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* These statements have not been evaluated by the EFSA. This product is not intended to diagnose, treat, cure, mitigate or prevent any disease.

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HAIR
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OF
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Natural
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Biolie p. 36

April 2023

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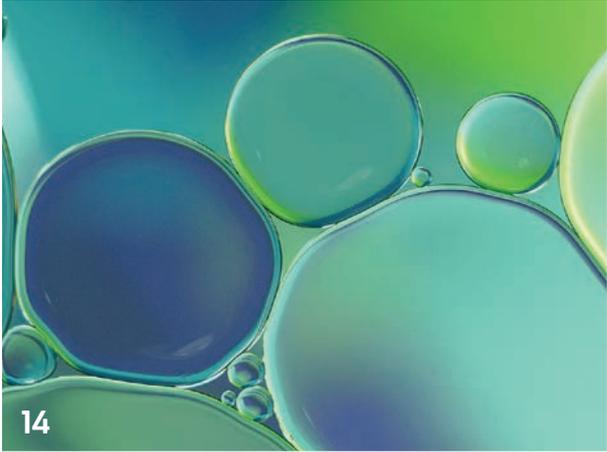
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The Estée Lauder Companies opens new technology center in Bucharest, Romania



The Estée Lauder Companies (ELC) is celebrating the grand opening of its Global Technology Center in Bucharest, Romania. This is an important step for ELC to further improve and elevate the Company's Information Technology function, strengthening its competitive edge through technology. The Bucharest office, together with offices in Long Island City, New York and Kuala Lumpur, Malaysia, embodies ELC's global approach to technology management and innovation. The office is a demonstration of ELC's recent investments in digital tech centers around the world, enhancing the diversity of its capabilities. The office provides digital solutions to enhance ELC's high-touch consumer experiences and high-performance supply chain network, through their capabilities in artificial intelligence, cloud acceleration, intelligent automation, omnichannel, and more.



SILAB puts the spotlight on its CSR program via a dedicated website

Actively Caring is an ambitious program that sets down SILAB's multi-year objectives and action plans for sustainable development. It is based on a highly transversal vision comprising five major pillars: sustainable strategy, development of human potential, responsible sourcing, preserved environment and societal dimension.

For this development, SILAB has opted for an eco-designed site consistent with digital simplicity, available in both English and French. The environmental impact of consulting websites is steadily increasing, and so this site was designed to reduce energy consumption by the suitable technical and editorial choices such as: green hosting, responsible development, "mobile first" design, streamlined design, seamless user experience, relevant contents, only essential functions and a measurement of impact. This technical challenge is part of SILAB's overall sustainable development strategy, focusing on continuous improvement.

Steve Guo joins Firmenich as Fine Fragrance Perfumer

Firmenich, the world's largest privately-owned fragrance and taste company, proudly welcomes Steve Guo as Perfumer to its Fine Fragrance team in China. Steve brings with him a deep understanding of Eastern and Western cultures and habits, together with a strong, prize-winning background in fine fragrance and a number of signature scents to his name.

He trained in Grasse then moved to Paris, staying for three years working as a perfumer, and relocated back to China in 2021 before joining the Firmenich Fine Fragrance atelier in Shanghai in 2023.



TRI-K appoints Evan Murphy as Global Sales Director

TRI-K industries has appointed Evan Murphy as global sales director and joins the company with over 20 years of experience in the B&PC industry.

Ulrich Cramer becomes Nordmann's Commercial Managing Director

The Management Board of Georg Nordmann Holding Aktiengesellschaft (GNH) is delighted to announce that as of April 1, Ulrich Cramer assumed his role as Nordmann's Commercial Managing Director. In so doing, he takes charge of Controlling, Human Resources & Organization, Information Technology, Logistics & Warehousing and Tax & Accounting. Alongside Nordmann's Managing Director Gerd Bergmann, Mr. Cramer will

Having brought Mr. Cramer on board the Nordmann management team will now provide the company with everything necessary to overcome the challenges posed by a constantly changing market. It will also allow the business to focus on its growth strategy and thus successfully secure the future of the Group.



Welcome Roni Rot

New CEO
Jojoba Desert



Jojoba Desert announces the appointment of Mr. Roni Rot as Jojoba Desert's new CEO, effective April 1, 2023. Rot brings a wealth of experience to the position, having served as a board member of the company since its establishment.

Under the leadership of Ms. Lee Reuveni, the outgoing CEO, Jojoba Desert has become a world-renowned cosmetics specialty ingredient company, with a focus on sustainability and quality.



Kerfoot strikes Gold with EcoVadis Sustainability Award

The Kerfoot Group (“Kerfoot”) is thrilled to be awarded a Gold EcoVadis Sustainability Award in recognition of its ongoing commitment to the advancement of sustainability throughout the business in 2022. The company was previously awarded a Silver EcoVadis Sustainability Award in 2021.

This award places Kerfoot, a leading supplier of natural, organic and essential oils and ingredients to the personal care and food manufacturing sectors, in the top 5% of assessed companies in its operating market.

Strategic acquisition by Groupe Berkem of Biopress, a French producer of 100% vegetable oils and proteins

Groupe Berkem, a leading player in bio-based chemistry announced the completion of the acquisition of Biopress, a French producer of 100% natural vegetable oils and proteins.

Located in Tonneins (Lot-et-Garonne), Biopress is one of the first French agri-food companies to specialize in the production of vegetable oils extracted from organic oil seeds from local farms. With properties similar to petroleum derivatives, while being renewable and biodegradable resources, vegetable oils can be used in a wide variety of applications such as cosmetics, coatings, inks, and lubricants. Also, the vegetable proteins contained in oil cakes, which result from the crushing process that is used to extract the oil from the seeds, are particularly prized in the nutraceutical field.

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Is hair care the new skin care?

Use of “classic” biophysical methods for hair & scalp measurement (a review)

By C. Uhl, D. Khazaka, and A. Pouladi

Hair diversity (style, shape, growth pattern or color) is one of the most important features to define us physically.

Therefore, it is no surprise that the market of hair care products with a value of 93.5 billion US \$¹ (Statistica, September 2020) is one of the most important sectors in the complete area of cosmetic products. Hair care products for women are the most frequently bought and used cosmetic products of all. Shampoos and conditioners are leading the field. For men, hair care is the most important and favored sector of all cosmetics.²



Image 1: There is a variety of hair care products on the market in each price category

However, there is more to it. Nowadays, social media, most of all Instagram, influences different generations. Besides skin, hair is the characteristic attribute for health, youth and attraction. Hair can even be a communication tool and a political instrument. Just take as an example the men who grow a moustache of their own style every November of a year, the so called Movember, to raise funds for men's health.²

Plenty of products and treatments are ready to fit the modern hair care market for thin, thick, curly, dry, oily, blonde, coloured, ethnic, young, or old hair. Imagine any claim, the product is already invented. As hair is unique, personalised products flood the

hair care market. Respectively, there is an ever-growing number of claims around the various products. Hair care rituals can be complemented with food supplements and treatment devices.³

Tests on hair tresses

In this context, claim-related best practice in vitro biophysical methods, including instrumental methods (mechanical and visual) to describe hair fibre characteristics, have been established:^{4,5,6}

The most widely used instrumental-based mechanical test to measure the efficacy of shampoos, conditioners, masks and other hair care products is the combing forces test on hair tresses as it supports a broad range of claims. Wet and dry combing forces are determined to substantiate claims such as combability, conditioning, detangling or easy-to-comb. Mechanical measurements of hair breakage provoked by continuous combing of hair tresses show how effective hair care products are regarding protection or resistance to hair damage caused by combing. The amount of broken hair fragments is determined to support claims such as anti-split ends or anti-breakage.

Friction tests, where a bar is pulled along a hair tress, are applied to support claims like “smooth and silky performance”.

The tensile properties of hair are depending on its inner structure. Their measurement offers a view into activities lying within. Hair strength is affected by a wide range of influencing factors, so it is often seen as a primary measure of hair damage which can be analysed with the Single Fiber Tensile or Single Fiber Fatigue Test.

Differential Scanning Calorimetry (DSC) is performed to support claims such as heat- and UV protection. By applying heat to the hair, a denaturing effect of keratin will occur. Applying this method, the thermal resistance of hair's major morphological components can be determined.

Hair consists of 12 to 15 % of water which is one of the most important fibre properties. The water content of hair can be measured through the Hair's Technical Water Content Test. The main factor contributing to the hair water content is the relative humidity of the surrounding atmosphere. This relationship is described via the hair water adsorption isotherm.

Bending tests support claims like long lasting hold and strength of fixation. There are three different test types depending on the product to be evaluated; such as bending the hold-providing film, remaining hold and flexibility of the hold.

For assessing hair shine/gloss, colour, curl retention and vol-

ume, visual tests have become standard in practice. Hair gloss assessment e.g. is mainly performed visually by an expert panel; colour protection and anti-colour fade products or the durability of colour-dyed hair are measured by using a Colorimeter and the volume of a hair tress can be assessed using a silhouette technique followed by image analysis.

Testing hair and scalp in vivo

For the hairless skin, objective testing methods have been known for decades. Some of these “classical methods” have also been used on hair and scalp for quite a while.

Sebum on hair & scalp

The sebum for hair and scalp is produced by the sebaceous glands on the scalp. The sebum gland releases the oil to the hair via a small channel. It is then transported along the hair shaft away from the scalp. The main task of the sebum is to protect the scalp and to keep the hair shiny and supple while preventing it from breaking.

When produced in a high quantity, sebum leads to greasy hair and scalp problems that may cause increased microbial activity and oily dandruff. Especially in urban areas with high pollution, fine dust particles and other pollutants may cling to the oil, making the hair look dull and degrading the hair quality. To remove the oil and pollutants, frequent washing is required which will most notably dry out longer hair. Also, this might just trigger the production of more oil to compensate for the frequent removal – leading to a vicious circle. So, the aim would be to balance the oil production to a moderate level or develop products with lipid-restoring properties.

The Sebumeter® e.g. is not only the worldwide most-used instrument to determine the sebum content of the skin but already in the 1980ies and the early 90ies, work has been presented about the usefulness of this device on hair and scalp.^{7,8}

For optimal reaching the hairy scalp, a special adapter can be useful to measure with the milky foil of the Sebumeter®. After the measurement, the transparency is evaluated photometrically.



Image 2: Reaching the hairy scalp with the Sebumeter® foil and a special adapter

Hair colour and gloss are “evergreens” among the claims around hair care

Easy and quick to use Colorimeter and Glossymeter devices that have been used on skin for a long time, are also suitable to support booming claims like brightening, luminosity, shine, colour intensity/lasting for hair. With special small measuring heads the scalp can be evaluated through the hair, e.g. increased erythema due to irritation.



Image 3: Glossymeter and Colorimeter probes used in vivo and ex vivo



Image 4: Use smaller measurement heads to reach the scalp through the hair

Hydration

Hydration on hair is more difficult to measure than on skin. One method that has been used to determine the moisture content of hair, is the measurement of induced chemoluminescence, a method that requires a huge financial and spatial expenditure, or the use of Differential Scanning Calorimetry (DSC) as described above. However, products applied on the hair and scalp cannot really influence the moisture content in the hair. Normal, healthy hair is designed to prevent substances from entering the inside. The common concern of the consumers about dehydrated hair⁹ and the respective popular product claims mean something else. It is more about the feel of the hair, the shine and the elasticity/bending properties. The hair looks less straw-like and more vital.

Product Safety

The pH-value on hair and scalp plays an important role in the efficacy testing of hair care. Claims like “pH-neutral” or “sensitive” are easy to support by pH-measurements.



Image 5: pH-measurement on hair and scalp

The barrier function of the scalp is the key parameter in the safety and efficacy evaluation of products applied on the head. Since the ban of animal testing in the development of cosmetic products, TEWL measurements have to take place in vivo on human subjects and in vitro on cultured cell tissue. The open chamber measurement of the Tewameter® is the worldwide most-used method for the assessment of transepidermal water loss (TEWL). The Tewameter® Nano probe has been developed to especially measure the scalp. With its small measurement surface of only 2 mm in diameter, the scalp can be easily reached through the hair. TEWL measurements are also used as indirect measurements of the water content on the scalp.



Image 6: Tewameter® Nano, especially developed for TEWL measurements on small and difficult to reach surfaces.

Claims on health and shine are also used on animal hair especially in regards to food and food supplements. The same way as human hair and scalp, animal skin and fur can be tested with these techniques.

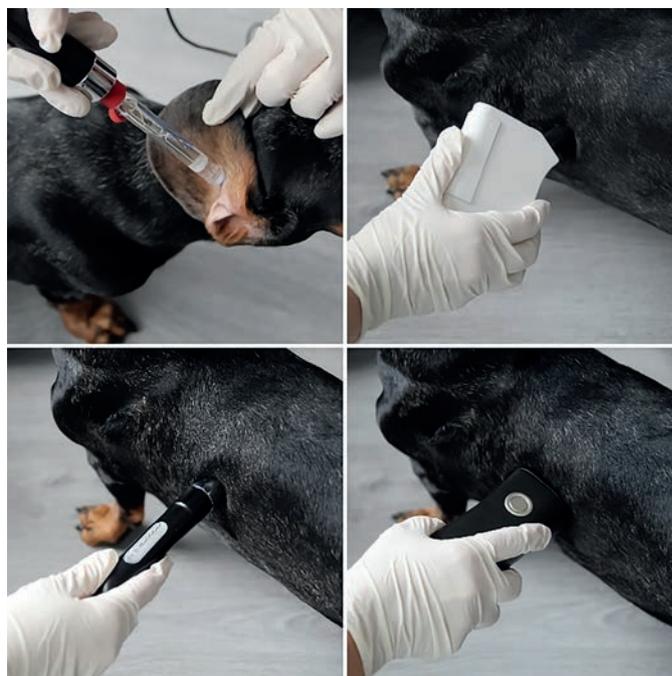


Image 7: Not only human hair but also animal fur is supposed to be healthy and shiny

Imaging

Following the tendency in evaluating skin care efficacy and its claim support, also in hair care development, more and more methods are based on image analysis.

