

Abstract Book



8-9 September 2021
DIGITAL CONFERENCE

SOCIETY OF
COSMETIC CHEMISTS
SOUTH AFRICA



2021 THE BEAUTY ODYSSEY

8-9 September 2021 | DIGITAL CONFERENCE

SOCIETY OF COSMETIC CHEMISTS SOUTH AFRICA 

Face-Off

8 SEPTEMBER 2021

SESSION 1

Chairpersons: Beverley Gardner, Skyem, South Africa
Charmaine du Preez, AECI Specialty Chemicals, South Africa

08h20-08h30 **Welcome Address**
Charmaine du Preez, AECI Specialty Chemicals, South Africa
Coschem President 2021

08h30-09h00 **Reducing Symptoms related to Eczema using Succulents**
Marizé Nel, University of Pretoria, South Africa

09h00-09h30 **Silicium in Skin**
Emmanuel Coste, Exsymol, Monaco

09h30-10h00 **The Hydration Conundrum and the 48-hour Scramble**
Beverley Summers, Sefako Makgatho Health Sciences
University, South Africa

10h00-10h30 **TEA / COFFEE BREAK**

Welcome Address

*Charmaine du Preez
AECI Specialty Chemicals, South Africa
Coschem President 2021*



2021 was a challenging year for everyone and we were all affected by the current Covid-19 pandemic. The 3rd wave of Covid-19 experienced in March of this year, with the new delta variant that was detected in India spread like wildfire. The delta variant being more transmissible than the beta variant placed most of us in an additional lockdown and restricted measures were imposed.

The consequence was that we could not have social gatherings, limited social contact, especially with people who are dear to us. We adapted by working in challenging environments, remotely and digitally, home schooling and others had no choice but to be exposed to the virus while keeping society functioning. Digital platforms became the norm in our fast-paced economy. The roll out of the vaccines started in May this year and is gaining momentum. We have

lost colleagues, family members and friends dear to us, but never forgotten. The economic and social disruption caused by the pandemic is devastating. Businesses were hugely impacted, and people lost their livelihoods. We are in this together and can only get stronger, embracing the future.

In addition to the current pandemic, load shedding, drought, and recent looting have all adversely affected the economy. Global warming and climate change are having a significant impact on our world. Finding sustainable solutions to these issues is key to conserving our planet for future generations. In our industry, we are enthusiastic and critical thinkers, ensuring that we are implementing sustainable concepts in development projects, packaging and distribution channels, and manufacturing environments.

We should rethink the future of our environment and tackle climate change and environmental degradation with ambition and urgency. Only then can we protect the health, livelihoods, food security and nutrition of all people, and ensure that our 'new normal' ensures a better future for all.

It is with much excitement that we host Coschem's first online conference. We look forward to the discussions, positive collaborations and sharing of knowledge in our forthcoming sessions. Do enjoy the Conference.

Reducing Symptoms Related to Eczema using Succulents

Marizé Nel
University of Pretoria, South Africa

Marizé is completing her final year of MSc in Medicinal Plant Science at the University of Pretoria. She completed her undergraduate degree in Plant Science and Biochemistry and BSc Hons in Medicinal Plant Science with distinction. Her MSc aims to determine whether South African plants, which are traditionally used against eczema or associated symptoms such as hyperpigmentation and wrinkle formation, will reduce the itching sensation experienced by those that suffer from the condition. Furthermore, she will be focusing on reducing the production of TNF- α , one of the main cytokines involved in the formation of acute and chronic eczema.

Marizé has published one peer-reviewed article and a second is currently under review. She is involved in several other projects, which will result in publication in ISI-accredited journals. She has been awarded the UP Postgraduate Bursary for Masters and Doctoral students by the University of Pretoria.



ABSTRACT

Eczema, or atopic dermatitis, is an inflammatory skin condition, which is characterized by an unbearable itching sensation, the appearance of a rash and dry cracked skin. Eczema mainly affects children and is considered a worldwide concern. In addition the COVID-19 pandemic resulted in the increased usage of alcohol-based hand sanitizers, leading to an increased prevalence of eczema affecting the hands specifically.

Secondary effects of eczema include hyperpigmentation and wrinkle formation, due to an increase in tumor necrosis factor alpha (TNF- α) and elastase production, respectively. Other cytokines involved in eczema formation includes IL-8 and IL-12, while IL-6 and IL-10 production is stimulated by hyperpigmentation. In addition, the production of histamine is directly linked to the itching sensation eczema patient's experience. Although there are several clinical treatments available to relieve the symptoms associated with eczema, there is no current cure for the condition. These treatments, however, only provides temporary relief, and are accompanied by several adverse side effects, such as tachyphylaxis and skin atrophy.

Aloes have been widely used by traditional healers to treat various forms of ailments, including eczema. This is mainly due to the immunomodulatory and immune boosting properties of aloes. Furthermore, other types of succulents have been used by traditional healers to treat eczema due to their hydrating properties. Therefore, the aim of this study was to evaluate eleven traditionally used plants, consisting of three pure aloe species, one succulent and seven aloe hybrids for their effects against tyrosinase and cytokine production.

Five extracts displayed noteworthy tyrosinase inhibition at a concentration of 200 $\mu\text{g/mL}$. These included *Aloe arborescens* (AG) (41.38%), *Aloe vera* (VL) (26.64%), X principis clone 2 (XL) (33.11%), (*Aloe chabaudii* x *A. petricola*) x *A. zubb* (CPL) (18.70%) and *Aloe ferox* x *A. zubb* (FZL) (21.82%). Furthermore, no antiproliferative activity on human keratinocytes (HaCaT) cells was observed at the highest tested concentration (400 $\mu\text{g/mL}$) of the five extracts tested.

AG and XL, which showed the highest tyrosinase inhibition, were selected for further cytokine evaluation. The cytokine modulatory effect of AG and XL was conducted using phorbol 12 –myristate

13-acetate (PMA) differentiated PBMCs. AG significantly ($P < 0.001$) enhanced interleukin (IL)-10 (18.3 ± 1.94), IL-1 β (18.51 ± 2.12) and IL-8 (161.7 ± 24.40 pg/mL) production at a concentration of 50 μ g/mL when compared to the untreated control. XL significantly ($P < 0.01$) inhibited TNF- α (3.04 ± 0.73), IL-10 (5.95 ± 0.62), IL-6 (2.61 ± 2.39) and IL-1 β (4.84 ± 0.36 pg/mL) when compared to the untreated control.

In conclusion, five extracts (AG, XL, VL, CPL and FZL) displayed tyrosinase inhibition at the highest tested concentration (200 μ g/mL) and no antiproliferative activity towards HaCaT cells ($IC_{50} > 400$ μ g/mL). AG significantly enhanced the expression of IL-10, IL-1 β and IL-8 whereas XL significantly inhibited TNF- α , IL-10, IL-6 and IL-1 β . Therefore, XL could potentially possess anti-eczema properties as it reduces one of the related symptoms and inhibits TNF- α production.

Silicium in Skin

Emmanuel Coste
Exsymol, Monaco



Emmanuel was born in the Principality of Monaco in 1982. He studied biology at Nice University (France) where he graduated in 2004. He moved to Paris and Montreal where he obtained his Master degree in multifactorial genetics at Pierre & Marie Curie University (Paris, France).

He then studied cell biology at Edinburgh University (Scotland, UK) where he received his PhD in 2010 thanks to his work on the development of a novel treatment for rheumatoid arthritis.

He joined EXSYMOL in 2011 as technical sales representative. Since 2020, he represents EXSYMOL as Scientific Marketing Manager where he uses his scientific and technical expertise to promote their innovative cosmetic actives worldwide.

ABSTRACT

Silicium is a trace element that plays a key role the human body. It is a constituent of connective tissues, but while its role in bones, blood vessels and even the nervous system is widely documented, few data is available in the literature to describe its role in skin.

Aging and several stresses may cause a decrease in the quantity of collagen fibers, of glycosaminoglycan (GAG) such as hyaluronic acid, and of silicium in the skin. This causes an aggregation of the remaining fibers, a decrease of the skin viscoelasticity together with a slowdown of all skin cell metabolisms. The skin thus becomes less hydrated, it loses its elasticity and flexibility, its regenerative capacities drop, and it becomes more vulnerable to the exposome.

Here show that a topical treatment with a bioavailable form of silicium has a dual effect in the skin as it has both a physical and a biological activity.

By binding and reorganizing collagen fibers and GAG in the dermis, silicium physically restore the skin architecture thus improving the biomechanical properties of the skin which allows for an improvement of its elasticity, firmness and flexibility while also providing deep hydration.

Silicium is also capable of stimulating the activity of all skin cells for multiple benefits. In the dermis, silicium stimulates the production of collagen and HA, and in the epidermis, it restores the barrier function. The skin thus becomes denser, firmer, more elastic, better hydrated and better protected. A cosmetic treatment with silicium helps protecting and rejuvenating the skin which is key for well-aging.

The Hydration Conundrum and the 48-hour Scramble

Beverley Summers
Sefako Makgatho Health Sciences University, South Africa

Beverley is a Professor of Pharmacy at Sefako Makgatho Health Sciences University (previously Medunsa). She has responsibility for the Photobiology Laboratory is involved in research and postgraduate studies.

She and her husband, Prof Rob Summers established the first Sun Protection Factor testing facility in South Africa at the Photobiology Laboratory, MEDUNSA, in 1989. Since then the laboratory has grown to provide a range of skin- and hair-care claim substantiation and safety testing for local and international companies. The Photobiology Lab is run by an experienced team which includes the co-authors of the paper (Lebogang Kgatuke, Marlize Lategan and Lee-Ann Raaff).



Beverley has published widely, on a variety of topics. She has presented over 150 papers at local and international conferences and has over 80 publications to her credit. She has served for many years on working groups and national committees for the CTFA, SA Bureau of Standards, ISO Sunscreen Working group (TC217 WG7) and pharmacy professional organizations. She was part of the Dept of Health working group that developed the original document on Good Clinical Practice in human studies.

She and Rob are both honorary life members of the SA Society of Cosmetic Chemists.

ABSTRACT

Skin dryness is a common problem thus moisturisers form a large slice of the cosmetics and toiletry product market. Hydration products by their name should add water i.e. “moisture” to the skin. Many skin products produce a moisturisation effect by occluding the skin surface and so allow a build-up of trans-epidermal moisture within the skin. In other words, occlusive products such as petroleum jellies and oils allow the skin to self-hydrate.

