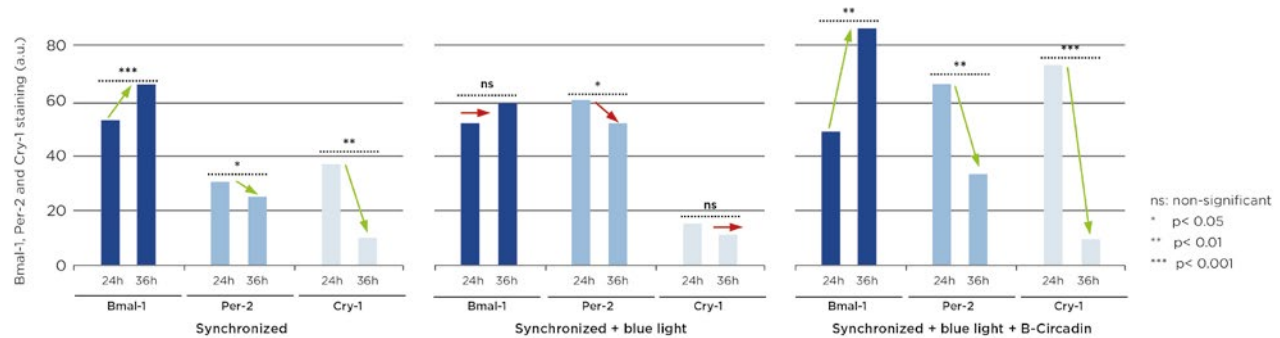


figure 2: Protein expression of three circadian genes (Bmal-1, Per-2 and Cry-1) before and after blue light exposure, with and without application of the ingredient based on Lespedeza capitata.

figures: Clariant Active Ingredients

photos: ART STOCK CREATIVE, Nancy J. Ondro/Shutterstock.com, Clariant Active Ingredients



The *Lespedeza capitata*, which comes from South Korea, is already used for medicinal purposes in its region.



The roots of *Luffa cylindrica* are rich in bryonolic acid, which is known for its anti-inflammatory and antioxidant properties.

*capitata*⁵, a plant grown and harvested in South Korea where it is used for its medicinal properties.

Containing two key glycosylated flavonoids directly involved in circadian clock maintenance – carlinoside and isoschaftoside – the active emulates the ability to resynchronise the circadian cycle within the skin cells, to regulate rhythm-dependent biological functions such as aquaporin-3 and Nrf2 pathway detoxification efficacy.

The protective effect against circadian rhythm’s disruption by blue light was demonstrated by a unique synchronised skin explant model. A skin explant taken from a 43-year-old Caucasian woman was exposed to dexamethasone to synchronise the cells. Then, this explant was exposed to blue light for four hours to induce stress and dysregulate the cells’ circadian rhythm.

As expected, protein expression of Bmal-1, Per-2 and Cry-1 were altered. But when the active ingredient at 1% was applied both before and after blue light exposure, these proteins were expressed at the expected time, with the right amplitude and phase rhythmicity (figure 2). On the same explant model, we also demonstrated that the rhythmic oscillations of biological functions such as aquaporin-3 and Nrf2 pathway were maintained even after exposure to blue light.

Thanks to its capacity to resynchronise the circadian rhythm, the new active can improve the overall quality of stressed skin, as demonstrated by a clinical trial enrolling 17 women with a dysregulated circadian rhythm (night-workers). After they applied a cream containing 3% active ingredient twice daily on one half-face and a placebo to the other half for 28 days, their skin complexion was improved by 17% after 1 week and 35% after four weeks. More than 85% of the volunteers found their complexion rested and fresh, for a recovered well-being.

Conclusion

The use of skin and body care can be a way to reduce anxiety in this stressful period, by practicing self-care and concentrating on well-being. By bringing new beauty care routines, the “RetroFuture” concept offers new classic formulations featuring active ingredients inspired from a desirable past and made to re-energise and re-synchronize stressed skin. □

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CARE OF YELLOW AND GREY

Moisturiser | A new moisturising ingredient is not just optically based on the colours of the year 2021. It is based on plant cell lysate from *Helichrysum stoechas*, which, with their grey hairs and yellow flowers, store moisture and thrive even in particularly barren, dry regions.



► **Bettina Barlog**,
Senior Business Development
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Each year, the Pantone Color Institute, a business unit within Pantone (specialising in colours), forecasts global colour trends and advises companies on colours for the visual identity of products and brands. They also define the “Pantone Color of the Year”, which has been influencing product development and purchasing decisions in several industries for over 20 years, including fashion, home textiles and industrial design, as well as product packaging and graphic design.

For 2021, the institute has defined two colours of the year:

- Pantone 17-5104 Ultimate Gray
- Pantone 13-0647 Illuminating

The union of these colours represents the world’s collective desire for strength and optimism, after a year of unprecedented uncertainty.

Like Pantone, wesource¹ has selected the cosmetic ingredient of the year inspired by the colours of 2021 and based on current consumer needs. Surveys show that in the wake of the health crisis, consumers are looking for more than just natural cosmetic

products and ingredients, they expect proof of sustainable product manufacturing and they now value reliable experts and technologies from science.

Power of resilience

The **Everlasting of Dunes**, *Helichrysum stoechas*, is a plant with small grey leaves and stems and yellow flowers found in regions where dunes, wind, and sun mix, especially on the coast of Brittany.

The grey of the evergreen leaves and stems comes from the downy hairs that cover them and enable the plant to get by with very little water. This grey is the symbol of the eternal’s strength to survive in a barren environment. This strength gives rise to a hopeful, optimistic yellow flower that persists even when the plant dries out.

wesource sees a comparable connection with our societies, which have gone through a grey period and deprivation, but are on the way to a more optimistic future. Therefore, the 2021 trend ingredient inspired by this

photos: Natalia Mir, Paco Moreno/Shutterstock.com

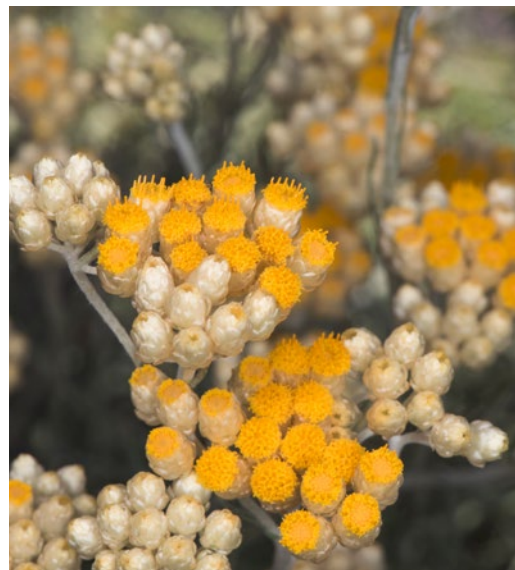
plant is based on a patented **plant cell lysate from the Everlasting of Dunes**.