The evaluation of the hair length can be used for different claims. In hair care and for food/food supplements, hair length assessment can substantiate hair growth claims. Also, in testing the quality of shaving, this measurement will be useful. Thickness measurement of the single hair is used to show the volumizing effect of products.

Special UV-based cameras such as the Visioscan® offer high resolution, non-glossy images of hair and scalp. Other cameras with parallel- and cross-polarized light show scalp and hair images from different angles.



Image 8: Hair length/thickness measurements in mm with the Visioscan® VC 20plus

Other methods such as transmitted light microscopy, scanning electron microscopy (SEM) but also high resolution-cameras with magnification objective can show structural hair fibre damages and substantiate hair repair claims.

Dandruff

The same way as skin does, the scalp will constantly shed small dandruff flakes from its surface. This is a normal process making room for new cells growing from the base of the epidermis. Usually, these minuscule and more or less imperceptible flakes will be removed by washing and combing the hair. However, almost 50% of the world population show plainly visible flakes at one time or another, a problem described as dandruff.¹⁰ In general, dandruff causes more social and psychological problems than medical ones, effecting self-esteem and confidence.¹¹

Dandruff is difficult to define because it can manifest in different conditions and blurs with seborrhoeic dermatitis and other scaly skin problems such as atopic dermatitis and psoriasis.¹² It is often linked to the colonization of the scalp by *Malassezia*, a fungal microorganism. Also, seborrhoeic conditions, allergies or dehydration of the scalp may result in dandruff. Additional external triggers have been identified, such as sun exposure¹³ or treatment with unsuitable products.

While the scalp condition can be assessed by probes such as TEWL measurement and sebum measurement directly on the scalp and skin surface moisture on the forehead close to the hairline, the extent of dandruff can be assessed either by expert rating, or, for more objective testing by imaging methods using the DandruffMeter. Dandruff flakes are sampled by the application of a defined combing procedure. The collected flakes will be distributed in a wide petri dish onto a dark background material that is then inserted into the DandruffMeter for analysis. Inside the device, circularly arranged LEDs will illuminate this sample homogeneously and in a standardized way. Straight above the illuminated sample, a high-resolution camera will take a picture. Dandruff will shine bright white against the dark background and can be analyzed and categorized in the device software for the amount and sizes of the dandruff accretions. Application of an anti-dandruff shampoo should shift the distribution from larger-sized categories to smaller-sized dandruff flakes.



Image 9: Classifying dandruff in number and size

Testing methods for hair loss

Another wide-spread concern is hair loss. The causes for alopecia are attributed to numerous combined influences ranging from genetic predisposition, increased dehydrotestosterone production, mineral and vitamin deficiency, stress, toxins, colonization with microorganisms to the way that the head is generally held as well as facial expression which are supposedly influencing muscle tension along the head.

Different to other mammals that shed their fur seasonably, human hair undergoes unsynchronized growth cycles.¹³ This irregular pattern is characterized by hair in different growth stages at the same time, ideally 90% anagen (growth phase), 1–2% catagen (regression phase) and 8–9% telogen (resting phase)¹⁴. In androgenetic hair loss, the anagen phase is shortened and the anagen-telogen rate may shift from 6:1 to 2:1.¹³ The changes from anagen to catagen to telogen and the ratio of the different hair growth stages can be assessed by trichography, either by microscopic determination of the hair roots of torn-out hair or by devices measuring hair growth within a certain time span after shaving like the Trichoscan® device.

Often, at the same time the single hair is thinning.¹⁴ The combination of decreased hair regrowth and thinner hair leads to the overall impression of baldness. Hair thinning can be assessed by special dermatoscopes (trichoscopy) or by using the Visioscan camera and objectively measuring the thicknesses of single hair.

Other sources also point to the scalp microbiome being involved in hair loss by promoting inflammation.¹⁵ Especially two bacteria and their ratio play an important role: if the balance between cutibacterium acnes (syn. propionibacterium acnes) and staphylococcus aureus shifts towards the latter, less inflammation will occur and hair loss is limited. The activity of the cutibacterium acnes can be made visible and calculated by using special UV-wavelengths that will cause an autofluorescence of the porphyrins produced by the acne bacteria. The Visiopor® is a handy and efficient camera emitting UV-light of this specific wavelength onto a small area of the skin surface (6.4 mm x 8 mm) and recording the occurring fluorescence. The amount, area and intensity of



Image 10: Fluorescence pictures from the scalp

these fluorescent spots can then be automatically calculated and compared over the treatment time.

Besides optical analysis, also the measurement of scalp stiffness can give interesting insights. It could be observed that balding men and women tend to have chronically tighter scalps than those without hair loss. Studies have been clearly identifying mechanical stress on the scalp as an active factor in androgenetic alopecia.¹⁶ Measurement of the rigidity (stiffness) of the scalp could therefore give additional information on the efficacy of tension-relieving methods. The Scalp Indentometer with a 1 mm diameter indenter can be used to show improvement in scalp rigidity.

Microcirculation that has also been found to be involved in hair loss can be easily determined by measuring the scalp temperature.¹⁷

Completing the circle

Is skin care the new hair care? Claims known in skin care for quite some time as anti-aging, pollution defense, exfoliating scrub, vitamin-infused, collagen boosting become increasingly common in the hair care market as it continues to diversify beyond the standard shampoo, conditioner and styling aids categories.¹⁸ Or is hair care the new skin care?¹⁹ Our hair is as individual as we are. The skin of the scalp is more permeable than the skin of our face. Personalized trends already known for a long time in skin care, are also gaining ground in hair care.

The same measurement methods used in the development and efficacy testing of hair care can be used in simplified forms at the various points of sale to lead the consumer through the jungle of products and find the individual suitable hair care range.



Image 11: Consumers have to choose the best suitable product

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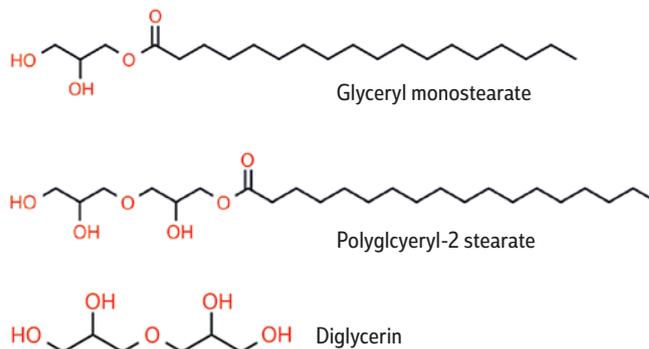
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Polyglyceryl Esters of Fatty Acids (PEFA) – the Proven Green Emulsifiers

By Matt Zoeller*

The popularity and extent of sustainable ingredients into the formulator toolbox continues unabated. Many chemists and the brands they support are probing away from use of ethoxylated (ETO) surfactants and additives given the current climate and the stigma assigned to these PEGylated compounds. With the negative public reaction to occasional ETO releases from medical sterilization plants, government scrutiny of 1,4-dioxane content, and their non-renewable content, the value proposition of any ingredient having “PEG” or “eth” in its INCI name has diminished lately. Though the ethoxylates continue to serve the industry well for over 75 years, alternative materials and methods are now of keen interest.

The polyglyceryl esters of fatty acids (PEFA) lend themselves to this cause to offer excellent emulsification tools and more. Although these renewable surfactants have been employed commercially since the 1960's, very little has been published on their utility and strengths. This knowledge gap and the consideration gap that accompanies it are addressed here. Structurally, the PEFA have their origin in glycerin esters such as glyceryl monostearate (GMS.) The emulsifying compound pairing GMS with a small amount of potassium stearate, introduced by Goldschmidt AG in the 1950's as Tegin A®, proved to be the most widely used cosmetic cream emulsifier of that era. It was only logical that chemists involved in surfactant syntheses recognized expanding the glyceride hydrophile might lead to useful ester oligomers. This proved to be the case. Esterifying polymeric glycerin (PG) led to many amphiphilic materials having diverse properties all from renewable starting materials.



Manufacturing technology and customization

Synthesis of these materials is founded in two steps. Glycerin is dimerized by a condensation reaction into linear diglycerin, which then undergoes asymmetric addition to create larger polyglycerides: PG-2 + PG-2 = PG4, PG-4 + PG2 = PG-6, PG-6 + PG-4 = PG10. These homologs maintain high linearity in this fashion being derived from diglycerin. Addition of mono-glycerin will produce more branched oligomers having less conformational uniformity.² This is why there are very few commercial Polyglyceryl-5, 7, or 9 oligomers, nor many PG-3. There are 8 possible isomers for polyglycerin-3. Furthermore, beyond polyglyceryl-10 (PG-10) this “goes off the rails” producing dendrimers. PG-10 is therefore the current practical oligomeric limit.

The next step is esterification of the polyglyceride backbone. There are several methods of doing so, most practical being a modified Steglich reaction,^{8,9} where the fatty acid forms a nucleophilic amido-functional intermediate capable of S_N2 substitution of hydroxyls bonded to both primary and secondary glycolic locations. The reaction proceeds under mild conditions and modern

* 3V Sigma USA

methods of Steglich use green solvents. Mild conditions are important in that high temperatures and pressures may lead to enol elimination resulting in olefins.

The esters created allow much versatility for commercial application.

Index #1. Attributes are a function of fatty acid character, polyglyceride oligomer and degree of ester substitution.^{3,7}

- Polyglyceryl-2 Laurate: plasticizer for aqueous & solvent nail enamels
- Polyglyceryl-3 Diisostearate: pigment dispersant & emulsifier
- **Emulsiderm PG4C** (Polyglyceryl-4 Caprate): lipid solubilizer/refatting agent
- **Emulsiderm PG4S** (Polyglyceryl-4 Stearate): o/w primary emulsifier
- Polyglyceryl-4 Isostearate: co-emulsifier for invert-phase systems
- **Emulsiderm PG6L** (Polyglyceryl-6 Laurate): o/w emulsifier for liquid mix
- **Emulsiderm PG6O** (Polyglyceryl-6 Oleate): o/w emulsifier for higher loading
- Polyglyceryl-6 Polyricinoleate: w/o primary emulsifier
- Polyglyceryl-6 Octastearate: crystallization inhibitor for oils, butters
- Polyglyceryl-10 Laurate: solubilizer, hydrotrope, detergent
- Polyglyceryl-10 Dilaurate: 2° emulsifier, detergent
- Polyglyceryl-10 Hexaoleate: corrosion inhibitor, fabric softener

When multiple ester substitutions take place in PEFA, polydiversity ensues. Location of the fatty ester lipophile can vary and the greater degree of substitution on longer the polyglyceride oligomer, the higher the polydiversity index.^{3,6} This can be a constraint but also an advantage as multi-esters convey unique properties to PEFA. (See Index #1) Indeed it is this condition that makes these chemical entities so useful in formulation chemistry, an unheralded quality in the author's opinion.

In formulating with PEFA know there are four basic types: Discrete (mono) esters: e.g. Polyglyceryl-4 Laurate, monoester of a discrete fatty acid.

Mixed (mono) esters: e.g. Olive Oil Polyglyceryl-6 Esters, monoester of multiple fatty acids.

Discrete multi-esters: e.g. Polyglyceryl-3 Diisostearate, multiple degrees of esterification with a discrete fatty acid.

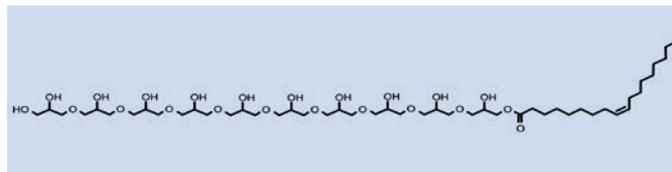
Mixed multi-esters: e.g. Polyglyceryl-4 Diisostearate/Polyhydroxystearate/Sebacate, multiple degrees of esterification by multiple fatty acids.

Index #2. The chemical nature of the fatty acids used in construction of the PEFA impact the final character of the compound, especially with regard to emulsification properties.

- Caprylate (C8) and Caprate (C10) convey greater polarity
- Oleate (C18:1) conveys a higher oil loading capacity
- Ricinoleate (C18:1 OH) conveys greater lipophilicity for w/o emulsification
- Laurate (C12) conveys hydrotrope character, lower interfacial tension
- Higher alkyl homologs (C16 to 20) make for better o/w emulsifiers

Character and Safety

Looking at PEFA chemical anatomy the character that stands apart from PEG surfactants is the greater number of hydrogen bond donor hydroxyls, their ratio to hydrogen bond acceptor oxygens and the larger polar surface areas occupied. PEFA share this character with surfactant chemistry based on alkyl-modified saccharides such as the glucosides and rhamnolipids. With the exception of sucrose esters, these compounds tend to work mainly as detergent surfactants in cleansing products, a quality they possess superior to that of PEFA. Yet PEFA afford more functions than any of these compounds, especially in emulsification.



Polyglyceryl-10 Oleate¹, HLB \gg 15, $\sigma = 52$ dyne/cm², logP = 2.8
H-bond donor = 11, H-bond acceptor = 22, Polar surface area = 332 Å²

PEFA compounds add many deliverables to the green formulator's toolbox, not only as o/w emulsifiers but as pigment dispersers, crystallization inhibitors, refatting agents in cleansers, w/o invert co-emulsifiers, micellar water conveyors, niosome vesicle constructors,⁴ sensorial enhancers and preservative boosters. Their versatility arises from the high degree of customization afforded by the chemistry itself, altering fatty acid moiety (see Index #2), degree of hydroxyl substitution and polyglyceride oligomer. Their chemical cousins the modified saccharides do not share this degree of versatility to the same extent as the PEFA.

