

7. The Human Skin Microbiome and Cosmetics

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Probiotics are well known in the realm of functional foods. Probiotics are generally recognized as microorganisms that are beneficial to gut health. Not long ago, the **World Health Organization** (WHO) widened the definition to live microbes that when administered in adequate amounts confer a health benefit on the host(1). This opens up the possibility of probiotics in skin care when we consider the wide range of conditions that involved microorganisms like dandruff, auxiliary odor, and acne.

Prebiotics & Probioactives

But there are many complications to the use of true probiotics in cosmetics like preservation, refrigeration, and harsh manufacturing conditions. Prebiotics, ingredients that stimulate the growth or activity of favorable microorganisms, and probioactives, bacterial lysates that consist of cell wall components capable of eliciting immune response, may be better options.(2,3,4)

Currently, acne treatment has been one of the most published about the applications of probiotic concepts in skin therapy. Propionbacterium acnes, a Gram-positive commensal member of skin flora, hyperproliferates in comedones and stimulates inflammation by producing free fatty acids that irritate follicular walls. Topical and oral antibiotic treatments for acne can cause unwanted side effects like photosensitivity and resistance in P. acnes(5,6). OTC actives also can cause irritation and dry skin. Taken together these factors make the application of prebiotics or probioactives an interesting option if side effects can be mitigated.

Prebiotic cosmetic research

One recent study investigated a prebiotic strategy by comparing various plant extracts for their ability to balance P. Acnes with respect to Staphylococcus epidermidis, another common commensal skin bacterium. Initial screening was performed in vitro by

measuring the turbidity of bacterial cultures to estimate organism counts.

A combination of black currant and pines extracts showed the best results and was incorporated into a regimen of cleanser, toner, and moisturizer for in vivo efficacy testing. Small sample size restricts significance, but a directional trend in balancing *P. acnes* with respect to *S. epidermidis* was demonstrated.(7)

As the knowledge of our skin microbiome grows and technology continues to evolve, the cosmetic scientist will have better ways assess these types of strategies and provide innovative approaches to treating skin conditions.

For a deeper dive into probiotics, prebiotics, and probioactives see

References

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