

EURO COSMETICS

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1/2 2023

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KOMPLEXITÄT:
SO VERPACKT SER WAX
SEINE DUFTKERZEN



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SCHUBERT

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Candle manufacturer SER Wax opts for end-to-end packaging solution from Schubert

Summary

In Santena, Italy, a short distance from the city of Turin, SER Wax Industry produces and processes waxes for a wide range of sectors, including premium scented candles in jars. For dispatching the jars, a TLM Multipacker from Schubert now combines all packaging tasks into a single line. The packaging machine manufacturer has also optimised the boxes and cartons for automation – significantly reducing process complexity.

Introduction

Along with special waxes for the food, cosmetics, construction, packaging and clothing industries, SER Wax is known primarily for its candles. With its Price's brand, the manufacturer even has the honour of being one of Buckingham Palace's court purveyors. Candles, however, not only contribute to a feel-good atmosphere at receptions, celebrations and royal ceremonies, they are also popular for more everyday occasions. Candles in glass jars are especially practical and appealing, as they leave no wax on the tablecloth and do not immediately go out in the wind. Until now, the manufacturer had packaged these products painstakingly by hand. Together with Schubert, the customer has now implemented a fully integrated automation solution.

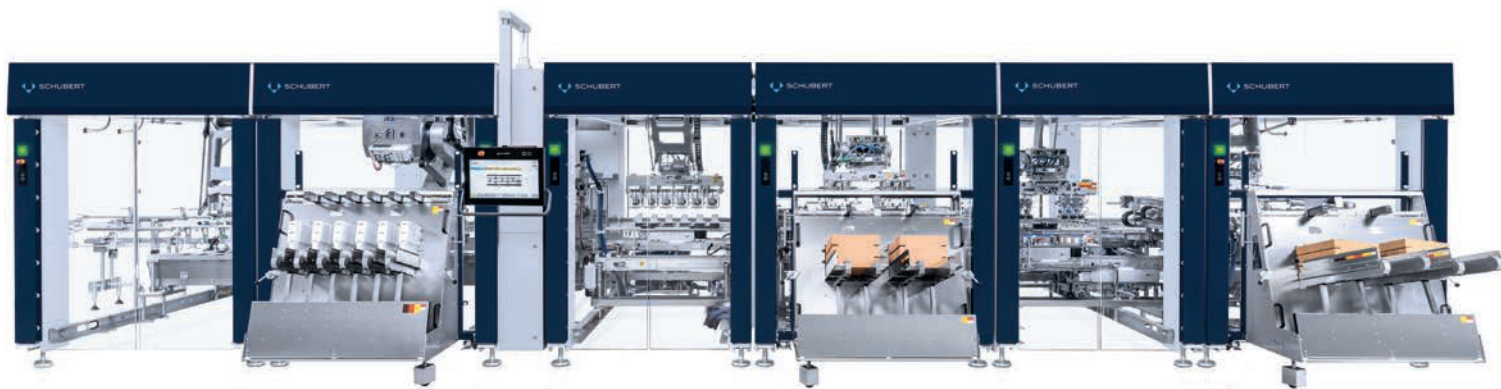
In addition to the time-consuming manual work, the various and at times double-glued carton models had resulted in high costs in the past. Schubert used its automation expertise to help the customer make these tasks more efficient and simpler. The objectives were clear from the outset: more output, higher packaging quality, reduced costs, quick format changes, no manual packing tasks and secure packaging for the small and large glass

containers. The heart of the solution is a Multipacker, which flexibly integrates different packaging operations into a single line.

Cardboard: A versatile material offering optimal protection

At the beginning of the project, the Schubert packaging developers revised and optimised the packaging. Instead of diverse cardboard versions, only flat blanks are now used. "This allowed us to implement machine-compatible, secure and cost-effective cardboard packaging with only one system for all formats – from beverage glass formats to the size of preserving jars," explains Schubert's Dirk Andrich, who is responsible for the project as Area Sales Manager. The complexity of the packaging process has been considerably reduced by using only one carton system for all formats. This is another reason why format changes take only 10 to 20 minutes.

The robot-supported line packs six different product formats and 13 different carton formats over a length of eleven metres. It consists of six TLM frames equipped with a total of six F2 robots



The SER Wax solution combines all packaging tasks in a single line over a length of just eleven metres.
Die Anlage bei SER Wax vereint auf elf Metern alle Verpackungsaufgaben.

All photos/alle Fotos: Gerhard Schubert GmbH

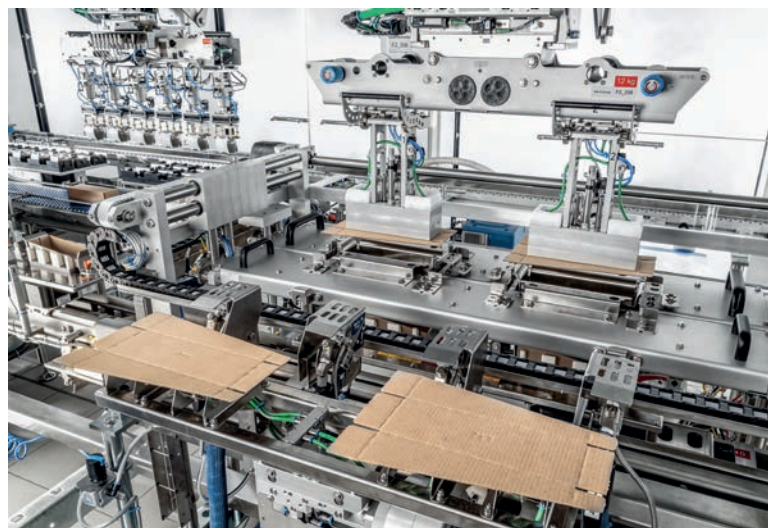
and three F3 robots. The Transmodul developed by Schubert connects the individual packaging processes with each other. For small jars, the line achieves an output of up to 105 jars per minute or 35 packages per minute (3-count cartons) or 17.5 packages per minute (6-count cartons). With the larger candles, an output of 45 jars, or 15 packages per minute (3-count cartons) is achieved.

A two-part packaging process

The jars are loaded onto a conveyor and gently grouped at defined intervals by means of a large, horizontal screw conveyor. Then comes the first packaging step where the smaller jars are individually inserted into cardboard sleeves. The sleeves are needed to protect the jars as well as for marketing purposes. The flat blanks are taken from the magazine by an F3 robot, erected and positioned on the Transmodul so that the F2 robot can place the jars precisely into them. A glue line is then applied to each sleeve and an F2 robot completes the primary packaging by centering and compressing the glue line. Large jars are not packed into sleeves but are pre-grouped with the aid of a special separating cardboard and then further processed.

In the second segment of the line, the robots place three prepared candles into cardboard trays. The trays can then either be covered individually or two trays can be combined under one lid

and sealed. This creates stable 3-count cartons or 6-count cartons that can be easily stacked. The combination of the newly developed carton packaging and robot-based machine technology makes the SER Wax automation solution exceptionally efficient, powerful and reliable.



Schubert optimised the packaging so that now only flat blanks are used.
Schubert hat die Verpackungen optimiert, sodass jetzt nur noch Flach-zuschnitte verwendet werden.

Gerhard Schubert GmbH is the globally recognised market leader in top-loading packaging machines (TLM). The family business from Crailsheim (Baden-Württemberg, Germany) relies on a combination of simple mechanics, intelligent control technology and high modularity for its digital, robot-based packaging machines. With this philosophy and its own culture of innovation, the company has been treading completely independent technological paths for over 50 years. With its TLM technology, the machine manufacturer provides its customers with future-proof packaging machine solutions that are high-performance, easy to operate, flexible in terms of format conversion and stable in function. The TLM packaging machines package products of all types and industries – from food, confectionery, beverages, pharmaceuti-

cals, cosmetics to technical articles – into trays, cartons, cases, or flow-wrap bags. Well-known brands such as Ferrero, Nestlé, Unilever and Roche rely on automation solutions from Schubert, as do numerous small, medium-sized and family-run companies. Founded in 1966, the group of companies, now managed by the second generation, employs 1,500 people.

Gerhard Schubert GmbH Packaging machines

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Kerzenhersteller SER Wax setzt auf ganzheitliche Verpackungslösung von Schubert

Zusammenfassung

Im italienischen Santena, unweit der Großstadt Turin, produziert und verarbeitet SER Wax Industry Wachse für die unterschiedlichsten Branchen, darunter auch Premium-Duftkerzen in Gläsern. Für den Versand dieser Gläser vereint ein TLM-Multipacker von Schubert inzwischen alle Verpackungsaufgaben in einer Linie. Zusätzlich hat der Verpackungsmaschinenbauer die Schachteln und Kartons für die Automatisierung optimiert und so die Komplexität erheblich reduzieren können.

Einleitung

Neben Spezialwachsen für die Lebensmittel-, Kosmetik-, Bau-, Verpackungs- und Bekleidungsindustrie ist SER Wax vor allem für seine Kerzen bekannt. Mit der Marke Price's darf sich der Hersteller sogar zu den Hoflieferanten des Buckingham Palace zählen. Doch nicht nur bei Empfängen, Feiern und Zeremonien der Queen, auch bei alltäglicheren Anlässen sorgen Kerzen für Wohlfühl-Atmosphäre. Besonders praktisch und ansprechend sind Kerzen im Glas, die kein Wachs auf der Tischdecke hinterlassen und bei Wind nicht gleich verlöschen. Diese Produkte hat der Hersteller bisher aufwendig in Handarbeit verpackt. Gemeinsam mit Schubert hat der Kunde nun eine ganzheitliche Automatisierungslösung realisiert.

In der Vergangenheit sorgten die unterschiedlichen und teilweise doppelt verleimten Kartonvarianten sowie die auswendige Handarbeit für hohe Kosten. Schubert hat den Kunden daher mit seiner Automatisierungsexpertise unterstützt, diese Aufgaben effizienter und einfacher zu gestalten. Die Zielsetzungen waren von Anfang an klar: mehr Leistung, höhere Verpackungsqualität, Kos-

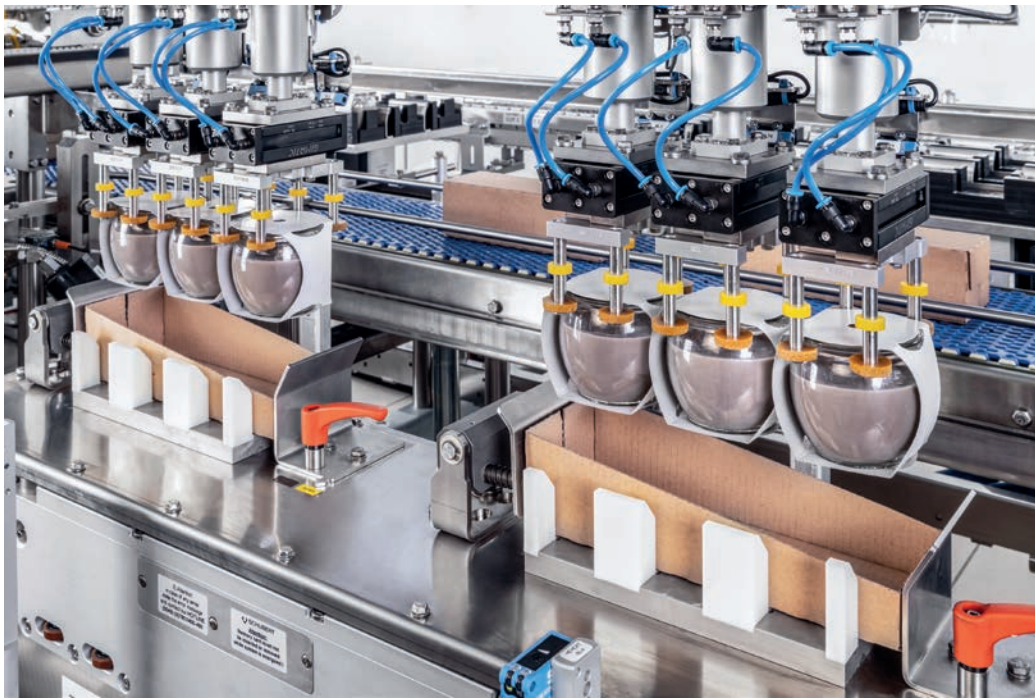
tensenkung, schneller Formatwechsel, keine manuellen Verpackungsaufgaben und eine sichere Verpackung für die kleinen und großen Glasbehälter. Das Herz der Lösung ist ein Multipacker, der verschiedene Verpackungsstufen flexibel in einer Linie integriert.

Karton: Vielseitiges Material für optimalen Schutz

Zu Beginn des Projekts haben die Verpackungsentwickler von Schubert die Verpackungen überarbeitet und optimiert. Statt diverser Kartonvarianten werden jetzt nur noch Flachzuschnitte verwendet. „So konnten wir eine maschinengängige, sichere und kostengünstige Kartonverpackung mit einem System für alle Formate umsetzen – von Trinkglasgröße bis zur Größe von Einmachgläsern,“ erklärt Dirk Andrich, der als Area Sales Manager von Schubert für das Projekt verantwortlich zeichnet. Die Komplexität des Verpackungsprozesses wurde erheblich reduziert, indem nur ein Kartonsystem für alle Formate zum Einsatz kommt. Auch deshalb erfolgt der Formatwechsel in nur 10 bis 20 Minuten.



The smaller jars are first placed into cardboard sleeves for protection. Die kleineren Gläser werden zum Schutz zuerst in Karton-Sleeves platziert.



The small candle jars are then packed into trays of three or six products each.

Danach werden die kleinen Kerzen-gläser in Trays zu je drei oder sechs Produkten verpackt.

Auf einer Länge von elf Metern verpackt die robotergestützte Linie sechs verschiedene Produkt- und 13 unterschiedliche Kartonformate. Sie besteht aus sechs TLM-Gestellen, die mit insgesamt sechs F2-Robotern und drei F3-Robotern ausgestattet sind. Die von Schubert entwickelte Transmodulstrecke verbindet die einzelnen Verpackungsprozesse miteinander. Die Anlage erreicht bei kleinen Gläsern eine Leistung bis zu 105 Gläser pro Minute bzw. 35 Verpackungen pro Minute (3er-Kartons) oder 17,5 Verpackungen pro Minute (6er-Kartons). Bei den größeren Kerzen wird eine Leistung von 44 Gläsern und 15 Verpackungen pro Minute erzielt. Bei diesem Format werden immer 3er-Kartons verpackt.

Zweiteiliger Verpackungsprozess

Die Gläser werden auf einem Band zugeführt und mithilfe einer horizontalen Förderschnecke schonend in definierten Abständen gruppiert. Dann folgt der erste Verpackungsschritt, bei dem die kleineren Gläser einzeln in Karton-Sleeves eingesetzt

werden. Die Sleeves werden für den Schutz der Gläser und als werbewirksame Flächen benötigt. Die Flachzuschnitte werden von einem F3-Roboter aus dem Magazin entnommen, aufgerichtet und auf dem Transmodul positioniert, damit der F2-Roboter die Gläser zielgenau darin platzieren kann. Im Anschluss wird auf jedem Sleeve ein Leimstrich aufgetragen und ein F2 Roboter vollendet die Primärverpackung durch Zentrierung und Kompression der Klebestelle. Große Gläser werden nicht in Sleeves verpackt, sondern mithilfe einer speziellen Trennpappe vorgruppiert und dann weiterverarbeitet.

Im zweiten Teil der Linie setzen die Roboter drei vorbereitete Kerzen in Karton-Trays. Dann können die Trays entweder einzeln verdeckelt oder zwei Trays unter einem Deckel zusammengefasst und verschlossen werden. So entstehen stabile 3er-Kartons oder 6er-Kartons, die sich gut stapeln lassen. Die Kombination aus neu entwickelten Kartonverpackungen und roboterbasierter Maschinenteknologie macht die Automatisierung SER Wax besonders effizient, leistungsstark und sicher. ■

Die Gerhard Schubert GmbH ist weltweit anerkannter Marktführer für Top-Loading-Verpackungsmaschinen (TLM). Das Familienunternehmen aus Crailsheim (Baden-Württemberg, Deutschland) setzt bei seinen digitalen, roboterbasierten Verpackungsmaschinen auf ein Zusammenspiel von einfacher Mechanik, intelligenter Steuerungstechnik und hoher Modularität. Mit dieser Philosophie und einer eigenen Innovationskultur beschreitet das Unternehmen seit über 50 Jahren völlig eigenständige technologische Wege. Mit seiner TLM-Technologie stellt der Maschinenbauer seinen Kunden zukunftsichere Verpackungsmaschinenlösungen bereit, die einfach in der Bedienung, flexibel in der Formatumstellung, hochleistungsfähig und stabil in der Funktion sind. Die TLM-Verpackungsmaschinen verpacken Produkte jeglicher Art und Branche – von Lebensmitteln, Süßwaren, Getränken, Pharma-

zeutika und Kosmetik bis hin zu technischen Artikeln – in Trays, Kartons, Schachteln oder in Schlauchbeutel. Namhafte Marken wie Ferrero, Nestlé, Unilever, Mondelez oder Roche vertrauen gleichermaßen auf Automatisierungslösungen von Schubert wie zahlreiche kleine, mittelständische und familiengeführte Unternehmen. Gegründet im Jahr 1966 beschäftigt die heute in zweiter Generation geführte Unternehmensgruppe 1.500 Mitarbeiter.