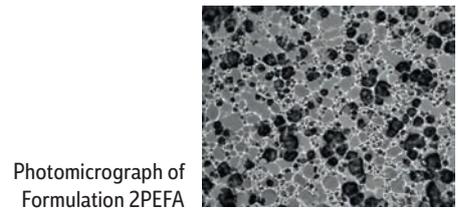
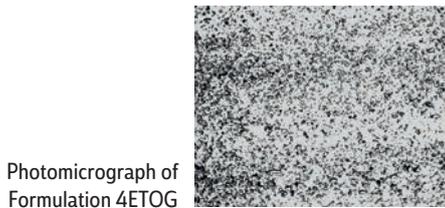
What we also know about PEFA is their excellent safety profile as these are well regarded by state regulatory agencies globally. Food technologists have used them for many decades.⁵ Being nonionic surfactants, the PEFA exhibit compatibility with all types of ingredient chemistry and rheology modifiers. They accommodate lipids of varying polarity, stability with electrolytes and proteins, and offer no interference with preservatives. Thus it can be said that polyglyceryl esters are useful surfactants that play well with others. As a value-added quality PEFA lend pleasant sensorial effects to emulsions. These *are* esters, after all. While primarily capable as o/w emulsifiers, the PEFA can function as superb w/o emulsifiers and co-emulsifiers with alkyl ether silanes as primary emulsifiers for high internal phase (HIP) invert emulsions. Although many PEFA may emulsify lipids as sole surfactant, in our work we found these compounds work more effectively when used in tandem with each other or with ancillary surfactants as contributors: the *buddy blend system* as it were.

Experiment and rationalization

We examined rheological attributes of four oil-in-water lotion formulations all sharing same emulsion chassis and medium polarity lipid concentrations. Processing conditions were held consistent and no rheology stabilizers were employed. Two were based on PEGylated surfactants while other two were based on

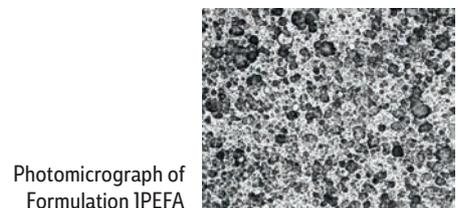
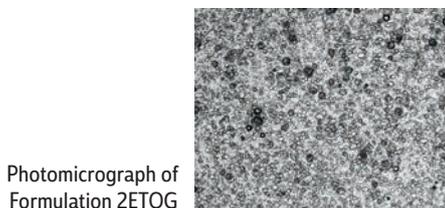
PEG classic o/w lotion formulation 4ETOG System HLB: 8.0 Lipids HLB: 8.0	%w/w	PEFA green o/w lotion formulation 2PEFA System HLB: 8.0 Lipids HLB: 8.0	%w/w
Water, deionized	q.s.	Water, deionized	q.s.
Tetrasodium EDTA	0.05	Tetrasodium EDTA	0.05
Glycerin	5.00	Glycerin	5.00
Butylene Glycol	2.00	Butylene Glycol	2.00
Polysorbate 60	1.25	Emulsiderm PG4S	3.00
Sorbitan Stearate	2.75	Glyceryl Stearate Citrate	1.00
Cetyl Alcohol	2.00	Cetyl Alcohol	2.00
Cetyl Palmitate	1.00	Cetyl Palmitate	1.00
Rice Bran Oil	8.00	Rice Bran Oil	8.00
Caprylic/Capric Triglycerides	1.50	Caprylic/Capric Triglycerides	1.50
Isononyl Isononanoate	1.50	Isononyl Isononanoate	1.50
Preservative same	1.00	Preservative same	1.00
Fragrance same	0.25	Fragrance same	0.25
Stable opaque uniform emulsion Viscosity (Brookfield): 16,000 cps pH @ 25°C: 7.30		Stable opaque uniform emulsion Viscosity (Brookfield): 13,000 cps pH @ 25°C: 7.24	

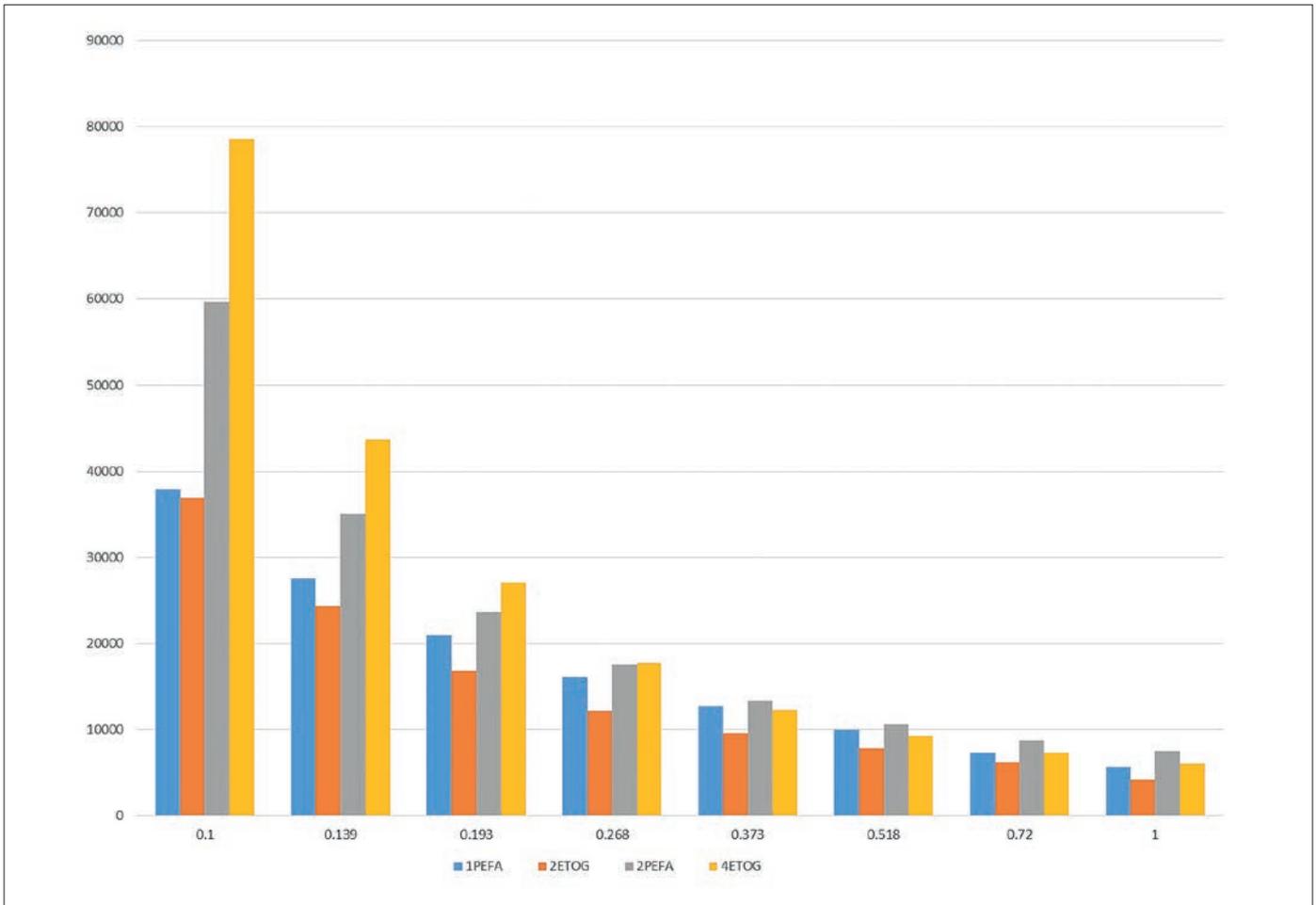
Example 1



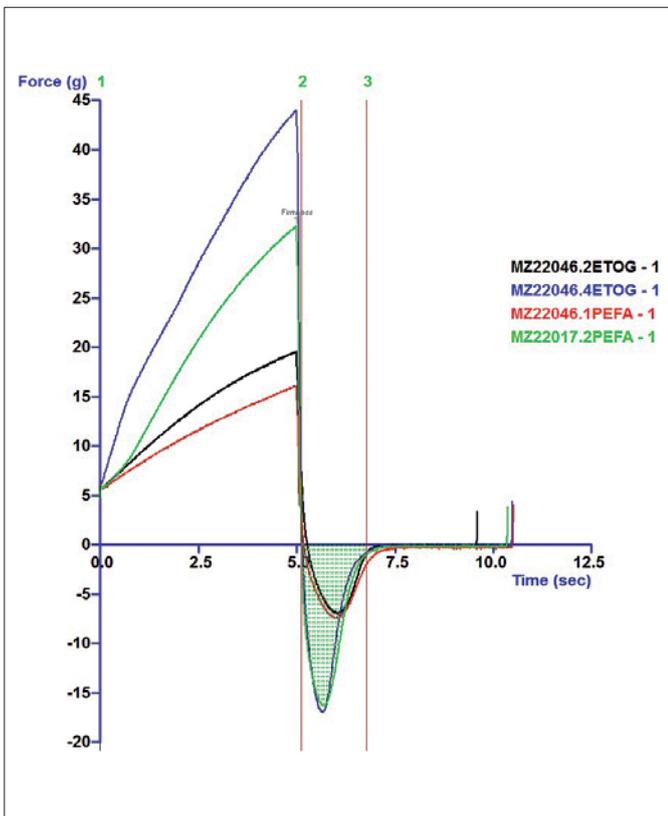
PEG ester o/w lotion formulation 2ETOG System HLB: 8.0 Lipids HLB: 8.0	%w/w	PEFA o/w lotion formulation 1PEFA System HLB: 8.0 Lipids HLB: 8.0	%w/w
Water, deionized	q.s.	Water, deionized	q.s.
Tetrasodium EDTA	0.05	Tetrasodium EDTA	0.05
Glycerin	5.00	Glycerin	5.00
Butylene Glycol	2.00	Butylene Glycol	2.00
CI2-20 Acid PEG-8 Ester	2.50	Emulsiderm PG60	2.50
Glyceryl Monostearate	1.50	Glyceryl Monostearate	1.50
Cetyl Alcohol	2.00	Cetyl Alcohol	2.00
Cetyl Palmitate	1.00	Cetyl Palmitate	1.00
Rice Bran Oil	8.00	Rice Bran Oil	8.00
Caprylic/Capric Triglycerides	1.50	Caprylic/Capric Triglycerides	1.50
Isononyl Isononanoate	1.50	Isononyl Isononanoate	1.50
Preservative same	1.00	Preservative same	1.00
Fragrance same	0.25	Fragrance same	0.25
Stable opaque uniform emulsion Viscosity (Brookfield): 10,500 cps pH @ 25°C: 7.20		Stable opaque uniform emulsion Viscosity (Brookfield): 8,500 cps pH @ 25°C: 7.00	

Example 2





Example 3: Rheometer study of formulations



Example 4: Texturometer study

PEFA in parallel fashion. Compounding the four then subjecting to parallel study on our rheometer and texturometer, we compared attributes. All four were similar in appearance and determined to be stable. Yet, there were differences.

The formula 4ETOG is based on a “classic PEG” Tween™ 60/Span™ 60 emulsifier combination as described in Griffin’s seminal HLB handbook¹⁰ of the 1950’s while its tandem formula 2PEFA was based on our Emulsiderm™ PEFA “buddy blend” of same total concentration and predicted HLB as the classic PEG. Photomicrographs of both exhibited smaller net average curvature (NAC) in the droplets formed by the PEFA emulsion with attendant lower viscosity even though stability and outward appearance was virtually same. (see Example 1)

The other two formulations used same co-emulsifier, glyceryl monostearate, but differing primary emulsifiers: PEG-8 C12-18 alkyl ester in the benchmark 2ETOG, polyglyceryl-6 oleate in the alternate tandem formula 1PEFA . Concentrations and predicted HLB were same in both. This time the PEFA alternative exhibited closer NAC vesicle size compared with the PEG benchmark. (see Example 2)

Rheometry curves for all four indicated typical pseudoplastic sheer-thinning behavior. (See Example 3) Texturometer analysis indicated the classic PEG emulsion was a firmer, more substantial lotion with greater pick-up mass, yet same uptake response, as the PEFA buddy blend. (See Example 4) These findings indicate the PEFA buddy blend formulation may have somewhat less cush-

ioning, yet similar spreading attributes compared to the classic PEG system.

The direct surfactant-emulsifier substitution tandem with the PEGylated alkyl ester exhibited nearly complete parity with each other (see Example 4). Although the emulsion based on the primary PEFA polyglyceryl-6 oleate exhibited somewhat lower NAC on the micrograph, it shared texture and rheology attributes nearly in lockstep with the PEG ester emulsion benchmark. (see Example 4)

PEFA anomalies explained ... and their prospects!

In our lengthy emulsion studies we noted some reluctance of our Emulsiderm PEFA to form lamellar liquid crystal matrices (LLC) when compared with PEGylated surfactants. We offer a theory on this dissonance and solutions to offset it. Considering the polyglyceride hydrophile end of these compounds it is apparent the high ratio of hydrogen bond donors to acceptors plays a role. This creates the condition of *intramolecular* hydrogen bonding between PEFA amphiphiles in solution. This interaction can lead to less affinity with water itself,¹¹ the liquid continuum of any oil-in-water emulsion. One can say when it comes to hydrogen bonding, PEFA don't know whether they are coming or going!

We named this phenomenon of amphiphile surfactants “bunching”, and the antidote to bunching is to increase the levels of hydrogen-bond donor polyols in the water phase. This lends a dispersive effect on the “self-absorbed” polyglycerides, levelling their distribution throughout the system and creating more numerous and uniform micelles. The greater the number and conformity of micelles in a colloidal dispersion, the more favorable that dispersion will be to LLC formation and the attendant stability achieved.