Sustainable technology

Beyond the inspiration of plant colours, this active ingredient also meets the new expectations of consumers. It was developed thanks to a **sustainable biotechnology** named “Celtosome” for the cultivation of plant cells. For this, **scientists collect a very small piece of the plant and then multiply and cultivate the undifferentiated native cells of the plant in bioreactors**. This produces an active ingredient with a unique molecular richness, consisting of hydrophilic and lipophilic molecules derived from the undifferentiated plant cells, but also specific ones secreted in the medium.

The active ingredient “Hydrachrysum” obtained in this way provides intense and long-lasting moisture and is the new natural ally for dry skin. This is a patented moisturising

ingredient that breaks what is called vicious cycle of “Inflamm’dryness”, named after recent scientific research that has linked skin dryness to inflammation: Dry skin is characterised by tightness, itching, lack of elasticity and a general feeling of discomfort. The altered barrier function leads to dehydration, impaired lipid production and an inflammatory signalling cascade. The active induces a decrease in pro-inflammatory and an increase in pro-resolutive mediators to allow a return to homeostasis and improved barrier function. It increases the number of lacunae, these markers of hydration that act as extracellular water reservoirs and account for up to 40% of the volume of the stratum corneum. It increases skin hydration after five days by significantly increasing the number of lacunae (+ 82% * versus placebo). This new active is Cosmos and NaTrue approved, Halal certified and suitable for all cosmetic applications. □



Helichrysum stoechas, also called Everlasting of Dunes, is a very resilient plant whose cell lysate is the basis of the new active ingredient.

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1 wresource: Seppic brand for its active ingredient

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SKIN CLEANSING

Formulations | Cleansing the skin has been playing a more important role than ever for the past twelve months. Due to the increased use of cleaning agents and disinfectants, the need for care during cleansing has also increased significantly. Our selection shows the latest trends in formulations in this area.

Soft & Green Shower Gel
BASF

Clean 'n Gentle
Biesterfeld

Be My Superhero Cleansing Stick
CLR

Soft Purifying Serum
Comercial Química Massó

Lemon Ice Make Up Remover Balm
Croda

Cleansing Butter for Men & Women
Kobo

Reinvented Cleansing Balm
Gattefossé

Watermelon Hand Wash
Nordmann

Nourishing Cleansing Butter
Roelmi

Mixed Berry Butter Scrub
Safic Alcan

Cleansing Toner with Sebeless
Sederma

Soft face cleanser
Seppic

Milky Body Wash
Solvay

Traveller Cleansing Powder

Sisterna

Body Cleansing Gel with a Soap-like Feel
Zschimmer & Schwarz

In the April issue we will be focusing on formulations for exfoliants, masks and treatments. In May, formulations for natural cosmetics will take centre stage. All of the information published here has been carefully assembled. Neither the publishers nor the developers of these formulations can accept responsibility for their safety or accuracy.

photo: EKATERINA SOLODILOVA/Shutterstock.com

NEWS



photo: Praan Naturals

NEW ESSENTIAL OIL

PRAAN NATURALS | The company introduces “Rosewood Essential Oil” (Aniba Rosaeodora (Rosewood) Oil) to its range of organic and conventional natural ingredients for personal care product development. The oil is ethically and sustainably produced from rosewood trees that have been cultivated on plantations owned by local farmers in Peru as the manufacturer says. “Rosewood Essential Oil” is said to be comprised primarily of linalool, a monoterpene that makes the oil extremely well suited for inclusion in formulations. According to the manufacturer it is suitable for all skin types.

www.praannaturals.com

ADVERTISEMENT

NATURAL AND TRACEABLE

GIVAUDAN ACTIVE BEAUTY | With “Nootropics” the company presents a collection of six natural and traceable extracts featuring guarana, ginger, green tea, gotu kola, ginkgo and green coffee, well-known among the industry and consumers for their impressive functions as food supplements and their cosmetic properties. From soothing and purifying to moisturizing and well-ageing, they each possess powerful benefits when formulated into cosmetics offering consumers natural and sustainable alternatives, as the manufacturer says.

www.givaudan.com



photo: w85/Shutterstock.com

Guarana is one of the six natural extracts that can be used for formulating into cosmetics.

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With more than 25 years of experience in ceramides, we offer a comprehensive portfolio to boost formulations with ceramides.

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AGAINST “MASKNE”

HALLSTAR | A new active ingredient has been developed for skin that is stressed by the regular wearing of masks. “Clear Oléoactif” is based on the sustainable use of a carefully selected organic thyme co-product sourced in France. Its two major markers – thymol and carvacrol – are identified and extracted at more than 90%, as the manufacturer says. The synergistic complex of thyme and virgin camelina oil is said to facilitate the active’s penetration into the sebaceous duct and provides blemished skins the fatty acids that it needs.

www.hallstar.com

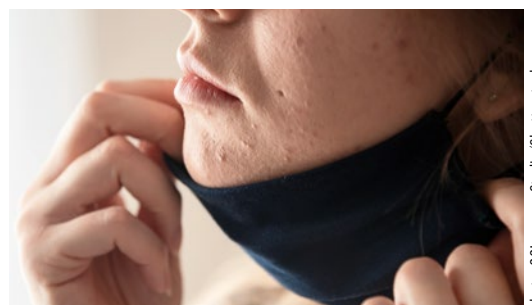


photo: 22Images_Studio/Shutterstock.com

SPOTLIGHT

RECYCLING, REFILLING, PCR

Finding resource-saving solutions p 38
Post-consumer recycled PET p 42





FINDING RESOURCE-SAVING SOLUTIONS

Resource cycle | The resources of our earth are becoming increasingly scarce, but consumption is increasing more and more. We'd like to do better, but how? Part of the solution can be sensible concepts for recycling existing packaging, refilling and the use of post-consumer recycling materials, as Darja Kozlova explains.





► **Darja Kozlova,**
Cosmetic Safety, Wala, Bad Boll,
Germany, www.wala.de

Recycling, refilling and post-consumer recycling materials (PCR materials) should be on the agenda of many manufacturing companies when it comes to packaging. This is not only due to growing pressure from consumers, but also to a major challenge affecting the entire population of the world – the problem of dwindling resources.

European Union policymakers are addressing the question of resource efficiency as part of their Circular Economy Action Plan. Here, we aim to examine the solutions that are currently available in the field of sustainable cosmetics packaging and the hurdles that still exist.

Planet's resources

Earth Overshoot Day occurs a few days earlier every year – with the exception of 2020, the year of the coronavirus¹. Unlike in previous years, the global community did not use up the planet's available resources by the end of July or the beginning of August, as is normally the case. Rather, this point was not reached until 22 August – around three weeks later – albeit in a year in which the global economy reached a historic low².

This demonstrates that, even when many production facilities worldwide have ground to a halt, causing the demand for energy to decline, people to travel less and the fashion and automotive industry to suffer a severe slump³, **humanity is still living well beyond its means**. Resource consumption in 2020 was around 1.6 earths⁴, which has many different consequences for the environment, such as climate change, species extinction and shrinking forests.