Skin dryness/ moisture levels can be assessed in multiple ways – skin capacitance, trans-epidermal water loss, objective expert visual assessment and subjective self-assessment.

The original moisturiser efficacy test of a few decades ago were designed to test the long-term effects of moisturisers. Such tests relied on a dry-down phase of about a week, with harsh washing, followed by twice daily product application for two to four weeks, sometimes with a regression phase to test the residual effect of the product. But such tests are expensive. So the regression phase was dropped and the application times shortened to as little as a week.

Next came the 8, 12 or 24-hour efficacy claims based on a single application of a hydrating moisturiser.

Then came the tissue oils and the natural oils. But how to test them? Either there must be a moisture build-up over time – a week at least OR the occlusivity can be assessed e.g. by a wipe-off test. In the wipe-off test the skin moisture builds up under the occlusive barrier and if skin moisture is measured immediately post-wipe, the increase in skin moisture values can be used to support a “locks in moisture” claim.

In the past few years it has become fashionable to make claims for a longer and longer duration of effect from a single application. From the initial studies for an 8, 12 or 24-hour effect, there is now

an avalanche of 48-hour claims. But are such claims realistic, particularly for occlusive products and is statistical significance enough, without true clinical significance?
This presentation will share results from different study designs to help unravel the hydration conundrum and address what claim substantiation methods are appropriate for different moisturisation product categories.

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8 SEPTEMBER 2021

SESSION 2

Chairpersons: Beverley Gardner, Skyem, South Africa
Kim MacCallum, Vantage Specialty Chemicals, South Africa

10h30-11h00 ***Fight Against Digital Aging - Blue Light Protection***
Marina Lefort, Merck, Germany

11h00-11h30 ***Simple Stabilizers or Powerful Allies for Skin Appearance:
The True Face of Emulsifiers***
Sophie Cambos, Seppic Research & Innovation, France

11h30-12h00 ***Beneficial Impact of Heat - Treated Probiotic Lactobacillus
Plantarum HEAL 19 on Health & Microbiome of Dry Sensitive
& Flaky Scalp***
Léa Schmidt, Symrise, France

12h00-12h30 ***Unlocking the Potential of Cannabidiol for Oily Skin and
Scalp Treatment***
Joan Gonzalez, Infinitec, Spain

12h30 -13h30 **LUNCH BREAK**

Fight Against Digital Aging - Blue Light Protection

Marina Lefort
Merck, Germany



Marina graduated from the National School of Chemistry of Montpellier, France with a Chemical Engineer degree. She joined Merck in Darmstadt, Germany in 1997 and worked as synthetic chemist in preclinical R&D for 10 years.

In 2007, she moved to the cosmetics department as Application engineer for Cosmetic Actives. Since 2015 she has been in charge of technical support/ technical marketing for Cosmetic Actives. Her areas of expertise are light protection, skin pigmentation and skin bioactives.

ABSTRACT

The effect of solar radiation in the blue light or high energy visible light range (HEVL, 400-500 nm) is an increasingly important topic of research. Blue light has been reported to penetrate the dermis, trigger oxidative stress, induce skin pigmentation, and cause photoaging [1-3]. Besides sunlight, artificial light, especially screen light from electronic devices – laptops, tablets, smartphones, TV – is an important source of blue light. Because of the COVID-19 pandemic, our time in front of screens has increased significantly over the past year, and this is a global trend. It is clear that there is a need to identify efficient cosmetic solutions that enable protection of the skin beyond traditional UV protection, whether outdoors or indoors.

There are already powerful tools to address light protection beyond UV, notably in the HEVL range, the first line of defense being a physical barrier and the second defense line being biochemical protection barrier in the skin. Indeed, using photometric measurements of cosmetic formulations in-vitro, we could show that UV filter grade titanium dioxides, effect pigments and functional fillers with different coatings and particle sizes may offer excellent first defense from high energy visible light [4-5]. In addition, the performance of second-line defense ingredients such as the natural extract *Phyllanthus Emblica* Fruit Extract, the synthetic antioxidant Bis-Ethylhexyl Hydroxydimethoxy Benzylmalonate, the natural cell protector Ectoin and the natural self-tanner Dihydroxyacetone were assessed on human explants after irradiation with blue light in ex-vivo studies. The level of efficacy of these ingredients was evaluated via immunostaining of representative biochemical markers [6].

In this work, we propose a variety of skincare concepts meeting the different skin needs of our new reality. Formulation examples across different categories of skin care and make-up are presented, combining beauty enhancing aspects with blue light protective aspects. These formulation examples feature above-mentioned active ingredients which have been proven to offer first defense and/or second defense from blue light. For efficient skin protection – outdoors and indoors.

References:

- [1] Mattsson *et al*: Scientific Committee on Emerging and Newly Identified Health Risks SCENIHR, Health Effects of Artificial Light, 2012
- [2] Nakashima Y. *et al*: Blue light-induced oxidative stress in live skin, Free Radical Biology and Medicine 108 (2017) 300-310

- [3] Regazzetti C. *et al*: Melanocytes Sense Blue Light and Regulate Pigmentation through Opsin-3, J. Invest. Dermatol., 138 (2018) 171-178.
- [4] Rozman V. *et al*: Advanced Light Protection with Titanium Dioxide, SOFW Journal 2017, 143:20-24
- [5] Lefort M. *et al*: Synergy of Mica and Inorganic UV Filters Maximizes Blue Light Protection as First Defense Line, IFSCC Magazine 22 (2019), 1:3-9
- [6] Bicard-Benhamou V. *et al*: A Global and Powerful Approach to Circumvent the Harmful Effects of Blue Light and IR-A Irradiation on the Skin, IFSCC Magazine 23 (2020)

Simple Stabilizers or Powerful Allies for Skin Appearance: The True Face of Emulsifiers

Sophie Cambos
Seppic Research & Innovation, France

Sophie is in charge of a valorization project team in the Research and Innovation department, she joined Seppic in 1989. She is a Cosmetic Scientist and has worked for eighteen years in the cosmetic R&D team, firstly as lab technician then as lab manager. Sophie was named as Seppic Expert for health care formulation and mixtures in 2014.



ABSTRACT

The primary function of an emulsifier is to stabilize an emulsion. It has also been demonstrated that emulsifiers can play a role in the sensory profile of emulsions. But actually, excipients such as emulsifiers can contribute to skin benefits. The most universal skin need is hydration. Hydration intensity depends on its mechanism: film forming effect, interaction with the stratum corneum lipids...

The aim of this study was to measure the impact of stable basic oil-in-water (O/W) emulsions on end-user performance by varying only the nature of the emulsifier, with a focus on two emulsifiers with long fatty chains. The second step was dedicated to better understanding the underlying mechanism of action

Two O/W emulsifiers based on the same C20-C22 fatty chains were studied: non-ionic and anionic. Minimalist emulsions were independently evaluated with several methods to measure their effect on the skin surface and generate data on skin hydration, compared to the appropriate reference. In the first attempt, the moisturizing effect (corneometry clinical test on twenty volunteers until five hours) and the film forming capability (in-house *in vitro* method dedicated to assess emulsion film water resistance after several baths in hard water) were carried out.

The positive impact and the mechanism of action of an emulsifier on skin hydration and smoothness have been assessed thanks to image analysis of skin rugosity (ColorFace® acquisition system on 20 volunteers until thirty minutes) and interaction with stratum corneum follow-up in reconstructed stratum corneum (X-rays diffraction during one hour). Furthermore, image analysis of skin gloss (ColorFace® acquisition system on 20 volunteers until thirty minutes) and *in vivo* protection against pollution (dosage of heavy metals after six hours in an urban polluted atmosphere, 20 volunteers) allowed to demonstrate the physical and protective effects of the film activities.

O/W emulsions based on the non-ionic emulsifier provided interesting results with three methods. The moisturizing effect was confirmed through corneometry measurement. The hydration mechanism was clarified by two complementary tests. Skin rugosity analysis with ColorFace® acquisition system allowed to visualize a restructuring effect. A deeper hydration was observed with X-rays diffraction, emphasizing emulsion interaction with reconstructed stratum corneum. This second research highlighted the emulsion interactions with stratum corneum lipids.

Emulsions containing the anionic emulsifier performed according to another mechanism. Water resistance of emulsion film was demonstrated with the validated in-house method. More information

on the film was acquired. Firstly, a mattifying effect was discovered with ColorFace® acquisition system. Moreover, the anti-pollution effect was quantified through heavy metals dosage after skin stripping.

This work confirmed that emulsifiers not only contribute to emulsion texture, stability and sensory, but can be powerful allies for improving skin appearance, in different ways and with different mechanisms according to their chemical structure.

The nonionic emulsifier imparted a restructuring effect explained by its interactions with stratum corneum lipids. This emulsifier inserted between the lamellar organization of the lipids thus strengthened the orthorhombic structure, which resulted in a higher skin hydration evaluated by corneometry. The anionic emulsifier formed a matte film at the skin surface that imparted water resistance and protection against pollution.

Beneficial Impact of Heat - Treated Probiotic Lactobacillus Plantarum HEAL 19 on Health & Microbiome of Dry Sensitive & Flaky Scalp

Léa Schmidt
Symrise, France



Léa holds a MSc in Chemistry and has more than 6 years' experience in the cosmetic industry. She has been part of the Symrise Cosmetic Ingredients division for the last 5 years, and is presently Global Product Manager for the Actives category, specifically focusing on Moisturizing and Barrier Strengthening portfolios.

ABSTRACT

Introduction: Dandruff is a common problem for people in their daily life. The uncomfortable situation of flakes on the shoulder goes along with an itching and red scalp.

Most anti-dandruff ingredients focus on oily dandruff caused by *Malassezia*, a fungus feeding on sebum. However, dry dandruff, caused by a dry scalp with low sebum content and a weakened barrier needs special care. First studies showed the corresponding microbiome exhibits high amounts of *Staphylococcus* and low amounts of *Cutibacterium*. Here, we investigate whether the mildly heat treated probiotic bacterium *Lactobacillus plantarum* HEAL 19 (*Lp* HEAL19) supports dry dandruff prone scalp and its microbiome.