The other characteristic of PEFA contributing to more difficult LLC formation and oil loading is the polydiversity of the ester lipophile portion of the compound. PEG surfactants possess discrete lipophile locus and spatial occupancy, contributing the proximity needed for Van der Waals attraction with dispersed lipids. The more diverse juxtaposition of polyglyceride lipid ester location does not share this quality. The packing factor of correspondent PEFA will usually be less when compared to alkyl and oleyl ethoxylates.

How to manage this? We found that using the buddy system of co-emulsifiers and builders can mitigate this to a large extent. Adding a monoglyceryl or sorbitan ester will act as a “spacer” for PEFA amphiphiles, leading to higher degree of micellar packing assimilation and LLC formation. This explains why the discrete PEFA work better than the multi or mixed ester PEFA in o/w emulsion success. Employing a discrete mono-ester PEFA will create the better packing conditions with multi-ester PEFA.

Surfactant compounds based on polyglyceryl esters of fatty acids grant the green formulator a great degree of mobility in creating new products and greener upgrades of previous formula

solutions. These are based on sustainable, renewable antecedents and have exceptional safety profiles. Though seldom seen in product INCI ingredient listings before the 21st century, the term *polyglyceryl* is more prevalent on labels now. We encourage the chemists enabling production of green personal care and home-care products to appreciate and consider the use of these novel materials now and in the future.

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Matt Zoeller is currently the Applications Manager for the Specialty Division of 3V Sigma USA based in Georgetown, South Carolina. Before this venture he spent some 35 years in technical management positions in contract manufacturing businesses in the Chicagoland area where he was integral to the development and technology transfer of thousands of personal care products for hundreds of beauty brands. He contributes knowledge to formulators globally and is the host and science writer for the popular YouTube channel *3V Sigma USA Makin' it with Matt*. He holds a B.S. Chemistry from Roosevelt University in Chicago, where he spent most of his life and contributed to the Midwest Chapter of the Society of Cosmetic Chemists.

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Preliminary study of combability effect to select shampoo and conditioner formulations

The lab to Consumer routine

By Tania Ross Mery Romero Bernal * and Mauricio Guzmán Alonso **

Summary

Shampoos and conditioners are essential part of routine for the hair care. We developed a general hair routine that includes shampoo and conditioner that have a preliminar performance in two types of hair: treated and natural. We evaluated 8 formulations in laboratory test, and we define two routines, to validate with the both users with natural and treated hair in a home test use. We found the routine 1 with a promissory performance and useful bases of formulation to start new projects in hair care.

Key words: Shampoo, Conditioner, Laboratory test, Hair routine, Home Test

Introduction

The global hair care market size reached US\$ 82.3 Billion in 2022. According to IMARC Group it is expected to reach US\$ 107.2 Billion by 2028 with a growth rate of 4.4% during 2023–2028.¹ The hair care market is one of beauty's all-star categories in cosmetics industry where we can see high expectations by the consumers in products for basic care as shampoo and conditioner.

Shampoo in simple terms is a hair care product designed to clean the scalp skin along with its hairs. It cleans the scalp of dirt and other environmental pollutants, sebum, sweat, desquamated corneocytes and other greasy residues including previously applied hair care products such as oils, lotions, and sprays, at the same time it must condition and beautify hair. Commercial shampoos contain a mixture of surfactants, conditioners, actives, emollients for providing optimum cleaning levels according to hair type and requirement – normal, oily, dyed, permed, colored, or

damaged hair.²

Hair conditioners are designed to improve hair manageability, decrease hair static electricity, decrease friction, detangle the hair improving combability and add luster. Conditioners act by neutralizing the electrical negative charge of the hair fiber by adding positive charges and by lubricating the cuticle that reduces fiber hydrophilicity. The ideal conditioner is capable of restore the hydrophobicity of the fiber and neutralize the static electricity. Depending on the capacity of entering the fiber, the conditioner may reach the cuticle surface or the inner part of the cortex.³ The smooth feel resulting from conditioner use gives easier combing and detangling in both wet and dry conditions.⁴

Weathering is the progressive degeneration from the root to the tip of the hair. Normal weathering is due to daily grooming practices. When the hair is extremely weathered and chemically treated, there may be scaling of the cuticle layers, removal of the 18-MEA and cuticle crack. If the cuticle is removed, the exposure of the cortex and further cortex damage may lead to hair fiber fracture.³ The use of hair cosmetics as shampoo and conditioner routine may balance hair cuticle damage and prevent hair breakage by reducing friction and water pick up.

* Formulation Scientist

** Applied Research Scientist
Belcorp Colombia

Proposal

Shampoos and conditioners are essential part of routine for the hair care and are responsible for helping the hair look healthy, manageable, shiny through their various ingredients. The balance between good cleaning and beautifying the hair is a challenge by cosmetic chemists achieved by mixing synergic ingredients in the correct proportion and the validation of the key parameters on the hair target (natural, colored, bleached, dyed, curly, straight etc.).

The hair look soft, shiny, and manageable is a key factor of decision for the customer now to re buy the product. We wanted to develop a general hair routine that includes shampoo and conditioner that could have a good performance in two types of hair: treated and natural. We ask it: What is the best formulation base to use in both natural and damage hair? With this question, we wanted to validate different formulations on tresses and then prioritize two routines to test with two types of consumer (Treated and natural hair).

Formulations

Firstly, we developed several formulations and choose four for each type of product (shampoo and conditioner) Table 1 and Table 2. The formulations selected were validate in preliminary stability at different conditions for one month (4° C, 40 °C, 60 ° C and cycles).

Ingredients Description	Sham-poo 1	Sham-poo 2	Sham-poo 3	Sham-poo 4
Water	69.7	68.6	70.9	72.1
Primary surfactant anionic	12.0	12.0	12.0	12.0
Secondary surfactant anionic	6.5	6.5	0.0	3.0
Secondary surfactant amphoteric	6.0	7.0	10.0	6.0
Opacifying agent	1.7	1.5	1.4	1.6
Preservative	q.s	q.s	q.s	q.s
Conditioning agent 1	0.6	0.7	0.8	1.0
Conditioning agent 2	0.5	0.4	0.5	0.0
Fragrance	q.s	q.s	q.s	q.s
pH adjuster	q.s	q.s	q.s	q.s
Foam booster	0.2	0.2	0.0	0.5
Viscosant	q.s	q.s	q.s	q.s
Rheology modifier	0.2	0.2	0.2	0.0
Conditioning agent 3	0.2	0.2	0.0	0.1
Lubricity agent	0.1	0.1	0.1	0.1
Chelating	q.s	q.s	q.s	q.s
Emollient Blend	0.0	0.0	1.5	0.0
Moisturizing Agent	0.0	0.0	0.0	1.0
Conditioning Agent 4	0.0	0.0	0.0	0.1

Table 1. Shampoo Formulations

q.s. quantity sufficient

Ingredients Description	Condi-tioner 1	Condi-tioner 2	Condi-tioner 3	Condi-tioner 4
Water	81.0	85.0	82.0	86.0
Viscosant	6.0	4.5	5.0	5.2
Cationic Conditioner	4.5	4.0	4.5	5.5
Emollient 1	2.6	3.0	2.5	0.8
Conditioning agent 1	2.0	0.0	2.0	0.0
Conditioning agent 2	1.0	2.0	0.0	1.0
pH adjuster	q.s	q.s	q.s	q.s
Preservative	q.s	q.s	q.s	q.s
Fragrance	q.s	q.s	q.s	q.s
Conditioning agent 2	0.2	0.0	0.2	0.0
Chelating	q.s	q.s	q.s	q.s
Conditioning agent 4	0.0	0.2	0.0	0.0
Film Former	0.0	0.0	1.0	0.0

Table 2. Conditioner Formulations

q.s. quantity sufficient

The formulations differ between them, in the percentage proportions of conditioning agents, emollients and secondary surfactants.

Laboratory evaluation

Then we tested the 8 formulations on Caucasian applying on tresses natural and treated in the laboratory. We measured combability through combing force evaluation. According to these results we selected two routines of Shampoo-conditioner to validate with users.

Tresses preparation. The study was conducted with 16 commercial Caucasian hair tresses (straight dark brown 4g/20cm net 2.5cm wide) per product. Half of the tresses were subjected to triple bleaching with a commercial product (potassium persulfate), with this treatment the two study groups are defined as natural/untreated (N) and treated/bleached (T). Tresses were previously washed using a 10% lauryl sulfate sodium solution for 1 min followed by 1 min of rinsing in 40°C tap water.

Equipment. Diastron MTT175 Miniature Tensile Tester Model. Measurement total work combability.

Tresses evaluation. First all tresses were reading at basal level in wet and dry conditions as a control reading in an initial condition. The application of four different formulas of shampoo and four different formulas of conditioner was carried out in each of the treatment groups (N and T). 0.5 ml of each product was applied and massaged for 1 minute, then rinsed for 30 seconds with a tap water and excess water was removed. Then, was carry out the measurement of combing and detangling on the Diastron equipment according to internal procedure. Duplicate measurements were performed.

Home test evaluation

A use test was carried out with heavy users of shampoo and conditioner. This test was carried out in Bogota city Colombia. 22 women with 20 to 40 years old participated in the study, ten of

them, with natural hair and twelve with treated hair.

For this study, two routines were given to the users, each with one shampoo and one conditioner formulations. The formulations chosen was the two best shampoo and the one best conditioner according to the results in the laboratory study. See Table 3.

The mode of use required to the users consisted in the application of routine during the shower, one on the first day of the study and the second routine on the day that they wash their hair according to personal hair care habits. A survey was carried out at the end of the application of each routine. The parameters evaluated were in wet hair and dry hair.

Day 1	First Shampoo 1	First Conditioner 1
Day 2	Second Shampoo 2	First Conditioner 1

Table 3. Routines

Results Analysis

The results of the instrumental test were graphed thanks to the Minitab software in which the ANOVA statistic $p < 0.05$ was applied.

For home test was used no parametric statistic. Wilkinson $p < 0.05$.

Results and Discussion

Laboratory Evaluation

Figure 1 shows the results of total work to combability for shampoo in wet and dry conditions on tresses. In the Figure 2 shows the same results for the conditioner.

In the red rectangular line, we can stand out the best performances in each parameter evaluated and that did not present a

significant statistical difference $p < 0.05$.

Formula 1 presented the best results in wet and dry conditions. As you can see the combability value is lower except in wet conditions in natural hair (N). Related to Formula 2 and 3 wet combability had similar behavior in both types of hair. In dry conditions Formula 2 presents a similar performance to Formula 1 in treated hair T, meanwhile, Formula 3 presented the best performance in dry conditions for natural hair. Formula 3 was chosen because it had better behavior on dry hair in natural highlights vs Formula 2. Formula 4 was the one with the lowest performance both wet and dry.

Formula 1 has a specific secondary surfactant anionic that can be explained the performance on natural and treated, and formula 3 has a unique blend of conditioners, with these results we are presenting two interesting options to validate with the users.

In figure 2 we can see the behavior obtained for the four conditioner formulas in the two types of tresses. The graphs show that the conditioner that presented the best performance was conditioner 1 since it presented the lowest combability values in the two types of tresses, both wet and dry. Formula 2 has good behavior, but in wet natural tresses, it presents a significant difference vs formula 1, so the comb exerts greater force. In treated hair, formulas 1, 2, and 3 do not present a significant difference between them. Formula 4 was the one with the lowest performance both wet and dry.

Formula 1 has two conditioning agents, we consider the mix conditioning agent 1 at 2 % enhance the performance in combability and the unique combination with conditioning agent 2 at 1% that is strong softening agent can be explain the good performance obtained.

Home Use Test

The formulas chosen for the routine evaluation for shampoo were 1 and 3. The formula for conditioner chosen for the routine evaluation was 1.