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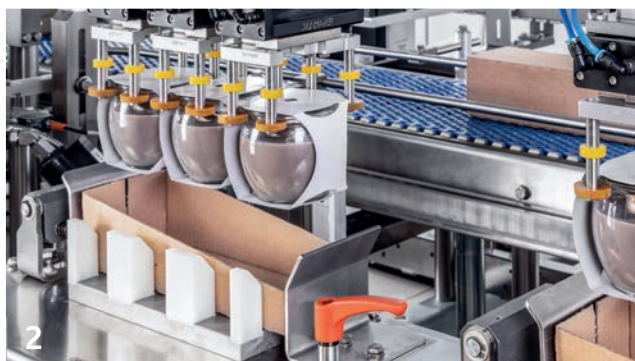


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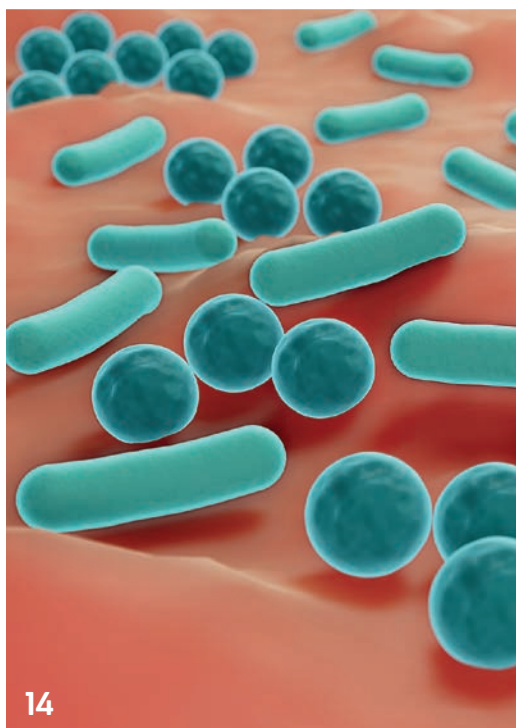
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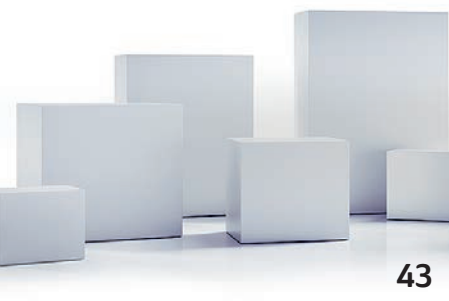
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Azelis strengthens its presence in Israel through the acquisition of Lidorr Elements

Azelis, a leading global innovation service provider in the specialty chemicals and food ingredients industry, announces that it has signed an agreement to acquire 100% of the shares of Lidorr Elements ('Lidorr'), one of Israel's leading specialty chemical distributors in crop-protection, industrial materials, and care & nutrition. The acquisition expands Azelis' footprint in Israel, further building on its growing network in the region following the acquisition of Orokia in 2020. Lidorr's wide portfolio of hundreds of products significantly strengthens Azelis' lateral value chain in the Agricultural & Environmental Solutions as well as in Advanced Materials & Additives market segments.

Univar Solutions to Expand Beauty and Personal Care, Home and Industrial Cleaning Portfolios with Acquisition of Leading Turkish Distributor, Kale Kimya



Univar Solutions Inc. (NYSE: UNVR) ("Univar Solutions" or "the Company"), a leading global solutions provider to users of specialty ingredients and chemicals, announced today that it has signed an agreement to acquire leading Turkish specialty chemicals distributor

Kale Kimya. First established in 1975, Kale Kimya offers best-in-class formulation laboratory capabilities and technical expertise as well as an extensive product portfolio of beauty and personal care products, and home and industrial cleaning products, including surfactants, actives, emulsifiers, preservatives, UV filters, fragrances, polymers, conditioners, esters and emollients. Terms of the transaction were not disclosed. Closing of the acquisition is subject to certain regulatory approvals and is expected to be completed within Q1 2023.

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Symrise expands its Executive Board

Symrise AG is expanding its Executive Board and has hired the experienced manager Dr. Stephanie Cossmann to take over the newly created executive responsibilities for the Human Resources and Legal group. At the same time, Dr. Jörn Andreas is taking over the Scent & Care segment, which until now was temporarily led by CEO Dr. Heinz-Jürgen Bertram. With the appointment of these two new members as of February 1, 2023, the responsibilities of the Executive Board of Symrise AG, which will consist of five members, are as follows:

Heinz-Jürgen Bertram, CEO, hands over the chair of the Scent & Care segment, which he has held temporarily for a year and a half, to Jörn Andreas.

Olaf Klinger, CFO, is responsible for the company's global IT in addition to his responsibility for Finance and Investor Relations.

Stephanie Cossmann takes over the newly created responsibilities for Human Resources and Legal.

Jörn Andreas will be responsible for the Scent & Care segment, which is comprised of the divisions Aroma Molecules, Cosmetic Ingredients and Fragrances.

Jean-Yves Parisot will continue in his role as Executive Board member for the Taste, Nutrition and Health segment, with its Food & Beverage and Pet Food divisions as well as the Business Incubation Group.



Sharon Personal Care Consolidates Recent Acquisitions

Sharon Personal Care, a leading global innovator and manufacturer of preservative solutions for cosmetics and personal care markets, has consolidated recent acquisitions that have broadened its green product portfolio while expanding its technology base and formulation capabilities.

Sharon Personal Care built on their successful foundation in 2022 with two key acquisitions. In March, they acquired Trezzo sull'Adda, Italy-based Res Pharma Industriale, expanding Sharon's technology and ingredient portfolio and strengthening its position as a leading specialty provider to the cosmetics industry. The cosmetic division of Gorla Minore, Italy-based B&C S.p.A was acquired by the company later in the year. This strategic acquisition further expanded Sharon Personal Care's catalog of cosmetic ingredients and enhanced the company's focus on sustainable technology.



Qosmedix Announces Samantha Donohue as Director of Sales & Customer Service

Qosmedix, a leading supplier of wholesale beauty supplies for the cosmetic, spa and salon industries, is pleased to welcome Samantha Donohue as Director of Sales & Customer Service. Samantha joins

Qosmedix with over 15 years of experience in the beauty industry. Most of her work has been focused on growing brand awareness, developing and overseeing the execution of sales and marketing strategies, as well as mentoring teams. As a former L'Oréal executive, she has overseen strategy and business development for the growth of top-selling professional product brands in large retailers and chain salons. In her new role, Samantha will lead the sales and customer service teams to maintain the company's position as a leading supplier of hygienic sampling, packaging and retail needs for the beauty industry.

Holiferm and Sasol Chemicals expand collaboration to develop and market sustainable surfactants

Holiferm Limited and Sasol Chemicals, a business unit of Sasol Ltd. (JSE: SOL; NYSE: SSL), announced today a collaboration to produce and market rhamnolipids and mannosylerythritol lipids (MELs). This collaboration expands the partnership announced in March 2022 between the two companies to develop and commercialise another biosurfactant product, sophorolipids. The partnership will use Holiferm's proprietary technology to develop the fermentation-derived biosurfactants. Sasol and Holiferm will develop and commercialise formulations and applications for the new molecules.



DSM appoints Parand Salmassinia as President, Personal Care & Aroma

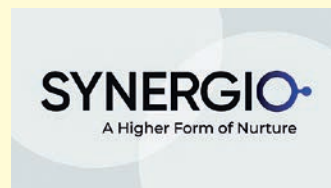
Royal DSM, a global, purpose-led science-based company, is pleased to announce the appointment of Parand Salmassinia to the role of President, Personal Care & Aroma from 1 January 2023. Parand, a US national, has held various leadership roles within DSM.

In her most recent position, as Vice President, Personal Care & Aroma, she increased the business unit's sales growth by high double digits over the last three-year strategic cycle. She was also responsible for product management, sales, and commercial organization.

In her new role, Mrs. Salmassinia succeeds Gareth Barker, who will be taking the lead on Global Marketing and Business Development at DSM Health, Nutrition & Care. She will become a member of Health, Nutrition & Care leadership team and report to Philp Eykerman, President, Health, Nutrition & Care.

Symrise Cosmetic Ingredients to enter strategic partnership with Synergio

Symrise announced a strategic investment in Synergio. The biotech company specializes in the development of natural and sustainable solutions using advanced plant-based technology for consumer goods products. Symrise considers this investment a strategic step to expand its leadership position in the product protection business in the personal care industry. Symrise will acquire a minority ownership in Synergio with the possibility to acquire a majority stake in Synergio's share capital in the future. Founded in Jerusalem in 2009, Synergio owns comprehensive expertise in natural antimicrobial combinations obtained by sustainable sourcing. The biotech company develops next-generation plant bioactives for healthier and more sustainable personal care & cosmetic products.



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As demand for sustainable natural and functional ingredients is continuing to grow, Lignopure, a German company based in Hamburg, is introducing their upcycled plant-based ingredient line called LignoBase. This line is powered by the multifunctional properties of lignin, a polyphenolic material found in the cell wall of multiple plants. Until now, it has been considered a byproduct of the biorefinery and pulp and paper manufacturing. Sadly, over 90% of this precious material is disposed of and considered waste. However, thanks to Lignopure's expertise, this is about to change.

Lignopure's journey started in 2018 when the founders Joana Gil, Wienke Reynolds and Daniela Arango founded the company with the mission of fully utilizing the precious natural resource that is lignin and its amazing properties into functional high-quality ingredients.

Lignopure's core focus is lignin, a biopolymer that gives plants their sturdiness and protects them against numerous external factors. These properties are of great value for a wide array of industries. Lignopure has developed a patented particle technology that preserves the molecular structure of lignin for maximum benefits and transforms it into fine, soft particles ready to be used in

cosmetic formulations. This groundbreaking technology enables us to utilize this precious resource in the beauty industry that would otherwise remain unused. This innovative development has resulted in the creation of a line of three sustainable powders, called LignoBase, that transfer the amazing natural properties of lignin to multiple beauty products.

Lignopure also has a strong commitment to sustainability fueled by years of know-how, development and having an upcycled material at the core of its business model. This includes the ethical, traceable and clean sourcing of raw materials as well as sustainable practices that are being optimized continuously to minimize environmental impact. These points exactly are being shown to be growing in demand while simultaneously being expected to become part of the new sustainable standards for the cosmetic industry. This puts Lignopure at the forefront of working toward a more sustainable and circular cosmetic industry.

With the introduction of this upcycled LignoBase line, Lignopure is ready to revolutionize the cosmetic and personal care industry. Set to launch in 2023, these natural, non-nano ingredients offer multiple benefits. One of its properties is its antioxidation capaci-



ties, thanks to its inherent polyphenolic structure that makes it a natural free radical scavenger that protects both the cosmetic formulations and the skin from damaging oxidative processes. This has been shown to result in up to 30 times more antioxidant activity compared to the oil-in-water control formulation in vitro tests. Another important property is in the photoprotection or SPF optimization area where LignoBase supports the SPF protection system of formulations, demonstrating a boosting effect of up to 50%, according to in vitro tests.

Furthermore, the natural brown tones of LignoBase allow formulators to simplify the color formulation process for a wide variety of finished products like BB and CC Creams, tinted sun care, makeup, mascara, eyebrow gel, and many more. Additional formulation-enhancing LignoBase properties come in the form of a soft finish, mattifying and white cast reducing effects thanks to the natural capacity of lignin to absorb five times its weight in oil when combined with other biopolymers. This proves to be very useful in formulations with SPF, which tend to have an oily finish that not all consumers enjoy. All of these properties are packed into a ready-to-use powder ingredient line suitable for vegan, natural, preservative-free and GMO-free formulations, a perfect

combination of great performance with clean, ethical and traceable sources.

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Ingredients from Probiotics or the Microbiome

Old friends and New Explanation of Bioactivity

By Donald R. Owen, Ph. d.*

Introduction

Interaction with the Microbiome and millions of years of evolution has worked together to produce a very powerful and elegant mammalian immune system. Probiotic derived ingredients and probiotic mimicking agents are offering new methods to help maintain that system. Probiotic products are generally regarded as containing live organisms. The inclusion of ingredients derived from probiotic organisms into skincare formulations has been increasing for many years. However, the exact mode of action of many of these ingredients was poorly understood. The “Glucan Glow” was used in marketing without any references to mode of action or the activity level of the beta-D-glucan. The beta-D-glucans are ubiquitous in the plant kingdom. The common sources commercially used include yeasts, mushrooms, fungi and even bacteria in some cases. In almost all cases these are powders isolated from the organism or the grown organism itself.

Glucans, the oral ones need help to work on skin

Many of these *beta*-D-glucan sources, suitable for oral ingestion, must be activated for optimizing the glucan for topical use. This activation normally occurs during the digestion process. This is necessary because many beta 1,3-D-Glucans glucans often “hidden” by other molecular types in the actual living organism and require being processed to certain molecular weights and/or particle sizes optimized for topical activity. What exactly to expose these structures to the immuno-active process. Not only exposing the molecular weight and distribution. Even now this is a “trial and error” process to optimize. However, the final results from this “natural and beneficial” process without inflammation-critical factor-are worth the effort.

In the last 20 years the biological mechanisms of action have been elucidated. Even the living Probiotic systems function be-

cause of the molecular components they are made of. These components by complexing with a family of receptors on all epithelial cells, mobile immune cells and keratinocytes trigger positive biological results. These receptors are the literal “heart” of the immune system. These epithelial or keratinocyte cells, coated with special receptors, makeup the surface-lining of the digestive tract, vasculature, respiratory tract and skin-any surface exposed to our external environment.

The skin’s sentinels always on guard

These particular cells all possess a group of unique receptors; the Pattern recognition receptors (PRRs). A sub-group within this family of detectors is the PAMP receptors, “pathogen associated molecular pattern” receptors. These include Dectin-1 and toll-like receptors (TLRs). There are at presently 11 known TLRs on either the surface or interior of keratinocytes, epithelial and mobile immune cells. Each TLR has a type or class natural foreign molecules associated with bacteria, yeasts, molds and viruses which act as toll-like receptor agonists or stimulants (see Figure 1). Dectin-1

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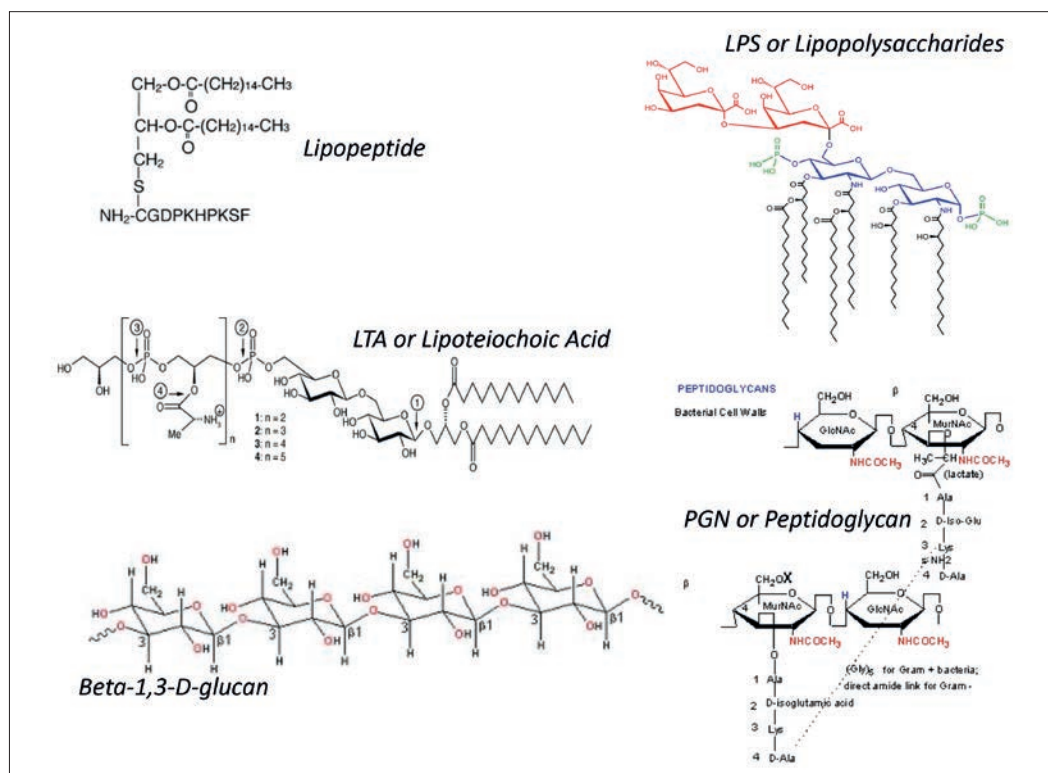


Figure 1: Biomolecules Found in Pathological and Probiotic Microorganisms Not Common To Humans

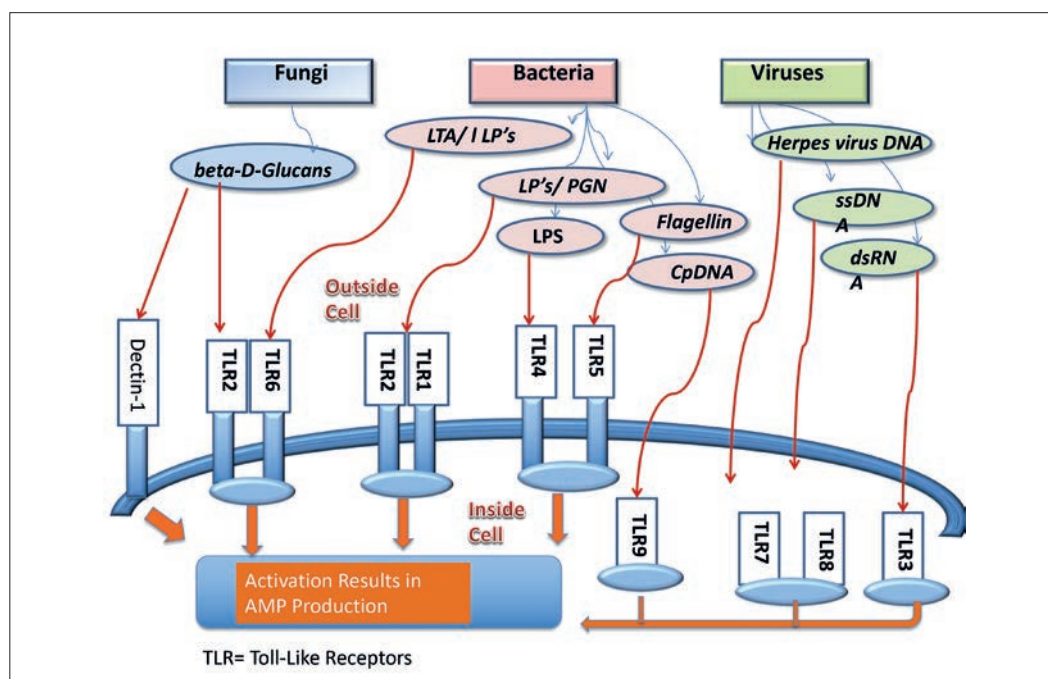


Figure 2

and at least two TLRs have been cited in the literature as being involved in detecting/responding to *beta*-D-1,3-glucans¹.