Methods: We investigated *ex vivo* the ability of *Lp* HEAL19 to increase the production of the barrier strengthening fillagrin and performed an *in vivo* study with 19 participants suffering from dry sensitive, flaky and itchy scalp. At the start and the end of the study the scalp dryness and dry dandruff levels were investigated using a Microcamera and a Corneofix®. The itching sensation was assessed by the subjects. Additionally, samples were swabbed for 16S rRNA gene sequencing to analyze the scalp microbiome composition.

Results: *Lp* HEAL19 can be used in dry sensitive scalp and dry dandruff prone scalp care with multiple benefits. *Ex vivo* it strengthens the skin barrier. *In vivo*, it significantly improves the visual aspect of dry scalp by 19% and reduces the itching sensation by 44% in comparison to a placebo. Furthermore, we observe a favorable shift of the balance of *Staphylococcus* and *Cutibacterium* in the microbiome.

Discussion and Conclusion: Mildly heat treated *Lp* HEAL19 supports the scalp's overall condition, and allows the microbiome to recover naturally. Dandruff is a complex problem and it is of great importance to understand scalp's condition as well as its interactions with the microbiome to develop novel cosmetic ingredients.

Unlocking the Potential of Cannabidiol for Oily Skin and Scalp Treatment

Joan Gonzalez
Infinitec, Spain

Economist and International Marketing Management by training, with more than 20 years of experience in the personal care and beauty market. Starting as Mass Market Analyst Manager in Personal Care and household in America until my incorporation to the biotechnology industry in 2003. Development of cosmetic active ingredients and delivery systems with special focus in the Asian markets (2003-2017). Since 2008, and working in parallel, as an active entrepreneur and independent consultant exploring cosmetic B2B and B4C alignment in cosmetic finished product development and social marketing strategy.



ABSTRACT

CBD (short for cannabidiol) is an exciting area for innovation where new cosmetics uses are proven or further established with clinical efficacy. At present, the medical benefits of cannabis are well documented but very little scientific evidence in topical applications is still a challenge.

Encapsulated cannabidiol provides an update on the advances on CBD research to date and confirms its therapeutical potential for oily skin and scalp.

Clinically-proven efficacy, through two independent *in-vivo* studies, shows the effectiveness of cannabidiol for the treatment of oily skin thanks to its excellent multi-target activity:

- (i) sebum-regulating capacity by reducing the number, area and size of sebaceous glands and anti-acne activity;
- (ii) its ability to reduce skin erythema and, also,
- (iii) its noticeable microbiota-balancing therapeutic effect in oily skin.

Also, it proves cannabidiol's potential in oily scalp at reducing sebum, dandruff and inflammation. It is noteworthy to point out that, thanks to lipid encapsulation technology, not only cannabidiol demonstrates its properties at low concentrations but also opens a gateway for this powerful oil-soluble active in oil-free formulations for the treatment of oily skin and scalp.

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8 SEPTEMBER 2021

SESSION 3

Chairpersons: Beverley Gardner, Skyem, South Africa
Jacques Strydom, AECI Specialty Chemicals, South Africa

13h30-14h30 **Debate & Panel Discussion relating to Sun Care**
What does the future hold for sun filters in sun care products?

Expert panel includes:

Heibrie Le Roux, Future Cosmetics, South Africa

Beverley Summers & Marlize Lategan, Sefako Makgatho
Health Sciences University, South Africa

Wayne van Wyk, Vantage Specialty Chemicals, South Africa

14h30-15h00 ***L Ergothioneine, The Natural and Desirable Companion of Ascorbic Acid***
Herve Offredo, Barnet Products, USA

15h00-15h30 ***The Effectiveness of LOC/LCO Method on Moisture Locking in Textured Hair and Its Impact on Breakage and Other Hair Properties***
Ernesta Malinauskyte, TRI Princeton, USA

Debate & Panel Discussion relating to Sun Care

What does the future hold for sun filters in sun care products?

Heibrie Le Roux

Future Cosmetics, South Africa

Heibrie is the current Managing Member and founder of Future Cosmetics CC, based in Pretoria, South Africa.



Heibrie qualified as an Analytical Chemist and obtained a National Diploma in Analytical Chemistry in 1990 and well as a Higher Diploma in Business Studies in 1995 from the Tshwane University of Technology. She also obtained a Diploma in Cosmetic Science in 1996 from the Society of Cosmetics Scientists (COSCHEM) in South Africa.

Heibrie has vast work experience in organic chemistry, radioactive chemistry as well as forensic drug and toxicology analysis. As a member of the South African Police Forensic Science Laboratory, Heibrie was honoured for her expert witness testimony in the South African courts during 1995 with an award for exemplary testimony.

She joined the cosmetic industry in South Africa during 1995. She has experience in research and development of all skin care, body care and colour cosmetics. Heibrie has extensive experience in formulating and testing of sunscreen products. Heibrie served on ISO TC217 from 2001 until 2018 where she participated in Working Group 7 as well as being involved with ring studies for ISO24444, ISO24443 including Water Resistance Test methods. Heibrie was the convenor of the South African Bureau of Standards ISO TC217 Working Group 7 on Sunscreens up to 2018.

Heibrie founded Future Cosmetics CC in March 2001, a business which will celebrate its 20 year anniversary during 2021.

Marlize Lategan

Sefako Makgatho Health Sciences University, South Africa

Marlize is Chief Technical Officer of The Photobiology Laboratory at Sefako Makgatho Health Sciences University for 19 years. Her main specialty at the Laboratory is Sunscreen Testing, Pigmentation and Hair Study co-ordination as well as Data, Statistics and Report Management. Also SABS Sunscreen Standards Working Group chairperson, CTFA Sunscreen Working Group Chairperson and ISO TC217 member.



Beverley Summers

Sefako Makgatho Health Sciences University, South Africa



Beverley is a Professor of Pharmacy at Sefako Makgatho Health Sciences University (previously Medunsa). She has responsibility for the Photobiology Laboratory is involved in research and postgraduate studies.

She and her husband, Prof Rob Summers established the first Sun Protection Factor testing facility in South Africa at the Photobiology Laboratory, MEDUNSA, in 1989. Since then the laboratory has grown to provide a range of skin- and hair-care claim substantiation and safety testing for local and international companies. The Photobiology Lab is run by an experienced team which includes the co-authors of the paper (Lebogang Kgatuke, Marlize Lategan and Lee-Ann Raaff).

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Beverley has published widely, on a variety of topics. She has presented over papers at local and international conferences and has over 80 publications to her credit. She has served for many years on working groups and national committees for the CTFA, SA Bureau of Standards, ISO Sunscreen Working group (TC217 WG7) and pharmacy professional organizations. She was part of the Dept of Health working group that developed the original document on Good Clinical Practice in human studies.

She and Rob are both honorary life members of the SA Society of Cosmetic Chemists

Wayne van Wyk

Vantage Specialty Chemicals, South Africa

Wayne is the Managing Director of Vantage Specialty Chemicals & Cosmetic Technologies. He is a Biochemist, Diploma in Cosmetic Science.

Wayne has more than 30 years' experience in the industry and specialises in Hair Care, particularly ethnic hair, Skin Care and Suncare. He has held various positions from QC Material analyst, R&D Manager, Manufacturing Manager, Technical Manager to his current position, with various companies, such as Revlon SA, Amka Products, Noristan Hoechst and Procter & Gamble.



He currently serves on the Coschem council, was past president, chairs the Scientific committee and lectures in Stability Science and Ethnic Hair. He is on the CTFA Executive Board and on various Technical committees. He also serves on the Technology Innovation Agencies Advisory Panel. His hobbies include Wildlife and hunting. As sport goes, he is a Golfer and Boater.

L Ergothioneine, The Natural and Desirable Companion of Ascorbic Acid

*Herve Offredo
Barnet Products, USA*



Herve was born and raised in Bretagne, the nose of France in the Atlantic Ocean.

He holds a Masters Degree in Biochemistry and Industrial Microbiology, an Engineering Degree in Applied Industrial Microbiology from the University of Marseilles and an MBA in Human Resources and Finance from Nancy Universite in France.

During these years he did research and papers on Hepatocyte culture; Bacillus thurigiensis culture. He worked on a process of production of beer for Heineken and during six months was a trainee at Roquette to isolate a Lactobacillus and optimize its fermentation to produce Lactic acid.

He started his career with Abbott Diagnostic as Account Executive, moved to Transia in the business of food diagnostic before joining Solabia where he built their export network before assuming the position of director of sales and marketing.

In 1997, Herve came to the United States where he joined Barnet Products as Vice President, Sales and Marketing. He is currently CSO of Barnet Products and SVP of international sales.

ABSTRACT

Vitamin C is a darling in skin care. It acts as a great antioxidant, helps fibroblasts to produce and secrete collagen, in melanocytes it reduces tyrosinase activity. Vitamin C is desirable for the skin with specific transporters: STVC 1 and 2. However ascorbic acid (AA) is very fragile and can be easily oxidized, therefore deactivated. Skin has also other transporters such as OCTN 's, often seen as carnithine transporters. In reality, OCTN1, present in all cells of the skin and in the nucleus membranes is the transporter of Ergothioneine (EGT). Once in the cells, is there a synergy between ergothioneine and ascorbic acid ? EGT is produced by fermentation, reactions and purification.

Evaluation of EGT and Ascorbic acid in chemical models:

First test was to mix EGT with AA at ratios of 1 to 10 AA , at 37 C ,for 5 hours . Without EGT , ascorbic acid is oxidized in 5 hours, however 75 % of ascorbic acid is not oxidized with EGT. Alloxan was added to generate free radicals to oxidize ascorbic acid in 3 hours ; 40 % is not oxidized with EGT . A formula , after a week at 45 C , with 1% Ascorbic acid turned yellow but did not when adding 0.005 % of EGT .

Evaluation of EGT and Ascorbic acid in biological models:

EGT at a ratio of 1 % to Vitamin C was added to Magnesium ascorbyl phosphate at various levels in fibroblasts . 16 hours later there was 3 times more ascorbic acid intact in the cells with or without EGT . EGT / vitamin C at 1 / 100 doubled the production of collagen 1 , multiplied by twelve the production of collagen 3 compared to no use of EGT .

EGT / Vit C at 1 for 100 on melanocytes cut melanisation in half compared to the absence of EGT .