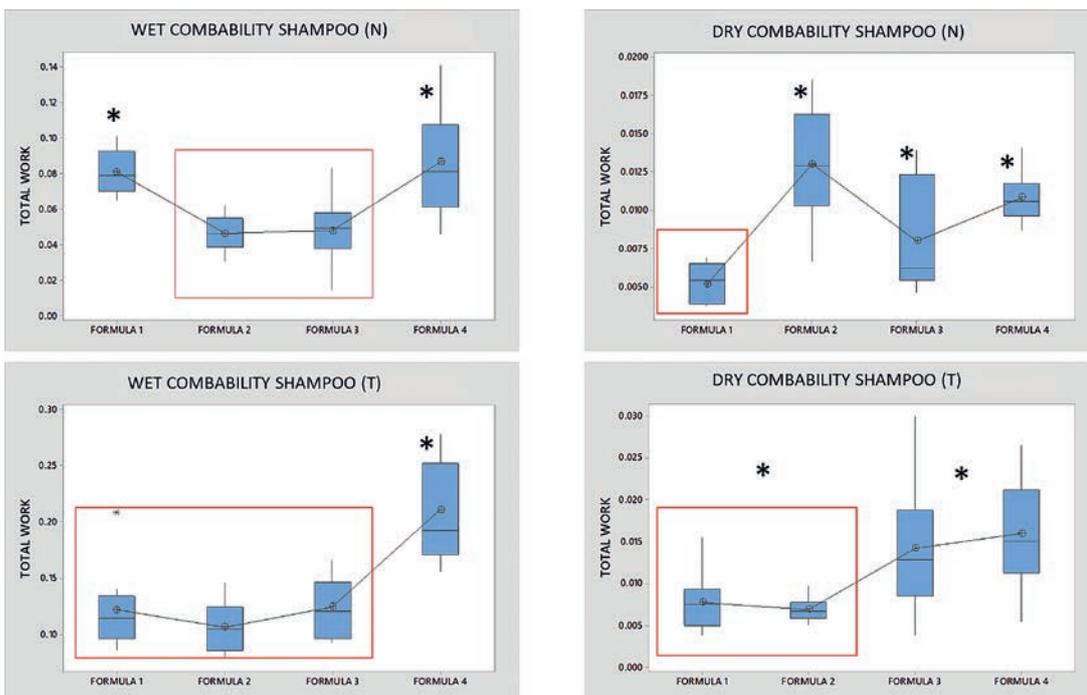


Figure 1. Results combability for shampoo

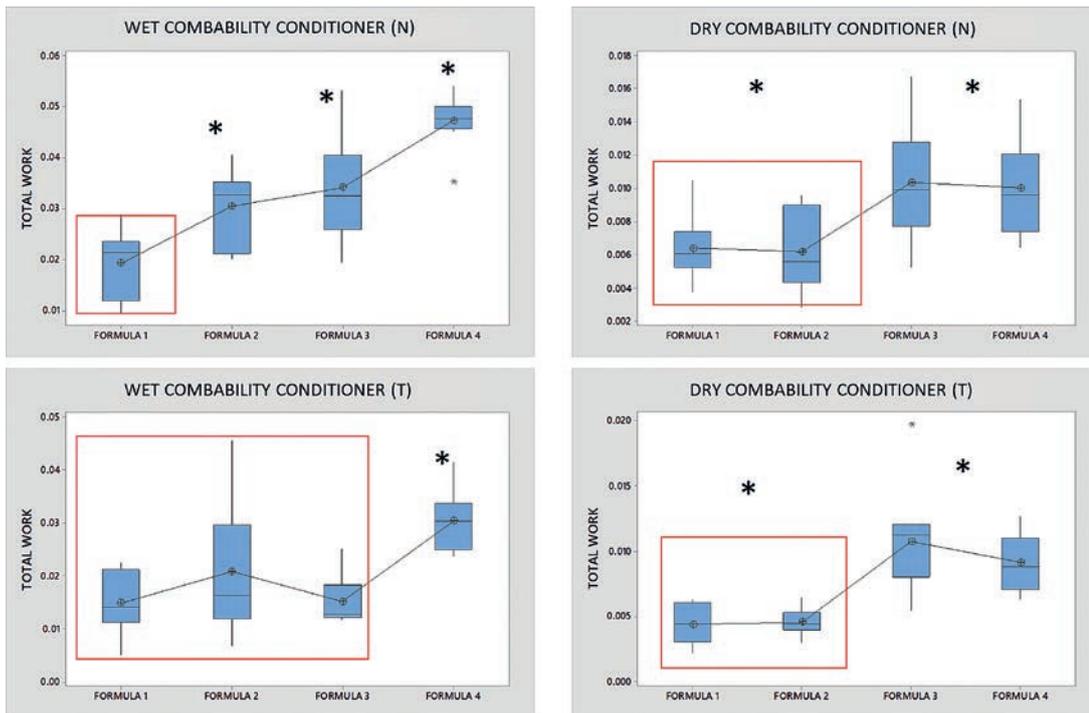


Figure 2. Results combability for Conditioner

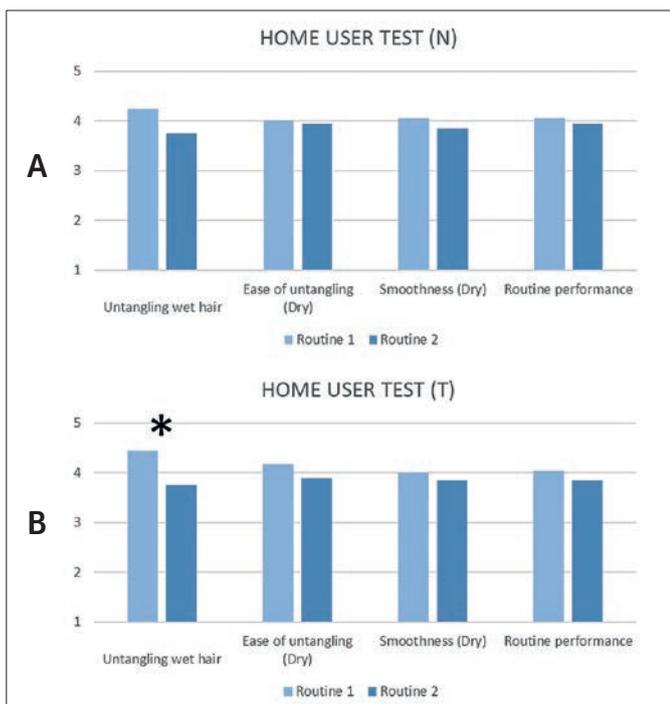


Figure 3. Home user test – A natural hair / B treated hair

The survey was rated from 1 to 5 where 1 was the lowest score and five the highest score for the users indicating that which was their perception.

The figures 3 shows the result about the home test use.

For natural hair users, attributes such as wet detangling and dry smoothness were more appreciated with routine 1, and there is a significant difference from routine 2. While dry detangling ease and performance of the routine still score better for routine 1, there is no significant difference.

The two routines presented good results in the preliminary home test in all parameters evaluated. Analyzing these results using a non-parametric statistic $p < 0.05$, statistically significant dif-

ference was found for wet detangling for users with treated hair. We can see a trend for dry detangling and smoothness with the routine 1 indicating a potential better performance and liking for this routine.

We can observe that the routine with the Shampoo 1, that was the best qualified in the laboratory test with the best conditioner probably will present best performance for two types of hair, natural and treated. We suggest the routine 1 (Shampoo 1/Conditioner 1) for the user with the two types of hair evaluating them in a sample home test more representative.

Conclusions

In our market in Latam, we have great diversity in hair, and for that reason is very important develop formulation base that can have good performance in all type of hair. This work contributes to validate formulation base that can be useful to start the development process of basic routines for different consumers.

Acknowledgement

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Achieving Instant Gratification

Investing in the Millennial's Dream

By Anne Charpentier

Hair is an integral part of one's identity, and people around the world place a great deal of importance on its look and style. Consumers are now looking for more inclusive, natural, ethical, and sustainable products that can help them improve their hair grooming rituals while still providing the necessary cleansing and caring benefits.

Taking care of the scalp and hair is an essential part of any daily beauty regimen. The 3 main objectives of this routine are mainly:

- **Maintain the good condition** of this unique scalp-hair ecosystem considering the internal triggers (stress, diet ...): Exfoliation, Moisture, sebum, sweat, microbiota (*Malassezia*), acidic pH ...
- **Cure and protect** it from external aggressions such as UV, heat, and various pollution...
- **Give the hair a makeover, make it more attractive** and change its style and appearance.

Biometrological measurements to assess hair care performance.

Evaluating the efficacy and safety of hair and scalp grooming products and treatments, as well as improving them for the beauty market, is a key part of R&D. For this, clinical tests, biometrological studies, and in-vivo or hair strand tests are used. However, the challenge for evaluation managers and cosmetic chemists is to find the **right method, a reliable protocol, and a suitable testing partner.**

A multitude of benefits whatever is the type and ethnicity of hair: **Care, Volume, Anti-Frizz, Smoothing, Flat Hair, Repair, Gloss, Shine, Colour, Fine Hair, Curly Hair, straightening effect, Restore, Anti-Sebum, Anti-Dandruff, UV Protection, Anti-Breakage, Moisturising ...**



The various biometrological measurements dedicated to fibres, strands and hair testing are focusing different targets: **the scalp, the cuticle, the cortex, the hair structure** and mechanisms or the growth and can be implemented under controlled conditions of temperature, hygrometry, and humidity (Bossa Nova Humidity Chamber) ...

What are the best practices for assessing haircare products? A comprehensive approach should be taken, which includes a panel tailored to the product's claims, clinical scoring, self-evaluation, instrumental measurements, samples for analysis (such as scanning electron microscopy and microbiota), and illustrative pictures. Additionally, it is recommended to include protocols such as scoring by dermatologists or hairdressers, consumer insights via lifestyle questionnaires, sensory analysis, and emotion studies.

The study of the hair can be classified in 3 main areas:

- The analysis of the **chemical properties** with the measure of the colour and the permeability of the hair,
- The measurement of the **mechanical properties** of the hair
- The study of the **hair volume and the fibres aspect**
- The evaluation of the **scalp conditions** and the aspect of its surface

At Testing Laboratories, hair locks are tested in a controlled environment with a specific temperature and humidity. Standardised hair tresses are used to accommodate different types of hair, such as Caucasian, Asian, Brazilian, African, straight, wavy, or curly. Treatments can be done prior to product application to assess its effectiveness on weakened hair. Additionally, real-life scenarios such as sun exposure, sea exposure, swimming-pool exposure, and sports activities can be simulated to better back up innovative cosmetic claims.



1. Chemical properties

- **Colour and brightness** and permeation, Colour Fade, bleaching test using: Goniolux (*Orion*), GlossyMeter (*C+K*), SkinColor-Catch & SkinGlossMeter, Samba Hair, Mambo, Salsa and Brightness index using the Samba Hair (*Bossa Nova*), SkinCam & SpectraCam (*Newtone*), C-Cube CR (*Pixience*), OptoSurf (*Eotech*).
- **Hair permeability:** infra-red microscopy, Confocal microscopy, Scanning electron microscopy, Optical multiphoton tomography, Atomic Force Microscopy ...
- **Hair protection:** against temperature, radiation, chemicals, odour, or anti-pollution assessment. With anti-pollution end points such as Malondialdehyde (MDA), free fatty acids, the melanin and protein content, and Tryptophan degradation.

2. Mechanical properties

- **Fibre aspects** and swelling Analysis: hair cross-section by dimensional Analysis
- **Mechanical properties analysis** (Young's modulus, Extension to breakage, Stress to break), thanks to the Micro-Tensile Tester MTT675 extensometer coupled to the FDAS. This technique evaluates the impact of hair treatments on the mechanical characteristics of the treated fibers.
- **Combing and abrasion of the hair:** Friba.one, Sirtaki (*Bossa Nova*), Fibrestress. Micro-Tensile Tester MTT175 extensometer.

3. Hair volume and straightness, and anti-frizz effect: 3D reconstruction of a Bolero and Rumba (*Bossa Nova*).

4. Scalp conditions and skinification performance

Are you a R&D manager or Cosmetics chemist looking to study the scalp? If so, you can access the Clinical testing Platform for free and find all the instrumentation and tests used to analyze the scalp. These tests are adapted to the surface topology and size of the area being studied and can be conducted in-vivo on men or women. The results can be quantified and visualized to get the best results you want for your products or actives. How do the

methods used to study the scalp compare to those used to study the skin?

- **Moisturizing effect:** MoistureMap & Corneometer (C+K), Dermalab Hydration, Aquaflux & Epsilon (Biox), MoistureMeter SC, MoistureMeterEpi, MoistureMeterD, C-Cube (Pixience)
- **Barrier Function and scalp protection:** Vapometer, Aquaflux (Biox), pH-meter measures, or the Tewameter Nano (C+K). Scalp visualization: VisioScan (C+K), Antera 3D (Miravex), C-Cube (Pixience), Skin Damage Vizualizer and all dermoscopes ...
- **Soothing effect:** Tivi 700 & Tivi 8000 (Wheesbridge), Thermographie infrar-red, Neurometer, C-Cube (Pixience) ...
- **Seboregulation:** QuantiSeb, DermaLab Sebum, Sebumeter (C+K), SebumScale including sebum analysis: Shotgun mass spectrometry, Metabolimic MS/MS-16srDNA-PCR (Phylogene), Raman microscopy, ATR-FTIR spectroscopy (Newtone) ...
- **Anti-Dandruff** by gravimetry and imaging, DandruffMeter (C+K), C-Cube (Pixience) ...
- **Hair loss and hair growth and density** by phototrichogram, C-Cube (Pixience), Trichoscan, SkinCam (Newtone).
- **Microbiome of the scalp:** Propionibacterium acnes, Staphylococcus epidermidis, Malassezia. Metagenomic analysis such as 16s ribosomal gene sequencing (Phylogene).

As consumers become increasingly aware of the need for eco-responsibility, a new trend is emerging in the form of biodegradability and ecotoxicology tests. Additionally, tests are being developed to measure the amount of water needed to rinse both solid and liquid products.

How is the new digital era impacting the beauty lifestyle and the personalisation of the hair care experience? It is pushing hair salons into the digital age with the use of hair diagnostics and augmented reality solutions. This allows for the analysis of the fibre and scalp, making a diagnosis and personalising hair care treatment on-site based on a client's hair data.



Anne Charpentier is the founder and ceo of Skinobs, two unique and worldwide platforms for both Clinical & Preclinical testing and a news feed and press review dedicated to the evaluation field for ingredients, personal care & cosmetics. She has over 30-year experience as marketing developer in the cosmetics, firstly in the field of clinical testing and then in the field of active ingredients.

