



## CENTER FOR DERMAL RESEARCH SEMINAR SERIES REMOTE

The Center for Dermal Research Welcomes

**Dr. James (Vince) Gruber, Director of New Product Development at Vantage**

*“ATP Biofluorescence as a rapid means to quantify probiotics delivered from topical probiotic treatments”*

Monday, February 5, 2024 at 5:30pm EST Remote



Dr. James (Vince) Gruber is the Director of New Product Development at Vantage developing new ideas and technologies for the personal care, cosmetic and therapeutic industries. He is also an Adjunct Professor at the University of Cincinnati's School of Pharmacy working with students in the cosmetics master's degree program. Prior to joining Vantage Specialties, Dr. Gruber held positions at Jeen, Botaneco, Sensient, Arch/(Lonza) and Amerchol among others, leading technical teams developing active and functional ingredients. He is the author of 42 refereed articles including 22 referenced in PubMed and holds 13 granted US Patents and additional published World Patent applications. He has authored numerous edited articles and book chapters and is an author and co-editor of the book *Principals of Polymer Science and Technology in Cosmetics and Personal Care*. He is a scientific review editor of numerous Open Access journals including the *Journal of Cosmetic Science*, *Cosmetics*, *Clinical, Cosmetic & Investigational Dermatology*, *Molecules*, *Microorganisms*, *Pharmaceutics*, the *International Journal of Molecular Science* and the *International Journal of Cosmetic Science*.

### **Abstract**

Recent studies have shown that it is possible to examine the presence of the skin's microflora in a global fashion after a sanitizing dysbiosis by using ATP biofluorescence to examine the presence of living microbes on the skin. Further exploratory work demonstrated that the technique could also be applied to skin that had undergone a dysbiosis in which living, quiescent *Lactobacillus plantarum* was applied to the skin from a cream that was formed from a powder containing living, quiescent probiotics just prior to topical application. The powder was preservative free and converted quickly to a cream upon the addition of water with mixing. Using the ATP biofluorescence testing technique, a group of commercially available probiotic products was examined quickly using a single person's volar forearms to see if the technique could potentially detect the application of living probiotics from various commercially available delivery vehicles. The results of the ATP biofluorescence measurements were supported by examining the same commercial products using 3M Pertifilms to examine the microbial viability of the products. In all cases examined, it appeared that the rapid ATP biofluorescence testing method could accurately determine if a living probiotic had been applied to the skin from the commercial products. To further extend the testing of the powder-to-cream probiotic delivery system, *in vitro* studies were conducted in which a powder containing probiotic *L. plantarum* Lp90 was converted to a cream and immediately applied to Reconstructed Human Epidermis, (RHE, EpidermEFT) tissues 2X for 24 hours of each treatment. The resulting tissues were examined for four well-established biomarkers including, Collagen, Elastin, Hyaluronic Acid and Filaggrin. It was found that the topical treatment of the RHE with the living probiotic stimulated the expression of elastin and it was further shown the effects were not the result of added oligosaccharide cryoprotectants used to make the quiescent probiotic powders. This talk will examine the benefits of topical application of probiotics from the perspective of potential cosmetic and therapeutic benefits and address the difficulties and some potential solutions on how to deliver living probiotics to the skin.



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