These experiences confirmed the synergy and boosting of EGT on Ascorbic Acid. Furthermore, anti-oxidant properties of EGT will be shared in comparison to Co Q 10 or Idebenone.

8 September 2021
Session 3
15h00 – 15h30

The Effectiveness of LOC/LCO Method on Moisture Locking in Textured Hair and Its Impact on Breakage and Other Hair Properties

*Ernesta Malinauskyte
TRI Princeton, USA*

Ernesta earned her PhD in Chemical Engineering at Kaunas University of Technology (Lithuania). She has 10 years of academic and professional experience in food engineering and hair sciences. Currently, at TRI Princeton in the role of Principal Research Scientist, Ernesta is responsible for leading a team of results-driven researchers investigating all textures fiber interactions with hair care, chemical & physical treatments, environmental insults (UV, particles, and ozone), as well as developing new claims substantiation methods for all types of hair and devices.



Ernesta with the team also work on expanding TRI research capabilities in the microbiome, hemp products use for textile & skincare areas. Ernesta often pushes the boundaries to make things better at TRI. This includes modification and enrichment of the work environment so the true potentials of interns, technicians, junior and experienced scientists are enabled. Ernesta is an active member of the research community via publishing and giving the presentation on research and hair science topics in academic environment, industry, and hairdresser communities

ABSTRACT

It is believed that moisture deprivation has been a long-standing affliction of textured hair due to the curliness of the hair shaft. Natural sebum produced by the scalp generally acts as the first-line of defense for hair follicles, followed by water. It serves as a natural lubricant and generally follows a path of least resistance as it travels downward to lubricate the hair shaft. Due to the structural dimensions of textured hair, the directional movement of the hair's natural lubricant is interrupted, leaving parts of the shaft uncoated. Consumers believe that unprotected hair loses moisture which leads to a reduction in consumer perceived elasticity, resulting in extensive breakage during the grooming process.

This work aims to prove or disprove the effectiveness of the widely believed moisture-locking phenomenon that can be achieved with the product application system known as the LOC/LCO method. This method considers how certain products, namely a leave-in conditioner, an oil, and a cream, are layered to maximize moisture retention; that is, a seal of lubrication is created along the hair shaft, thus preventing water loss. Additionally, the elegant experimental design will clarify once and for all whether the LOC/LCO method provides textured hair owners with more benefit than just lubrication by a combination of oil and cream.

2021 THE BEAUTY DYSSEY

8-9 September 2021 | DIGITAL CONFERENCE

SOCIETY OF COSMETIC CHEMISTS SOUTH AFRICA 

Face-Off

9 SEPTEMBER 2021

SESSION 4

Chairpersons: Beverley Gardner, Skyem, South Africa
Sapphirah Phala, Symrise, South Africa

08h20-08h30 **Welcome**

08h30-09h00 ***A New Formulation Lever to get an Attractive Tan with only a Daily Exposure***
Pauline Chanut, Seppic Research & Innovation, France

09h00-09h30 ***Evaluation of some Environmental Factors on Skin Aging: From Cellular Impact to Skin Enhancement***
Cyrielle Rakotovao, Sederma, France

09h30-10h00 ***Selected High Performance Innovation for Beautiful Hair: Hair Loss Prevention and Anti-Greying, Hydration & Sebum Reduction Featuring an Organic Plant Extract, a Vitamins Complex, and a Sugar Derivative***
Olivier Garet, DSM Nutritional Products, France

10h00-10h30 **TEA/COFFEE BREAK**

A New Formulation Lever to get an Attractive Tan with only a Daily Exposure

Pauline Chanut
Seppic Research & Innovation, France



Pauline is in charge of cosmetics active ingredients' biological evaluation and valorization in the Life Science Department, joined Seppic in 2018.

Both Biology Engineer and PhD, Pauline has more than 3 years' experience in the cosmetic industry. She is in charge of cosmetics active ingredients biological evaluation and valorization in the Research and Innovation department of Seppic since 2018.

ABSTRACT

Human skin pigmentation is a complex biological process at the origin of skin colouring and tanning. It is triggered by a signaling cascade leading to melanin synthesis by melanosomes in melanocytes, followed up by their transfer in surrounding keratinocytes. Consumers are looking for solutions to benefit from the benefits of sun and beautiful tanned skin safely, thus limiting exposure. In this perspective, the objective of this study was to investigate the effects of a new biosourced Esterified Lipoamino Acid (ELA) on skin tanning.

Starting with melanogenesis pathways, melanin production was evaluated on melanocytes culture treated with ELA 0.005% for either 3 days in B16-F1 cell line or for 8 days in human primary cells. Extracted melanin was then measured spectrophotometrically at 405 nm.

Melanosome transfer was investigated on a melanocyte/keratinocyte co-culture treated with 0.005% ELA during 48h. Cells were then fixed, permeabilized and labelled with anti-PMEL17 and anti-cytokeratin primary antibodies for evaluating the amount of keratinocytes with integrated melanosomes by flow cytometry. In parallel, cells were co-cultivated on coverglasses, treated and labelled as previously described. The amount of transferred melanosomes was then assessed by microscopic image analyses.

Gene expression was also explored in human pigmented reconstructed epidermis (phototype III-IV) by applying topically a formula containing 1% ELA or placebo during 30h (analysis using TaqMan array after RNAs extraction).

In a second step, clinical efficacy on tanning was assessed on 20 caucasian women with a phototype III. Formulas with 1% ELA or 1% acetyl tyrosine as melanin booster reference were applied twice a day during 11 days. The volunteers were exposed to their minimum pigmentation dose of UVA radiations to mimic a normal incidental daily sun exposure (with untreated area as a control). Skin color was measured by colorimetry and ITA° calculation (Individual Typology Angle) and photos were taken before each UV radiation and one day after the last exposure. Assessments were also done two weeks after the last application and UV radiation.

ELA demonstrated to boost melanin synthesis in both melanocytes models. This result was explained by the overexpression of mapk1, usf1, mitf genes regulating melanogenic enzymes production and aim1, ap1m1, pmel17 and stx6 genes regulating melanogenic enzymes transport, which were studied in human pigmented reconstructed epidermis.

ELA was also able to stimulate melanosome transfer and the amount of melanosomes transferred from melanocyte to keratinocytes, thanks to the stimulation of related genes such as rac1, f2r11, ktn1 and myo5 in human pigmented reconstructed epidermis.

Finally, the clinical evaluation revealed that ELA was able to decrease ITA° and thus significantly boost the tan up in comparison to untreated area and acetyl tyrosine from day 4 to day 11. It also extended the tan up to 15 days after the last application and UV exposure.

The new esterified lipoaminoacid demonstrated to boost and prolong skin tanning with limited daily exposure conditions. This boosting efficacy is explained by its actions along the melanogenesis pathways: capacity to stimulate melanin synthesis, melanosome transfer and to increase the amount of transferred melanosomes from melanocytes to keratinocytes.

Evaluation of some Environmental Factors on Skin Aging: From Cellular Impact to Skin Enhancement

Cyrielle Rakotovao
Sederma, France

After graduating from a chemical engineering school in a dual degree the Institute of Industrial Pharmacy in Lyon as a chemist, Cyrielle specialized in R&D projects in the health and cosmetics sector through her R&D experience at Henkel GmbH and the Faculty of Pharmacy of Montréal before turning to sales.

Now, she uses her technical knowledge to develop new business in Eastern Europe, Middle-East and Africa for Sederma.



ABSTRACT

The term “Exposome” describes the totality of exposures to which an individual is subjected from conception to death (Jean Krutmann & al.,2017). He proposed a definition of skin aging exposome focusing on environmental factor that are known to be linked with skin aging: UV, IR and visible light, tobacco, nutrition, stress lack of sleep and pollution. Focusing on air pollution, Vierkötter & al. regrouped in several studies impacts observed on Caucasian women from Germany that were correlated in China. At cellular level, some mechanisms have recently been proposed involving the Ahr (arylhydrocarbon receptor) in keratinocytes culture.

Mitochondria are the energy provider of the cells which underline their crucial role in cell survivance. Mitochondria can be observed under two different aspects, a filament network and a round isolated form that coexist. The reduction of the mitochondrial dynamism allowing the passage from a form to the other one is an important factor of aging. It increases oxidative stress that amplify mitochondrial damages, reduce the fusion because it favours the formation of inactive forms and finally lead to a 5 to 8% reduction in energy production per decade (GAZIEV et al.,2014; FIGGE et al., 2013, LANZA and NAIR, 2010; SAUNDERS et al., 2013).

In 2015, using Mito Tracker coloration, we demonstrated that UVB irradiation of human fibroblasts induced a modification of the mitochondrial repartition in favor of the isolated one. We also confirmed that UVA irradiation was increasing free radical level using DPPH method, oxidation by lipoperoxidation method, singlet oxygen and finally ROS using DCHF probe. Nowadays, we evaluated the impact of chemical pollution using Benzo[a]Pyrene (B[a]P as a model of the fossil fuel pollution. We confirmed that when applied on human keratinocytes culture it causes DNA breaks, IL-8 and IL-1 α induction.

Regarding the impact of B[a]P on mitochondria, we observed a reduction of ATP production on human keratinocytes culture but also a modification of the shape of the mitochondria in human fibroblast culture in favor of an isolated round shape. Using a specific informatic tool we were able to quantify this phenomenon.

Finally, *in vitro* evaluation and *in vivo* application of plant cell culture extracts allowed us to counteract these negative impacts and enhanced skin aspect.

**Selected High Performance Innovation for Beautiful Hair: Hair Loss Prevention and Anti-Greying, Hydration & Sebum Reduction
Featuring an Organic Plant Extract,
a Vitamins Complex, and a Sugar Derivative**

Olivier Garet
DSM Nutritional Products, France

Olivier is currently EMEA Business Development & Marketing lead for DSM Personal Care, with a specialization in Skin care bioactives. For more than 18 years, he has crossed the Personal Care industry at diverse positions from Commercial & Technical Development, to Sales & Marketing Strategy, in EMEA and Asia.

Olivier has built his strong background of valuable proposals thanks to a wide and international base of experiences with customer associated with an intimate enthusiasm for Personal care and Market insights..

'Capturing Trends evolutions and translate them into forward looking solutions that consumers will love across DSM Personal Care segments (UV filters, Skin care bioactives, Vitamins, Technical & Performance ingredients) featuring Sustainability as one of the key drivers is an exciting journey and an everyday focus!



