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The New Evidence and Perspectives on How Micro Biomes Affect Skin Aging

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Editorial

Both internal and extrinsic factors contribute to the multifactorial ageing process of the skin. Given that the skin's antioxidant system tends to deteriorate with age, one of the main theories of ageing focuses on cellular senescence or apoptosis brought on by oxidative damage. A complex ecosystem made up of microorganisms, the human microbiota is found in the body (bacteria, fungi and viruses). Both the gut and the skin's microbiota play crucial roles in the immune system's regulation, which affects both innate and adaptive immune responses, moderating inflammatory conditions and defence against pathogen invasion. Nevertheless, many disturbances and life stages may cause changes in the human microbiome.

"Microbial dysbiosis," which is linked to the effects of many illnesses, including ageing, is the outcome of a modification of the gut bacteria [1]. The skin interactome is an unique "genome-microbiome-exposome" integration that is important for skin ageing and skin health. In the future, protecting against, delaying and preventing skin ageing while maintaining good skin conditions should be accomplished by minimising the detrimental effects of elements impacting the skin interactome. The present research on how human microbiomes impact skin ageing is outlined in this review, along with examples of potential microbiome-related therapies that might be used to control skin health and ageing. Currently available probiotics-based medicines are mostly used as supplemental treatments for a variety of dermatologic diseases [2].

A younger to an older, frequently less healthy, organism is what is referred to as the ageing process. Even if the societal definition of "old" or "aged" falls between the ages of 60 and 70, the ageing process actually happens at all stages of life. All of the organ systems' structure and function deteriorate as a result of the biological ageing process, which takes place at the cellular and molecular level. A large portion of ageing is caused by genetic factors. In part, genetics explains why people from particular lineages often live longer and in better health than those from other lineages, which is how a species' longevity is determined. As a result, ageing is widely acknowledged in today's scientific community to be universal, inescapable and irreversible.

The skin has a multifactorial ageing process that is brought on by both internal and external influences because it is our bodies' greatest contact. The inherent causes, or chronologic skin ageing, appear to involve a series of physiological changes in the skin that take place over time and are impacted by genetic, hormonal and cellular changes, including metabolites from the gut and skin microbiota. These modifications include soft tissue changes, including a decline in collagen synthesis, a reduction in lipid levels, thinning of the epidermis and loss of subcutaneous fat. Skin that is intrinsically older looks dry, pale and has fine lines and increased suppleness. Soft tissue changes, facial bone resorption and recession all work together to give the ageing face its distinctive inverted triangle form [3].

Given that the skin's antioxidant system tends to deteriorate with age, one of the main theories of ageing focuses on cellular senescence or apoptosis brought on by oxidative damage. The primary contributors to skin ageing are external elements like UV radiation and reactive oxygen species production that results from normal aerobic metabolism. Stress-related genes, such as nuclear factor-kappa B (NF-B) and hypoxia-inducible genes, are upregulated as a result of oxidative damage. Skin homeostasis and the skin's ability to act as a barrier against external factors and possible infections are both significantly influenced by the skin microbiome. Competition between commensal bacteria for resources and available space results in the development of antimicrobial compound peptides (AMPs), which prevent rivals from reproducing and thwart the growth of pathogens. Enzymes involved in skin homeostasis are secreted by skin microorganisms. Protease enzymes contribute to the regeneration of the stratum corneum, lipase enzyme breaks down the surface of lipidic films and urease enzyme is involved in the breakdown of urea [4].

In conclusion, the "genome-microbiome-exposome" have been integrated in a unique way to create the skin interactome, which is important for skin ageing and skin health. Future strategies to defend against, postpone and stop skin ageing as well as maintain good skin conditions should focus on reducing the detrimental effects of elements impacting the skin interactome. There aren't many clinical researches on skin anti-aging, but more are needed because this notion is growing and might offer a glimpse into potential future treatments. However, it's critical to remember that ageing is a multi-factorial and multi-dimensional process. The present medical paradigm still considers maintaining an individual's holistic health to be of utmost importance [5].

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Conflict of Interest

The author shows no conflict of interest towards this manuscript.

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