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Validating cosmetic and personal care products with biobased testing

By Jordan Turner *

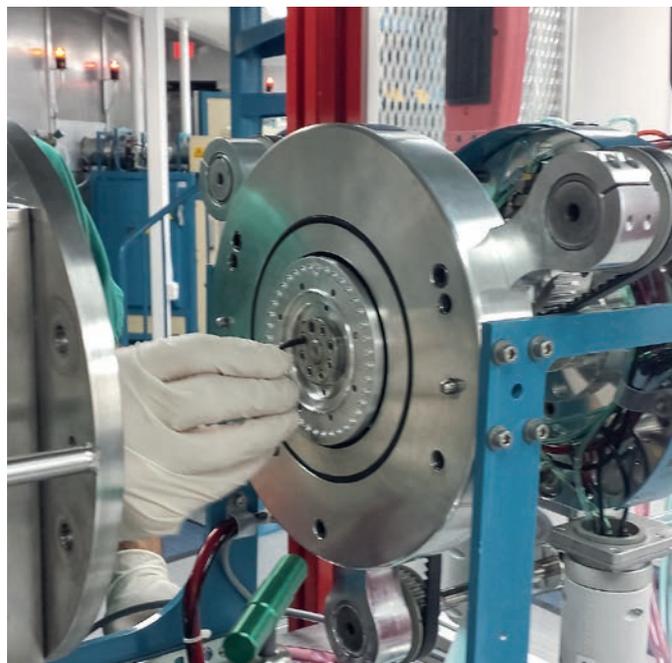


As awareness of sustainability concerns grows, consumers are becoming more conscious of product ingredients when making purchases, favoring eco-friendly products and biomass-derived ingredients. In 2021, a study revealed that 63% of the world's population are shifting their purchasing habits in favor of sustainable products with 34% of consumers expressing a willingness to pay more for products and services that are sustainable.¹ To meet these shifting market demands and ensure their products can withstand consumer's scrutiny, distributors and manufacturers in the personal care and cosmetics industries seek to formulate their products using biobased ingredients. In addition, many aim to support label and marketing claims by obtaining eco-labels and biobased certifications to attest to the integrity of their products. In order to achieve this, validation of the biobased percentage of ingredients in these products can be obtained through biobased testing via test standards such as ASTM D6866.

Biobased testing authenticates biomass-derived products

Carbon-14, or radiocarbon, is a radioactive isotope that is absorbed by living organisms from the atmosphere via respiration or through the food chain. All living organisms contain a certain amount of carbon-14 but materials that are petrochemical-derived do not. For this reason, radiocarbon (carbon-14) analysis is an accurate method for determining what amount of carbon in a material comes from biomass sources as opposed to petrochemical sources. The test is performed via Accelerator Mass Spectrometry (AMS) according to internationally recognized standards such as ASTM D6866, CEN/TS 16137, and ISO 16620-2. It is applicable to solid, liquid, and gas samples.²

The United States Department of Agriculture (USDA) defines biobased products as "products composed in whole or in significant part, of biological products, including renewable domestic agricultural materials, renewable chemicals, and forestry materials; or an intermediate ingredient or feedstock".³ Biobased materials can be used to formulate a wide range of products including



An Accelerator Mass Spectrometry (AMS) instrument is used to measure radiocarbon. Credit: Beta Analytic

packaging, skincare, personal care items, and cosmetics. Biobased testing is used to verify the percentage of a sample that is derived from biomass versus petrochemical-sourced ingredients. Results are reported as a percentage between 0% to 100% biobased content. A higher biobased percentage indicates a greater amount of biomass-sourced material in the sample whereas a lower percentage shows a greater proportion of petrochemical-derived substances.

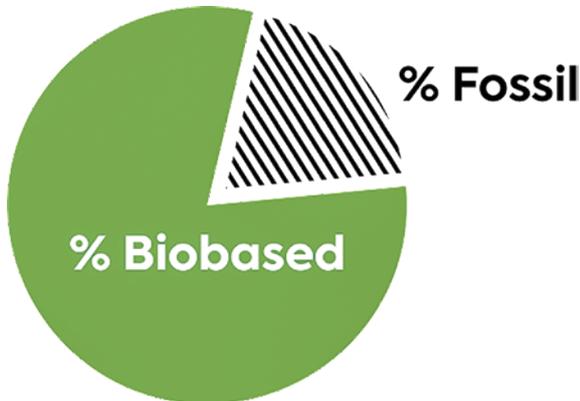
Validating the biobased content of products is a useful tool for preventing the practice of greenwashing, a deceitful advertising tactic used to mislead eco-conscious consumers via false claims and labeling.⁴ Additionally, it supports label and marketing claims, increases product and brand confidence for sustainable-minded consumers, and is often required during the application process to qualify for eco-label and biobased certification programs.

Biobased certification programs require biobased test results

Biobased certification and eco-label programs provide consumers with visual proof that the product is formulated using biobased ingredients. Eligible products can display a logo on their packaging attesting to its certification as a product that meets biobased

Marketing Coordinator at Beta Analytic, www.betalabservices.com

content standards designated by that program. Certification programs include the United States Department of Agriculture (USDA) BioPreferred® Program, Din Certco DIN-Geprüft Biobased Scheme, and TUV Austria's Vinçotte OK Biobased program. Each of these programs requires biobased testing via carbon-14 analysis for products to qualify for their certification.



USDA BioPreferred® Program

The USDA BioPreferred® Program requires companies to apply for the certification program and conduct testing after their application is approved. Samples must be submitted to an approved ISO 17025-accredited carbon-14 testing laboratory that performs biobased content testing. If the results of this test meet the USDA's minimum biobased content percentage requirements, the product is allowed to display the USDA Certified Biobased eco-label on its packaging.⁵ For example, cosmetics require a minimum of 25% biobased content to qualify for the eco-label. Sunscreen requires 53% biobased content, 73% biobased for deodorants, 88% biobased for facial care products, and 62% biobased content for personal care product components such as surfactants, oils, humectants, emollients, or emulsifiers.⁶

Din Certco DIN-Geprüft Biobased Scheme

Germany-based Din Certco offers certification through their DIN-Geprüft Biobased Scheme, which allows eligible products to display their eco-label that specifies the percentage of biobased content in the product. To qualify, biobased testing must be conducted according to the ASTM D6866, CEN/TS 16137, or ISO 16620 standard. The scheme accepts products that have a percentage of biobased content that falls within three ranges: 20–50%, 50–85%, or >85% biobased content.⁷

TUV Austria's Vinçotte OK Biobased program

TUV Austria's Vinçotte OK Biobased program requires participants to apply for the OK Biobased eco-label then have the product tested for biobased content. Qualified products must be manufactured from materials with at least 20% biobased carbon content.⁸

Certification programs such as these allow companies to prove to their consumers that the products they're purchasing are truly derived from biomass and prevent concerns related to mislabeling and greenwashing.

Conclusion

Biobased testing through carbon-14 analysis is a reliable tool that gives manufacturers and distributors of personal care and cosmetic products the ability to validate the percentage of biobased content in their ingredients, support label and marketing claims, prove they do not participate in the dishonest practice of greenwashing, and qualify for eco-labels and biobased certification schemes. These eco-labels help increase consumer confidence and serve as an easily identifiable indication of a product's use of sustainable, biomass-derived ingredients which is a growing factor in consumer purchasing decisions in the cosmetic and personal care industries.

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Media Lab Science – The Voice of Science and Beauty

As the beauty and personal care market continues to evolve, companies are seeking new ways to substantiate their product claims while also engaging with consumers in a more meaningful way.

Soliciting feedback from real consumers allows beauty brands to contextualize and monetize the testing process in a way that traditional clinical efficacy testing simply cannot replicate. This feedback is invaluable in not only substantiating product claims but also in helping brands to better understand their target audience and improve upon their products in a way that resonates with consumers.

This approach is new to the market, and it allows to capture their users' testimonials, before-and-after photography, selfie style reviews, and short-form video content for distribution across multiple social media and other promotional platforms. This approach not only helps to showcase the effectiveness of beauty brands products but also creates a powerful form of authentic, user-generated content that can be leveraged to engage with consumers and build brand awareness and trust.

Media Lab Science, part of ALS Global, is the only consumer beauty product testing company of its kind to perform these ser-

vices of capturing clinical data then presenting it in user-generated-style content. This approach allows us to offer our clients an unprecedented level of value and stand-out content, by packaging both the clinical data and the user-generated content for seamless distribution and syndication, all produced in one location.

At Media Lab Science, we are proud to be leading the way in innovation for consumer products testing services that resonates on an emotional, and trustworthy way, for the consumer. With an international clientele and a reputation for excellence, we are committed to helping our clients achieve their goals while also engaging with consumers in a more significant way.

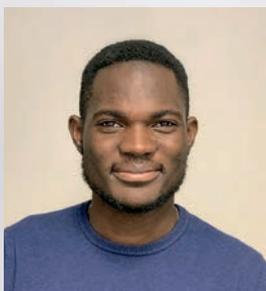
If you are interested in learning more about how Media Lab Science can help you achieve your product testing and marketing goals, we encourage you to contact us today. With our unique approach to consumer products testing services, we are confident that we can help you achieve your goals and set your brand apart in a crowded marketplace.

At Media Lab Science in Studio City, CA, we have discovered a unique opportunity to achieve both of these goals through the integration of high-quality user-generated content arising organically as a product of the conventional clinical testing process. ■



Before and after result

BIOLIE, the largest French portfolio of natural upcycled ingredients



By Jordan Yeboah

Jordan Yeboah is a technical sales engineer at BIOLIE based in Houston, Texas. Having a chemical engineering background with a focus on innovative products, he uses his expertise to support cosmetic companies on their clean beauty projects.



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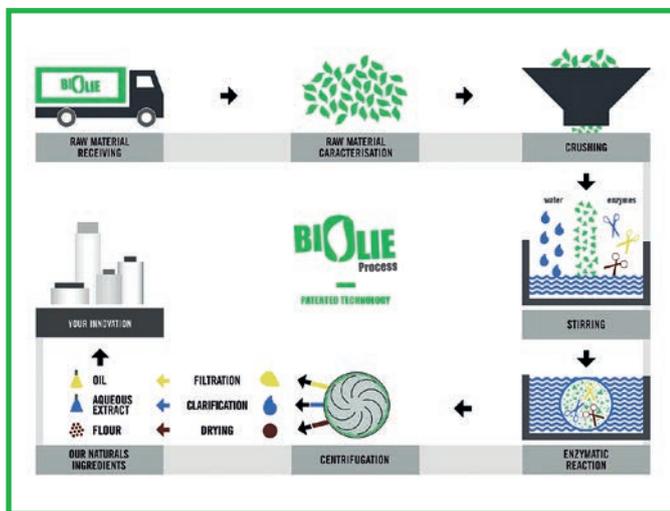
Who is BIOLIE ?

BIOLIE is a French company specialized in the development of upcycled and sustainable ingredients for the cosmetics, nutraceuticals and nutrition-health markets. Recently, BIOLIE opened an office in the USA which is located in Houston, Texas.

Two of BIOLIE's founders are researchers from the University of Lorraine, France. They developed a patented enzymatic extraction process, allowing to obtain high quality and clean ingredients.

Indeed, this process only requires water as a solvent, as opposed to other extraction methods that imply organic solvents, often harmful for both the environment and for health.

To avoid having resort to them, other methods exist, such as supercritical CO₂ extraction or subcritical water extraction, but the temperature and pressure conditions make them high-energy-consuming processes. BIOLIE's clean technology is a low-energy consuming mild process as described on the picture below.



This technology is composed of simple steps, such as: grinding, enzymatic hydrolysis, and centrifugation. The latter allows to separate the mix into 3 fractions: a lipophilic fraction, an aqueous fraction, and a solid fraction. The aqueous and the lipophilic fraction are used as ingredients and the solid fraction, although is sometimes used as an ingredient too, is mostly turned into compost or valorized as biogas. In other words, BIOLIE works in a zero-waste concept.

The ingredient's quality is guaranteed by BIOLIE's unique tool: Screenzym. Screenzym is a two-step method to assess the efficacy of enzymes alone and combined. Enzymatic hydrolysis is carried out in microplates with very low volumes. The extracts are then tested with standard methods to identify their activity. This tool enables the R&D team to identify which enzyme to use and to optimize the process parameters to obtain high quality ingredients, rich in active molecules, vitamins, polyphenols, proteins, peptides, carbohydrates, among others. This is a way to enhance a biological activity (anti-ageing, soothing, antioxidant, firming ...)

The use of enzymes also allows to obtain never-seen-before ingredients that cannot be obtained by traditional extraction method.

What does BIOLIE offer?

R&D Services

BIOLIE offers both the ingredients in the portfolio R&D services. The R&D services consist in custom made development for brands, contract manufacturers or raw material suppliers that wish to own their ingredient, produced with BIOLIE's expertise. In that case, the company benefitting from the R&D services would become the exclusive owner of the ingredient. BIOLIE would then manufacture the tailor-made ingredient. Such service does not imply a minimum order quantity for the developed ingredient.

Thanks to a wide network of partners, BIOLIE offers complete R&D services that go from sourcing raw materials, characterizing them and testing them to working on efficacy, safety, regulations, certifications and marketing.

Cosmetics ingredient portfolio

BIOLIE owns the largest portfolio of upcycled ingredients in France. The enzymatic extraction process allowed to develop 5 ranges of unique upcycled ingredients, all COSMOS-approved or COSMOS-certified:

- Water-based actives: they are ingredients obtained from upcycled fruits, flowers, vegetables, plants, seeds and their activity was scientifically proven with clinical studies, in-vitro studies, ex-vivo studies ... Several activities are claimed, including soothing, anti-inflammatory, antioxidant, anti-pollution, preservation-boosting, whitening, anti-ageing, firming, skin repairing, moisturizing, anti-stretchmarks.
- Vegetable oils: they are unique upcycled oils rich in nutrients that have amazing properties for skin and hair. Some of them have strong pleasant smells and can allow to remove fragrances or essential oil from formulations. Their composition also gives them interesting touch feeling, ranging from dry to greasy. BIOLIE offers, Mirabelle Plum seed oil, Beech seed oil, Vosgian Fir seed oil, Chicory seed oil, Apricot kernel oil and Hemp seed oil.
- Rainb'Oils: these are vegetable extracts in deodorized organic COSMOS-certified sunflower seed oil. In addition of being natural emollients, each vegetable extract brings a specificity to the ingredients in terms of activity. Moreover, they bring a nice color to the formulation and can fully replace synthetic dyes or colorants. The color range is wide, including red to pink, yellow, green, orange, and the colors can be combined to create new ones!
- Vegetable active waters: they are COSMOS-certified fruit extracts that can partially or totally replace water in a formulation. In addition of increasing the content of organic ingredients in a formulation, they are anti-collagenase and anti-tyrosinase. In other words, they constitute a strong ally to keep the skin firm and fight against age spots. Some of them also bring nutrients to the natural skin microbiota and another has an antioxidant activity that is comparable with vitamin C!
- Botanical extracts: they are natural extracts obtained from plants rich in nutrients with different properties.