In 1970, Earth Overshoot Day occurred as late as 29 December.



Glass containers are characterised by the fact that they can either be refilled or recycled as often as required without any loss of quality in the material.



Refillable or reusable cosmetic containers can help to reduce the use of energy and resources.



The problem with recycling plastic is that high quality results can only be achieved with a material that is as pure and colourless as possible.

However, owing to the high level of consumption in industrial and emerging economies and to rapid population growth, this day moved back further and further towards the start of the year⁵.

As natural resources – especially minerals, ores, fossil fuels and biomass – are the foundation of how we live and do business today, they need to be preserved and protected, not least for the sake of future generations.

Political demands

EU policymakers have devoted considerable attention to this in recent years. The aim is to create a resource-efficient and more cycle-oriented economy, which means that products, substances and resources should be preserved for as long as possible.

In the specific context of packaging, this gives rise to the following target hierarchy:

- Avoidance
- Preparation for reuse
- Recycling – and, only as a last resort:
- Disposal, e.g. through thermal treatment

Priority protection

Packaging has to meet a great number of different requirements. As well as being sustainable, it needs to be first and foremost capable of protecting the product. This is especially the case if it comes into direct contact with products such as cosmetics and if the formulations in question contain water, which is a very good breeding ground for microorganisms.

Water-free products like powders and soap have more straightforward packaging needs. As certified natural cosmetics producers deliberately avoid using synthetic preservatives, protecting products is the number one priority when it comes to selecting packaging.

The suitability of certain materials depends primarily on the constitution of the formulation. For instance, glass, aluminium and different plastics like PET (polyethylene terephthalate), PP (polypropylene) and PE (polyethylene) essentially have good barrier properties, which is why they are frequently used for types of cosmetics packaging that come into direct contact with products.

Refilling options

Glass is what is known as a “permanent material”, which is also inert. This means that glass can be recycled again and again without any loss of quality and that it behaves neutrally towards the contents. Accordingly, this material is also particularly suitable for refilling because the material properties remain unchanged after the cleaning process. More and more cosmetics producers are offering consumers the option of returning empty cosmetics packaging to them directly or in bulk via specialist retailers. The advantage of returning packaging to producers is that these can meet their high hygienic requirements in their own industrial production. The disadvantage is that heavy glass containers are returned individually, in some cases via long distribution routes. This means that, in the case of some solutions, the ecological advantage of saving materials is severely compromised – or in some cases even outweighed – by the need to transport them back to producers.

At present, **retailers only provide the filling option for washing and cleaning products.** These are conserved

products that have a high degree of hygienic protection against contamination. In 2020, two major European drugstores launched a pilot project with an elaborate filling system; it remains to be seen how end consumers respond and whether other products will follow.

Recycling systems

The basic requirements for a functioning recycling system are for the country in question to have an existing collection system in which different materials are separated and recycled. Another decisive factor is the packaging design. **The colour scheme, material density or size of the packaging could each constitute grounds for exclusion on its own.** It can even be the case that different materials fail to reach their intended cycle, e.g. if they are not disposed of correctly or if different materials are not capable of being separated mechanically.

Chemical recycling is seen as supplementing material recycling of plastic waste because it has the potential to reuse waste that is highly contaminated or difficult to recycle. However, these procedures are currently coming in for much criticism from various environmental associations⁶. The technology is promising but needs to prove its worth when it comes to material flows, use of chemicals and applicability in real-life waste management situations. Beside different institutions, distributors of products can now also make use of free evaluation systems such as RecyClass to ascertain the recyclability, especially with regard to their plastic packaging. If waste is produced in Germany, the minimum standard for measuring recyclability pursuant to the German Packaging Act (Verpackungsgesetz) applies.

Trends and specifications

Reusing post-consumer recycling (PCR) or post-industrial recycling (PIR) materials not only protects resources but also has a positive effect on the life cycle assessment of the products in question. This is because reuse has been shown to reduce both

the primary energy requirement and greenhouse gas emissions⁷.

The range of recycled materials on offer is increasing steadily. A recent addition to wastepaper and glass has been PIR aluminium for cosmetics and food as well as PCR PE and PET. The latter is produced from used food packaging, collected in a closed cycle, and reprocessed. The recycling process meets European Food Safety Authority (EFSA) specifications for processing post-consumer recycling packaging for the purposes of manufacturing new food packaging.

Accordingly, the reprocessed plastic material is of very high quality and purity and is allowed to be used again for food packaging. Extracting recycled materials from domestic waste is a major challenge. Plastic mixtures, coloured plastic or composites of plastic, paper and aluminium reduce the material quality, preventing it from being separated and sorted by type, which in turn results in impure recycled plastic flakes.

However, packaging calls for extremely high-grade plastics, which in turn require extremely pure recycled materials. The long-term goal

must be to establish a functionally identical closed-loop material recycling system on a broad front. **Recycling is only sustainable in the long term when packaging is constantly transformed into new packaging.** And it is only then that it will be a viable way to protect scarce and valuable resources. □

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In the cosmetics market in particular, customers are increasingly asking for packaging made from recycled material.

POST-CONSUMER RECYCLED PET

Recycled materials | The call for recycled plastic in the packaging of consumer goods is getting louder - also in the cosmetics industry. But not every material is suitable for reuse. Peter Barlog shows what is possible with PET (polyethylene terephthalate).



► **Peter Barlog,**
Managing Director, Barlog Plastics,
Overath, Germany, www.barlog.de

The packaging of our consumer goods in general and in the cosmetics industry in particular fulfils many important functions: They ensure the hygiene and safety of the products, protect them from external influences, provide space for important consumer information and play an important role in the purchase decision with the help of an attractive packaging design. But packaging, and in particular plastic packaging, also stands for a linear economic model: produce cheaply, use briefly and then dispose of. **The huge success of plastic packaging leads to an equally huge stream of waste and pollution**, which has attracted the attention of the public as well as governments and businesses around the world with worries about the future.

Economic cycles

Systemic change that addresses the root causes is needed: a transition to a circular economy. The consumption of resources and impact on the environment can be reduced if materials remain in economic cycles for as long as possible. To achieve this transition to a circular economy there is still a long way to go and a great deal of joint effort is required from many players along the entire value



PET: one of the few functioning plastics cycles

chain. But time is short and quick wins are needed to make decisive progress toward achieving the ambitious goals.

So far, there are **still very few successfully functioning and effective plastic cycles**. One of them is the recycling of PET beverage bottles. Across Europe, about two out of three PET Bottles are already recycled today¹, and in Germany the figure is over 93%².