These PAMP receptors in turn cause keratinocytes, epithelial cells and immune cells to express the genes to produce various cytokines including the antimicrobial peptides (AMPs) of the innate immune system as well as directly activate the cellular components of the innate system, assuming a strong enough stimulant. The AMPs up regulated can include LL37 and the *beta*-defensins (Figure 2). These in turn have been determined to also initiate growth factor production², a key to why probiotics, through activation of Dectin-1 and TLRs, can cause enhanced cell turnover as well as increase keratin and collagen production.

The dramatic increase in understanding of biological processes, by scientists including those in the skincare industry has occurred. At least in part because of new analytical techniques available and improvements in *in vitro* cell culture techniques. Foremost of these has been Polymerase Chain Reaction (PCR) assay. Yes, this also has allowed easy COVID-19 testing.

The last decade a group of ingredients called lipopeptides has commercially become available with proliferative properties and reported³ to function as TLR agonists or stimulants. These ingredients had a similar mode of action yet very different chemistry that the *beta*-D-glucans. These were a complex family of oligopeptide fragments with lipid arms attached.

The epithelial cells “see” with their TLR receptors

As with the *beta*-D-glucans, potential pathogens can also produce these lipo-oligopeptides (LOPs)-so the immune system developed sensors to “see” these molecules as well. Researchers have shown these LOPs such as PAM2 or PAM3-Cys-SKKKK are potent TLR agonists (stimulants) and can form nanoparticles⁴. These are capable of activating TLRs at very low concentrations without activating the intracellular inflammasome resulting in procaspase activation resulting in interleukin 1b (IL1B), a primary cause of irritation.

The LOPs mentioned were studied extensively providing a basis for understanding the complex interaction of pro-biotic derived molecules with PAMP receptors. These molecules are available commercially in research quantities and are very useful as a standard by which to determine bioactivity of new TLR agonist candidates.

The commercial availability of these probiotic mimicking naturally derived molecules has allowed their use as anti-microbials, anti-acne, wound healing and hair growth stimulants. These turn out to be very related in certain aspects. The basal layer of the skin contains stem cells as does the dermal papilla of the hair follicles. The initial TLR stimulant process up-regulates genes which in turn up-regulate the AMPs (Figure #2); obviously these are useful for anti-microbial and anti-acne formulations. Stimulating the bodies natural defenses to attack or prevent pathological bacterial activity. The AMPs are powerful naturally occurring antibiotics – that’s their main job in life.

How does a cell doing guard duty stimulate eyelash growth?

Of course this brings us to the next real question, “how does triggering AMPs produced enhanced eyelash growth rates?” A lesser known, but equally important role in the life of PAMP receptors, especially the TLRs, is the boosting of local critical growth factor (GF) production. GF genes such as FGF2, FGF7, TGFA, TGFBI, EGF etc., all of which can be produced by keratinocytes or other TLR containing cell types; are critical for wound healing and youthful skin rejuvenation processes. Yes I finally connected the dots.

TLR stimulants at work ... Peptides stimulating hair growth around wounds

A family of these LOPs are produced by Therapeutic Peptides Inc. under various patents⁵ and are distributed by Symrise Inc. The Sympeptides are useful for eyelash growth enhancement as well as augmenting anti-acne and bioactive anti-aging formulations. Early investigations found it difficult to explain the bioactivity of these LOPs at such low concentrations – TLR agonists work at the several parts per million level or less.

As stated earlier, numerous molecules with a very different chemical structure than the *beta*-d-glucans can be PAMP/ TLR

stimulants (Figure #1). This is logical as there are many molecular types within or on pathogens not found in human beings. PAMPs are capable of sensing all these very different structures-it is understandable the need for numerous PAMPs such as the different TLRs (figure #2).

Humans categorize their immune system as divided into the innate and acquired. The innate is functional at all times with the acquired being called in when needed-an infection has a taken foothold. The innate/acquired immune system was designed to eliminate foreign “particles” and pathogens via both chemical and cellular processes. Hopefully in most cases prior to significant infectivity and disease is realized.

Thus, the epithelial cell surfaces play a critical role in the first line of defense as does the members of the mobile immune system and the epithelial cells themselves as producing both killer molecules as well as initiating changes in the mobile immune cells to produce more of these molecules as they move towards the infection. The TLRs of the innate immune system are a key to the recognition of molecules from all foreign sources. They do not require ever having “seen” the molecule. This is especially useful in preventing viral infections by prevention of the initial docking and virus entry process.

The magic “goldilocks region”; not too hot and not too cold – the balance between stimulation and irritation

In addition to TLRs the inflammasome (INFZs) is another cellular structure that can sense not only foreign molecular structures as well. Together and with other receptors they constitute the pathogen associated molecular pattern (PAMP) receptors. Almost nothing gets by the PAMP receptors in skin. They are the basis of innate defensive immunity and play a critical role in acquired immunity as well. Innate immunity is functioning at some level at all times on all. Acquired immunity takes 9–11 days to get to effective levels and requires a stimulus.

In most of these cases we think the molecular components of innate immune system (i.e. such as *LL37* and *beta-defensins* among others) literally prevent the infection before it occurs. This happens because the innate immune system’s molecular components prevented either the initial receptor attachment or initial replication or physically lysed the virion or bacterial capsule.

Stimulating the natural innate immune by the use of probiotics is of course a well-known practice generally associated with the critical epithelial cells of the gut in contact with a pro-biotic. Use of probiotics or TLR agonists/ stimulants for topical skin applications is receiving greater interest but is more difficult with an intact stratum corneum. However, the natural microbiome appears to function even with an intact SC. How is that happening?

Also why can certain microbiome organisms live just fine on skin, stimulate AMP production – yet do not trigger irritation – at least most of the time.

It appears to be all about greed. Microbiome organisms have learned what it takes to live in/on us and developed a symbiotic relationship. That means allowing our immune system to limit the

regions they inhabit and the limit the molecular components they present to our immune system. When the human immune system becomes compromised that balance can be thrown off.

The good guys are symbiotic and generate immune “muscle” – the bad guys you either kill them or they kill you

Pathological species have no limits-even if it kills the host. Nor is there any attempt at crosstalk. Nature has spent 100's of millions of years developing a system to prevent the very thing many of us in formulary development attempt to accomplish: getting bioactive plant extracts or other potential bioactive through an intact stratum corneum (SC).

For cosmetic delivery of bioactives, macroemulsions have been the work horse. However, for carrying colloidal *beta*-D-glucans or LOP TLR stimulants they are not suitable without modification. Macro-emulsion particle sizes are simply too large to take their cargo where it needs to be to optimize results.

Many natural probiotic TLR stimulants, even with special processing techniques, are difficult to produce sub-micron particles. The small molecule TLR stimulants are indeed easier to achieve dermal penetration. However, have other issues because of their bio-surfactant properties. Conventional liposomes with their aqueous cores and generally larger size have penetration/stability issues; as do the newer “exosome” type formulations.

Another delivery option for both types of TLR agonists has been the sub-micron nano-emulsions. These possess excellent penetration when combined with sub-micron colloids or soluble TLR agonists. Nature's version of the nano-emulsion is the chylomicron (). We generally now refer to them as low/high density lipoproteins or LDLs and HDLs – the “protein” part of lipoprotein refers to the complex protein macromolecules used to stabilize the phospholipid coated lipid particle.

Same old issue if you can't get it where it needs to be it's a practical failure

Very few companies to date have developed naturally based sub-micron nano-emulsion technologies combined colloidal or receptor specific bioactives which have the ability to get to the appropriate PAMP receptors without initiating a negative response. The use of TLR stimulating nanoemulsions capable of being added to macro-emulsion formulations offers a promise of “having your cake and eating it too”.

The human immune system was intentionally designed to see living microorganisms, or parts of dead microorganisms – and react. As stated many of us have used selected probiotic derivatives such as the *beta*-D-glucans for years without knowledge of exact mechanisms. The natural microbiome can also function quite well without causing inflammation – activation of the INFZs. This occurs just by TLR activation-without the inflammazome (INFZ) triggering inflammation. Selectively turning on the TLRs to produce a family of constitutive (antimicrobial peptides AMPs) without also stimulating the INFZs, is a neat trick. Microbiome

organisms such as *Staph. Epidermitis* do it all the time by producing molecular debris which includes TLR agonists which stimulate AMP production-but just the right amount. We are learning to augment that process as well.

Early research PCR assay results made it necessary to re-define the term “bioactive” to any ingredient or process that alters cellular gene expression. As it turned out the more we looked; almost everything was “bioactive” at some concentration. The question is really what is the net effect: positive or negative at a given concentration? The PCR assay combined with in vitro cell culture allows large and medium sized companies with properly funded laboratories to suddenly be able to look at fundamental cellular processes and determine what indeed is both positive in the “bioactive” sense as well as safe to use.

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How to Prove the Concept of Microbiotic Skin Care

By Christiane Uhl

When the Human Genome Project¹ was launched in autumn 1990 with the aim of identifying and mapping all of the genes of the human genome, no-one would have thought that we would discover a new microcosmos revolving around and mingling with our human cells.

Of course, already long before this project, it was well-known that our body is not sterile and there are many bacteria living within and on it. These bacteria were however mainly classified as being malicious, threatening our health and causing problems.² Until the 70s of the last century, a germ-free personal environment was considered as most desirable, and strong cleaning products became quite popular. Only starting in the early 1980s, these ideas and information were carefully reevaluated.

When the first results of the Human Microbiome Project³ that started in 2008 were published and we learnt that not only do we host an amazing amount of microbes in and on our body but that these tiny cohabitants at least equal or possibly even exceed the amount of our own human cells, intense research has been dedicated to understand their function for human health and disease.⁴

With the rapid development of novel metagenomic methods, microbiome analysis has become much easier, quicker, more comprehensive and reliable than with traditional techniques such as sampling and culturing that only allow the identification of certain isolated species that can be cultured.

Besides the composition of our gut microbiome, also the microbial colonization of our skin which serves as our outside border to the environment has become the subject of intense research.^{5,6}

While research of microorganisms on the skin in the past was mainly serving the purpose of identifying pathogens that cause disease and studying the means to fight them, only recently, the beneficial aspects of our skin commensals were discovered and further studied.

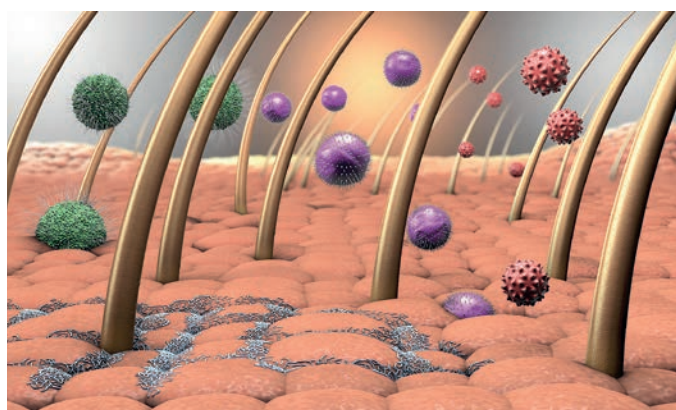


Figure 1: The skin is a natural habitat for a rich variety of microorganisms.

Many publications are describing their interaction to create a stable environment and protect their community and thereby also the skin from the invasion of foreign and potentially harmful microbes. Strong evidence of the interaction of the microbiome with the human immune system has been found.⁷ The microbiome seems to be involved even in protecting the body from UV radiation.⁸ On the other hand, many studies have proven that there is a close link between skin diseases such as acne⁹ and atopic dermatitis¹⁰ and the skin microbiome. Recent research indicates that “the microbiome is crucial for healthy skin, but so is healthy skin for the health of the microbiome” (Kristin Neumann¹¹).

From these insights, we can conclude that by strengthening and balancing the microbial symbiosis, skin condition and health can be improved. Contrary, it seems clear that the use of antibiotics, strong disinfectants and cleaners may lead to a disruption of the microbial balance and impair skin health.

When the first evidence of the beneficial effects of our microbiome was found, it did not take long for more and more publications coming up about the possible improvement of the skin and its microbiome by pre-, pro- and postbiotic additions to cosmetic products.

Classic claims, such as the microbe-eliminating effects of cleansers, antibiotics and disinfectants can easily be proven, often by traditional methods focusing on individual species. Also, products that claim to leave the microbiome uninfluenced can be tested by metagenomic analysis.

Claims of balancing or improving the microbiome with dedicated products cannot be verified that easily. It seems that the marketers of such claims are far ahead of the scientists. Even though the most common bacteria on the skin have been identified, the microbial profiles of different individuals are significantly different.¹² This is attributed to genetic and demographic properties, age, gender, ethnicity, skin type, lifestyle, hygiene, geographic differences, environmental stress by temperature, humidity, seasonal variation, radiation exposure and pollution, cohabitation with animals, profession and many more. Even applied products might cause shifts in their composition.

But not only between different people, even intra-individually, there is a huge variation of the skin conditions at different body sites.¹³ The face offers home to microbes that profit from or at least tolerate high skin surface moisture and increased sebum production. On the other hand, the extremities are rather dry and provide challenging conditions for most bacteria. The amount of microbes is much lower there than on the face, and a much higher variation between different persons has been found. Then, there are the arm pits and body folds with high moisture but moderate sebum content, again offering a completely different

environment to microorganisms. And not only different moisture and sebum contents provide different microbial environments, there is also a huge impact of the skin pH. Bacteria regarded as beneficial usually prefer acidic conditions.

Because of all these influencing variables, until today there is no scientific consensus about the composition of the “ideal” microbiome. Microbiome analysis can show if the bacteria of probiotic products or the nutrition for special bacterial species in prebiotic formulations will lead to an undesired or a desired shift in the microbiome composition. Also, for some skin problems such as atopic dermatitis and acne, changes in the microbiome may be used to confirm the product efficacy. For cosmetic effects on healthy skin, however, it is almost impossible to interpret the result of such an examination.

If microbial analysis does not yield the desired information on the improvement of the skin condition, how else can we measure the efficacy of cosmetic claims for microbiome care products?

We have learnt that a healthy skin and a healthy microbiome are closely intertwined. Even though with our current knowledge, it is not possible to clearly quantify an improvement of the microbiome, skin health can be and has been measured for years. Different skin functions and conditions are ascribed to skin health.

Skin barrier assessment

The skin works as a barrier between our inner body and the environment. The strength of the skin barrier is closely linked to skin health: healthy skin will provide a strong barrier. Assessment of the barrier quality is usually performed by measuring the so-called TransEpidermal Water Loss (TEWL).¹⁴ This is the amount of water that evaporates through the skin into the environment. Healthy skin at most skin sites, measured at ideal ambient conditions of 20–22°C and 40–60% of relative humidity, will show a TEWL between 5–15 g/h/m². If the barrier function is not optimal, a higher loss of water can be measured. Different probes for this application are available.