Suitable For All Skin Types – Are We Sure?

By Theresa Callaghan PhD

No-one can deny that if we were able to create a skincare routine that was suitable for all skin types life would be much easier – if less profitable. However, as we should know, life is not like this and we have billions of different skin types, all requiring varying degrees of attention. From dry skin to oily skin; baby skin to adult skin; Celtic skin to African skin; male skin to female skin; and everything in between from, sensitive skins to “normal” skins; wrinkles to fine lines; zits to atopy; blotches to tattoos; you name it, the cosmetic industry is adept to “jumping”. Claims abound keeping the likes of me and others, on their toes.

However, products “suitable for all skin types” is an understandable desire, whereby the products would be suitable for children, adult females and adult males. This is typical of soaps and shower gels and even shampoos and conditioners for “all the family”. Furthermore, who hasn’t passed the big blue pot of Nivea around the family at some point, or even aftersun gels. All well and good. Careful investigations have demonstrated that for the basic products this is possible, if the products are well formulated, safety scrutinised, and testing is conducted on all age groups – both male and female – producing both age neutral and gender neutral products.

Now I am throwing a “spanner in the works”!

We have seen in recent weeks, the uproar over the so-called woke agenda when it comes to the gender transition debate. The backlash¹ was so strong it caused market shares to tumble, and even strong criticism from a number of men who had “transitioned” e.g. Caitlyn Jenner. What I am talking about is the lack of judgement when brands jumped on yet another bandwagon before real consideration of what they were doing in order to make another fast buck – it did not work. Beer aside, cosmetic brands also supporting this particular trans lobby need to be careful – especially those brands whose products were not developed for either “males” or “suitable for all skin types”. Moral, ethical, and political issues aside, let’s look at the issues from a “scientific” vantage, as well as claims compliance.

In order for an XX female to transition to “male” traits, or an XY male to transition to “female” traits, they have to undergo a series of treatments and procedures, that are not for the faint-of-heart, and with many of these patients some compassion is required. From the dermatological aspect, the barrage of hormonal intervention results in a number of visible changes such as acne, ato-

py, hirsutism, cellulite, and menopausal issues, to name a few.²⁻⁸ Moreover, does the skin of a transitioner at the age of 50 years have the same characteristics as a transitioner aged 50 who had transitioned when they were 20 years old?

Unfortunately, the scientific literature is almost devoid of pre-clinical studies focusing on hormonal, physiological, biochemical and structural changes in transgender skin (pre-pubescent and post-pubescent), in terms of the epidermis, dermis and hypodermis. A transitioned male is still male genetically, and a transitioned female is still female, and often interventions such as botox and plastic aesthetics are required to feminise or vice versa. The male/female traits may be “suppressed” with hormones and the like, but the genetic reality (XY/XX), can’t be undone.

Without a clear understanding of the triggering of skin changes, how can effective skin care for these two “new” skin types, be developed? Suggesting that current and established anti-ageing or barrier affirming products are “suitable”, when they were in fact developed and tested on non-transitioned females and in some cases non-transitioned males, is insufficient to be properly claims compliant. Investigation into “trans” skin types requires further focused study, and skincare ranges for those skin types developed. If it is found that during the course of research I am suggesting, that current skin care lines are suitable for these skin types, then and only then could the claim “suitable for all skin types” be justified. What bandwagon these brands then choose to jump on is between them, the consumer, investors, and regulatory authorities. Given the overt FMCG nature of the industry, it has to decide if this is worth pursuing given the high cost of investment versus the ROI, for such a small section of society?

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Based in Hamburg, **Dr Theresa Callaghan** has international career spanning more than 30 years, having worked for a number of well-respected personal care companies at the senior level including LVMH-Dior, Unilever, Marks & Spencer, J&J, Evonik and proDERM. In 2008 she set up her own consulting business, anticipating a need for more discipline of cosmetic claims, and furthering scientific developments involved in that process. As a scientist and the author of the popular book *Help! I'm Covered in Adjectives: Cosmetic Claims & The Consumer* (available from Amazon) Callaghan is also widely published with more than 120 papers. She gives regular workshops and presentations internationally and is a major contributor for peer-reviewed and trade journals, as well as authoring behalf of clients internationally. Theresa is also a lecturer on the MSc course for Cosmetic Science at the university of Sunderland (UK). In addition she has appeared in number of press articles, interviews and podcasts and even has her own website and YouTube channel for cosmetic claims. **Theresa Callaghan is also a regular contributor to our monthly newsletter.**



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Artemisia capillaris (Adobe Stock)

Ichimaru Pharcos has launched HyaluGuard, the warrior of dermal matrix against sagging, at in-cosmetics global

HyaluGuard inhibits the degradation of hyaluronic acid (HA) in fibroblasts and works to reduce skin sagging and wrinkle. In the epidermis, HA was known to be cleaved by HYAL1/2. In the dermis, on the other hand, HYBID (Hyaluronan-Binding protein Involved in hyaluronan Depolymerization) is recently identified as a major HA cleavage enzyme. Natural aging and extrinsic stimuli like UV and histamine promote the expression of HYBID.

This is a major cause of dermal sagging and wrinkles. Ichimaru Pharcos tried to suppress HYBID by natural ingredient and found Artemisia capillaris flower extract.

Characteristics:

- Inhibition of expression of HYBID
- Reduction of skin sagging
- Reduction of skin wrinkle
- Increase in moisture content

HyaluGuard is manufactured using 1,3-Butylene Glycol which is obtained from Sugarcane.

www.ichimaru.co.jp



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Sun Chemical introduced new effect pigments at in-cosmetics global

During in-cosmetics Global 2023, under the campaign theme *Beauty is colorful. We are the color experts.*, Sun Chemical presented new effect pigments.

Sun Chemical presented SunPRIZMA™, a new range of 11 silica-based color travel effect pigments. Offered in two particle size ranges, this innovative line offers high coverage, multi-chrome effects for intense bold looks and glittering color travel for striking sparkle finishes.

Sun Chemical also showcased Reflects™ Dimensions Platinum G13CD, a silver, sparkling, metallic-like effect pigment based on borosilicate.

In line with today's most influential trend in the cosmetic industry, Sun Chemical also featured its naturals portfolio, including the recently launched line of six new plant-derived natural colorants and functional ingredients, SunPURO® Naturals.

<https://www.sunchemical.com>



Mibelle new launch: TiMOOD™

Neuroactive power to look and feel good

In a global society characterized by more and more people feeling stressed, the concept of emotional wellbeing and has become increasingly important.

Skin that feels good can boost one's mood; not only consciously due to a visible improvement of the facial appearance but also unconsciously via the skin-brain axis. This link between the skin and brain is achieved by signaling via released molecules as well as through the direct connection by nerve cells.

Our newest launch TiMOOD™ has been shown improve emotional wellbeing in stressed volunteers leading to a more relaxed state. Based on timut pepper, a spice plant from the Himalayas, it can improve neuronal function in the skin and thereby increase skin homogeneity. Moreover, TiMOOD™ positively influences the mood and emotional wellbeing.

Benefits of TiMOOD™:

- Protects neurons from aging
- Supports a healthy and even skin complexion
- Improves wellbeing under stress
- Stimulates the skin-brain connection

mibellebiochemistry.com



Timut pepper (Adobe Stock)

Lubrizon Announces New Argireline® YOUth peptide

A preventive solution to slow down the signs of aging without compromising authenticity

Younger consumers today are increasingly seeking cosmetic procedures to prevent the onset of expression lines, with botulinum toxin injections being a popular choice. Lubrizon Life Science Beauty (LLS Beauty) has developed an exciting alternative based on its time-tested Argireline® peptide.

For over 20 years, the original Argireline® peptide has been the go-to ingredient for those looking to smooth out wrinkles and now, the new Argireline® YOUth peptide can be expanded to new applications, including oil-based skincare, especially transparent serums, oils and sticks. This is thanks to the patented LipoClear™ inverse micelle delivery system developed by LLS Beauty, which allows for the creation of an oil soluble active ingredient.

Results of the in vivo efficacy testing of Argireline® YOUth peptide include:

- Minimized appearance of expression lines, without compromising the smile expression.
- Shorter and less visible wrinkles around the eyes.
- Smoother skin around the eyes and in the nasolabial and forehead regions.
- Minimized appearance of “tech neck” lines.

0 days

28 days



Shorter and less visible wrinkles around the eyes

0 days

28 days



Minimized appearance of neck folds

To learn more about Argireline® YOUth peptide, visit Argireline YOUth peptide.

www.lubrizon.com

Seppic – SEPIBLISS™ FEEL

Selfcare is beyond physical appearance and considers also the comfort improvement and emotions brought by cosmetics. Knowing that feeling good is impacting the way we look, Seppic created SEPIBLISS™ FEEL.

SEPIBLISS™ FEEL is a patented active ingredient acting on the skin and mind for a holistic beauty experience. Extracted from coriander seeds sourced in France, this natural oil is the result of a specific process to guarantee excellent skin safety. Its high percentage of petroselinic acid, a fatty acid known for its soothing properties, makes it an ingredient with unique properties.

Via innovative *in vitro* models, it has been demonstrated:

An effect similar to that of acupuncture (reduction of an oxidative stress marker)

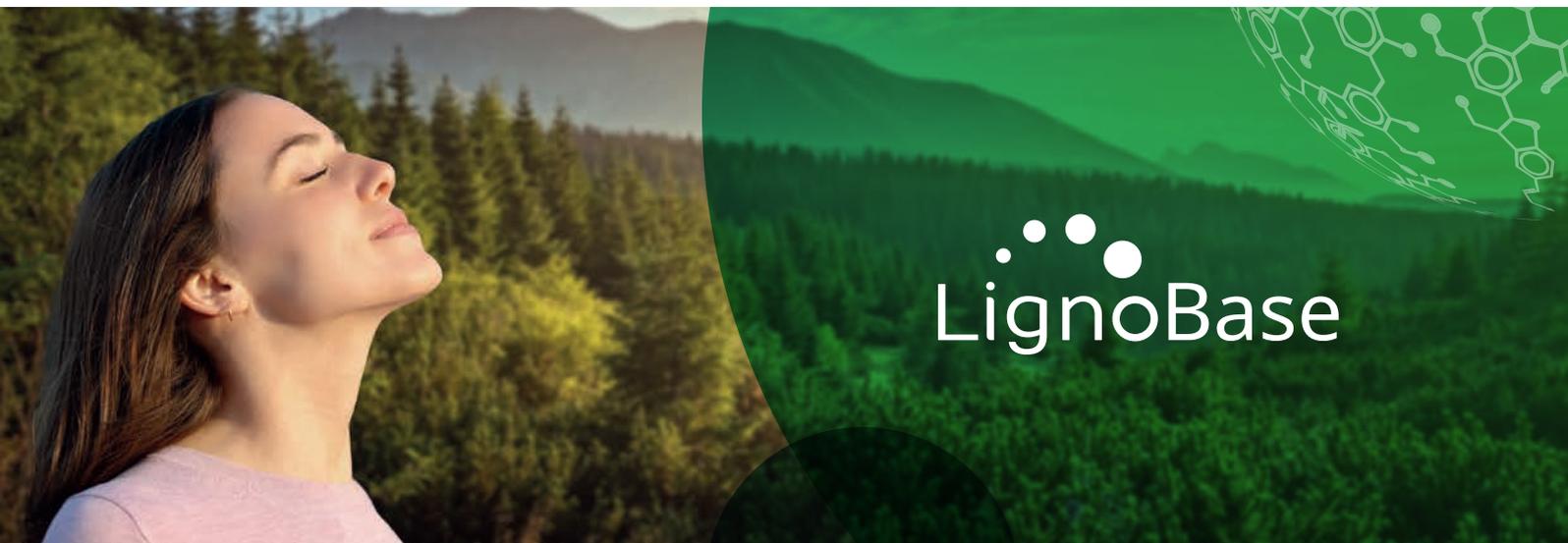
- Protection of the production of happiness molecules (β -endorphins and oxytocins)
- Soothing properties (inhibition of key factors in the inflammation process and neuronal protection)

Via *in vivo* tests in formulation, it has been demonstrated that:

- SEPIBLISS™ FEEL provides a nourishing, soothing and comforting effect that was not detected for the placebo.
- 63% of volunteers also perceive a feeling of well-being when using the formula containing SEPIBLISS™ FEEL compared to 35% for the placebo formula.

www.seppic.com

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The first lignin-based multifunctional ingredient for cosmetic formulations

LignoBase™ is a non-nano ingredient line suitable for vegan products and made from upcycled, sustainably sourced materials that transfers the natural protective properties of lignin into cosmetic formulations.

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For more information visit www.lignopure.com



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www.ifsc2023.com

Farbe neu erleben mit der Sommerkollektion Make the Rules von OPI #OPISummerMakeTheRules

Verspielte Energie und sorgloser Hedonismus mit der Summer Make the Rules Collection von OPI. Klassische Pastelltöne und leuchtende Farben werden neu interpretiert, indem beide Stile miteinander zu einer Palette von 12 frischen, fröhlichen hellen Pastelltönen kombiniert werden.

Die Kollektion umfasst vier leuchtende Perlmuttertöne mit einem neuen, noch nie dagewesenen Schimmereffekt, der die Farben von innen heraus leuchten lässt. Zitronengelb, pfirsichfarbenes Nude, Lavendel und Himmelblau - jeder dieser Perlentöne hat eine Ausstrahlung, die Finger und Zehen zum Strahlen bringt.