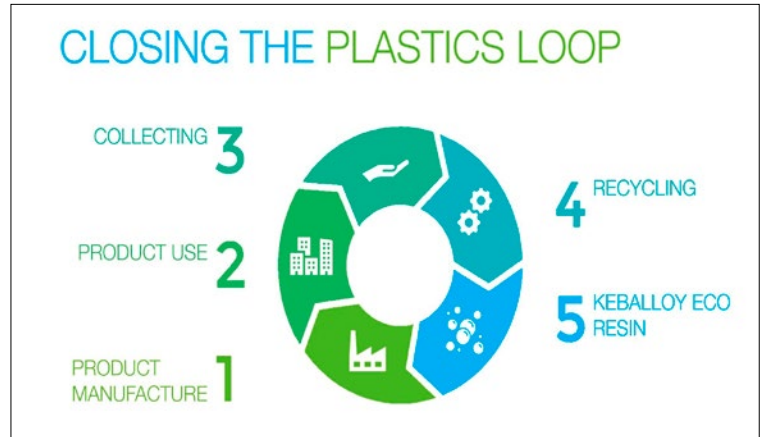
Advantages of PET

PET has very advantageous properties for recycling: its chemical structure makes it possible to add solid state polymerisation to mechanical recycling, thus producing food-grade recycled materials of controlled quality and with very low levels of volatiles. These materials can be used again for the production of PET beverage bottles or for other packaging requiring high purity and controlled quality of the material, e.g., packaging for cosmetics such as lipstick, creams or liquids.

Depending on the manufacturing process of the finished article, post-consumer recycled PET (PCR R-PET) enables savings of 60 to 79%¹ CO₂ emissions compared to virgin PET.

Practical example

One example for a company that offers a range of high-quality recycled plastics is Barlog Plastics with its "Keballoy Eco R-PET" that is part of its sustainability initiative since 2019. This is made from >99% post-consumer recycled PET beverage bottles in an efsa-certified (European



Circular economy – closing the plastics loop

Food Safety Authority) manufacturing process. The materials are food grade according to EC directive 10/2011, comply to the European cosmetic regulation EC 1223/2009 and are supplied in very tight specifications comparable to virgin PET.

The products are particularly suitable for the injection moulding of amorphous, transparent components with wall thicknesses of up to two millimetres. The diverse properties of PET enable functional integration in recycling-friendly mono-material assemblies.

Just the beginning

Using post-consumer recycled PET is a good start to making products more sustainable, but it takes much more to achieve a true circular economy. Barlog wants to support its customers in designing their products for recyclability and act as their sparring partner in developing concepts for recycling their products.

In addition to the range of materials, there is a comprehensive service portfolio in many places to support the development of sustainable plastic products: from material selection to 3D printing of initial draft samples to material and recycling-specific design, FEA structure and process simulation, prototype and small series production using injection moulding. □

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MARKETING

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Sustainability project p 48







► **Wenjing Wang,**
Managing Director of
Hylink DE Digital Solution,
Munich, Germany,
www.hylink.de

TARGET GROUP GENERATION Z

Market insight | European beauty brands are in great demand in the Chinese market. The so-called Generation Z is characterised by a high propensity to consume as well as purchasing power. Wenjing Wang presents the results of a recent study.

Generation Z is one of the most discussed topics when it comes to marketing. Young people born between 1995 and 2003 are now gradually reaching the age of purchasing power and are becoming the central target group for brands. With 226 million potential customers (16% of the Chinese population), Generation Z in China is so large that it alone can decide on success or failure for brands and products in China.

A typical persona of Gen Z consumer: trend setters yet still relying on influencers' recommendations, unconventional with strong personalities, digital but highly social – the **generation Z consumers in China are becoming the main force driving cosmetic consumption trends**, and having completely different consuming con-

cepts and behaviours than any other generation before. As a result, “why do they shop?” and “how do they shop?” become thought provoking questions.

Hylink, an independent Chinese digital marketing agency, together with Sina Weibo, an influential Chinese social media platform, conducted a survey on Chinese Gen Z' consumption perspectives and trends, for which, 2,855 Chinese people born between 1995 and 2003 were surveyed to formulate the analysis and results.

A few **key findings of the report to Gen Z's** shopping trends:

- European premium cosmetic brands are preferred by Gen Z.
- There are a diverse range of motivations behind Gen Z's cosmetic purchases, that are influenced

heavily by KOLs (Key Opinion Leaders) and influencers' recommendations.

- Gen Z's willingness to increase online spending is significant, 21% of Gen Z shop almost every day online.

Preferring European luxury cosmetic brands

Among all international cosmetics brands, including makeup, skin care and fragrances, a strong preference of European luxury brands were shown, with French brands leading the trend. The German cosmeceutical brands are loved by the niche group and on the rise.

In terms of average purchasing price and frequency, for makeup products, the average single product purchase price is 49 Euros. Also, on average,

more than 60% of high-income groups spend on cosmetics twelve times a year. While for skincare products, it is on average 54 Euros and almost once a month, fragrances have the highest average purchase price around 61 Euros, but less frequent.

Influencing factors of purchase decisions

There is a diverse range of motivations behind Gen Z’s cosmetic purchases. For daily consumption, Gen Z have a comprehensive checklist (see table 2), among which, the top three influencing factors are: brand advertising / publicity, product features and price.

Compared to the fashion sector, Gen Z’s cosmetic purchasing decisions are even more influenced by influencers’ recommendations. As there is too much information about brands’ offerings and too many choices, the opinions of celebrities and well-known spokespersons are priceless. Similarly, the recommendations of Gen Z’s closest friends and colleagues are also important and persuasive because of their powerful personal connections. The recent rise of the KOC (Key Opinion Consumer), an imitation of the KOL, allows professional amateurs and consumers to convince others of what to buy through their own recommendations. They often appear down-to-earth and grounded, appealing to Gen Z. Nevertheless, many of their consumption motivations are still tied to impulse shopping to relieve stress.

Willingness to increase online spending

One of Gen Z’s light-hearted sayings is: “Whenever surfing online, something will be bought”. Around 21% of survey takers shop almost daily online, while on average, Gen Z shop 13 times a month online, and the frequency of women and high-income groups is even higher. 66% of them shop online because there are ‘more choices,’ and 60% value the ‘door-to-door delivery’ and ‘saving time.’ ‘Convenient price comparisons’ and ‘better prices’ are also considered as

Makeup, skincare products, fragrance

Domestic makeup	Foreign makeup	Domestic skincare	International skincare	Fragrance
PERFECT DIARY	DIOR	OLAY	ESTÉE LAUDER	LANCÔME
CHIOTURE	YSL	PECHOIN	SK-II	YSL
MGPIN	MAC	OSM	LANCÔME	DIOR
JUDYDOLL	LANCÔME	CHANDO	KIEHL'S	CHANEL
MARIE DALGAR	ARMANI	DABAO	LA MER	ARMANI

table 1: Top five brands favoured by Generation Z.