ABSTRACT

Hair aging is characterized by greying, loss and thinning of hair. It is considered as an aesthetic problem and might cause major psychological distress in affected individuals. Therefore, the cosmetic industry is looking for mild and natural treatment options.

We investigated **an organic extract of the alpine plant Edelweiss** (*Leontopodium alpinum*, var. *Helvetia*, particularly rich in leontopodic acid), for its ability to work against hair aging. Our data on human hair follicles *ex vivo* show that the extract is able to significantly prolong the hair growth phase anagen and to increase keratinocyte proliferation in the hair matrix, both associated with hair growth mechanisms. In addition, there was a donor-dependent increase in the hair follicle's melanin content, suggesting positive effect on hair pigmentation.

In placebo controlled clinical studies on about Hair loss prevention and anti-hair greying, we found a significant increase in hair density (Trichoscan) over time and against placebo formulation. Trichoscan analysis showed also a significant increase of pigmented hairs for the Edelweiss extract over time, and against the placebo group. We therefore provide evidence that an extract of the alpine plant Edelweiss has a solid hair anti-aging effect *ex vivo* and *in vivo*.

Another investigation on hair aging was made on a **multi-vitamins complex** (Vit. E, Vit. C, Vit. B3, Vit. B5, Vit. B6 - tocopheryl acetate, sodium ascorbyl phosphate, niacinamide, calcium pantothenate, pyridoxine hydrochloride). The new set of data show that the multi-vitamins complex is able to prevent hair loss and promote anti-hair greying on human hair follicles *ex vivo* and as well in in-vivo studies.

Consumers start to understand that the scalp should be nurtured in a similar way to facial skin and will be interested in ingredient innovation that crosses from facial care to the scalp. Itchy scalp appears to be the #1 symptom for scalp problems (65%). The claim that sufferers from scalp issues

find most interesting is “moisturizes scalp and hair” (44%), followed with some distance by “soothes the scalp, reduces itchiness” (41%). In that way, new studies were performed on Hair with a 100% natural origin sugar derivative (**saccharide isomerate**) known for its great long lasting and deep hydration properties (in leave on) and its ability to restore hydration in rinse off. This bioactive is able to moisture dry scalp. 24 hour after one single application and even after 28 days of frequent showering, shampoos with 0.2% and 0.5% of saccharide isomerate reinforce the scalp barrier. This sugar derivative is also able to reduce scalp flaking , up to 55% reduction after frequent showering with shampoos, and offers a 40% sebum reduction after frequent showering with a shampoo. The improvements over the placebo are highly statistically significant. Saccharide isomerate is then a bioactive of choice for scalp treatment targeting moisture and reduction of flaking & sebum.

Our selected high performing innovations featuring an organic plant extract, a vitamins complex, and a Sugar derivative, enable Hair loss prevention & anti-hair greying, hydration & sebum reduction for beautiful hair.

To go beyond, DSM has performed for hair care new studies on 20+1 other technologies, substantiated by extensive literature research and in house instrumental tests, that are available for further sharing to inspire products that consumers are looking for and will love.

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SESSION 5

Chairpersons: Beverley Gardner, Skyem, South Africa
Charis Lewis, Investchem, South Africa

10h30-11h00 ***Himanthalia Elongata, the Marine Ingredient with the Power to Correct Dark Spots on all Skin Complexion Types***
Frederic Serres, Givaudan, France

11h00-11h30 ***Flower-Powered Conditioning: A Sustainable New Cationic Surfactant***
Lucie Maisonneuve, Stepan Company, France

11h30-12h00 ***Interview with South African Brand Owner***
Theo Mothoa-Frendo, Uso Skincare, South Africa

Himanthalia Elongata, the Marine Ingredient with the Power to Correct Dark Spots on all Skin Complexion Types

*Frederic Serres
Givaudan, France*



Frederic has a Master degree in Chemistry of Polymers & Biology of the French University of Lille, and has 20 years' experience with several active ingredient manufacturers. He works for Givaudan Active Beauty for the past 7 years, and takes care now specifically of the African & Middle East Region. He works actively with our partners from The Careco for the African territories.

ABSTRACT

On a daily basis, environmental stress such as UV exposure and pollution as well as chronological ageing generate a loss of control in the pigmentation process, which ends up in the appearance of brown and dark spots on the surface of the skin. According to our recent global online consumer study, algae extract is perceived as one of the most effective ingredients to reduce hyper pigmented spots, a prevailing skin concern that impacts over 70% of consumers worldwide. But did you know that 1 out of 2 of South African consumers starts acting on their hyper pigmented spots with cosmetic treatments between 18 and 29 year old? This skin issue, mainly due to sun exposure, create a real interest for South Africans. According to our global online consumer study, 84% of them are enthusiastic to have a product that helps erase or reduce dark spots. Building on the consumers' strong interest, Givaudan's Marine Biotechnology and skin experts have designed an active ingredient with *Himanthalia Elongata*, a unique and sustainable macro-alga extract which re-establishes the communication between fibroblasts and melanocytes, thereby reverting pigmentation disorders.

Loss of communication... main cause for pigmentation disorder

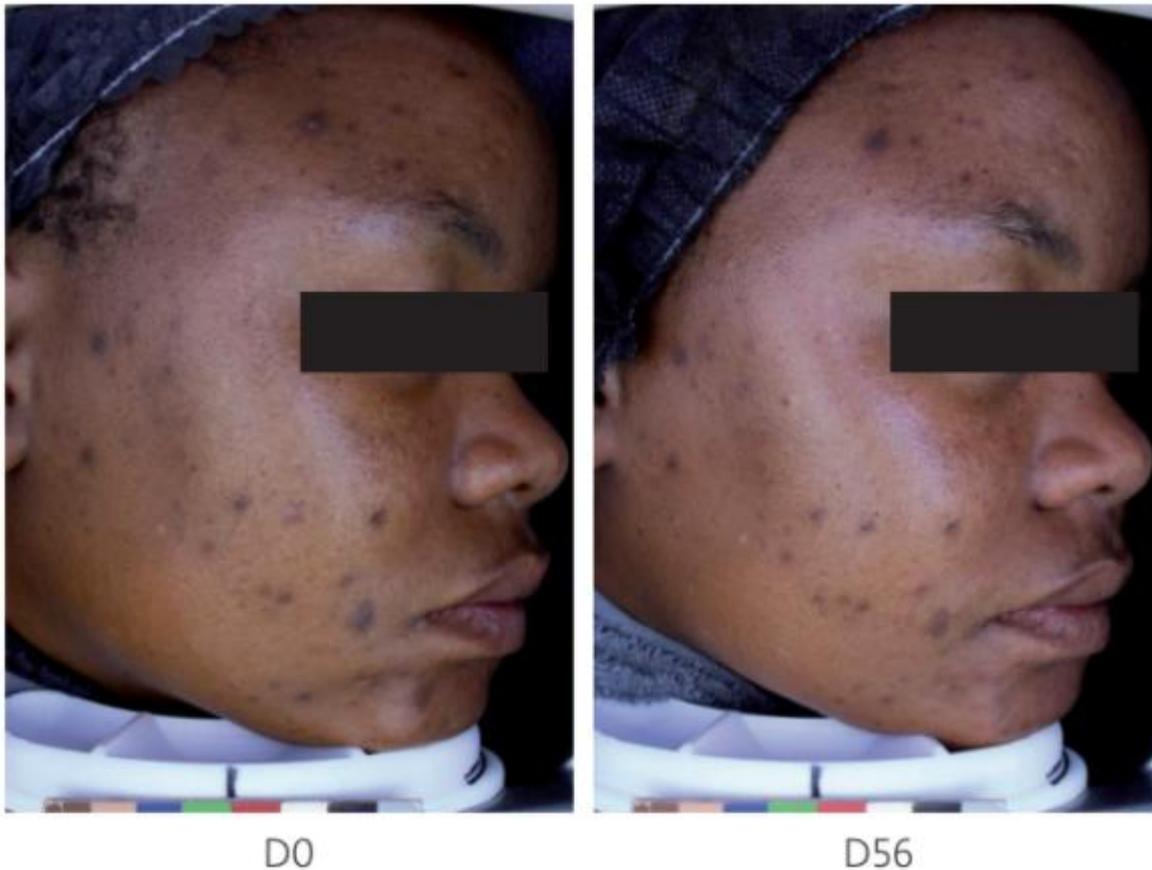
Classified as one of the most important ageing concerns for consumers globally, dark spots, which are also called ageing spots and brown spots, are the consequence of a biological process getting out of control: skin pigmentation, which results in an overproduction of melanin, the pigment also responsible for the colour of our eyes, hair and skin.

Intrinsic ageing (resulting in senile lentigo), overexposure to UV (solar lentigo), inflammation process or wound healing (scars), amongst many others various causes can generate a loss of control on the pigmentation process. Up to now, the only way to fight against hyper pigmented spots was to use whitening agents or exfoliating compounds, which are often aggressive for the skin, or result in a general impact on the skin tone, as they are not specifically acting on the spots.

A new biological pathway has recently been identified¹, explaining how a loss of communication between senescent fibroblasts and melanocytes is one of the main causes for the pigmentation disorders. A key protein (SDF-1), synthesised by the fibroblasts, is indeed playing a crucial messenger role in our skin, but its production decreases drastically in senescent conditions. This was the key Givaudan Active Beauty scientists were looking for, to offer a new and exclusive ingredient, specifically targeting pigmentation spots, without impacting consumers' natural skin tone. By re-establishing communication between fibroblasts and melanocytes (reactivating SDF-1 production in senescent skin conditions or under over-exposure to UV), and thanks to its antioxidant

properties providing interesting additional benefits, *Himanthalia Elongata* enables to take back control on the skin pigmentation process, both in a preventive and curative way.

[Capture 1]



The power of Marine Biotech

Himanthalia elongata, a brown macro-alga up to 2 meters long growing close to the Pink Granite Coast of Brittany, France, was identified in our Marine Biotechnology Centre. Concentrating extraordinary active compounds, it uses, during its growth, the power of sunlight and captures atmospheric CO₂ to produce its key constituents. By doing so, algae participate in lowering the atmospheric carbon released by industrial activities, making it one of the most sustainable resources to develop new cosmetic ingredients. To preserve this sustainable aspect, the algae used as raw material are then harvested manually at low tide, by trained Goémoniers.