Figure 2: Tewameter® measurement with open measurement chamber does not influence the natural evaporation from the skin.



Skin surface hydration measurement

The water holding capacity of the stratum corneum is depending on the presence of natural moisturizing factors and an intact skin barrier function. It is easily affected by many external influences such as dry air, absence of sebum, frequent washing etc. as this skin layer interacts strongly with the environment.

Dry skin will not only look scaly, but can also lead to small fissures in the skin surface where pathogens may settle. On the other hand, in a continually wet environment, the corneocytes that are forming the bricks in our skin wall will macerate which can also lead to a disruption of the skin integrity. The stratum corneum hydration therefore should be balanced, not too high but neither too low.

The water content will not only vary between persons with different skin types, but also between different skin sites on the single individual. At dryer skin sites like the arms less bacterial species can be found than in areas with higher moisture such as the face.

The Corneometer® is recognized throughout the industry as the gold standard to determine the stratum corneum hydration in the most important upper layers by capacitance. The measurement takes less than one second, thus not influencing the skin at all. Also, the L'Oréal Skinchip® or the MoistureMap® devices are based on capacitance measurement. They display the distribution of the water on the skin by capacitance imaging. Other equipment available on the market uses impedance or conductance methods.



Figure 3: The Corneometer® allows quick and easy hydration measurement at different skin sites.

Skin pH-value

Skin pH is essential for the well-being of specialized bacterial communities. Many bacteria associated with a healthy microbiome prefer acidic conditions and cooperate with the skin and amongst each other to maintain this microenvironment. Skin pH measurement can show if an applied product supports this aspect or if it leads to a shift of the pH value.

From neutral pH values in the lower epidermis, there is a steep decrease of pH values towards the skin surface. Depending on the body site, age, gender and many other intrinsic and external



Figure 4: pH-changes may influence microbial association. Their measurement can give valuable information on the efficacy of products.

factors, values at the skin surface mainly range between pH 4–6.¹⁵ Higher pH values at certain body sites like the axilla or intertriginous areas promote the colonization of certain odour-producing or harmful bacteria and fungi.^{16,17}

Cleaning the skin with soaps will lead to a short-term shift of the pH value. Even pure water with its neutral pH of 7.0 will influence the surface pH for a short period. Healthy skin will be able to balance this disruption within a certain time span. Frequent washing can however lead to cumulative effects and can seriously harm the skin barrier.¹⁸

Especially atopic dermatitis is often linked to increased pH-values and at the same time a different composition of the bacterial associations with an increased presence of staphylococcus aureus.¹⁹ Skin pH measurement in that case can show whether a shift of the pH value could be obtained by the product application.

Skin sebum

The Cambridge Dictionary describes the lipids excreted by the sebaceous glands as “an oil-like substance produced by the sebaceous glands in the skin that makes hair shiny and prevents skin from becoming dry”.²⁰ The role of sebum in atopic dermatitis has been dismissed by different investigations in the past. More recent studies however, have shown that in diseased skin conditions such as atopic dermatitis, sebum levels are considerably lower than in healthy individuals.¹⁹ On the other hand, increased sebum production is correlated to the occurrence of acne.²¹

Sebum is very different at different skin areas. In the face and on the scalp sebum levels are highest.²² Other skin sites show much lower values. The sebum content has a high impact on microbial life on the skin. Especially the facultative anaerobe cutibacterium acnes prefers sebum rich environments.

The Sebumeter® is the standard device to measure the sebum secretion on the skin surface. The special matte tape will become transparent by absorbing sebum present on the skin surface. The transparency will be measured – the higher, the higher the sebum level.

Other methods such as Sebufix® or Sebutape® use special microporous tapes that show the sebum pits on the skin surface as dark blotches of different sizes.

You can also study the presence of acne bacteria by using specialized camera equipment. The Cutibacterium acnes produces porphyrins that will show a fluorescence when exposed to UV light of special wavelengths.²³ Even though these bacteria can be found on most people at oily skin sites, their activity poses a problem for acne-prone skin. Assessment of the porphyrin fluorescence is useful to test the efficacy of special anti-acne products. This can be done by using cameras providing the needed wavelengths. Special software will evaluate the number, area and intensity of fluorescence.



Figure 5: Sebum measurement with the Sebumeter® takes approximately 30 seconds.

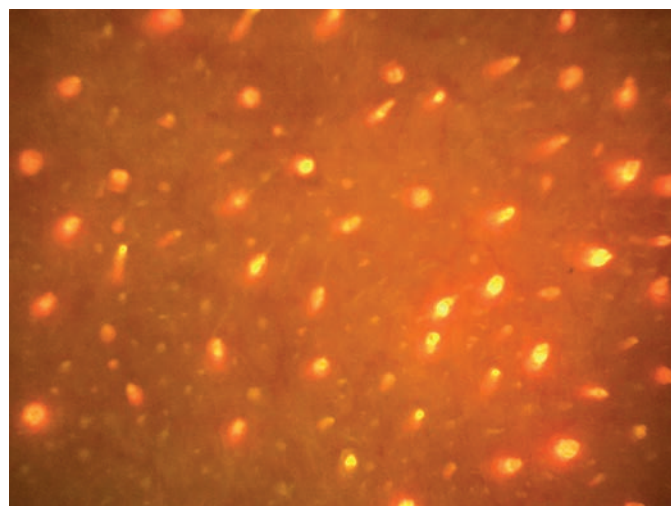


Figure 6: Strong fluorescence of the Cutibacterium acnes porphyrins under UV-illumination of the Visiopor® camera.



Figure 7: Homogeneous illumination and elimination of ambient light with the VisioFace® for standardized facial photography.

Evaluation of skin blemishes

Blemishes are usually an indication that the skin condition is not ideal. They especially occur in acne and are often correlated to an increased sebum production.

The occurrence of pimples and blackheads can be visually assessed and graded. This can be done based on direct inspection or for better comparison by the evaluation of high-resolution photographs.²¹ The comparability of photos is strongly influenced by ambient light not only in reference to the light colour and intensity but also to the angle of light. Additionally, the position of the face and the angle of photographing as well as the distance between camera and face will have a huge impact on the outcome.

Therefore, simple mobile phone cameras or even high-end consumer cameras are not the best-suited tools for taking such pictures.

There is dedicated equipment available on the market that provides a homogeneous illumination, sometimes even the use of different light sources and a fixed positioning of face and other body sites for taking standardized photos. With such equipment, very reproducible and comparable images can be taken that are evaluated either by subjective scoring or by automatic calculation of the size of the pores and the amount of blemishes.

Skin healing properties

Skin healing can be assessed by creating small wounds by punch biopsy, excision or damaging the skin in a different way. The extent of the wound and wound closure time can be assessed using visual methods.

An elegant solution not involving an open wound is the measurement of the TransEpidermal Water Loss (TEWL), already described above, after standardized repetitive skin stripping with special tapes such as Corneofix® or D-Squame®. The damage will show in an increased TEWL and can be evaluated together with the time the skin takes to recover to healthy TEWL values.

Desquamation

The skin continuously sheds dead skin cells from the outmost layer of the stratum corneum to make room for new cells growing from the base of the epidermis. This desquamation process is triggered by enzymatic activities that are induced in different skin layers, often depending on special pH values.²⁵ Desquamation has been related to skin health and barrier function. In healthy skin, the shedding of corneocytes should be more or less imperceptible and very regular. When the desquamation process is disrupted, the shedding tends to become inhomogeneous, leaving islands of rather thick layers of dry corneocytes that can sometimes even be perceived by the eye as scaliness.

Desquamation is easily assessed by using the same type of tapes as for standardized tape stripping, e.g. the Corneofix® or the D-Squame®. These sticky tapes remove loose corneocytes. Combined with special cameras and evaluation software, you can quantify the degree of desquamation. In the resulting picture, accretions of corneocytes appear in whitish colour, whereas the regular desquamation will show in grey colours. Homogeneity or irregularities in desquamation can be easily displayed by using false colours.

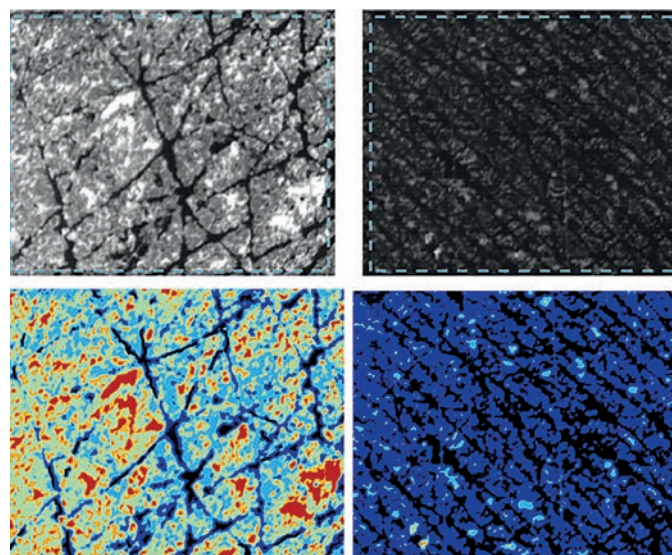


Figure 8: Desquamation measurement with Corneofix® using Visioscan® camera and software – left side: irregular and strong desquamation, right side: fine and regular desquamation

Measurement of skin irritation

Skin irritation will show in increased microcirculation visible as an increased redness.²⁴ Its intensity is often assessed by subjective scoring performed by experienced scientists. The human eye

is, however, not able to evaluate very small differences and compare them to colours that have been previously seen at a different examination day. Photographs, taken at standardized conditions, will assist the researchers in the grading of redness.

Instead of subjective grading, image colour analysis can also be automatically performed by special software.

Besides comparing pictures, colour measurement to assess redness is often done by probes that are quicker and easier to use.

Also, other parameters such as skin surface topography or elasticity may offer information on skin health.

Conclusions

Research on the skin microbiome is an interesting and trendy topic that will probably evolve further. Despite the intense research of the last years, there is until now no scientific consensus on the perfect composition since the microbiome shows huge both inter- and intra-individual variation. Microbiotic analysis will therefore in most cases not yield satisfying prove of the efficacy of pre- and pro-biotic formulations for improved skin health.

You can easily prove skin health claims that are attributed to an improved microbiome by using traditional biophysical testing methods and imaging.

Some aspects that still need more research effort are the influence of cosmetic products on the resident microbiome. There are some concerns that microbiome influencing products may shift the scope of the microbiome by favouring only special microorganisms, thereby disturbing the balance of a perfectly healthy microbiome.

The role of environmental influences on the skin microbiome also offers a wide field of research.

These doubts need to be addressed in future tests and might even lead to the definition of new skin types, taking into account their main microorganisms.

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Preliminary Observations of the Effects of a Curcuma longa and Niacinamide-led Formula in the Reduction of Hair Loss

By Anders Reckendorff **, Maren Bohl *

Abstract

Hair loss is a common occurrence for both women and men, and a major cosmetic concern. Consumer concerns over the side effects of drugs such as Minoxidil® and Finasteride®, have given rise to numerous cosmetic developments in order to address these concerns. In this preliminary investigation, we present our initial findings, and demonstrate beneficial effects of a curcumin-niacinamide formula on the reduction of hair loss, and the improvement in hair density, when applied topically to the scalp. In this 5-month clinical study, hair growth and hair loss evaluation was quantitatively and objectively measured with TrichoScan® analysis, and image photography. Volunteer subjective assessments, of the effect of the test product by self-perception of reduced hair loss, increased number of new hairs, as well as issues relating to the tolerance and acceptance of the product, were also evaluated.

Key Words: Curcuma longa; Hair loss; Hair density; Hair growth; Niacinamide

Introduction

The human hair follicles are very important skin appendages, and play a unique role in skin function and renewal¹. A unique “micro-organ”, the hair follicle is formed by the interaction between the skin’s epidermis and dermis, and is composed of complex multi-component microstructures, all playing significant roles in hair growth and condition. Structurally, the hair follicle is rich in stem cells which are regulated by a variety of signalling pathways, and are important for the growth of hair as well as playing an important contribution to skin renewal following in-

jury. Hair follicles have a high capacity for renewal, and possess a defined periodic growth cycle that continues during human lifetime. Hair growth is affected by many factors including age, the environment, diet, and general health². Such factors impact the development of a variety of hair follicle disorders including hair loss (alopecia).

Mainly seen in adults, alopecia or hair loss is a common disorder³. Androgenetic alopecia (AGA, also called male and female pattern alopecia or baldness) is hormone driven and the most common cause of hair loss⁴. Depending on age and ethnicity, it is estimated to affect 30–58 % of men by the age 50 and 12–40 % of women^{4,5}.

Regulation of the hair cycle is multi-complex and involves an incompletely understood interplay between endocrine, autocrine and paracrine signalling pathways. Hair loss is characterised by

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the progressive “miniaturisation” of the follicles, resulting from the actions of androgen hormones on the epithelial cells of genetically susceptible hair follicles in androgen-dependent areas⁵. The hair cycle consists of three phases: the growth phase, which is called anagen, the resting phase, which is called catagen, and the shedding phase, which is the telogen phase. Approximately ninety percent of hairs are in the growth phase (anagen) and the remainder, correspond to ten percent in the transition (catagen) and shedding (telogen) phases⁵.

While complex genetic inheritance and age of the individual are major risk factors in AGA development, inflammation at the cellular level within the follicle is central to the hair loss process, as well as the effects of abnormal signal transduction (the wingless-type integration site pathway), high levels of apoptosis, and oxidative stress⁶. Cosmetically, hair loss can be exacerbated by over-use of hair dyes, hair straightening and styling products, as well as improper use of shampoos and conditioners. The management of hair loss normally takes a pharmaceutical approach with drugs such as Minoxidil® (anti-hypertensive drug) and Finasteride®, a 5-alpha-reductase inhibitor^{7,8}. In the field of cosmetics, interest in hair loss reduction especially those formulated with natural products or their extracts has increased. As mentioned previously, since multiple factors contribute to hair loss, its management requires a multi-action approach. For example, vitamins and trace minerals are vital to the hair follicle cycle⁹, and help maintain homeostasis as enzyme cofactors, hormones, antioxidants, and immuno-modulators, etc.

Widely used in cosmetics¹², the genus *Curcuma* of the family Zingiberaceae has been important for its wide variety of benefits since ancient times, and many species of *Curcuma* have been identified, with *Curcuma longa* having been the most intensively scientific researched^{10–12}. The rhizome *Curcuma longa* L. (*Zingiberaceae*) commonly known as Turmeric, is reported as safe¹¹, and has been, by certain literature, reported to have a multitude of biochemical activities notably those reducing inflammation, and the reduction of oxidative stress¹³, both key features in the hair loss process. Curcumin, the active ingredient of turmeric, has been used for centuries, and literature reports its ability to down regulate cyclooxygenase-2, lipoxygenase, and inducible nitric oxide synthase enzymes¹⁴, and potentially inhibits nuclear factor-kB signalling, thereby decreasing pro-inflammatory cytokines such as tumour necrosis factor (TNF)- α and interleukin (IL)-1¹⁵. Additionally, TNF- α and IL-1 are involved in follicular regression¹⁶. Curcumin is also reported in the literature to have antioxidant, antimicrobial, anti-neoplastic, and anti-androgenic properties¹⁷.

Niacinamide is the amide derivative of Vitamin B3 (niacin). Its action on the skin has been well reported including antipruritic, sebum regulating, and vasoactive effects¹⁸. It has also been reported that niacinamide could enhance hair growth by preventing oxidative stress-induced cell senescence and premature catagen entry of hair follicles¹⁹. Furthermore, reports indicate that niacinamide controls the NFkB-mediated transcription of signalling molecules²⁰ by inhibiting the nuclear poly (ADP-ribose) polymerase-1 (PARP-1). Given its “flushing” effect on the skin due to its vasoactive properties, niacinamide is a well-tolerated and safe substance used in a wide variety of cosmetic applications^{21, 22}.

Based on information in published reports, the primary objectives of this preliminary investigation were to ascertain whether a curcumin and niacinamide based serum (Bio-Pilixin®) could help reduce hair loss when topically applied over a period of 5 months, to the scalp as measured quantitatively and objectively by hair density Trichosan® analysis and image photography²³. Volunteer subjective assessments of the effect of the serum under study by self-perception of reduced hair loss, increased number of new hairs, as well as issues relating to the tolerance and acceptance of the product were also evaluated²³.