	%	Make up	Skincare	Fragrance
Brand advertising and publicity	71.1	73.8	65.7	
Brand recognition	33.9	36.8	28.6	
Recommended by friends	33.9	36.3	28.5	
Recommended by a KOL	32.1	30.2	29.5	
Cross-border brand cooperation	10.2	10.7	8.6	
Outdoor advertising	14.6	13.7	12.7	
Product itself	59.4	46.6	58.5	
Unique design	15.2	9.3	17.7	
Ornate details	20.5	16.3	23.2	
New in season	17.9	14.7	15.6	
Limited edition	12.9	10.4	11.6	
Colour	28	10.2	11	
Fabric	7.6	6.6	8	
Newly updated	7	8.3	6.3	
Price and channel	57.7	64.1	50.5	
High cost performance	41.9	47.1	32.3	
Typo - promotional	18	19.9	14.6	
Accessibility (convenience to purchase)	20.3	24.6	20	

table 2: Consumption considerations of beauty products

Online shopping frequency		Online shopping purpose	
%	TOTAL	%	TOTAL
Every day	21	Choice	66
4-5 times a week	21	Delivery	61
2-3 times a week	23	Save time	61
Once a week	13	Convenience	57
2-3 times a month	12	Price	54
Once a month	6	Special products unavailable offline	49
Once every two months or less	5	Regularly updated	35
Average (times)	13		

table 3: Gen Z’ online shopping frequency and the preferred reasons.

the main purpose of online shopping. There is no obvious difference between the purchase channels of the different product categories. Of course, with the diversification of e-commerce platforms and the rise of derivative social e-commerce platforms such as Little Red Book, the frequently used purchasing channels by Gen Z, varied from the initial vertical social platforms (WeChat and Weibo) to sharing communities and short video sites. Gen Z can recommend products to friends and share

products from comprehensive shopping websites and apps to social platforms, thanks to the powerful and well-developed social shopping tools. Generation Z’s cosmetic shopping trends are very diversified, leaving lots of room for innovative and creative ideas for brands and marketers. It is vital to continually re-evaluate the trends, as they change and evolve consistently and fast. □

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SUSTAINABILITY PROJECT



Cooperation | In order to obtain sustainable raw materials, not only environmentally friendly cultivation, but the entire value chain is important. Matti Spiecker and Ralf Kunert talk about a project around macadamia nuts that takes both quality and social aspects into account.



COSSMA: naturamus and Limbua have a special partnership. Can you reveal more about it?

Ralf Kunert: To be honest, we were lucky. In order to find a trustworthy sourcing partner for macadamia nuts, we found the “macadamia fans”, the predecessor organisation of Limbua at the exhibition “Biofach 2015”. Both of us, basically, share the same points of views: ethical sourcing, ecological sustainability, and transparency. Therefore, we decided to financially support on the one hand, and to source organic

and fair-trade macadamia nuts on the other.

Matti Spiecker: The foundation of the “macadamiafans”/“Limbua” started in 2006 with an expedition around the globe to 40 social entrepreneurs. I visited “best practice” projects for sustainability in 25 countries in Asia, Latin America, and Africa. We founded “Limbua” with the aim of conflating the best results of these projects. Today, we see ourselves as an innovative interface between smallholders in Africa and critically asking customers all over the world.

What do you declare to be an “innovative interface”?

Matti Spiecker: By using a high degree of state-of-the-art technology, we enable direct support to smallholders. For example, we have established a bar code system ensuring the traceability of each nut package back to the farmer. If there is a problem regarding a batch, we can trace back the package to support the farmer. This way, we not only guarantee consistent premium quality, but also ensure complete transparency throughout the entire processing chain. We

Pictures: Limbua and naturamus



► **Matti Spiecker,**
Founder Limbua Group, Berlin,
Germany, www.limbua-group.com



► **Ralf Kunert,**
CEO naturamus, Aichelberg,
Germany, www.naturamus.de

use a digital fingerprint payment system to make sure, all farmers get paid well and honestly. This improves the income of the smallholders while keeping the price-performance ratio for our customers reasonable.

Ralf Kunert: We also declare to be innovative partners since both companies live the idea of sustainability in a meaningful way. For example, Limbua operates modern and decentralised production facilities in the immediate vicinity of the 5,000 smallholders associated with Limbua. This reduces transport costs, saves energy, and preserves the freshness of the nuts. On top, both companies only trade with organically grown and processed products. That not only includes the protection of the environment but also stands for social responsibility.

How did this partnership grow?

Matti Spiecker: In the beginning, there was a large interest-free loan from the parent company of naturamus, WALA Heilmittel. With the help of this money, we could develop in the first hand. Although naturamus was a very small customer at that time, we were able to exchange ideas on various issues as well.

Ralf Kunert: naturamus grants an annual purchase guarantee for macadamia nuts. By doing so, we contribute to a sustainable source of income for the Kenyan smallholders, while Limbua can plan. In turn, we rely on a strong and long-lasting partner. However, Limbua and naturamus have come across with more. Both of us are “Fair for Life”-certified. The idea goes beyond Fair Trade initiatives and makes sure the agency of small-

holders is strengthened. For each kilo of macadamia nuts, we support the local “Fair for Life” fund with an agreed percentage on the raw material price per kilo. A committee of Limbua employees and smallholders decides autonomously on how to spend the money. In 2018, for example, school utensils were purchased for children of financially disadvantaged families; in 2019, new seedlings and organic fertilisers were procured.

Why do you produce the oil in Germany, not in Kenya?

Ralf Kunert: It is completely in line with our philosophy to leave the added value in Kenya. We see this as an opportunity for endogenous growth. But we have found out that Germany is a highly interesting business place to trade not only oil but also press cake grounded into flour. We have, thus, decided to market oil and press cakes in Europe.

Matti Spiecker: We have made up our minds on how to diversify the portfolio of Limbua and naturamus on the one hand and on how to keep more created value in Kenya on the other hand. During a visit to Kenya in 2016, the idea of supporting the farmers by producing and providing pressed avocado oil was established.

How does this project look like?

Ralf Kunert: We have started to set up a production plant in Embu to press avocado oil directly after the harvest takes place. To implement this construction project, we have arranged a loan from the “Deutsche Investitions- und Entwicklungsgesellschaft” (DEG) for Limbua.

Matti Spiecker: The DEG-loan helped us building the production plant without financial concerns. Since naturamus has given a purchase guarantee for the oil, we can concentrate on producing it. This is a good compromise for both, and, in return, we have worked out a profit share model.

How close can this partnership be?

Matti Spiecker: I think the partnership thrives on working together equally. We are both independent companies. But it makes sense to work together in the field of oils. We market the nuts directly. In the case of oils, we have made the experience that customers often look for with a focus on companies with a wide range of oils.

Ralf Kunert: With business relationships it is like with other human connections: you should form them in a way both enjoy it, otherwise it will not work in the long run.

What do you need to know about the local legal situation?

Matti Spiecker: Of course, it is important to be familiar with the local situation and to build up a local Kenyan team that you can fully trust and that has experience with the local formalities. For new construction, for example, you need nine different permits. The property must be registered for the right use. Neighbours must be asked about the environmental impact as part of expert reports, and much more. But with a good team, it is all manageable.

And where are the pitfalls in the cooperation?