Colibri Beauty GmbH
www.colibri-beauty.de



Matte Bronzer oder Shimmer Bronzer – mit der PureBronze-Kollektion von jane iredale ein sonnengeküsster, glowy Look

Wer sich den perfekten Sommerglow schenken möchte, hat mit den drei matten und vier schimmernden Bronzer-Varianten der PureBronze Kollektion von jane iredale die idealen Helfer gefunden. Denn Bronzer sorgen für einen sommerlichen, strahlenden Teint, indem sie dem Gesicht eine leichte und natürliche Bräune verleihen. Und das, ganz ohne sich der Sonne auszusetzen. Zusätzlich lassen sie sich auch gut zum Konturieren des Gesichtes verwenden.

Der neue Matte Bronzer ist in den drei Farbnuancen Dark (Schokoladenbraun), Medium (Karamellbraun) und Light (Hellbraun) erhältlich. Den Shimmer Bronzer gibt es in den Farbvarianten Copper Dusk (Kupferschimmer-Bronzer), Moonglow (Goldschimmer-Bronzer), Peaches & Cream (Pfirsichschimmer-Bronzer) und Rose Dawn (Rosaschimmer-Bronzer).

Erbältlich unter www.zeitwunder-shop

Zum Muttertag sinnliche Verwöihnmente

Charme und viel Freude versprüht das neue Geschenk-Set von La mer – und bringt jede Menge Pflege-Power aus dem hohen Norden mit: das Exklusiv-Set aus sanft verwöhnender Dusch- und Körpercreme – ein unwiderstehlich duftendes Hautpfleegerlebnis für alle Sinne, das keine Wünsche offen lässt. Liebe auf den ersten Blick: Tube und Tiegel des Exklusiv-Sets erstrahlen in frühlingshaften weiß-rosa Streifen mit rotem Herzchen, verpackt in einer kleinen weißen Canvas-Pouch.

Die blumig-pudrig duftende Duschcreme mit dem einzigartigen La mer Meeresschlick-Extrakt und nährendem Avocadoöl pflegt die Haut bereits beim Duschen und verleiht ihr ein streichelzartes Hautgefühl. Die ebenso himmlisch duftende Körpercreme enthält neben dem wirkstoffreichen Meeresschlick-Extrakt und Avocadoöl außerdem Sheabutter, die die Haut optimal pflegt und ihr neben einem samtig-weichen Gefühl auch ein frisches Aussehen schenkt. Dank der zart schmelzenden Konsistenz lässt sich die Creme mit der geballten Pflegekraft des Meeres leicht auftragen und angenehm verteilen – ein herrlich entspanntes Körperpflegeritual, das allen Müttern in ihrem hektischen Alltag einen kleinen Verwöihnmoment beschert.

GOSSIP+ Public Relations GmbH
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Cosmetics lines: simple, flexible automation beyond the machine itself

Packaging machine manufacturer Schubert presents series-ready cobot

The AI-supported cobots handle all packaging parts at the cosmetics line infeed without requiring any programming or start-up phase, for example these glass bottles.

All photographs: Gerhard Schubert GmbH



Automation processes for packaging cosmetics and other small, multi-part products have until now been mostly limited to the packaging machine. Feeding, on the other hand, is often done by hand, because processes such as picking & placing products from a crate onto a belt, separating them, orienting them correctly or sorting them are very complex and, as a result, can rarely be automated cost-effectively. With the development of its tog.519 cobot, packaging machine manufacturer Schubert now has a new, highly flexible and extremely easy-to-operate solution ready to take cosmetics manufacturers a decisive step forward on this front.

The cobot's ease of use is based on AI-supported image processing developed by Schubert. It recognises both the products as they are picked up and the environment into which they are to be placed. The cobot's neural network is so extensively trained that the robot can immediately process new products from the same product group. These may include, for example, pouches (sachets, flowpacks, stand-up pouches, sealed-rim pouches, etc.) in different sizes or bottles in different shapes. The AI's tolerance is such that variable sizes, materials, surfaces or thicknesses are accepted within a product group. This virtually eliminates the need for a teach-in or start-up process. Once commissioned, the Schubert cobot can get started immediately.

Highly flexible and very easy to operate

The cobot's integrated systems also make it entirely self-sufficient and therefore mobile. It can be used to close automation gaps at different and ever-changing points in the production process. It can either stand freely or be placed inside a protective cell. Freestanding, the tog.519 protects workers by reducing its speed if a person approaches too closely. Conversely, this means: In a very cramped production environment, the protective cell around the Schubert cobot ensures that production runs at the highest cycle rate at all times without delays. Even with the protective cell, the cobot remains flexible: The entire cell can be easily moved to another location using a lift truck and then deployed via plug & play for other applications thanks to the fully integrated system components.

Its advantages make the cobot especially interesting for the cosmetics industry, with its high product and packaging diversity as well as frequent product launches, re-launches and new developments. High flexibility and easy switching between different products are key criteria for manufacturers who need to act quickly and constantly introduce new formats. Schubert has trained the AI accordingly: The product groups which have been pre-trained so far include pouches, jars, lids, pumps and bottles.

Practical, proven and extremely versatile

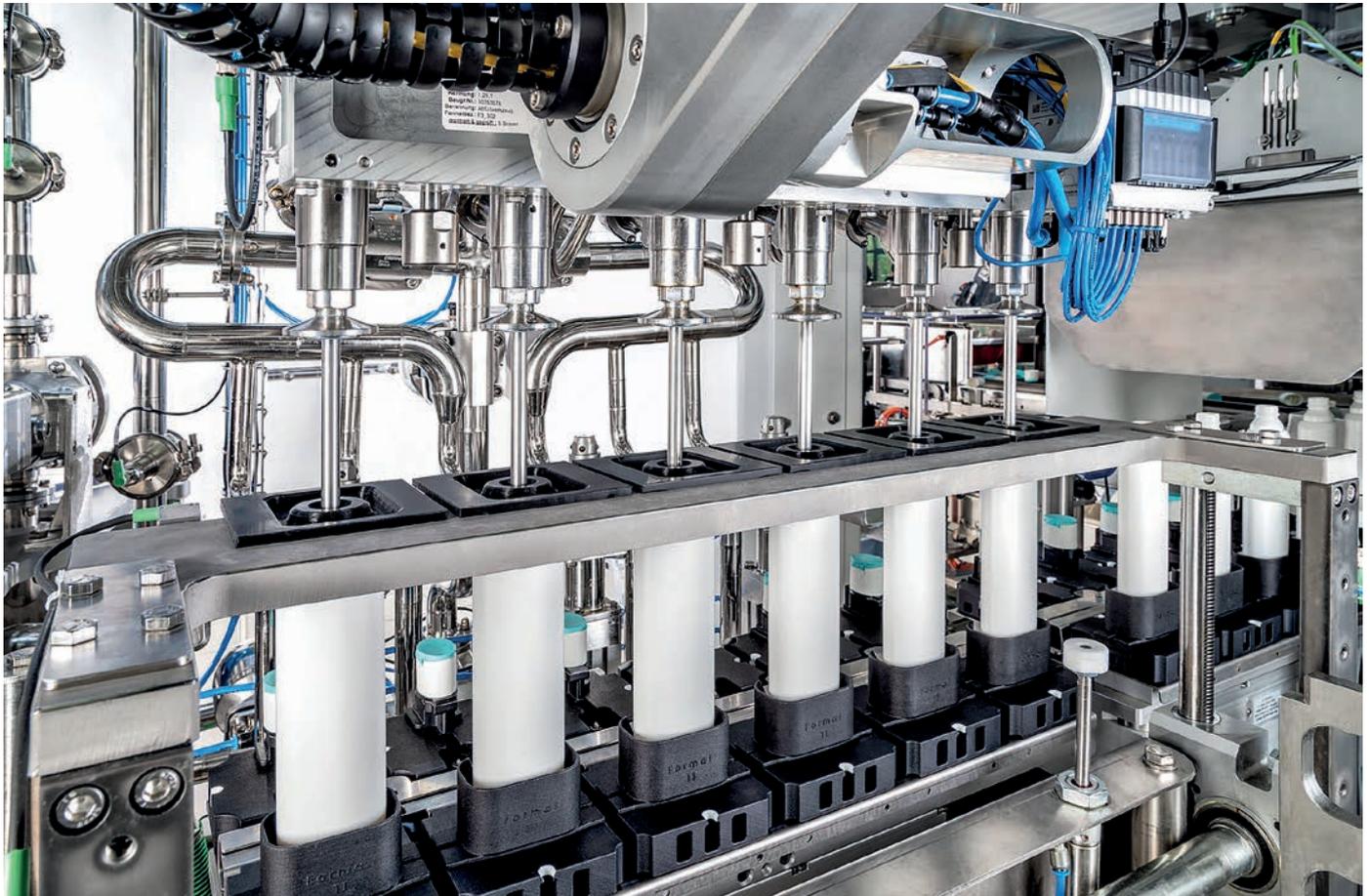
The cobot's potential applications are tremendously diverse. At the packaging machine infeed, for example, the tog.519 can pick up a wide variety of products such as jars, cosmetic bottles or lids from a carton or a bin, and orient and align them correctly for the subsequent packaging process. In the next packaging process, it can also pick up products from the conveyor and fill them into boxes or assemble mixed packs. The image processing even reliably detects intersecting products on top of each other, such as pump sprayers with a tube. If very narrow, unsorted products, such as mascara tubes, happen to be standing vertically in a box and therefore cannot be easily gripped, a vibrating unit rearranges the products between the cycles and helps the cobot find a mascara tube that can be picked up at each cycle.

In addition to the use of a single tog.519, for example for feeding a packaging machine, several robots can also be set up as an entire cobot line, making for much more flexible packaging processes. This makes sense, among other things, for mixed cosmetic sets in which, for example, a washing lotion, facial toner and day cream are packaged together. The cobot not only works with Schubert machines, but also with third-party lines and even robots from other manufacturers without any problems. This versatility opens up entirely new possibilities for cosmetics manufacturers to automate their packaging processes very flexibly and to raise their existing production to an all-new level.

Cosmetics filling line in combination with cobots at the interpack 2023

The Cobot has already proven itself in practice in the baked goods industry and now in the cosmetics industry: Schubert has designed a filling line for natural cosmetics manufacturer Börlind, the feeding of which is handled entirely by three cobots. In the machine, glass jars, glass bottles or plastic bottles are blown out, checked, filled, sealed and closed with various pump systems and lids. To do this, the cobots pick up the individual unsorted package components or, alternatively from cardboard trays, and orient and place them in the line's infeed. The combination ensures a high degree of automation and a high performance density: on an area of only 2 x 4 metres, the filling line processes 60 products per minute. In this exceptionally efficient cosmetics packaging process, the AI-supported cobots handle all packaging parts without requiring any programming or start-up phase. This, together with the individually designed 3D-printed format tools, keeps format changes to a minimum, taking at most 15 minutes.

The cobots and the filling line can be experienced live and in action at the interpack trade fair in Düsseldorf from 4 to 10 May 2023 at Schubert, Hall 14 Stand D01.



At the interpack, Schubert will be demonstrating how cobots take over a cosmetics filling process on a line for cosmetics manufacturer Börlind



Geka - Applicator Brushes with PCR Fibers and Shadow Printing for Packaging

Geka, supplier to the cosmetics industry, has presented two new solutions aimed at helping customers reach their sustainability goals. The first mascara and eyebrow brushes made from PCR fibers. The new brushes are made from up to 65 per cent recycled PET or PBT. Its fibers and designs are perfect for adding volume and separating or extending eyelashes and eyebrow hairs, according to the manufacturer. This new development represents an expansion of the company's range of sustainable products for the cosmetics industry. Its Reborn collection includes mascara, lip gloss, eyebrow brushes, cleansing pads and accessories made from 93 per cent organically based and recycled materials.

Geka has added its patented Shadow Printing Service to its portfolio as a further product innovation. In this process, the design on the surface of packaging is created without additional films or printed colors.

www.geka-world.com

Neopac introduces fiber-based tubes for Personal Care and Cosmetic Products

Hoffmann Neopac, a global provider of high-quality packaging and dosing applications for pharma, beauty and oral care, has introduced its PaperX Tube series, which utilizes thin-walled 300 micron fiber-based laminate with 80% paper content to drastically reduce both plastic materials use and overall carbon footprint. Ideal for organic and natural personal care and cosmetic products, the next-generation eco-friendly tubes contain 46% less plastics than conventional tubes, leading to a 24% drop in CO₂ emissions.

Potential applications for Neopac's new PaperX Tube include sun care lotions, body and face care creams, and toothpaste. Available with flip-top closures, the tubes are offered in diameters ranging from 35–50 millimeters, and can house products in volumes from 40–250 milliliters.

Turchette Agency
www.neopac.com





Morrama launches Maya, new range of refillable cosmetics packaging

Morrama created in collaboration with Shanghai based packaging manufacturer, PPK, Maya a refillable range of packaging for solid and liquid cosmetics, offering the beauty industry an opportunity to reduce their impact on the environment. With 95% of cosmetic packaging being thrown away, packaging is one of the biggest sustainability issues facing the beauty sector. There are very limited refillable and plastic-alternative options available on the cosmetics market, especially for make-up products, something we look to address with this new range. All packaging options come with refills made from renewable paper pulp that can be either composted or recycled as paper waste at the end of life and are manufactured using renewable energy. The paper pulp is made from a blend of bamboo, a fast growing renewable material that absorbs CO₂ as it grows, and bagasse, a by-product of the sugar-cane industry.

www.morrama.com



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Miguel Cabello, CEO at MC Actives, and his team



Cécile Pinatel, Marketing Manager Sophim



Claudia, Euro Cosmetics, with Diego Pekarek CEO Truth Treatment Systems



Claudia with Deanna Utroske



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