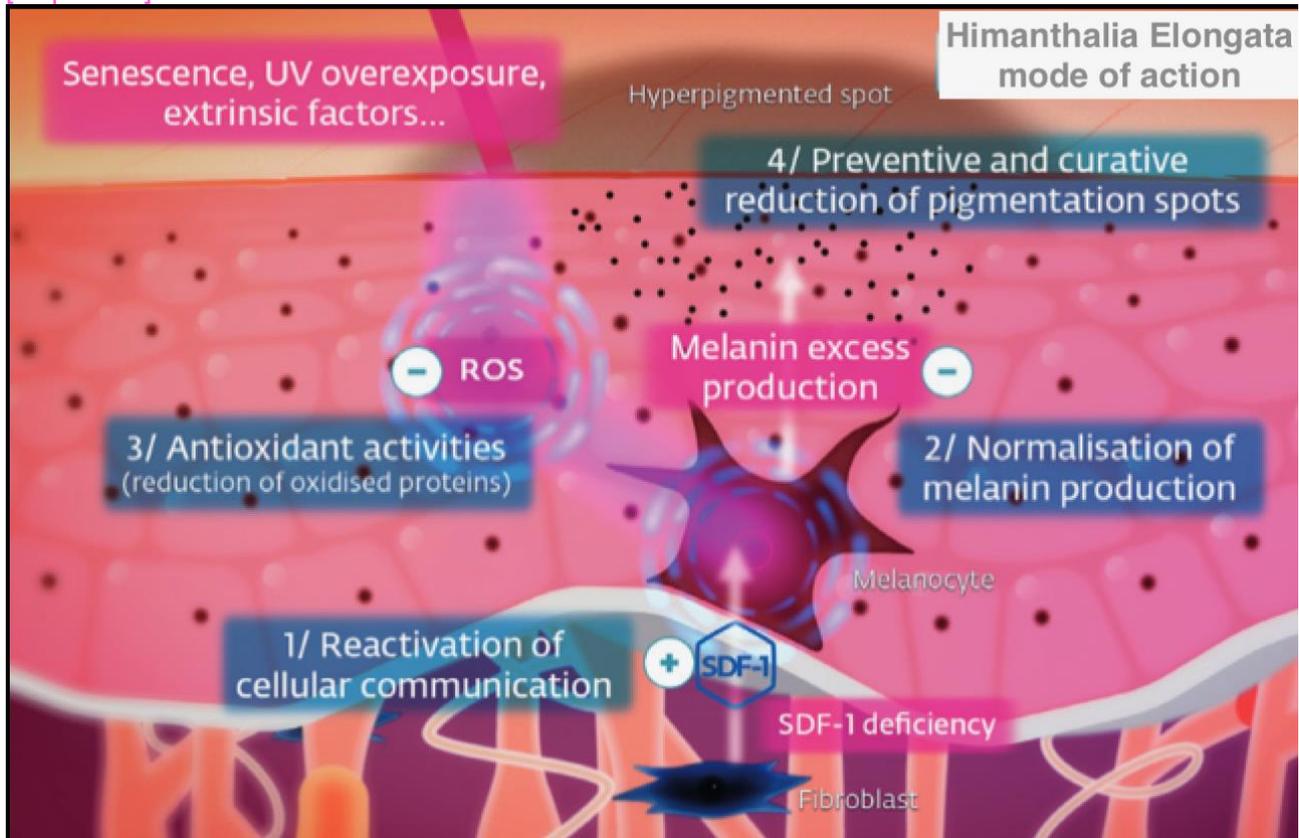
Himanthalia elongata produces many biomarkers of interest, such as polyphenols, and more specifically phlorotannins. These particular molecules have been identified during our screening for their ability to reactivate the expression of SDF-1, a key target in hyperpigmentation disorders. By enriching the alga extract in those molecules of interest, Active Beauty scientists crafted *Himanthalia Elongata* Extract, the universal dark spots fader.

How to target pigmented spots for all skin ethnicities?

To evaluate the consumers' benefits of *Himanthalia Elongata* Extract against dark spots and pigmentation disorders, a clinical study was carried out on 43 female volunteers with African skin type, from 19 to 54 years old, selected for their hyperpigmentation spots on the face. Volunteers were divided into 2 groups, applying either a formula containing *Himanthalia Elongata* at 3% or a placebo (same formula without the active) on their full face, twice a day for 56 days. As African skin is very rich in melanin (potent UV protector), it usually shows less ageing spots due to UV exposure or senescence than other skin types. However, it is prone to hyperpigmentation disorders which can be related, for instance, to an over production of melanin during wound healing. Therefore, for this clinical test, volunteers were selected for their hyperpigmentation disorders on the faces, no matter their age (19 to 54 years old). The melanin content in the dark spots of the volunteers was then

evaluated thanks to a Mexameter® at D0 and after 28 and 56 days of treatment. Himanthalia Elongata induces a significant reduction of the melanin content in the hyperpigmented spots of the volunteers, down to -91% and -327% versus placebo, respectively after 28 and 56 days.

[Capture 2]



To inspire the beauty industry and concretely show Himanthalia Elongata Extract's efficacy, the active ingredient was formulated by our experts in an inspirational skin complexion boosting essence. This luxurious formula combines Himanthalia Elongata Extract together with a radiance booster obtained from Sea Fennel, and a moisturising water rich in sea minerals sourced from Brittany. Its "fat water" texture (a 2020 new skincare trend) gives the product a consistency between the essence and the serum, and its delicate smell makes this essence the perfect beauty product to smooth the skin, erase dark spots and even out complexion.

Images & legends

Capture 1

Himanthalia Elongata Extract mechanism of action

Capture 2

Illustrative pictures (VISIA®), Himanthalia Elongata Extract at 3%

Volunteer 07 - 29 years old

¹ Yoon JE et al. Senescent fibroblasts drive ageing pigmentation: A potential therapeutic target for senile lentigo. *Theranostics*. 2018 Sep 9;8(17):4620-4632

Flower-Powered Conditioning: A Sustainable New Cationic Surfactant

*Lucie Maisonneuve
Stepan Company, France*

Lucie is currently a Consumer Products Business Development Manager with Stepan Company, Europe. Prior to joining Stepan, she held various positions, including new product development and marketing.



ABSTRACT

Hair conditioners are used around the world to improve the feel, appearance and manageability of hair. While the performance of these products is a must for consumers, a majority of them define themselves as eco-conscious beauty buyers and are looking for more sustainable products.

The most common cationic hair conditioning agents currently used are behentrimonium chloride (BTAC) and Cetrimonium Chloride (CETAC). As the industry standard for conditioning performance, BTAC is considered the preferred quaternary for combing and achieving a soft feel. However, both BTAC and CETAC have use-level restrictions in Europe due to their irritation potentials. In addition, these products are very toxic to aquatic life with chronic effects.

With decades of experience in esterquat chemistry, Stepan Company still believes in the value of esterquats for hair conditioning. Stepan's personal care chemists started the development of a "next generation" esterquat that could provide the positive environmental and safety profiles of this chemistry, along with the combing and conditioning performance of BTAC.

Stepan decided to go greener by using sunflower oil instead of a palm-derived fatty acid and has developed a novel hair conditioning quat in accordance with consumers' main expectations in mind. The resulting product, a sunflower esterquat (INCI: Dioleylethyl Hydroxyethylmonium Methosulfate (and) Sunflower Seed Oil Glycerides) does not contain any water, solvent nor preservative, and is comprised of 100% total cationic and emollient actives. This fits the rising need for concentrated ingredients that enable transportation and storage optimization. Thanks to its liquid form, the product is not only easy to handle, but also decreases the need for heating while formulating hair conditioners or masks. It also allows galenic form ranging from solutions to oils, emulsions and solids. While BTAC-based formulations need to be heated to approximately 80°C, formulating with SF-EQ¹ can be done at 65°C, hence contributing to energy savings. What is more, this sunflower oil-based esterquat is considered to be Derived Natural by ISO 16128 [Standard]. The Natural Origin Index for the product is 0.88, offering a better story for the consumer, the formulator and the environment.

While this esterquat was designed to meet as many sustainability criteria as possible, another crucial aspect to assess was technical performance. The detangling properties of this esterquat was assessed using a Dia-Stron instrument that measures the force needed to pull a comb through a standardized tress of wet hair. The greater the force, the poorer the conditioning performance. To simulate damaged hair, the tress tested was bleached Caucasian hair. When a

¹ Sunflower Esterquat

12% active conditioning agent is added to the base, the force needed to comb through hair is significantly reduced by all the cationic conditioning agents, showing easier detangling. However, CETAC and palm-based esterquats are not premium performers. Only the esterquat based on sunflower oil was able to equal the performance of the leading chemistry, BTAC.

Stepan also studied the deposition of SF-EQ onto the hair fiber and assessed its substantive character. To do so, a modified Rubine test using the anionic Red 80 dye was performed. This anionic dye serves to reveal the presence of a cationic onto keratin, the main component of hair. Tresses of bleached Caucasian hair were washed with a non-conditioning shampoo and rinsed thoroughly. A 2% active cationic conditioner was applied, and the hair was rinsed once more. The tresses were then dipped into a Red 80 dye solution, drained to removed excess solution, rinsed and left to dry overnight. The final observation of the dry hair tresses showed that the control one that was only shampooed, showed no trace of dye. The BTAC-treated hair showed some pinkish areas, resulting in a heterogeneous, low presence of BTAC. On the contrary, the SF-EQ-treated tress was uniformly left bright red, proving its superior substantivity towards the hair and suggested that the effect of this esterquat could last longer than the time spent under the shower.

However, substantivity can be a disadvantage when the conditioning agent keeps accumulating on the hair surface, which eventually leads to a greasy and heavy appearance of the hair. That is why a second shampoo was performed on the SF-EQ-treated hair tress. After rinsing and drying, the hair tress was back to its initial state. This indicates that the esterquat was completely eliminated after the next shampoo and rinse. SF-EQ consequently would not have a build-up effect.