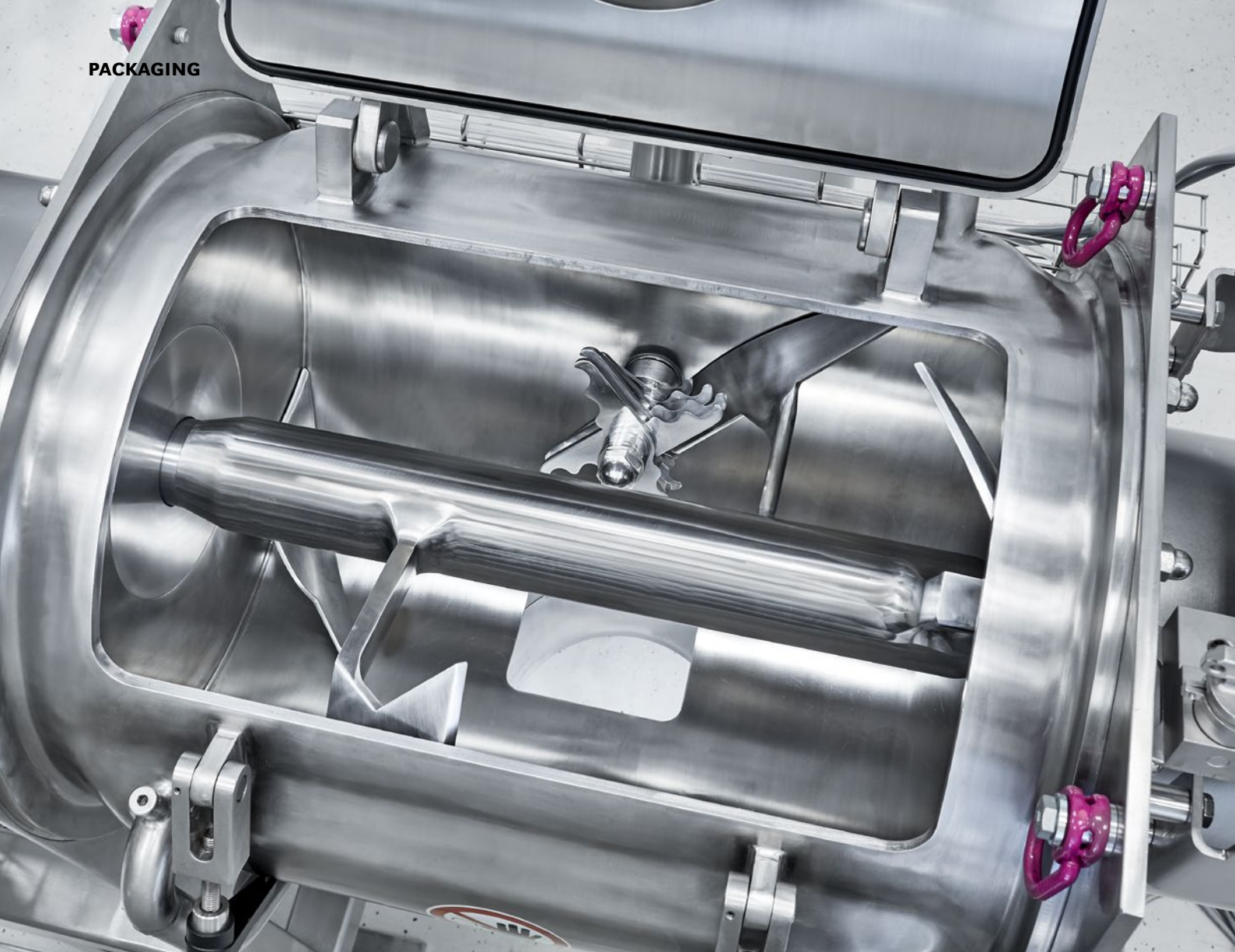
Ralf Kunert: As always, they lie in communication. You cannot talk to each other enough to avoid misunderstandings. But this works very well for us.

Matti Spiecker: I agree with this, and, of course, there are still many pitfalls on the ground, so from my point of view the trusting cooperation with the farmers is the basis for everything. □



PACKAGING

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EFFECTIVE MIXING SYSTEM

Powders | The manufacture of powder products can sometimes be a big challenge, since small amounts of pigments must be mixed completely evenly with relatively high amounts of carrier substances. Christian Schilken introduces the horizontal ploughshare mixer, which was developed for powder products.



► **Christian Schilken,**
Sales Life Science Technology,
Gebr. Lödige Maschinenbau, Pader-
born, Germany, www.loedige.de

The production of cosmetic powder products requires fast, homogeneous mixing of different components that vary significantly in quantity. With special ploughshare mixers, all the stages of the mixing process can take place in one machine, which means that these mixers represent a very efficient solution to this complex process engineering task.

Loose and pressed cosmetic powder products are made up of several ingredients in different ratios. For example, **tiny amounts of pigments have to be mixed with large quantities of carrier material.** Every stage of the production of these powder products is highly complex.

Firstly, the individual components must be mixed quickly and evenly. Next the pigments need to be

dissolved without causing streaking. The third step involves adding precise amounts of liquid binding agent and distributing it without flocking to ensure high-quality pressing results. This phase may also include carefully mixing in effect pigments. As a result, highly sensitive and expensive additives, such as mica (CI 77019), have to be processed without causing damage or leading to a deterioration in quality. Another problem is that the temperature of the materials must not exceed a critical level during mixing to ensure that the product does not change colour.

mains in the drum after it is emptied, even in the case of highly adhesive materials.

Mixing principle

The central feature of the mixer is a special arrangement of ploughshare shovels on a horizontal shaft. The shovels rotate in a cylindrical mixing vessel, which is positioned horizontally. The size, number, position, shape, and circumferential speed of the shovels are carefully coordinated to create a three-dimensional movement in the materials during the mixing process. This means that the



The use of horizontal ploughshare mixers in batch mode has, in many cases, proved to be the ideal solution to produce cosmetic powder products.

“THE SURFACE ROUGHNESS MUST BE SMALLER THAN THE PARTICLE SIZE OF THE MATERIALS (...) SO THAT THE RESIDUE CAN BE DIRECTLY MOISTENED BY THE CLEANING AGENTS.”

Horizontal mixer

In many cases, the use of horizontal mixers has proved to be the ideal solution to these varied and complex requirements. These mixers operate based on the mechanically generated fluid bed principle developed by Lödige, which ensures a high energy input and produces very good mixing results. In addition, the mixers make it possible for all the stages of the cosmetic powder production process to take place in one machine. This results in short process times and a high level of flexibility. Liquids and other additives can be introduced via a single-substance nozzle in the venting port.

The small models in particular, which have a gross volume of 130 or 300 litres, offer the high levels of flexibility needed by manufacturing companies which have small batch sizes and formulations that change frequently. A cooling jacket with a large heat transfer area allows for effective temperature control. The distance between the mixing elements and the wall has been kept to a minimum. By machining the drum, distances of 0.5 to 1.0 mm can be achieved. The result is that only a very small amount of the product re-

materials are continuously mixed by the mixing tools to prevent dead spots or areas of low movement and to guarantee a quick, precise and reproducible mixing process.