Methods

1. Volunteers

This was a single centre, 150-day study (Capillary Technology Centre (CTC), Barcelona, Spain). Thirty (30) healthy male and female volunteers with a mean age of 47 ± 11 years, were recruited onto the study in accordance with the principles of Good Clinical Practice (GCP). All volunteers signed a consent form and agreed to follow instructions. Assessments for the type of hair loss experienced by the volunteers was recorded as follows:

Volunteers	Mean Age (Years)	Hormonal Hair Loss	Seasonal Hair Loss	Stress hair Loss
Male	49	3	1	0
Female	47	11	9	6

2. Inclusion/Exclusion Criteria

Healthy male and female adults, willing to sign an informed consent and motivated to commit to the study timeline, aged between 18–65 years exhibiting hair loss, were eligible to enrol for the study. Volunteers with cardiac and psychiatric disorders, and other medical conditions likely to interfere with the study outcomes, were excluded from the study. Volunteers with known sensitivity to any of the ingredients in the formulation, and those with scalp diseases such as psoriasis, dermatitis and eczema were also excluded. Volunteers taking medications known to cause alopecia such as fluoxetine, retinoids, and anti-coagulations were excluded from the study, as well as volunteers taking nutraceutical products for reducing hair loss. Volunteers modifying their diet during the course of the study would be excluded.

3. Study Schedule

(i) *Test Product* – A serum-based product (Bio-Pilixin® Serum, Scandinavian Biolabs) comprising: (INCI) Aqua, Alcohol, Niacinamide, Caffeine, Curcuma Longa Callus Conditioned Media, Panthenol, Vanillyl Butyl Ether, Sodium PCA, Sodium Lactate, Arginine, Aspartic Acid, PCA, Pentylene Glycol, Zinc PCA, Glycine, Alanine, Serine, Valine, Isoleucine, Proline, Threonine, Histidine, Phenylalanine, Phytic Acid, Parfum.

(ii) *Product Application* – Volunteers applied the test product daily (ca. 4 ml) at night time on a clean scalp, according to instructions. A minimum of 2 pipettes was considered enough to cover the entire scalp. The product was to be gently massaged into the scalp, paying attention to hair roots. Volunteers were also

provided with a neutral shampoo to use on alternate days to prevent any subsequent interpretation bias of data.

(iii) *Schedule* – 48 hours prior to study commencement (T-2), volunteers were requested not to wash their hair, and not to comb their hair (T0) on the day of study centre visit.

The clinical schedule was as follows:

Measurement	T0	T45	T150
Global Photography	✓	✗	✓
Trichogram	✓	✗	✓
Hair Density	✓	✗	✓
Comb Test	✓	✓	✓
Wash Test	✓	✓	✓
Volunteer Questionnaire	✓	✓	✓

4. Measurements

(i) *Photography* – Standardised global photography, using a Canon EOS 600D digital camera, of the mid-scalp sagittal area was used to capture standardized images of volunteers. Parting the scalp hair was achieved with the aid of a cotton-tipped applicator, aligning the centre of the hair part with the patient's nasal bridge. Photographs were taken at T0 and T150 and then compared.

(ii) *Trichograms (Hair Removal)* – This consisted of extraction of a determined number of hairs from the left parieto-occipital area of the scalp on days T0 and T150, by traction plucking with tweezers in the direction of hair growth to minimise damage. As a precondition, volunteers were instructed not wash nor treat their hair with any cosmetic product at least 48 hours before the cosmetic trichogram was carried out, in order to retain any hairs which were near the end of the telogen phase and to avoid artificial reduction in the percentage of telogenic hairs observed in the trichogram. A fixed area is marked on the scalp through a template with a uniform pen.

Plucking was repeated as many times as necessary to obtain the number of hairs required for the cosmetic trichogram, and hair bulbs were immediately mounted onto glass slides for microscopic evaluation – in order to identify which phase of the their growth cycle these hairs were present – anagen growth phase or catagen/telogen fall phase, as well as the assessment of both initial and final appearance of the hair bulbs.

Results were expressed accordingly:

A0 Number of hairs in anagen phase at T0 (before product application).

T0 Number of hairs in telogen phase at T0 (before product application).

%A0 Percentage of hairs in anagen phase at T0 (before product application).

%T0 Percentage of hairs in telogen phase at T0 (before product application).

A150 Number of hairs in anagen phase at T150 (after 150 days product application).

T150 Number of hairs in telogen phase at T150 (after 150 days product application).

%A150 Percentage of hairs in anagen phase at T150 (after 150 days product application).

%T150 Percentage of hairs in telogen phase at T150 (after 150 days product application).

(iii) *Hair Density* – The number of hairs present per unit of area (cm²) was calculated from TrichoScan® (TrichoScan, Tricholog GmbH, Germany), phototrichogram micro-camera images (Dino-Lite Pro Digital Microscope (micro-camera), Naarden, Holland), of the scalp (40× magnification and reported as units/cm²). TrichoScan® image analysis software permitted counting of the number of hairs present in an area equaling 0.592 cm² of scalp. For comparison between the number of hairs present at the end (T150) and at the start (T0) of the study, the increase in the number of hairs in that area was recorded and hair density calculated at the end of the study (T150).

(iv) *Hair Root Bulb Imaging* – With a light microscope, standardised photomicrographs of plucked hair roots taken at the beginning (T0) and at the end (T150) of the study, of the three most representative results for each study group, were evaluated to correlate findings of the trichograms, and to assess the condition of the hair bulbs pre- and post-application (T0) and (T150).

(v) *Cape Combing Test* – Using a standardised comb test, the number of hairs falling out under test conditions was determined on days T0 and T150. As a precondition, volunteers came to the study centre without having washed their hair at least 48 hours prior to study commencement, and without having combed their hair at least 24 hours, in order to assess hairs near the end of the telogen phase, and to avoid artificial reduction in the percentage of hairs in telogen phase. Falling hair – in the comb and on the cape – was collected for counting.

(vi) *Wash Test* – The number of hairs falling out during hair washing under standardized conditions was determined. As a precondition, volunteers came to the study centre without having washed their hair at least 48 hours prior to study commencement, and without having combed their hair at least 24 hours, in order to assess hairs near the end of telogen phase and avoid artificial reduction in the percentage of hairs in telogen phase. Any hair from the sink basin was then collected for counting.

5. Volunteer Subjective Assessments

Volunteers evaluated, via an 18 question response form, a variety of aspects of their hair at 3 control points (T0, T45 and T150). Responses were recorded and data evaluated.

6. Statistics and Data Analysis

Statistical descriptive analysis was performed for each biometric quantitative variable along experimental times, including basic descriptive parameters (central tendency and variance) that define the distribution for each response variable in test product and control along experimental times. Linear mixed-effects models were adjusted to data distributions for each response variable, in order to assess the application efficacy of the tested products versus control along experimental times. The application effect of principal variables was interpreted by comparing test product to control in baseline and each experimental time. Every model used in this study for data analysis is contained in the lme function of nlme package for R software. In order to evaluate the efficacy

between applications at each time point, normally distributed data that could not be fitted by a linear mixed-effects model were analysed using a paired Student's t-test. The effect of test product on biometric measures was interpreted by comparing applications with each other at each time point. In order to compare timepoints with baseline for each application, normally distributed data that could not be fitted by a linear mixed-effects model were also analysed using a paired Student's t-test. The effect of time on biometric measures was interpreted by comparing timepoints with baseline for each application.

In cases of non-normality of data distribution, a Wilcoxon Signed-Rank test was performed for comparisons between test product and control in baseline and each experimental time. In addition, the experimental times relative to baseline are compared marginally for test product and control. Where the null hypothesis of no differences amongst test product and control in each time point was rejected, it can be concluded that there are significant differences amongst test product and control in that experimental time. Where the null hypothesis of no differences among each experimental time and baseline were rejected, it can be concluded that there are significant differences among the time point under assessment and baseline.

Results

All volunteers completed the study with no drop-outs, and no adverse events were recorded.

(i) *General Photography* – Figure 1 is representative of the three most representative general differences seen in hair growth patterns observed between T0 and T150. When the product application manages to increase the number of hairs, general photography of the scalp is a simple test that demonstrates product success. In this study, general differences were observed between T0 and T150. The example images shown for volunteers A, and C, a subjective difference, where the appearance of new hair is observed after 150 days of application in the parting areas com-

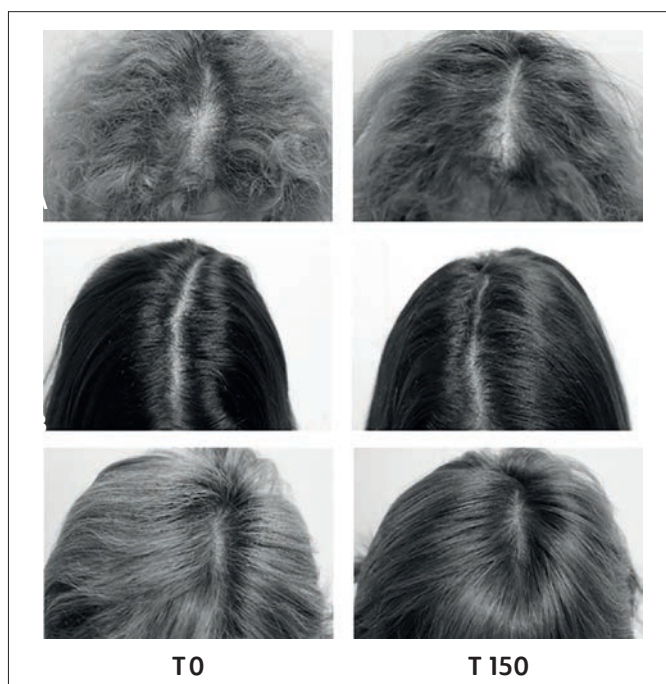


Figure 1: Standardised global photographic (Canon EOS 600D) images of representative (3) volunteers showing subjective changes in hair density, and the subjective appearance of new hairs, following application of test product comparing T0 versus T150 (see text for details).

pared T0. In addition, in volunteer B a subjective increase in hair density is observed in the same part of the hair after 150 days of application.

(ii) *Hair Density* – As represented in Figure 2 (volunteers D, E, F), observations following 150 days of test product application, showed that 73.3% all volunteers exhibited a higher capillary density. Evaluating the data obtained at T150, the test product was able to increase capillary density with an average value of 5.28%. Taking into account only those volunteers with higher capillary density at T150, the test product was able to increase hair capillary density by an average of 8.64%. At T150 days after product application (Figure 2), capillary density increased at an average of

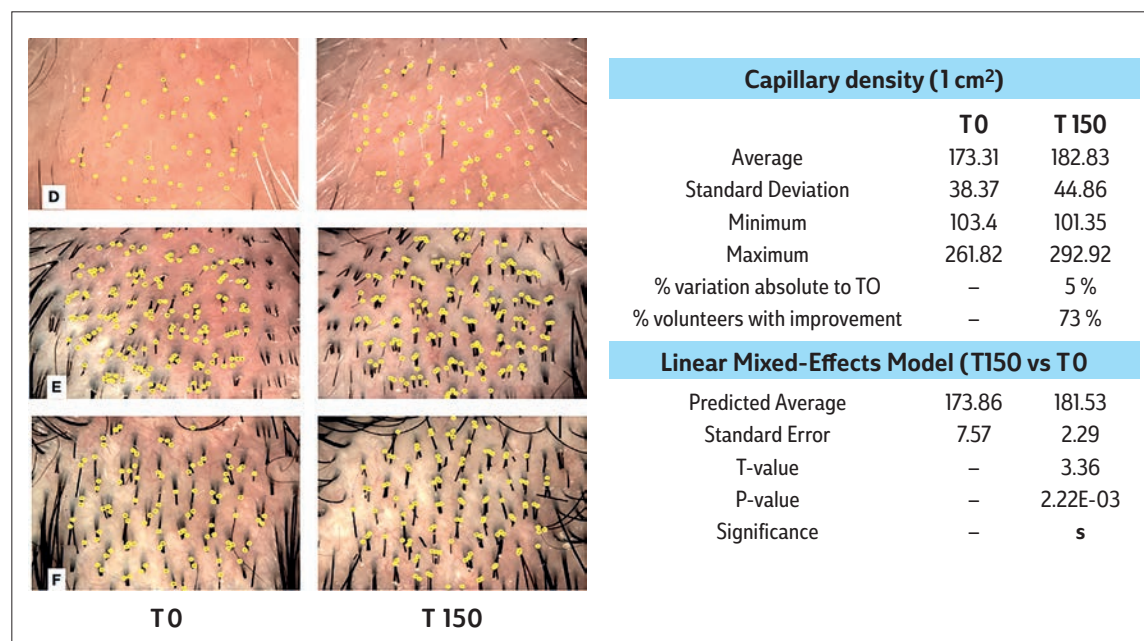


Figure 2: TrichoScan imaging of scalp 3 representative volunteers (D,E,F) showing a quantitative improvement in hair density following 150 days treatment with test product, versus baseline (T0) $p < 0.05$ (see text for details).

Increase in Anagen Phase			Increase in Telogen Phase		Ratio Anagen/ Telogen		
	T0	T 150	T0	T 150	T0	T 150	
Average	0.72	0.83	0.23	0.14	3.23	7.60	
Standard Deviation	0.09	0.06	0.05	0.05	0.70	6.09	
Minimum	0.48	0.69	0.17	0.03	1.20	3.00	
Maximum	0.80	0.97	0.41	0.23	4.00	35.00	
% variation absolute to T0	–	16 %	–	-39 %	–	135 %	
% volunteers with improvement	–	90 %	–	87 %	–	90%	
Linear Mixed-Effects Model (T 150 vs T 0)			Wilcoxon Signed Rank Test (T 150 vs T 0)				
Predicted Average	0.72	0.84	V	–	423.00	–	9.50
Standard Error	0.02	0.02	P-value	–	9.30E-06	–	4.71E-06
T-value	–	7.18	Significance	–	s	–	s
P-value	–	6.57E-08					
Significance	–	s					

Table 1: Percentage of volunteers for whom application of the test product had a positive effect (T0 vs T150) p < 0.05 (see text for details).

Combing and Wash test			Increase in Telogen Phase		
	T0	T 150	T0	T 150	
Average	394.63	197.90	0.23	0.14	
Standard Deviation	192.88	132.96	0.05	0.05	
Minimum	102.00	60.00	0.17	0.03	
Maximum	795.00	517.00	0.41	0.23	
% variation absolute to T0	–	-50 %	–	-39 %	
% volunteers with improvement	–	93%	–	87 %	
Linear Mixed-Effects Model (T 150 vs T 0)			Wilcoxon Signed Rank Test (T 150 vs T 0)		
Predicted Average	372.76	185.06	V	–	351.50
Standard Error	30.09	29.85	P-value	–	0.01
T-value	–	-6.29	Significance	–	s
P-value	–	7.26E-07			
Significance	–	s			

Table 2: Combined comb and wash tests T0 vs T150 and T0 vs T45. Numbers of hair lost reduced significantly at all time points p < 0.05.

HAIR PARAMETER	TO RESPONSES (%)			
	INTENSIVELY	MODERATELY	SLIGHTLY	NOT AT ALL
Do you currently have hair loss	40	50	10	0
Do you notice your hair fragile/weak	20	36,7	20	23,3
Do you notice your hair is thinner	16,7	36,7	23,3	23,3
Do you notice a lack of volume	23,3	30	26,7	20
Do you observe reduced hair density	23,2	30	30	16,7
Is your hair dull	6,7	46,7	16,7	30
Is your hair frizzy	20	26,7	13,3	40
Is your hair easily tangled	30	13,3	30	26,7
Is your hair dry	23,3	16,7	23,3	36,7
Is your hair easily damaged	13,3	26,7	30	30
Are your hair roots/scalp oily	10	20	22,3	36,7
Do you have dandruff on your hair/scalp	6,7	6,7	30	56,7
Is your scalp itchy	13,3	46,7	33,3	6,7
Do you feel confident regarding your hair appearance	16,7	36,7	30	13,3
Do you like your hair aesthetics	13,3	46,7	33,3	6,7
Currently, do you have hair loss (pillow, comb, etc)	40	50	10	0
The hair that falls is	Mainly Thick: 33,3	Mainly Thin: 46,7	Both: 20	
Do you dye/colour your hair	Yes: 63,3	No: 36,7		

Table 3: Volunteer responses at T0 prior to study commencement.

5% relative to baseline (T0), and all data was statistically significant (p < 0.05).

(iii) *Effect on Anagen and Telogen Phases* – Table 1 shows the percentage of volunteers for whom the test product has had a positive effect (anagen increase and telogen decrease). It was observed that the test product resulted in a positive effect in 90.0% of volunteers with an increase in the anagen phase, and 87% of

volunteers showed a positive effect with a reduction in the telogen phase. This is indicative of the test product being able to prolong the growth phase (anagen) of the hair and/or reducing the time hair spent in the telogen phase. By calculating the average values of the increase and/or decrease of the anagen and telogen phases a 17.5% increase in the anagen phase and a 36.5% decrease in the telogen phase (data not shown) was observed. In

respect of only those volunteers with an increased anagen phase or decreased telogen phase, there was a 20.03% increase in the hairs in anagen phase and a 43.67% decrease in hairs in the telogen phase. After 150 days of test product application, the anagen phase was increased by 16% relative to baseline (T0), and all data was statistically significant ($p < 0.05$). After 150 days of test product application the telogen phase was decreased by 39% relative to baseline (T0), and all data was statistically significant ($p < 0.05$).

(iv) *Effect on Hair Regeneration* – Any hair loss reducing product is required to increase the percentage of hairs within the anagen phase as well as decrease hairs within the telogen phase, and thus an increase in the anagen/telogen (A/T) ratio. In this study, it was observed that 90.0% of the volunteers showed an increase in the A/T ratio after 150 days of product application (Table 1). Furthermore the ratio of A/T was increased by 135% relative to baseline (T0), and all data was statistically significant ($p < 0.05$).

