SCC 79TH ANNUAL SCIENTIFIC MEETING & SHOWCASE

DECEMBER 16-17, 2025 | SHERATON NY TIMES SQUARE, NEW YORK

Speaker Abstracts

Session K: Biotechnology

Sophorolipids for 2-in-1 Conditioning Shampoos: Surfactant-Polycation Interactions, Complex Formation, and Deposition on Hair

Linh Dieu Do Ph.D.; Sasol North Amercia, LLC

Fermentation derived sophorolipids are very mild, microbiome-friendly, and multifunctional biosurfactants, that combine gentle cleansing with additional scalp care benefits. Furthermore, they show beneficial interactions with cationic conditioning polymers that can be utilized in 2-in-1 conditioning shampoos.

This talk will provide insight into these biosurfactant-polymer interactions and the resulting complexes, that are relevant to understand the deposition of conditioning agents on hair. Dynamic light scattering (DLS) and Zeta-potential measurements have been used to provide a comprehensive overview of the phase behaviour of selected model systems, while rinsing. Furthermore, foam-film thinning and ellipsometry experiments have been used to elucidate the deposition of polycations and silicon on hair. Ultimately, hair combing experiments have been used to investigate the resulting conditioning on hair.

It was found that the addition of sophorolipids impact the deposition mechanism and resulting conditioning performance. These findings contribute to a knowledge-based optimization of 2-in-1 shampoos.

The Potential of Plant-Derived Extracellular Vesicles for Skin Care —A Comparison Study Between an Exosome Formulation and a Traditional Plant Extract

Mathias Gempeler PH.D.; DSM-FIRMENICH

Plant derived exosomes are a heterogeneous group of phospholipids membrane-bound micro-to nano-sized bio-vesicles. They contain a diverse cargo of biomolecules including proteins, lipids, and nucleic acids, and play crucial roles in intercellular communication. In recent years, their importance as potential active ingredients in cosmetics has increased considerably, but there is not yet much data available on their effect compared to traditional treatments.

In an 8-week blinded placebo controlled clinical study with 128 healthy female subjects (Fitzpatrick phototypes II/III, age between 35 and 71y) the effect of an exosome formulation has been evaluated against a traditional plant extract.

The Exosomes formulation showed significant better results compared to placebo after 4 and 8 weeks for major ageing endpoints ($p<0.05$) and outperformed the traditional plant extract. A dose and time dependent effect has been observed. The data clearly show the potential of exosome formulations for cosmetic applications.

A Novel Bio-Inspired Glycolipid from Plant Holobiont: A Biotechnological Approach for Targeting Atopic-Prone Skin Disorders

Melissa Bergman, Solabia USA

Biotechnologies, through insights derived from natural phenomena, bridge natural processes and scientific advancements, enabling the production of naturally rare molecules to develop new active ingredients, particularly for cosmetic applications.

A notable example is *Pseudozyma flocculosa,* an epiphytic fungus that lives in symbiosis with plants and produces a specific glycolipid to protect its ecological niche while also safeguarding its host from phytopathogenic infections. Using biotechnology, the function of the glycolipid produced by *Pseudozyma flocculosa* can be extrapolated and adapted for cosmetics use to target human holobiont.

This bio-inspired ingredient shows great potential in targeting atopic-prone and sensitive skin, helping to restore microbiota balance, combat Staphylococcus aureus overgrowth, a hallmark of atopic dermatitis, and enhance skin comfort. Such innovation is also aligned with sustainable practices, reducing reliance on synthetic chemicals. This highlights how nature-inspired solutions can drive sustainable and effective innovation in cosmetics, ultimately improving skin health and overall well-being.

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A Next-Generation of synthetic peptide: green AI-Engineered Tetrapeptide for Neurocosmetic Innovation

Joan Attia, PhD*; Lucas Meyer Cosmetics by Clariant*

Baptiste Bro, PhD; Lucas Meyer Cosmetics by Clariant

Sandrine Kurdykowski,PhD; Lucas Meyer Cosmetics by Clariant

Anne Zibi; Lucas Meyer Cosmetics by Clariant

Discover a breakthrough in sustainable skincare with our AI-designed, PFAS-free tetrapeptide (MTP), developed in line with green chemistry principles. This innovative multifunctional ingredient targets the neuro-cutaneous interface to deliver triple action benefits: anti-aging, brightening, and botox-like effects. Validated through *in silico*, *in vitro*, and clinical studies, MTP demonstrates high efficacy in enhancing skin firmness, reducing wrinkle depth, and evening pigmentation across diverse skin types. It outperforms traditional NEP inhibitors, offering rapid, dose-dependent results through mechanisms like ECM rejuvenation, neuromodulation, and melanogenesis regulation.

Powered by artificial intelligence, MTP is a safe, sustainable solution that meets today's cosmetic and environmental demands.