The design of the mixing tools ensures that the mixture is removed from the drum wall in a radial movement to prevent particles becoming stuck between the wall and the



The production of cosmetic powder products requires fast, homogeneous mixing of different components that vary significantly in quantity.



Cosmetic powder products are made up of several ingredients in different ratios. For example, tiny amounts of pigments have to be mixed with large quantities of carrier material.

mixing tools. The mechanically generated fluid bed principle causes no damage to the product and is ideal for delicate, heat-sensitive substances. Modified shovels can be used depending on the requirements, even for more specific ones. These enables producing the best possible results even when processing the most sensitive products.

In some mixing tasks, in particular dissolving pigments and distributing liquid binding agent, the mixing elements need additional support. For this purpose, serrated choppers can be installed. These have a separate drive system and rotate at high speed. They help with the distribution of substances within the product. The resulting **short mixing time together with the efficient use of drive power keeps the energy consumption to a minimum**. In addition, a complex two-substance nozzle is not required.

Hygienic design

Particularly when colour pigments and some other substances are used, it is also essential to prevent the cross-contamination of consecutive batches. The hygienic design of the machine ensures that it can be emptied leaving hardly any residues and,

most importantly, can be easily cleaned.

This has been made possible by a large inspection door that gives easy access to the entire interior and by the use of ground and polished stainless-steel surfaces. As a general rule, the surface roughness must be smaller than the particle size of the materials that adhere to the surface so that the residue can be directly moistened by the cleaning agents. Surfaces that come into contact with the product usually have a roughness

of $Ra < 0.8 \mu m$. The surfaces can be electropolished to further reduce roughness.

The mixing elements and choppers have also been specially designed for easy cleaning. The mixing tools and the set of chopper blades are fully welded and have the same surface roughness as the drum wall. **Air purge seals or mechanical seals that can be rinsed are generally the best technical solution for use on mixing tool shafts and choppers.** During the production process the shaft seals are purged with compressed air. This prevents the product from penetrating into the gap between the fixed and rotating parts of the seal. The volume flow rate is controlled and assessed via a flow meter and air volume and pressure are displayed on the control panel of the machine control system.

Conclusion

The production of cosmetic powder products involves mixing very small amounts of pigments evenly with the carrier material, dissolving the pigments without causing streaking and distributing the liquid binding agent evenly without flocking to ensure high-quality pressing results. Other requirements include short process times and a high level of flexibility. Horizontal batch mixers with plough-share shovels and a hygienic design are the ideal solution and allow all the stages of the process to take place in one machine. □



To produce a high-quality product, highly sensitive and expensive additives need to be processed without causing damage or leading to a deterioration in quality.

NEWS

SAMPLE-SIZE SOLUTIONS

SILGAN DISPENSING | Compact solutions for uses such as holiday samples, gift sets, travel sets, and in-store testers are offered by the new “Mini Nea line”. Based on the “Nea” platform, this pack provides a good evacuation rate and smooth actuation, as the manufacturer says. The mini products are available in three sizes: 5ml, 7.5ml and 10ml. They come in the company’s standard colours: black, white, and natural. Specific colours are as well available as several additional customisation options or a PCR version.

www.silgandispensing.com



Renovated look

BARALAN | The classical and refined packaging line “Minerva” expands with the launch on the market of the iconic 50ml jar in an amber version. In harmony with the most innovative market trends, the new amber “Minerva Jar” is said to accentuate the aesthetics of the packaging with the preciousness of its amber tone, to give life to an exclusive product in form and colour, synonymous with sophisticated luxury and refinement in the style, a concrete sign of the Italian soul.

www.baralan.com



Special creation

STOELZLE | The first technical challenge for the bottle of the new perfume “Jimmy Choo” was to obtain a significant narrowing of the neck for this shape of bottle with a very high corset, as the manufacturer says. To achieve this, the glass was pushed through a very narrow opening in neck and achieve the high-quality aspect shoulder which would ensure the correct



closure. The flatness of the face was subject to tolerance reduction to guarantee easy application of the JC monogram. The bottom glass distribution is said to give all the dynamic support to this line, which is slightly raised on each side.

www.stoelzle.com

REFINED DESIGN

CORPACK | Evolving out of a mixture of two luxury hair-care lines and their traditional square haircare range, the company came up with a logical symbiosis of these two styles, to create a unique and modern rendition of the past. The result is said to be a modern, square-to-round sloping design, with a subtle reminder of the previous generation, yet successfully carrying the brand forward in an ever-changing market. The bottles are produced with a 50% content of PCR PET.

www.corpack.de



The Beauty of cardboard

TEXEN | For its summer bronzing powder, Sothys selected a maxi-format palette with jungle décor. According to the manufacturer the texture of the paper is soft and smooth. For this development, the company chose paper from sustainably managed forest. Printed in four colours, Sothys’ jungle décor appears in “trompe l’oeil”. Its shiny finish is achieved thanks to a lamination process. The compact features an insert dyed in contrasting black designed to hold the pressed powder and texturized to resemble the outer décor. A magnetic closure holds the lid in place.

www.groupetexen.fr





FIGHTING GERMS

Textiles | Since the beginning of the coronavirus pandemic, the security thought in all contacts with customers or generally on the move has been very important. The routine of disinfecting is now normal, although not always pleasant and involves a lot of effort. New antimicrobial textiles are a new approach that can help protect yourself and your customers from viruses and germs.



► **Hannes Steiner,**
 Managing Director,
 SanSirro, Lebring, Austria
www.virusfree.at

Hygiene has always played a major, yet largely invisible role in commerce in general, particularly in the beauty industry. As the coronavirus pandemic and its aftermath began and continued, the old pattern and the benefit of

a doubt on which it was based shattered. Now, customers need and demand clear or rather clearly visible safety concepts. Particularly sensitive lines of business, such as the beauty industry, have to adapt to these new requirements fast,

photos: SanSirro



With the help of special germicidal coatings, the hands can be protected from contamination with germs or viruses. This protection, which does not require any additional disinfectant, is not only available for often frequented contact zones but also for the hands themselves.

establishing an indisputably germ-free environment.

Those who rise to the challenge, however, may accomplish a fresh start more easily – a difficult task made feasible by a new antimicrobial textile from Austria.

Hygienic concepts

Disinfectant dispensers have been ubiquitous since the beginning of the pandemic. **Where stores are allowed to open, consistent disinfection – by both customers and staff – has become indispensable.** The approach is not failsafe though. People tend to touch their faces unawares, their hands shifting from door handles, light switches and table tops unprotected. Accordingly, it could be more effective to target germs not on the skin, but on surfaces it comes in touch with.

Antiviral coatings

An innovative textile from Austria precisely serves this purpose. **Enriched with biocides based on silver, the fabric kills microbes and germs.** The technology was proven effective against Sars-Cov-2 by an independent third-party virology institute, deactivating more than 98 percent of all viruses after a mere minute. The

textiles also repel dirt and liquids. They can be washed up to 30 times at 40 degrees.