(v) *Hair Root Bulb Imaging* – Plucked hair root bulbs were examined for integrity at T0 and T150 (Figure 3). In the example volunteers (T0) poorly developed or irregular root structure was observed under light microscopy, with a clear telogen phase, and little or no presence of the hair sheath (G and H). In volunteer I, the hair sheath was also absent with an irregular poorly developed root and poorly compacted cohesive keratins. Following application with the test product (T150), the hair roots of volunteers exhibited a well-developed hair sheath and increased thickness corresponding to the anagen phase. Good follicle adherence was also observed.

(iv) *Comb and Wash Tests* – As illustrated in Table 2, in the combined comb and wash tests, following 45 days of test product, 80.0% of the volunteers exhibited a reduction in hair loss. Of those volunteers exhibiting reduced hair loss, the average actual numbers of hairs was reduced by 13.9%. After 150 days of application 93% of the volunteers exhibited a reduction in hair loss, and of those volunteers exhibiting reduced hair loss, the actual average reduction of hair numbers lost was increased to 28%. At 45 days after application, the numbers of hairs lost decreased was 17% relative to T0, while at T150, the number of hairs lost decreased by 50% relative to T0. These differences were statistically significant ($p < 0.05$).

(v) *Volunteer Subjective Assessments* – A pre-study questionnaire was completed by all volunteers with regard to insights on their hair loss concerns, scalp condition, and general hair condition (Table 3). All volunteers exhibited hair loss with 90% rating that loss as either moderate (50%) or severe (40%). The hair lost was considered either thick (33.3%), thin (46.7) or both (20%). Of interest, while to majority of volunteers exhibited little (30%) or no dandruff (56.7%), the majority of volunteers (93%) indicated they had an itchy scalp. The reasons are unclear, though the majority of volunteers were women (26), and the number of volunteers who dyed their hair was 63%.

During the course of product usage, volunteer subjective assessments correlated with clinical objective evaluations in that a reduction of hair loss was seen. 77% of volunteers indicated a hair loss reduction at T45 which increased to nearly 97% at T150 (Figure 4). Clinical observations of hair density also correlated with volunteer assessment, with volunteers indicating an increase in hair density, of 17% and 30% at T45 and T150 respectively. Ap-

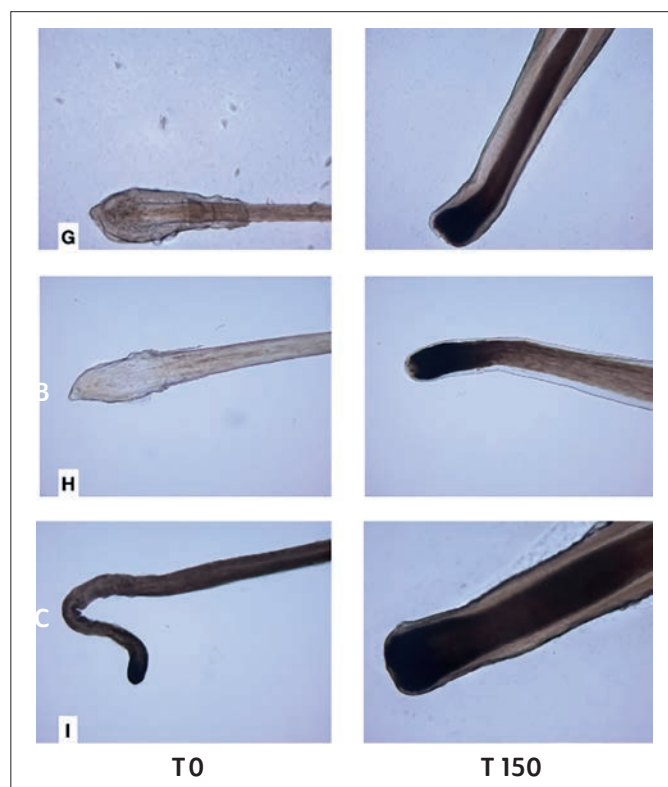


Figure 3: Hair root bulb light microscopic representative (3 volunteers) imaging before (T0) and after (T150) treatment with test product. At T0 little or no hair sheath is present (G,H), and telogen phase is clear (G,H,I). At T150 well developed hair sheath is visibly present with more structure and good bulb adherence (G,H,I).

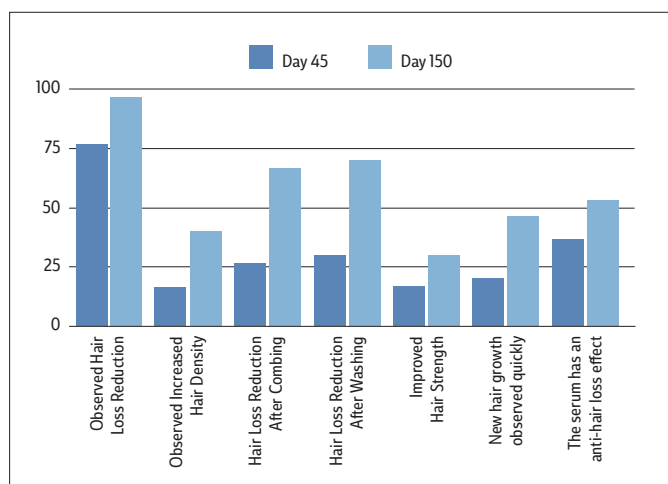


Figure 4: Improvement scores (expressed in percentage) in volunteer self-assessments of test serum attributes after 45 and 150 days treatment. Data showing combined "intense improvement" with "moderate improvement". $P < 0.05$

proximately 47% of volunteers felt a slight increase - correlating with the data that around approximately 77% of volunteers in fact had an increase in hair density based on the Trichoscans. Furthermore, volunteers also noted a good reduction (intense and moderate improvements) in hair loss after combing and washing, notable after 150 days application (67% and 70% respectively). Considering whether the product could be considered as having an actual hair loss reducing effect, 53% agreed (intense and moderate agreement) with 40% agreeing to the product having a slight

benefit. Other observations (data not shown) indicated that 97% of volunteers felt the product caused no scalp discomfort; 67% of volunteers said they noticed new hairs, and 95% scored this notice as either intermediate (75%), or higher (20%).

Discussion & Conclusions

In this preliminary study we have been able to show, that when combined with niacinamide^{18,19}, the Curcumin longa and niacinamide led cosmetic formula was able to help reduce the loss of hair in human volunteers over a 5 month test period²³. Standard methods employed to evaluate the cosmetic improvement in hair loss and hair density provided valuable insights into the performance of the product under test. The results obtained correlated well with subjective volunteer assessments, despite the low number of volunteers recruited onto the study, and the imbalance between male and female volunteers. However, in order to solidify the data, a larger cosmetic study is in planned process, in terms of volunteer numbers, with a more balanced male-female ratio, the type of hair loss, and age, etc. Furthermore such a larger study will enable us to focus on the hair loss parameter between the sexes, as well as validate the data presented herein.

While clinical quantitative methods, including hair loss and pattern type, as well as clinical grading of severity are commonly used and valuable in demonstrating the effectiveness of any cosmetic hair loss product, unless potential consumers can see the effects for themselves, photographic imaging and volunteer subjective questionnaires with respect to cosmetic product performance are vital. Moreover, a better understanding of the “individual” in terms of their nutritional status, hormones, environmental exposure, stress, use of hair dyes, straighteners, bleaching and the like, etc., are also required.

The hair loss phenomenon is distressing for those individuals suffering from the condition, and self-perception of image and loss of attractiveness is still poorly understood and poorly addressed by the cosmetic industry. This could partly be due to legislation classifying cosmetic hair loss/hair loss reducing products, such as the one studied here, as “borderline”²⁴, whereby each product is assessed individually on a case-to-case basis, with few clear guidelines for the industry. This could potentially make it harder to engage the community in developing, testing and improving such products.

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Being in advance is still a strategic issue for the clinical testing market for the Chinese Beauty industry

By Anne Charpentier

Today we want to bring a unique and global panorama on the current drivers of the specific but global market of the clinical evaluation for ingredients and personal care brands in Asia and specifically in China. This market of the clinical evaluation concerns skin, hair, scalp, and nail studies, for efficacy, safety and tolerance, consumer tests and sensory analysis.

To give a concrete approach of this subject, we have conducted during the 1st semester of 2022, two surveys, one first dedicated to the purchase habits of European clinical testing managers evaluating actives, toiletries, or personal care, a second one dedicated to the figures around the Clinical Testing laboratory activities.

The beauty market, dynamic innovative and resilient

The beauty market in the world represents a total of € 228 billion in 2021, Asia gathered 39% of the market in 2018 and has represented in 2020 \$126.9 billion¹. The golden category in the beauty industry is the skin care. But the Covid-19 had a global impact on this market, where Asia, the leader lost some market share due to the several lockdowns particularly in China. Indeed, the difficult period of 3 years of containment and quarantine procedures is just over since December 2022. Nevertheless, we can globally observe a dynamic but resilient market as after the big drop in 2020, it bounced well in 2021.

Asia market as a cosmetics trendsetter

Let's now see the trends that drives this market globally in the world: Clean-beauty and various cultural changes, sustainability and social responsibility, the regulation constraints, and the life-style changes. Specifically for the Asia zone, we can highlight 5 main trends: Sustainability and packaging, Climate aggression protection, The perfect use and easy experience, Customization, and bespoke Beauty.

Not surprisingly, South Korea is at the forefront as one of the most innovative cosmetic markets in the region. K-beauty is recognized globally, with consumers around the world citing the positive effects and good quality of products as the main positive aspects of the beauty trend. Cosmetics from Japan remain very influential with historical brands and century-old know-how. However, new beauty markets are emerging in the Asia-Pacific region like China, Thailand, or Vietnam. The introduction of halal products has led to the growth of the cosmetics industry in countries such as Indonesia and Malaysia.

In addition, the region's digital revolution has also contributed to the increase in beauty consumption, with consumers buying more products online. Increased social media penetration has impacted the cosmetics industry, as consumers are more likely to buy products that have been reviewed by influencers. Asian consumers are known to thoroughly research products before buying

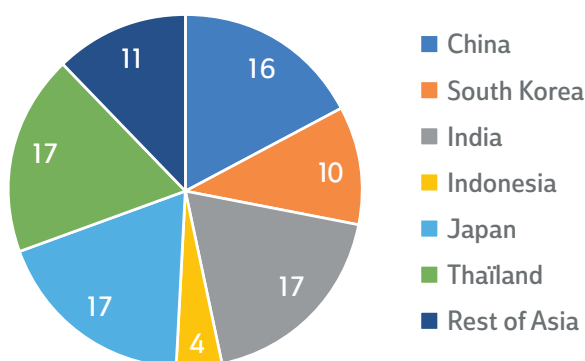
them. The Asia-Pacific cosmetics industry continues to grow at a steady pace while offering innovative products and maintains a global leadership position.

The Evaluation testing at the services of the Beauty innovation

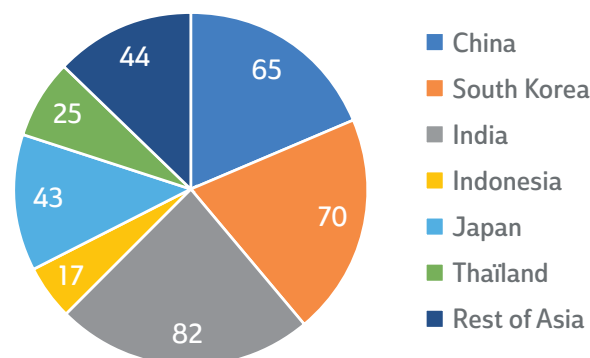
While Europe is the major testing partner, with 50% of the global business related to clinical evaluation, Asia is the second localization of these services with 24%. The Asia-Pacific area gathers more than 39 laboratories present in China, India, Indonesia, Japan, and South Korea, offering more than 245 methods to analyse the skin, hair, or nails. These testing laboratories answering the evaluation needs for the tolerance and the efficacy with classical but also high-tech instrumentation such as Raman microscopy. These clinical evaluation centres help the brands to be compliant with each local regulation (Japanese, Korean, Asean or Chinese) and to support the claim substantiation needs.

In Asia, the context of the clinical testing market is very good with specific characteristics for each country. In Japan where the average age is the highest in the world with 48 years and despite the importance of the Beauty sector, the number of testing labs is relatively low compared to Europe but high compared to Asia area. We can note that Japan is the 5th country in Asia in term of range of services for skin care. It may be explained by the history of the claim substantiation politics of the national cosmetics brands. For Korea, since few decades the K-beauty influences significantly the international Beauty market with innovative concept and requires specific regulation to enter it. Several CROs are present but with few of them coming from abroad (except IEC Group). South Korea is the second country in term of testing labs number but the first one considering the range of clinical evaluation services. In Indonesia we recently notice the recent emergence of new testing labs. India, the second world's most populous country with an historical powerful pharmaceutical industry is the country which presents the most numerous centres of testing (ex-aequo with Japan) and the most numerous testing services.

Number of centers per country



Tests distribution for the Skin Care Efficacy

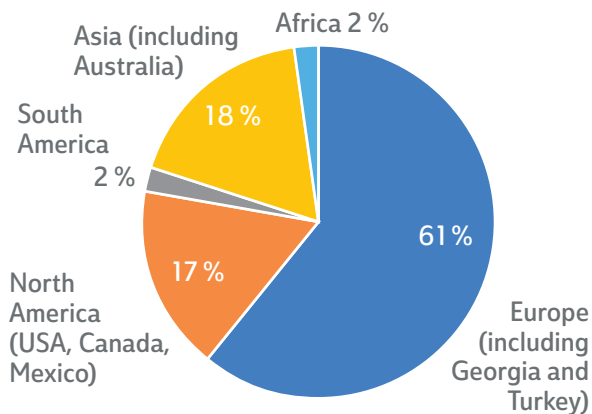


- The ranking in order of importance of the range of the skin efficacy test services is India, South Korea, China, Japan, and Thailand.
- The ranking in order of importance of the number of the testing centres is Japan and India, China, South Korea, and Thailand. This ranking is not proportionate to the country size.



China is a particular testing market mainly influence by the growth of the cosmetics consumption, the Beauty purchasing patterns, the specificity of the distribution channel (90% on internet) and finally by its recent cosmetics regulation constraints. The new regulation can be considered as an obstacle to market access (after the positive list that was necessary to comply for ingredients). Indeed, CROs need to have a global accreditation from the Chinese government but also for some claims such as moisturizing, need to use specific instrumentation to get the final approval. It will limit inevitably the foundation of new foreign laboratories. China, the second great world powers just after the United States is the 4th country considering the centre number and the 3rd in term of testing service range. Most of the European respondents to our survey (evaluation managers) works with five or more testing laboratories to conduct their tests, mainly implemented in France, Europe but also in North America and China for about 30%.

Distribution of the manufacturers per continent



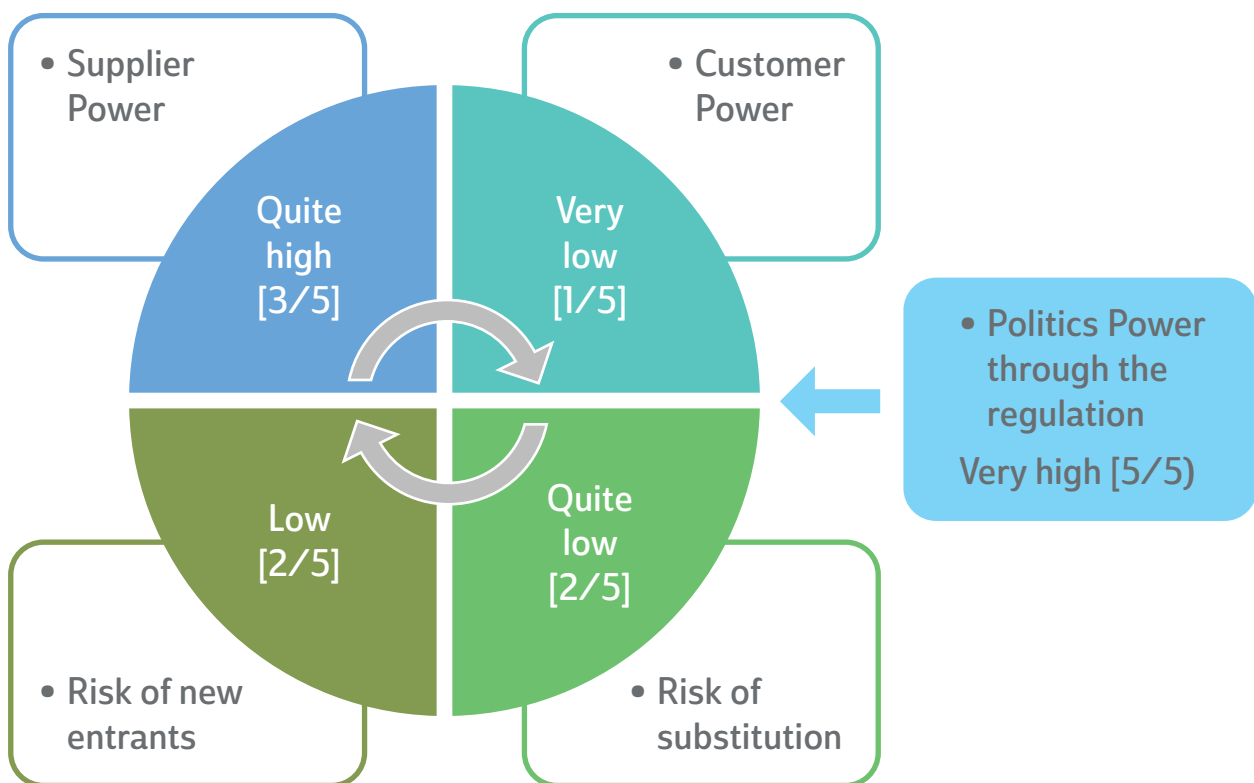
We have observed that worldwide the testing services range offered by the CROs is largely influenced by the dynamism of the instrumentation manufacturers providing new equipment and new technology to deliver innovation perspectives. In China, nowadays the offer of instrumentation is lower than the needs.