Another challenge traditionally faced by formulators when substituting a key ingredient in their formulation is to be able to maintain the same physico-chemical properties. In the case of hair conditioning products, viscosity is a very important parameter. SF-EQ is able to build viscosity with lower levels of fatty alcohols and thickens more gradually than BTAC when more fatty alcohol is added. This gradual increase can be useful as it provides better control during the industrial production process. Even though SF-EQ does not reach the same high viscosities as BTAC, the values obtained are within the benchmark range, enabling formulators to create a range of hair care products comparable to BTAC.

This Dioleylethyl Hydroxyethylmonium Methosulfate (and) Sunflower Seed Oil Glycerides product is a European-sourced, GMO-free sunflower oil and does not contain any additives. Its performance is similar to BTAC. By smoothing each individual hair strand, hair will be super-soft and manageable. It allows for easy combing and possesses great substantivity and good rinsability. It also promotes inclusive beauty as it offers superior curl control.

Lastly, this hair conditioning quat has a better environmental profile than the most popular quats (BTAC and CETAC) thanks to its ready biodegradability and sunflower oil feedstock. It is an eco-designed alternative to most common cationic conditioning agents.

Interview with South African Brand Owner

*Theo Mothoa-Frendo
Usso Skincare, South Africa*



Theo is the Founder and CEO of African Dermal Science (PTY)Ltd the owner of Usso Skincare, an advanced facial skincare range aimed at addressing the specific skincare needs of Africans.

A Medical Doctor by training, GIBS MBA Graduate and Pharmaceutical Expert, Dr Theo spent 10 years with Roche Pharmaceuticals across Sub-Saharan Africa mostly as Medical Director. Through her company she focuses on the research, development, manufacturing and marketing of science-driven skincare solutions for Africans. Dr Theo is also a Fellow of the prestigious Archbishop Tutu African Leadership Fellowship and was named as one of the 50 African Entrepreneurs to watch by Entrepreneur Magazine.

Other interests include the industry wide development of the Wellness industry which she does as a Board member of the Spa and Wellness association of Africa as well as promoting menstrual health and distribution of menstrual cups through her role as a Board Member of the MINA Foundation. Dr Theo also loves sharing her story in order to inspire others through her Public speaking engagements. She is a TedX Jhb Speaker and has spoken at various organisational platforms including Telkom, Liberty, GIBS, ESKOM, United Nations Africa, Barloworld, Lionesses to list a few.

OVERVIEW

Usso Skincare by African Dermal Science, a proudly South African anti-ageing skincare brand that has hit the local South African market. Specifically formulated for Africans and the African climate, the product name Usso takes its meaning from the Zulu word **Ubuso**, which means face, a celebration of who we are as Africans.

The Founder, a female black South African Medical Doctor and Pharmaceutical Expert, Dr Theo Mothoa-Frendo, was inspired to start this company and develop this range based on her personal struggles with finding locally developed quality skincare that addresses her specific African needs. Through extensive local research they identified the following as being skincare concerns that are specific to Africans: uneven skin tone, hyperpigmentation, seasonal dryness, oily skin and difficulty finding a sunscreen that does not leave a grey or white residue on the skin.

Over 3 years, they worked with renowned local cosmetic scientists, medical doctors and African women to research and develop this world class, proudly South African skincare range. Only the finest Botanical ingredients and the most advanced, tested, active pharmaceutical ingredients the world over have been used for the range products. As recognition for excellence in Formulation, Regulations, Safety and Marketing, this young brand was Runner up in 2 categories at the South African Pharmaceutical and Cosmetic Review New Product competition, where it was recognised alongside legendary South African Brands.

Suitable for all skin types, this cosmeceutical range that is Doctor Developed has been clinically tested and dermatologist approved.

Just one year after launch, Usso by African Dermal Science was listed with selected Edgars Stores in South Africa, Botswana and Namibia making it the first African Doctor developed Skincare Brand to be available in a leading Skincare retailer in South Africa. Usso Skincare products are also available on their own e-commerce site www.usso.africa, Take-a-lot, Beauty on Tapp and several other online stores. African Dermal Science celebrates the Beauty of Science for African Science.

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9 SEPTEMBER 2021

SESSION 6

Chairpersons: Beverley Gardiner, Skyem, South Africa
Liesl Keulder, Cirebelle, South Africa

13h00-13h30 **Corn-Derived Bio Polymer in Hair Styling**
Vinayak Rupnar, Dow Chemicals, Dubai

13h30-14h00 **Next Generation Green Dandruff Control**
Bernd Heinken, Symrise, Germany

14h00-14h30 **The Benefits of a Functional Vehicle Specifically Developed
for personalized Acne Treatments**
Hudson Polonini, Fagron, The Netherlands

14h30-15h30 **Debate & Panel Discussion Relating to Natural**
Is there a place for natural raw materials in South
African formulations?

Are natural ingredients inherently better than synthetic
ingredients?

Expert panel includes:

Will Coetsee, Botanica Natural Products, South Africa
John Knowlton, Cosmetic Solutions, South Africa
Namrita Lall, University of Pretoria, South Africa
Charis Lewis, Investchem, South Africa
Wayne Robertson, Pharmaceutical Marketing Consulting
Group

15h30-15h40 **Closing Address**
Liesl Keulder, Cirebelle, South Africa
Vice President Coschem 2021

Corn-Derived Bio Polymer in Hair Styling

*Vinayak Rupnar
Dow Chemicals, Dubai*

Vinayak is a post graduate in Chemical Engineering from IIT Bombay, India. He is working as Technical Service and Development Manager for Dow Consumer Solutions Division handling Middle East, Africa and Turkey region. He has over 23 years of industry experience in the chemical industry having worked with Tecnimont, bp-Castrol and Croda prior to Dow. He has spent significant amount of his time in emerging geographies of India, Middle East, Africa and Turkey. He is based in Dow Chemical MEA HQ in Dubai.



ABSTRACT

Consumers are increasingly desiring products that are natural and connect to them personally. Consumers scrutinize product ingredients and demand transparency. However product performance is the baseline of expectations.

In this study Hydrolyzed Corn Starch Polymer was studied for Curl retention, Humidity Resistance, Style Durability and Hair Stiffness properties in Hair Styling formulations. Hydrolyzed Corn Starch was compared with synthetic Hair Fixatives currently used in the industry.

Hydrolyzed Corn Starch acts as an excellent film-former and hair fixative. It offers a Comparable performance to synthetic film formers with added benefit of being a natural bio-based hair fixative polymer.

Next Generation Green Dandruff Control

*Bernd Heinken
Symrise, Germany*



Bernd studied Chemical Engineering in Münster (Germany) and spent several years of R&D work in various technical industries before joining Schülke & Mayr GmbH, Norderstedt (Germany) in 1998 in the Application Department. In 2002 he took over the role as International Market Manager responsible for the Technical Biocide Business unit at Schülke & Mayr.

Since beginning of 2009 Bernd Heinken had been responsible for the Technical Support Department “Special Additives” within Schülke’s worldwide organization with focus on integrated microbiological hygiene concepts and global Technical Support networking. In addition, he is a member of several industrial expert groups/ associations, like DGK, EDANA, etc.

In February 2019 Bernd joined Symrise’s Cosmetic Ingredients Division in Holzminden/ Germany as Technical Directory Micro Protection for the EAME region. In this role Bernd is responsible for customer support on all relevant Micro Protection topics, networking with industries (societies & associations), managing test procedures and training for customers and sales teams.

ABSTRACT

Flaky scalp is surely among the most frustrating skin conditions. Yet, whatever the cause – ethnic hairstyles, cleansing habits, seasonal changes, stress, pollution, genetic disposition, ... - it always comes down to a dysbiosis in the fragile ecosystem of the scalp. Conventional anti-dandruff products in the cosmetic market have been relying on the use of three common ingredients: zinc pyrithione, climbazole and piroctone olamine. All three actives are based on a strong anti-microbial effect against dandruff causing yeast *Malassezia* and have been used in the personal care market for decades.

From the inventor and leading supplier of one of these three benchmark anti-dandruff actives (climbazole), the presentation will demonstrate an entirely new, natural derived, anti-dandruff technology with an innovative mode of action. Comprehensive test results on anti-dandruff efficacy comparable to conventional actives climbazole and piroctone olamine will be demonstrated. Furthermore the presentation will include additional data showing the new active’s beneficial properties for hair fibre and scalp. Propanediol Caprylate is an ester-based COSMOS approved technology that complies with the requirements of ISO 16128 for a natural origin index of 1.

The Benefits of a Functional Vehicle Specifically Developed for personalized Acne Treatments

*Hudson Polonini
Fagron, The Netherlands*

Hudson is a Pharmacist, MSc in Health Sciences (Dermatology and photoprotection), PhD in Health Sciences (Skin and transdermal products– Universidade de Juiz de Fora, Brazil; Nanotechnology and ecotoxicology – Université de Paris, France) and Post-doc (nanobiotechnology). He has published 83 scientific articles and 6 books up to date. Currently, he works as Global Innovation Project Manager at Fagron (The Netherlands), and was previously Professor at the University of Medical Sciences from Juiz de Fora (Brazil).