Diverse fields of application

In addition to already available products such as **gloves, door handle covers and protective sleeves for shopping cart handles**, the fabric can be tailored for surfaces of all kinds – from displays and accessories in the checkout area to sample and demoproducts – and is thus ideally suited for cosmetics retailers. From now on, elastic protective covers for demo-products such as per-

fume bottles could add a much-needed sense of security to the customer experience – even after the pandemic is over. They are effortless to use, environmentally friendly and a good fit for the checkout area too, where customers place their bags and touch surfaces while paying. The innovative hygiene concept is well received by customers. Demand from schools, kindergartens, municipalities and companies is high. This also gives the beauty industry the opportunity to finally return to the standard operating routines despite Corona. □

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► **Christian Eisen,**
Vice President Global Sales & Innovation,
Faber-Castell Cosmetics, Stein, Germany,
www.fc-cosmetics.de

SUSTAINABLE AND POWERFUL



Market changes | The entire cosmetics market and, of course, the colour cosmetics market have changed a lot in the past few months. On the one hand, the clear desire of consumers for sustainable products can be felt, but the demands on performance itself have also changed. Christian Eisen talks about the current preferences of the market.

COSSMA: Your company has been working according to sustainable principles for a long time, but development does not stand still for you either. What were the last tweaks you made?

Christian Eisen: Faber-Castell is globally known for its sustainable approach. The family has been managing its own forests in Brazil for many years which is already a huge asset in this context. Though cosmetics is part of this global approach we have however specific requirements in creating more sustainable products by reducing material in general and plastics especially.

We have already managed to switch relevant components to PCR material in order to reduce virgin plastic. Moreover, we offer products with components from bio-based materials and we are moving forward in creating cleaner formulations by exchanging synthetic raw materials with natural ones.

This is a lot of fundamental work in sometimes rather small steps. But we are very happy to say that we succeed in offering more sustainable versions of all of our bestselling products by now – and we won't stop. We are especially proud that we are now able to offer one of our high performing, waterproof and long-lasting liner formulas also in a wood pencil. This is a first in the cosmetics industry. Combined with a cap out of bio-based material the product is essentially made from renewable sources.

Trend researchers confirm that consumers have been relying more on sustainable products since the outbreak of the pandemic. To what extent is this also noticeable?

Sustainability has been an emerging mega trend for quite a while, but during the pandemic this trend has become even more important to consumers. This global development is greatly appreciated as it reflects the

focus at Faber-Castell Cosmetics on sustainable product development. We are always working on ecologically optimising both plastics and textures.

Our long-term commitment to corporate sustainability was recently awarded with the EcoVadis Gold Medal which confirms that we take our responsibility seriously. Our professional knowledge is appreciated by the customers. All our new projects have specific sustainability requirements. It feels like we are focusing on the really important topics right now. Maybe the pandemic is helping to sharpen the focus in some way.

What are the sustainability challenges for colouring ingredients?

Colour combined with high performance is our main business. The demand for cosmetic colours is as individual as people are. Therefore, we have to deal with thousands of different recipes concerning colouring ingredients – and the number is growing daily. A limited choice as well as a performance risk are the main challenges regarding sustainability.

First of all, we have a lot of “no-goes” and blacklist topics such as animal origin or general impurities in some pigments. With these restrictions the variety is limited and therefore also the possible colour options for customers. ►

Secondly, we try to exchange synthetic raw materials with natural ingredients wherever possible. However, natural ingredients are less stable than synthetic ones. Guaranteeing a stable colour over the product lifetime is thus more difficult and also colour variations with different batches become a bigger problem.

But I have good news: the offers are getting broader which provides us with more and more options every day to extend our colour expertise into a sustainable offer as well.

How has the demand for make-up products changed since the introduction of the mask requirement?

Concerning the impact on the mask requirements we were honestly expecting way more impact from the consumer's side. Considering the experience with makeup in cultures, where women cover parts of their face, there is a big tendency towards bright and colourful eye makeup as well as lip products. But these must meet certain requirements: long-lasting and smudge-proof. Such demands apply as well for mask proof products. For this reason, we have developed formulas that will stay put beneath a mask without fading, smudging, transferring, or staining the mask no matter what. However, the demand has shifted

“THE DEMAND FOR COSMETIC COLOURS IS AS INDIVIDUAL AS PEOPLE ARE.”

Christian Eisen, Faber Castell Cosmetics

from classical lipstick to light wear products. For example, we experience an extremely increasing demand for our mask proof “Lip-stain”, with a lightweight texture and moisturising effect.

Social-distancing also has an effect on colour cosmetics: people are using video-calls for work and more and more for socialising. For this reason, people are spending more time looking at themselves on their screen. Facing computer cameras and at-home lighting they start to optimise their look. Therefore, we observe an increase in concealer as a pencil to limit finger application on the face, but also a rising increase in eyeliner, browliner and lipstick with care ingredients.

How does the demand for nail products look in comparison?

During the pandemic and lockdown, we experience a new wellbeing-boom. Consumers are turning to beauty as a positive time-filler for relaxing, selfcare and comforting

reasons. They look for at-home treatments like never before. This applies not only for skin and body treatment but also for nail care.

The nail care market has grown during the past months and I'm sure this trend will continue for the next few years. Due to hygiene requirements, increased handwashing and the use of sanitisers, the focus is on nail moisturising products. We are observing a boom of nail nourishing products especially with aromas and active ingredients like grapeseed, CPD or tea-tree oil.

Which trends are already emerging for 2021? Will there be a surprise or two?

Personally, I think that the pandemic will have a long-term impact on consumer behaviour. People all over the world have become more conscious and mindful about global warming and environmental threats, but the crisis emphasises again the importance of sustainability. This trend leads to organic, vegan, clean and sustainable cosmetics becoming more mainstream, as consumers perceive these products as safer for human health and the environment.

Transparency will be key for people who are increasingly asking questions about the quality of ingredients and the material of packaging. On the other hand, consumers will be more concerned with the safety of the products and how long they can be used safely.

That's why I'm not surprised to see a revival of the wood pencil since it combines everything we have mentioned so far: a naturally sourced product with high performing ingredients and by sharpening a tip always hygienic – all in all the ideal product for demanding consumers. □



It is a challenge to create colour cosmetics from natural ingredients that remain colour-stable for a long time.



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On the following pages you will find a selection of suppliers to the cosmetic industry. The listing is in alphabetical order based on the section headings.

You can also find a full overview, with a search function, at www.cossma.com/guide

Should your company be listed here?

Send an e-mail to dorothea.michaelis@health-and-beauty.com

We will be glad to send you details of terms and prices.



Book your 4 colour layout entry in COSSMA's Suppliers' Guide (see following pages) under the heading of your choice (40x43 mm, CMYK). This is available for just € 156 net per month (minimum entry period: 6 months). Check the available headings in the list to the right.

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