For Asia, the observation deserves to be more detailed since Japan has a great tradition of skin analysis caught up in recent decades by South Korea. China, for its part, through its new cosmetic regulations, intends to catch up with these two neighbours. It will certainly offer in the coming years many opportunities for analytical methods supported by the intensive use of diagnostic applications for consumers and their corollary of A.I. Tests on hair or strands form a specific category and it is worth looking specifically at this offer proposed by many laboratories.

We can imagine in the future that the emergence of high level of testing requests in China – that constitute a clear and strong entry barrier – will create a new and important demand of measurement devices. May the Chinese testing sector will one day develop its own instrumentations to analyze the skin, hair, and nail

The Asia-pacific market of clinical evaluation is held by big testing groups (Eurofins, SGS, MMR research, CIDP, MS Clinical research ...) but also defended by local testing providers that act as leaders in each country: Ellead in South Korea for example. In China we can retrieve IEC, Complife, Cosderma Eurofins as originally European actors, MMR research as Indian suppliers then as local actors China Norm, Eviskin, Pony, and all government testing labs that are run by the Chinese administration in every region.

Chinese competitive environment of the clinical evaluation for the beauty industry



In conclusion

The international clinical testing market is oligopolistic with numerous testing labs. This sector represents through the CROs activities the dynamism of the Beauty sector and its compliance with worldwide regulation for the safety evaluation and the performance substantiation. The WTO (World Trade Organization) did an important work on the standards diffusion of the Beauty sector for 30 years. This global market is not homogeneous and can be mature in some part of the globe such as Europe or North America and some countries in Asia like Japan and South Korea. Some areas are still in development in the field of clinical testing and represent a significant growth potential in South America and China particularly.

The singular know-how of the skin biometrology that European and Asian countries have, influence worldwide the sector with classical or innovative and high-tech methods. Finally, the clinical evaluation services benefits of the influence of the dynamic, innovative, and resilient market that represents the Beauty market today.

The evolution of this clinical evaluation sector has been impacted by the two years of sanitary crisis with the Covid pandemic; in the future, it will be certainly influenced by several ele-

ments and mainly the politics with the cosmetics regulations around the world and their specificities (China, Japan, South Korea...), the consumer requests for more ethical testing, inclusivity and social responsibility, the innovation in the field of active ingredients and the technological innovation with IA, diagnosis App, nomad and remote solutions.



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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Phage tech, oral wellness and smile care, new ideas in sun care, advances in clinical testing, and next-gen cannabinoids are just some of the beauty innovations I will be watching in 2023

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Deanna Utroske is one of the most well-respected critical thinkers in the cosmetics and personal care industry today. An editor, writer, and beauty industry commentator, she contributes to trade and business media publications around the world. As a consultant, Deanna develops business content for suppliers and manufacturers, helping them grow in key B2B markets. And as a public speaker, she enjoys presenting to company teams, higher-education classrooms, and event audiences internationally. More at DeannaUtroske.com.

Author's Note:

The cosmetics and personal care industry, innovation is a constant. Consumers have been conditioned to seek newness; brand leaders launch products to address the challenges of the moment; and scientific discoveries happen every day, advancing what's possible in and beyond beauty. Here, I outline just 5 of the emerging science topics and product formulation trends that I'll be following and writing about this year in my Global Perspectives column here for EURO COSMETICS Magazine.

Phage Technologies for Skincare

It seems as if every beauty maker right now is marketing microbiome skincare products. Industry leaders including L'Oréal, P&G, and DuPont have been researching and developing skin microbiome science with practical applications in beauty for more than a decade now. Nonetheless, “the research within the world of the microbiome is still very early,” as **Elsa Jungman PhD, Founder and CEO of HelloBiome**, told me for the Global Perspectives column on Advances in Microbiome Beauty Science that ran in the September 2022 issue of this magazine.

Some scientists believe that bacterial viruses are the way forward. Brands like Phyla Skincare and Gladskin as well as ingredient innovators like **Biocogent** and **Lysando AG** are working with phage technology to address consumer skin concerns such as acne. ‘Phage’ is short for bacteriophage; a type of virus that infects bacteria to perpetuate its own existence and in doing so eliminates the host bacteria.

Lysando AG, for instance, specializes in the development of antimicrobial proteins – proteins that selectively eliminate bacteria. The company's Artilysin Platform Technology has applications in multiple industries, including personal care and cosmetics. And,

Formulation Trends for Beauty Innovators to Watch in 2023



In the phage technology lab
at Lysando AG

in a recent interview, **Chairman Markus Graf Matuschka von Greiffenclau** spoke with me about **Lysando's** unique approach to phage technology.

Under normal circumstances, a phage attaches to its particular host bacteria at a receptor site; and then coerces the bacteria to generate more copies of that virus. *"The phage, at the end of its cycle,"* explains **Graf Matuschka von Greiffenclau**, *"needs to break out of the bacterial envelope to spread ... They have two elements holins and endolysins; and these, in cooperation, break up the cell wall from the inside so that the bacteria gets opened and [the virus] can spread."*

To understand the Artilysin Platform Technology, it's important to know that the cell wall of bacteria are stabilized, in part, by a cluster of ions. Lysando's technology exploits that intrinsic electrical charge. *"What we do is take the endolysin – it's a very small molecule about 40kDa (kilodalton) – we take this endolysin and we manipulate it."*

By giving the endolysin a positive electrical charge, *"we can attach our endolysin any place on the target bacteria,"* **Graf Matuschka von Greiffenclau** tells me. *"We destabilize the bacterial cell wall by [means of] the electric charge; and then by osmotic pressure, the bacteria will burst."* Through this mechanism of action, the targeted bacteria strain is eliminated and the skin condition it correlates to is significantly resolved.

Of course, the technology is much more complex than all of that; over the past 15 years, **Lysando AG** has secured hundreds of patents and developed some 450 prototypes. And there is much more to come from this company and others working in phage technology.

Oral Wellness & Smile Care Innovations

Oral care sits neatly at the intersection of health and beauty, which is why ingredient makers like US-based Ingredion are now helping oral care brands get in on the waterless and solid formulation trend with product prototypes like Fresh Bite Toothpaste Tablets.

It's why brand's like Gallinée – recently acquired by Shiseido – are bringing microbiome beauty and oral care together with products like Prebiotic Toothpaste and a Mouth & Microbiome Supplement. And why brands like Korea-based SALTRAIN are helping introduce mineral-rich gray salt to mainstream oral care consumers with its toothpaste formulations.

At the same time, we see Ireland-based Spotlight Oral Care (a brand founded by dentists, a product portfolio flush with conventional oral care products and tools) offering skincare: a \$180 Smile Rejuvenation System, complete with a derma-roller tool, a Pro Regeneration Serum, and a Lip Sheet Mask.



The Beauty of Sunlight

The skincare benefits of daily SPF protection are now widely known; and more and more beauty consumers have made sun care a part of their regular routine. So it follows that companies across the cosmetics and personal care industry are developing new sun care ingredients.

SPF boosters are becoming quite common. Dow, for instance, offers a line of ingredients called SunSpheres that boost SPF or raise UV protection. And according to the company site, these ingredients are well suited to both sun care and complexion product formulations.

Perhaps even more compelling is the January 2023 launch of Nectaria Lithops, a trademarked ingredient that helps optimize the skin's own production of vitamin D. Inspired by the functionality of Lithops pseudotruncatella (a succulent native to South Western Africa sometimes called 'living stones'), the team at Spain-based Vytrus Biotech developed the new active using their in-house expertise in plant stem cell technologies.

Alejandro Guirado, Communication and Marketing Manager at Vytrus, shared press materials with me that explain how *"Lithops pseudotruncatella is able to maintain levels of water and healthy cells during extreme periods. Its secret weapon is its sugar structuration. Along with a peculiar metabolism, this sugar structuration enables the plant to capture the light necessary for ... underground photosynthesis without compromising the water balance of the plant."*

There are apparently similarities between this underground photosynthesis and vitamin D synthesis in human skin. So, *"by developing a biotechnology platform (Phyto-Glucidic Fractions) based on plant sugars, Vytrus created Nectaria Lithops. The biophysical mechanism of action of this active ingredient, made from Lithops stem cells, consists of the optimization of the skin microenvironment to stimulate the vitamin D production by the cutaneous cells,"* explains the company's press materials.

And a sun care innovation that promises to surprise and delight is in the works at US-based expressive biology company **Arcaea**. In a mid-January interview with Dylan Dreyer of NBC's Today, **Arcaea CEO Jasmina Aganovic** shared this sun care news: *"This is strange to say, but fish don't get sunburned. And it turns out they have this molecule that we don't have as humans. What we're doing is studying that molecule and creating it through fermentation so that we don't have to extract it from fish and looking to bring that to market in sunscreens."*

Advances & Opportunities in Clinical Testing

It takes more than new ideas, new ingredients, and new product innovations for better beauty benefits to become reality. Clinical testing methods, technologies, and protocols are tremendously important tools for developing effective products.

GeneMarkers, for instance, a US-based genetic research company that supports the personal care and pharma industries with testing services, has developed testing methods that make it possible

to assess and quantify the effects that blue light exposure has on skin. The company recently published research on one such testing method in the International Journal of Cosmetic Science with the title, “*Reproducible method for assessing the effects of blue light using in vitro human skin tissues.*”

As authors **Rishabh Kala, Nicole Heiberger, Heather Mallin, Stephanie Wheeler, and Anna Langerveld** note in that article’s abstract, “*Gene expression and protein biomarkers were measured using qPCR, ELISA and immunohistochemical (IHC) methods.*” And their research concluded that “*consistent blue light exposure produced skin damage via alterations in biological pathways that are associated with skin ageing.*” This method of assessment can then be used to determine the benefit of ingredients and products developed to mitigate blue light damage.

Another company in the clinical testing space is doing work focused on the importance that skin’s physiological or mechanical tension plays in how it responds to ingredients, products, and treatments. Based in Scotland, **Ten Bio** is intent on “*transforming skin research with ... advanced ex vivo human skin models,*” according to promotional materials that **Founder and CEO Robyn Hickerson** shared with me late last year.

TenSkin is the company’s real human skin model, which is cultured under tension that “*[restores] skin’s inherent mechanobiology*” and “*retains skin’s physiological complexity, metabolic activity, and structural integrity,*” staying viable for as long as 2 weeks, “*allowing research teams to make more informed decisions at every stage of R&D,*” according to **Ten Bio**.



TenSkin ex vivo human skin models from Ten Bio

Next-Generation Cannabinoids

Cannabinoid beauty is here to stay and companies around the world are making important advances to ensure that these newly popular ingredients are available at the quality and scale that our industry requires.

This past October, for instance, US-based **Purissima** announced the launch of its biotech Cannabichromene (CBC), a minor cannabinoid known for its anti-inflammatory benefits. Minor cannabinoids are simply those found in small amounts in cannabis – small compared to the amount of CBD and THC. Purissima leverages microalgae and fermentation to produce cannabinoids at industrial scale.

“The effectiveness of CBC in both topical and ingestible formulations is a testament to the clear advantages that algae fermentation brings to the natural sourcing of hard to access ingredients,” believes **Robert Evans, Purissima Co-Founder and Chief Business and Strategy Officer**. “Versus plant sources of CBC, algae fermentation offers reliable and repeatable purity and dosage as well as a vastly more sustainable profile,” he told the press in late 2022 when the company launched its CBC to the market.

Looking Forward at 2023 Emerging Science and Formulation Trends

Phage tech, oral wellness and smile care, new ideas in sun care, advances in clinical testing, and next-gen cannabinoids are just some of the beauty innovations I will be watching in 2023. ■

If you’re shaping the future of beauty science – working on new ingredients, manufacturing processes, or product formulations that will impact these and any other emerging science and formulation trends – let me know: hello@deannautroske.com

Jimmy Choo bringt den Duft "Blossom" in einer Limited Edition heraus

Wie die besten Essentials der Saison hat sich auch der kultige Duft Blossom von Jimmy Choo als so unwiderstehlich erwiesen, dass er seit seinem Erscheinen im Jahr 2015 zu einem wahren Sommer-Must-Have geworden ist. Im Jahr 2023 kommt der geheimnisvolle Duft in einem auffälligen, neu gestalteten Flakon daher.

Blossom-Fans werden feststellen, dass der Duft für den Sommer 2023 zwar anders aussieht, der verführerische Duft, der von der angesehenen Parfümeurin Marie Salamagne kreiert wurde, jedoch derselbe Limited Edition Duft bleibt. Die Frangipani-Blume ist ein imposanter Akkord neben einem Schmelztiegel von Noten, der die berausende Wirkung exotischer Früchte im Herzen und den Reichtum von Sandelholz in der Basis umfasst. Es ist diese fröhliche und funkelnde Harmonie, die die Jimmy Choo Blossom-Kollektion verkörpert.

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2023 schreibt Montblanc Signature seine Geschichte mit der Einführung von Signature Absolue weiter. Mit diesem sinnlich-intensiven Duft setzt sich die Montblanc-Frau in Szene und zieht ihr Umfeld mit ihrem außergewöhnlichen Strahlen in ihren Bann. Signature Absolue greift auf ein weiteres wichtiges Element in der DNA von Montblanc zurück: Gold. Die Feder, das Herzstück der ikonischen Schreibgeräte von Montblanc, wird von Hand und aus Gold gefertigt. Dieses subtile Detail inspirierte die Parfümeure dazu, einen leuchtenden neuen Duft zu kreieren, der den Glanz dieses charakteristischen Golddetails, das zeitlos mit der Marke verbunden ist, widerspiegeln sollte.

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es weniger ungebündelt (frizzy) erscheinen. CosVivet HA eignet sich perfekt für die Verwendung in Haarwaschmitteln, -masken und -pflegeprodukten. Brenntag bietet eine Reihe von Pulvern sowie leicht anwendbare flüssige Formen von Natriumhyaluronat in verschiedenen Molekulargewichten an. Erfahren sie mehr über die verfügbaren CosVivet HA-Qualitäten.

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Euromed's natural ingredient Pomanox® can positively modulate skin health and beauty-related parameters

According to a recent in-vitro study conducted by EURECAT and published in the International Journal of Food Sciences¹, Euromed's pomegranate fruit extract Pomanox® may reduce unaesthetic signs of skin ageing such as hyper-pigmentation, skin dryness and loss of elasticity, by reducing melanogenesis and oxidative stress while modulating collagen and hyaluronic acid metabolism. The results from this proof of concept, in-vitro assay with human foreskin fibroblast cells, therefore suggest that Pomanox® is a promising ingredient for nutricosmetic and beauty-from-within applications.

Pomanox®P30 is standardised to more than 50% total polyphenols and not less than 30% punicalagins $\alpha+\beta$, making it an ideal candidate for skin ageing studies. Multiple assays evaluated the effects of various concentrations of Pomanox® on human fibroblast Hs68 cells under normal and UV-induced photoageing conditions. The inhibitory effects of Pomanox® on tyrosinase activity were also investigated.

www.euromedgroup.com
akp public relations



DSM receives registration approval for SYN-UP® as a New Cosmetic Ingredient (NCI) in China

Royal DSM, a global purpose-led science-based company, today announces that its skin care peptide SYN-UP® has been approved as a New Cosmetic Ingredient (NCI) in China under the country's new cosmetic legislation and can be used freely in formulations all over the world. The outcome makes DSM the first company to receive NCI approval in the stringent NCI category 3 and confirms that SYN-UP® meets the highest levels of quality and safety for an active peptide. This successful result is the fruit of a long-term, cross functional collaboration which involved compiling an extensive dossier to give the Chinese authorities the detailed, wide-ranging data they require to grant NCI approval. It also reflects DSM's commitment to providing customers with impeccable service in the regulatory and quality sphere. SYN-UP® is a sophisticated, IP protected, synthetic dipeptide derivative. Its broad efficacy makes it suitable for use in a number of skin care applications.

www.dsm.com/personalcare

Ashland introduces Natural Line

Ashland announces the launch of The Natural Line for personal care products. This line is focused on promoting natural ingredients that can be easily recognized by their name, INCI description and have a defined composition. One of the standout ingredients launched in the natural line is sodium hyaluronate, which is produced through biotechnology. This ingredient, hyalurotech™ sodium hyaluronate is known for its ability to hydrate and plump the skin, making it a popular choice for skincare products.

