

ABSTRACT

PRESENTER: Prof. George John

COMPANY: The City College of New York

JOB TITLE: Professor

Podium Title: *Sugar-Based Gels: Wax Free Lip Balms and Trans Fat Free Oil Structuring Agents*

Background information (Short introduction)

Quest for healthier, green and sustainable alternatives to current ingredients in food and cosmetic formulations has been the industry's research thrust for the past several years. Trehalose is a non-reducing disaccharide with two glucose molecules linked through an α , α -1,1-glucosidic bond. Trehalose has shown enhanced penetration of select ingredients and has been used in cosmetic products as antioxidant, skin protectant and moisturizer.

Objective

To exploit such properties of trehalose, we designed and synthesized trehalose-based fatty acid derivatives (amphiphiles) via regioselective transesterification via biocatalysis [GRAS].

Methodology

Preliminary studies using new trehalose amphiphiles confirmed their gel forming ability in a wide variety of vegetable oils.

Results

New lip balm formulations were prepared in which wax-base was completely replaced with trehalose-based oleogels (patent pending). Rheological tests of the resulting formulations revealed that the new formulations not only were comparable to currently available commercial lip balms, but also exhibited an increased elasticity of the final product.

Conclusion

The ability of trehalose-based amphiphiles to self-assemble and form 3D networks will allow to encapsulate lipophilic active ingredients and control their release. Such property has the potential to bring trehalose-based formulations to a new level of cosmeceuticals, and oil thickening agents.

Why is this important to the industry?

Naturally derived sugar based thickening agents as potential green alternative in cosmetic applications.



George John is recognized for his active research in the field of functional molecular materials from renewable resources and green nanotechnology. He is currently a Professor of Chemistry and Biochemistry at the City College of the City University of New York (CUNY). The interdisciplinary research of John's laboratory is focused on the molecular design of synthetic lipids, membrane mimics, soft matter, green energy technologies and organic materials chemistry. His group has successfully developed environmentally benign antibacterial paints, polymer-coatings, molecular gel technologies, oil spill recovery materials, organic battery components,

vegetable oil thickening agents, and trans fat alternatives. He is the recipient of the Tokyo University of Sciences (TUS) award, Kerala Center Award, Fellow of the Royal Society of Chemistry, and was a Senior Fulbright Scholar to India.