ABSTRACT

Acne vulgaris is one of the most prevalent skin disorders worldwide and affects all ethnic and age groups, independent of sex, nationality, or socioeconomic status.¹ The presence of acne lesions can usually affect self-confidence, anxiety, and community avoidance. The main accepted aetiologic mechanism involves changes in the pilosebaceous unit through the hyperkeratinization of the pore, overproduction of sebum, and excessive proliferation of *Cutibacterium acnes*.²

Personalized treatments for acne can provide benefits to patients, as long as the vehicle used in the formulation has enough safety and functionality for the acneic skin. Here, we present ingredients used in a functional vehicle, which makes it the ideal choice for compounding acne topical treatments. By having these ingredients in the formulation, they allow for good compatibility with the most common active ingredients for acne. Its main constituents are:

***Cleome gynandra* L. leaf extract:** *C. gynandra* has anti-inflammatory and antioxidant activities³, as well as positive effects on wound repair⁴ and skin allergy/ itching.⁵ The main components of this product are polyphenols, notably rutin and hydroxycinnamic acid. These substances can act synergistically on decreasing sebum secretion and inflammation (inhibits *C. acnes*, and suppresses TLR2, IL-8, and neutrophils).⁶

Palmitoyl Tripeptide-8: A single group efficacy trial with 50 patients with rosacea showed that the use of a facial lotion containing palmitoyl tripeptide-8 significantly improved redness, flushing, overall appearance, rosacea severity and lesion count – in comparison to the baseline.⁷

Bisabolol: In addition to the reduction of proinflammatory markers, bisabolol can also reduce oxidative stress.⁸

Hyaluronic acid: Hyaluronic acid has shown a range of different activities on the skin: anti-inflammatory and antibacterial properties;⁹ antioxidant capacity;¹⁰ and accelerator of the wound healing process.⁹

Functional oils

- *Persea gratissima* oil: positive effects on acne.¹¹
- *Simmondsia chinensis* seed oil: positive effects on acne and wound healing.¹²
- *Rosa canina* flower oil: anti-inflammatory¹³ and antimicrobial activities.¹⁴

- *Cocos nucifera* oil: antimicrobial¹⁵ and anti-inflammatory properties.¹⁶
- *Lavandula angustifolia* herb oil: inhibition of skin allergies.¹⁷
- *Melaleuca alternifolia* leaf oil: amelioration of acne vulgaris due to anti-inflammatory and antimicrobial effects against *C. acnes*.¹⁸
- *Rosmarinus officinalis* leaf oil: decreases the proliferation of *C. acnes*.¹⁹
- *Vitellaria paradoxa* butter: anti-inflammatory and anti-aging properties.²⁰
- Tocopheryl acetate: skin barrier-stabilizing properties.²¹

In addition, the proposed vehicle was tested to be compatible with the most common ingredients for acne, namely: Metronidazole 2%, Niacinamide 5%, Tretinoin 0.1%, Clindamycin 1.0%, Azelaic acid 15%, Benzoyl peroxide 10%, Salicylic acid 2%, Lactic acid 10%, Cannabidiol (CBD) oil, Ascorbic acid 2%.

Given the exposed, a functional vehicle containing the ingredients here described seems a good option for compounding personalized treatments for acne, presenting good functionality and stability.

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Debate & Panel Discussion Relating to Natural

Is there a place for natural raw materials in South African formulations?

Are natural ingredients inherently better than synthetic ingredients?

Will Coetsee

Botanica Natural Products, South Africa



Will is a passionate entrepreneur focused on social entrepreneurship which combines ecology, indigenous culture and business principles to create products and services in developing countries. Having graduated with a BSc degree in biodiversity and ecology in 2003, he started working for his family business, the Mogalakwena Group in rural Limpopo. In 2010 he graduated with an MBA (cum laude) in social entrepreneurship from the University of Stellenbosch Business School. Since 2013, he has been Managing Director of Botanica Natural Products, which is a social enterprise that produces plant extracts, oils and powders for personal care applications and nutritional benefits.

Dershana Jackson

CTFA, South Africa

Dershana holds a BSC (Microbiology) Honours Degree from The University of the Witwatersrand, and has also completed Occasional studies toward a BA (Psychology) Degree at the same institution. She has completed the Cosmetic Science Diploma through Coschem.

Her career started off as a microbiologist at Be-Tabs Pharmaceuticals and then progressed to managing the quality control and quality assurance functions at Avon. Dershana has also worked as a Technical and regulatory manager at Sensient Colors South Africa. She has 25 years of experience in the pharmaceutical, cosmetic and food industries and is currently heading policy & regulatory affairs at the Cosmetic Toiletry & Fragrance association of South Africa for the last 5 years.



In her current role at the CTFA, Dershana represents the cosmetic industry at National and International stakeholder forums.

At a national level she is the industry representative at various technical committees and steering committees at the South African Bureau of Standards, SABS/TC 217 – Cosmetics, SABS/TC229 – Nanotechnology, SABS/TC0070 Legal metrology, SAB/TC0038 medical textiles, SABS/TC1040 Animal testing for scientific purposes, SABS/TC1006 Industrial cleaners. She also represents the industry at the Department of Fishery, Forestry and Environment at the chemicals management committee. Dershana is the industry liaison with the National Department of Health and the Department of Trade, Industry and Competition.

At an international level Dershana participates at the International organisation for standardisation (ISO) work group meetings. Dershana also accompanies the National Department of Health representative at the International Co-operation of Cosmetic Regulators, as the South African industry representative.

John Knowlton
Cosmetic Solutions, South Africa



John Knowlton is the founder and Managing Director of Cosmetic Solutions, a consultancy business dedicated to the needs and requirements of the cosmetic and toiletries industry, both in South Africa and internationally. Cosmetic Solutions was established in 1998 and since that time has developed into one of the most successful cosmetic consultancy businesses in South Africa.

John graduated in 1978 from the University of Kingston, London, with a first-class honours degree in chemistry. John was President of the Society of Cosmetic Scientists in the UK in 1992 and in 1999 became President of the Society of Cosmetic Chemists in South Africa, one of only a handful of people who have achieved Presidency of two cosmetic societies in different parts of the world.

John is a board member of the Cosmetic, Toiletry and Fragrance Association of South Africa and is also a member of the Scientific Advisory Panel for the Pharmaceutical & Cosmetic Review. In 1994, John co-authored the book "Handbook of Cosmetic Science and Technology", which is still used today as a valuable tool in the education of young students in the field of cosmetic science.

Since 2006, John has been accepted as an independent expert in the field of cosmetics by the Advertising Regulatory Board of South Africa (ARB), the only person in the country to have achieved this status, and in this role he spends much of his time assessing the validity of advertising claims and advising on methodologies for their scientific substantiation.

Namrita Lall
University of Pretoria, South Africa

Namrita is a Research Chair at the University of Pretoria and has been placed in the Essential Science Indicators list of the top 1% of publication outputs (citations) in the discipline PHARMACOLOGY and TOXICOLOGY. She has been also appointed as an Adjunct Professor at the School of Natural Resources University of Missouri, USA (Dept is 1 of the top 15 in the world), and at JSS AHER, India and as a Senior Research fellow at the Bio-Tech R&D Institute, Jamaica.

Six start-up companies named, "Bio Indigenous Solution" (a Mamelodi community-based company in Pretoria), "Tone Tribe", "Blyde Botanics", "Anoiksen", "Scholareview" and "Looksci" (formed by Young postgraduates) resulted from Prof Lall's research programme.



She has international recognition for her research into the potential of medicinal plants for pharmaceutical and cosmeceutical purposes. One pharmaceutical product for skin-hyperpigmentation problems has been commercialized internationally and another twelve are close to commercialization. Several License Agreements have also been signed for various actives researched under Prof Lall's supervision.

She has published more than 165 research articles, 12 patents, more than 50 book chapters, H-index is 41 and RG score is over 40 (Top 5%). Three books on medicinal plants edited by Prof Lall, have been published by the publishers; 'Elsevier' and 'Taylor and Francis'.

Among several awards received in recognition for her work, a few are “**The Order of Mapungubwe**”, South Africa’s highest honour from the Honorable South African President Jacob Zuma (April 2014), and UNESCO-L’Oreal Award for Women in Science (one of the 10 selected candidates internationally, March 2002, in Paris).

Charis Lewis
Investchem, South Africa



Charis started her career at Mintek back before the Rinderpest. After completing a National higher diploma in Chemistry she had a very varied career.

In 2014 she joined Investchem as an Account manager and became a member of Coschem. Charis completed the Coschem diploma in 2016. She is currently studying through the Institute of Personal Care Science, Australia towards on a paired program – Diploma of Personal care formulation + Certificate in Cosmetic Regulatory Essentials.

Wayne Robertson
Pharmaceutical Marketing Consulting Group, South Africa

Wayne is the Managing Director at Pharmaceutical Marketing Consulting Group (Pty) Ltd. PMCG is a specialist consulting company working in the Pharmaceutical, CAMS, Cannabis, Botanical and FMCG Industries.

Wayne is also the Operations Director at Inzpire Health (Pty) Ltd who markets and sells CAMS products. He is also the Quality Director at PharmaLeaf (Pty) Ltd, who are a Medicinal Cannabis Growing Facility in Gauteng.



Wayne studied pharmacy and obtained his B.Pharm degree at the University of Witwatersrand and graduated in 2000 being awarded the PSSA (Southern Gauteng) Pharmaceutical Student of the Year. He furthered his studies whilst working by undertaking his Diploma in Production Management (2005) at the Production Management Institute of South Africa where he was awarded *Cum Laude*.

He has worked most of his career in the pharmaceutical / CAMS industry but in various sectors from manufacturing, direct sales, regulatory, auditing, QA and new product development. He has worked in pharmaceuticals, complimentary medicines, botanicals and FMCG. He has also worked in South Africa, USA, Europe, Nigeria, Ghana, Kenya and Tanzania.

Previous highlights in Wayne’s career include:

- Business Development Director at Afriplex (Pty) Ltd
- Sales & Technical Director for Azochem Laboratories (Pty) Ltd
- Director of Product Development for GNLD International (Pty) Ltd - Africa Region
- Production Pharmacist & Liquids Manager for Pharma Natura (Pty) Ltd
- Production Pharmacist for Alliance Pharma (Pty) Ltd

Wayne is a HPA (Health Products Association) Exco Member and on the Scientific and Regulatory Affairs Committee. The HPA is the leading trade association for CAMS and Cannabis in SA. He also

sits on the Industry Task Group (ITG) that meets and interacts with the SAHPRA and is also a CTAC member for Marketing Code Authority.

Wayne was also part of the Cannabis Ministerial Task Team that was chosen to give input from industry on hemp, CBD and cannabis in August 2019.

9 September 2021
Session 6
15h30 - 15h40

Closing Address

*Liesl Keulder
Cirebelle, South Africa
Vice President Coschem 2021*

Dear Speakers, Delegates, Sponsors and Guests,



Thank you for being part of this moment in history, Coschem's first Digital Conference.

As we all know 2020 changed the way that we live our daily lives and has definitely changed the way we as a society function. I want to thank all of you for embracing the new ways of working and ensuring that the beauty Odyssey continues.

It was exciting to see that research and development continued as well as being able to welcome international speakers to share their knowledge with our industry.

On behalf of Coschem, thank you for your participation, from attending talks, presenting and debating the pertinent topics in our industry.

Thank you to Beverley Gardner and the scientific committee for their commitment to presenting the Coschem conference this year and to MGG for ensuring that everything ran smoothly.

And lastly, to Bridget for her tireless dedication to the society. Thank you for all your effort and hard work.

We hope to see you all in person next year.