The hyalurotech™ product line is comprised of different molecular weights that allow for varied depths of penetration into the skin, making it suitable for use on different areas of the face and body. Ashland intends for The Natural Line to become a go-to choice for those looking for personal care products made with natural ingredients.

www.asbland.com/naturals
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registered in various countries.

Hoffmann Neopac Debuts Fully Metal Child-Resistant Tins

Hoffmann Neopac, a global provider of high-quality metal and plastic packaging for pharma, beauty and oral care, is launching a fully metal version of its child-resistant high barrier tins. The completely recyclable, mono-material CR Tins are ideal for a wide variety of dry and semi-dry cannabis products including edibles, CBD oils, creams, gummies and concentrates.

Hoffmann Neopac's fully metal tins represent the next generation of the company's existing CR Tins with plastic inserts. By converting to a fully metal construct, the tins are not only more recyclable, but also help lock in freshness and provide protection from light. Most importantly, of course, the CR Tins keep children and pets safe

www.neopac.com
Turchette Agency



TekniPlex Consumer Products Launches Dispensing Liners Providing Dosing Moderation & Product Protection

TekniPlex Consumer Products, a globally integrated provider of innovative solutions through materials science and manufacturing technologies, has introduced a range of dispensing liners whose convenient peel-tab design provides simplified dosing for a wide variety of liquid, powder, and solid products. An attractive alternative to conventional plastic press-in orifice reducers, TekniPlex Consumer Products' new line of Peel n Pour™ solutions offer strong induction seals to prevent product leaks, with custom orifice sizes to reduce product flow by as much or as little as a brand owner specifies. The fully customizable peel-tabs allow for easy removal while maintaining tamper-evidence and product spoilage. TekniPlex Consumer Products' new Peel n Pour™ solutions are ideal for a broad array of products in which product flow control is useful – everything from baby oils and personal care products to cosmetics, household items, automotive, and even pharmaceutical applications.

www.tekni-plex.com/consumer
Turchette Agency

Das SWISS SCC Winterseminar in Vergangenheit, Gegenwart und Zukunft

Ein Gespräch mit Dr. Fred Züllli, Geschäftsführer,
und Dr. Franziska Wandrey, Leiterin Forschungsabteilung,
Mibelle Group Biochemistry



Franziska Wandrey hat 2014 ihre Doktorarbeit in Biochemie an der ETH Zürich abgeschlossen. Seit 2015 ist sie bei der Mibelle Biochemistry, wo sie einen wissenschaftlichen Beitrag leistet für die Entwicklung neuer kosmetischer Wirkstoffe. 2017 wurde Franziska der «Maison G de Navarre Young Scientist Prize» vom IFSCC verliehen. Im Frühjahr 2020 hat sie berufsbegleitend ein MBA-Studium mit einer Masterarbeit zum Thema Innovationsmanagement abgeschlossen. Seit 2021 leitet Franziska das Forschungsteam der Mibelle Biochemistry und ist Mitglied im Vorstand der Swiss SCC.

Dr. Fred Züllli ist Business Development Director von Mibelle Biochemistry Switzerland, einer Geschäftseinheit der Mibelle Group, die Wirkstoffe für die Körperpflege-industrie entwickelt und produziert. Er gründete Mibelle Biochemistry vor mehr als 30 Jahren und erfand eine Vielzahl von patentgeschützten Wirkstoffen, die auf verschiedenen Technologien basieren. Zuvor arbeitete er am Nestle-Forschungszentrum in der Schweiz. Seine Forschung konzentrierte sich auf die Molekularbiologie und Genetik von kommerziellen Bäckerhefestämmen. Dr. Fred Züllli studierte Chemieingenieurwesen an der Technischen Hochschule Winterthur und setzte sein Studium an der ETH Zürich fort, um Molekularbiologie und Biophysik zu studieren. In seiner Dissertation an der ETH untersuchte er die Thermostabilität von bakteriellen Enzymen. Derzeit ist er als Vizepräsident in der Schweizerischen Gesellschaft für Kosmetische Chemie aktiv und war für das wissenschaftliche Programm der IFSCC-Konferenz 2015 in der Schweiz verantwortlich.



EURO COSMETICS: *Wir freuen uns, dass in diesem Jahr das Swiss SCC Winterseminar wieder in Präsenz in Davos stattfinden kann. Auf was dürfen wir uns nach der langen Pause besonders freuen?*

Dr. Franziska Wandrey: Wir freuen uns auch sehr, dass wir dieses Jahr das Seminar wieder durchführen können. Das Programm ist sehr interdisziplinär mit dem Konzept „Menschen – Kosmetik – Wissenschaft“ und lebt von der interaktiven Teilnahme der Zuhörer während der Vorträge und aber auch danach beim gemeinsamen Abendessen. Und das macht dieses Seminar so wertvoll.

EURO COSMETICS: *Der Starschuss für das 39. Winterseminar fällt am 5. Februar, diesmal unter dem Titel „Kosmetamorphose“. Was steckt hinter dieser Thematik?*

Dr. Franziska Wandrey: In diesem Seminar versuchen wir generelle Trends, wie schnelle Wandlung von Wissen, Konsumentenbedürfnissen, Märkten und Produkten in der Kosmetik von verschiedenen Seiten zu beleuchten mit Experten aus der Wissenschaft, dem Marketing und dem Vertrieb.

EURO COSMETICS: *Herr Dr. Züllli und Frau Dr. Wandrey, in Ihrer Funktion als Seminarleiter haben Sie stets aktuelle Themen im Blick. Welchen Themen sind besonders gefragt und welche Bereiche in der Kosmetikindustrie werden künftig eine stärkere Rolle spielen?*

Dr. Fred Züllli: Wir sind überzeugt, dass das Thema „Nachhaltigkeit“ in verschiedenen Facetten noch lange aktuell bleiben wird. Komplett neu sind die Schwierigkeiten im Supply Chain Management. Wir haben uns Wohlstand über die Globalisierung erworben und müssen da nun eventuell doch etwas zurückrudern. Die schnell ansteigende Regulierung in allen Bereichen und in allen Ländern wird in Zukunft noch eine wichtigere Rolle spielen und auf die Innovationskraft und Margen der Unternehmen drücken.

EURO COSMETICS: *Was ist das Besondere am Swiss SCC Winterseminar?*

Dr. Fred Züllli: Das Seminar findet in einem kleinen ungezwungenen Rahmen statt. Die Vorträge sind sehr interdisziplinär und ermöglichen den Teilnehmenden über den Tellerrand hinauszuschauen. Die Referent*innen und Expert*innen kommen aus verschiedenen Gebieten und stellen ihre Inhalte in einem grösseren Rahmen dar.

EURO COSMETICS: *Namhafte Industrieexperten werden zu aktuellen und branchenübergreifenden Kosmetikthemen vortragen und mit den Teilnehmern diskutieren. Auf welche Seminarinhalte dürfen die Teilnehmer gespannt sein? Können Sie uns einen kurzen Überblick geben?*

Dr. Franziska Wandrey: Als Keynote Speaker am Sonntagabend konnten wir Prof. Collin Ewald von der ETH Zürich gewinnen. Er wird uns einen Einblick

geben in das Thema „Longevity“. In seiner Forschung untersucht er die molekularen Mechanismen der Langlebigkeit. Dabei geht es nicht nur darum die Lebenserwartung zu verlängern, sondern auch die Jahre bei kompletter Gesundheit hinauszuschieben. Ein weiterer spannender Referent ist dann Boris Oak aus den USA. Er ist der Gründer der Kosmetikmarke EVOLVh. Er wird uns einen Einblick geben in die Entwicklung und Vermarktung eines Indie Brands

EURO COSMETICS: *Und gibt es einen Vortrag, den Sie besonders empfehlen würden?*

Dr. Fred Züllli: Spannend wird dann sicher auch der Vortrag von Rainer Vögeli, Senior Lead Scientist von DSM. Er spricht über die Hautprobleme, Hautpflege und Wahrnehmung des weiblichen Gesichtsausdrucks in verschiedenen ethnischen Gruppen.

EURO COSMETICS: *1982 wurde das erste Winterseminar in Champfèr ins Leben gerufen. Welchen Stellenwert nimmt das Winterseminar seither beim SWISS SCC ein? Und was hat sich seit den Anfängen besonders verändert?*

Dr. Fred Züllli: Das Winterseminar findet nun zum 39. Mal statt und hat von Champfèr bei St. Moritz nach Davos gewechselt. In den ersten Seminaren haben sich hauptsächlich die Formulierer (damals noch keine Frauen) getroffen, um über ihre Produktentwicklungsprobleme zu

diskutieren. Im Laufe der Jahre wurden sowohl die Themenbereiche als auch die Zusammensetzung der Teilnehmenden vielfältiger.

EURO COSMETICS: *Welche Auswirkungen hatte die Pandemie auf den Verein?*

Dr. Franziska Wandrey: 2020 konnten wir das Winterseminar gerade noch im Februar durchführen. 2021 und 2022 mussten wir das Seminar leider ausfallen lassen.

Eine virtuelle Durchführung schien uns nicht sinnvoll, da der Wert des Seminars sehr stark auf dem persönlichen Austausch liegt. Umso mehr freuen wir uns dieses Jahr all die treuen Teilnehmenden wieder physisch zu sehen.

EURO COSMETICS: *Welchen Nachholbedarf sehen Sie in der Branche und welche Schwerpunkte möchten Sie in der Zukunft beim Winterseminar setzen?*

Dr. Fred Züllli: Wie bereits erwähnt, stellen die physischen Interaktionen der verschiedenen Disziplinen der Branche ein Nachholbedarf dar. Daher ist das Winterseminar ein idealer Ort, um sich mit all diesen Expert*innen ungezwungen auszutauschen.

EURO COSMETICS: *Wir bedanken uns für Ihre Zeit und das Gespräch.*

Mehr Informationen zum Winterseminar finden Sie hier: <https://www.swissccc.ch/aktuelle-termine/>

The SWISS SCC Winter Seminar in the past, present and future

A conversation with Dr. Fred Züllli, Founder & Business Development Director, and Dr. Franziska Wandrey, Head of Research, Mibelle Group Biochemistry



Franziska Wandrey completed her PhD in biochemistry at ETH Zurich in 2014. Since 2015, she has been working at Mibelle Biochemistry, where she scientifically contributes to the development of novel cosmetic active ingredients. In 2017, Franziska was awarded the "Maison G de Navarre Young Scientist Prize" by the IFSCC. In 2020, she completed an MBA program with a master's thesis on innovation management. In 2021, Franziska became Head of Research at Mibelle Biochemistry and joined the board of the Swiss SCC.

Dr. Fred Züllli is the Business Development Director of Mibelle Biochemistry Switzerland a business unit of Mibelle Group which develops and produces active ingredients for the personal care industry. He founded Mibelle Biochemistry more than 30 years ago and invented a large number of patent protected actives based on different technologies. He previously worked at the Nestle Research Centre in Switzerland. His research focussed on molecular biology and genetics of commercial baker's yeast strains. Dr. Fred Züllli studied chemical engineering at the Technical Engineering School of Winterthur Switzerland and continued his studies at the ETH in Zürich to study molecular biology and biophysics. In his Ph.D. thesis at the ETH he investigated the thermo stability of bacterial enzymes. Currently he is active as vice president in the Swiss Society of Cosmetic Chemists and was responsible for the scientific program of the IFSCC conference 2015 in Switzerland.



EURO COSMETICS: *We are pleased that this year the Swiss SCC Winter Seminar can take place again in person in Davos. What can we particularly look forward to after the long break?*

Dr. Franziska Wandrey: We are also very happy that we can hold the seminar again this year. The program is very interdisciplinary with the concept "People – Cosmetics – Science" and thrives on the interactive participation of the audience during the lectures as well as afterwards at the joint dinner. These interactions are what makes this seminar so valuable.

EURO COSMETICS: *The starting signal for the 39th winter seminar will be given on February 05, this time under the title "Cosmetamorphosis". What is behind this topic?*

Dr. Franziska Wandrey: In this seminar we try to illuminate general trends, such as rapid transformation of knowledge, consumer needs, markets and cosmetic products from different angles with experts from science, marketing and sales.

EURO COSMETICS: *Dr. Züllli and Dr. Wandrey, in your function as seminar leaders you always have current topics in mind. Which topics are particularly in demand and which areas in the cosmetics industry will play a greater role in the future?*

Dr. Fred Züllli: We are convinced that the topic of "sustainability" will remain a big topic for a long time to come. What is completely new are the difficulties in supply chain management. We have acquired prosperity through globalization and may now have to backpedal a little. The rapidly increasing regulation in all areas and in all countries will play an even more important role in the future and will put pressure on

companies' innovative strength and margins.

EURO COSMETICS: *What is special about the Swiss SCC winter seminar?*

Dr. Fred Züllli: The seminar takes place in a small informal setting. The presentations are very interdisciplinary and allow participants to think outside the box. The speakers and experts come from different fields and present their content in a larger framework.

EURO COSMETICS: *Renowned industry experts will speak on current and cross-sector cosmetics topics and discuss them with the participants. What seminar content can participants look forward to? Can you give us a brief overview?*

Dr. Franziska Wandrey: As keynote speaker on Sunday evening, we were able to win Prof. Collin Ewald from ETH Zurich. He will give us an insight into the topic of "Longevity". In his research he investigates the molecular mechanisms of longevity. The aim is not only to extend life expectancy, but also to extend the healthspan, the years living in complete health. Then another exciting speaker is Boris Oak from the USA. He is the founder of the cosmetic brand EVOLVh. He will give us an insight into the development and marketing of an indie brand.

EURO COSMETICS: *And is there a presentation that you would particularly recommend?*

Dr. Fred Züllli: The presentation by Rainer Vögeli, Senior Lead Scientist at DSM, will certainly be exciting. He talks about skin problems, skin care and perception of female facial expression in different ethnic groups.

EURO COSMETICS: *In 1982, the first Winter Seminar was launched in Champfèr. What is the significance of the Winter Seminar at SWISS SCC since then? And what in particular has changed since its beginnings?*

Dr. Fred Züllli: The Winter Seminar is now in its 39th year and has moved from Champfèr near St. Moritz to Davos. In the first seminars, mainly formulators (no women at that time) met to discuss their product development challenges. Over the years, both the topics and the composition of the participants became more diverse.

EURO COSMETICS: *What impact did the pandemic have on the association?*

Dr. Franziska Wandrey: In 2020, we were just able to hold the winter seminar in February. In 2021 and 2022, we unfortunately had to cancel the seminar. A virtual seminar did not seem to make sense to us, as the value of this seminar is very much based on personal exchange. All the more we are looking forward to seeing all the loyal participants again in person this year.

EURO COSMETICS: *What accumulated needs do you see in the industry and what would you like to focus on in the future at the Winter Seminar?*

Dr. Fred Züllli: As mentioned earlier, the physical interactions of the various disciplines in the industry represent a need that could not be met in the past couple of years. Therefore, the Winter Seminar is an ideal place to again have an informal exchange with all these experts.

EURO COSMETICS: *Thank you for your time and the interview.* ■

More information to the Winterseminar you can find here: <https://www.swissccc.ch/aktuelle-termine/>



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VIVANESS – International Trade Fair for Natural and Organic Personal Care

The cosmetics sector meets at the cosmetics exhibition from 14 – 17 February 2023 in Nuremberg

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Nature has always been regarded as a source of energy and the best supplier of active ingredients for holistic care, vitalization and underlining people's natural beauty. VIVANESS is the International Trade Fair for Natural and Organic Personal Care. It brings together the traditional with the modern and pioneers with newcomers from the international cosmetics sector in a unique manner.

The VIVANESS Congress program as well, is as diverse as the issues driving the sector and focuses on sustainability, partnerships, trends and market developments. It offers a wealth of sessions, covering the facts and figures of current market developments, market insights, consumer insights, as well as more emotional topics such as collaborations and partnerships. The program reflects the issues that are driving the sector, such as new packaging concepts, the circular economy, the increasing importance of sustainability for industry and commerce, and "clean-washing".

Over a total of four congress days (Tuesday to Friday) the sector will explore the issues that are relevant for the future. Alongside the Specialist Retail Forum, the Sustainability, Politics, Sci-



ence and BIOFACH forums all offer exciting approaches for discussion. Certain forum presentations will be recorded and can then be watched as videos on the digital event platform (videos on demand).

Several congress sessions will also be live streamed on talque. All trade fair participants have automatic access to the digital event platform.

<http://www.biofach.de/programme> and
www.vivaness.de/programme



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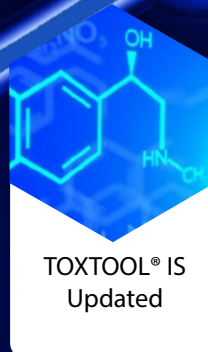


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