LA ROCHE-POSAY
LABORATOIRE DERMATOLOGIQUE

Why consider the skin microbiota in daily practice?

ATOPY BASIC

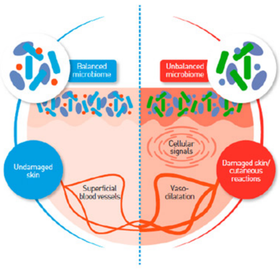
Human skin is a complex barrier organ that provides an ecological niche for a wide range of microorganisms. The majority of these microorganisms are harmless or beneficial, providing protection against pathogens and playing an important role in modulating the host's cutaneous immune systems. The symbiosis between the skin and its microbiota depends on a complex "dialogue" and is necessary for healthy skin and an effective skin barrier function.[1]

Atopic dermatitis: beyond skin barrier dysfunction, dysbiosis

It is now acknowledged that the composition of the extracellular matrix no longer fulfils its role in AD patients and the skin barrier function is altered.

Several cultivation studies have identified changes to the composition of microbial communities in areas of dry, itchy skin over time when compared to healthy control individuals,2 with a dramatic drop in bacterial diversity and up to 90% of the community limited to just one type, Staphylococcus.

This abnormal microbial colonization means that AD can be seen as a state of dysbiosis.[3]

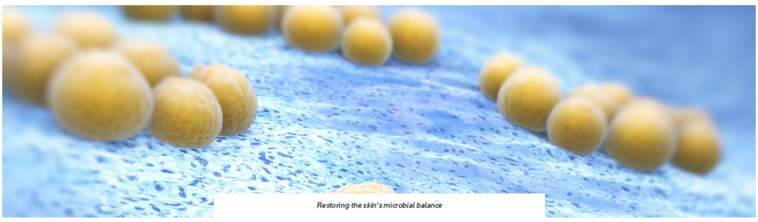


Dysbiosis occuring during AD

Rebalancing skin dysbiosis: another challenge for the treatment of AD

Changes in the normal composition of the skin microbiota can contribute to the development of inflammation and worsening of disease severity.[1]

Restoring the skin's microbial balance may be clinically meaningful in inflammatory skin diseases such as atopic dermatitis. The skin microbiota may be "the newest frontier" in preventive health and shape the approach to AD treatment.[4]



Restoring the skin's microbial balance

Emollients may help restore the skin microbiota

Moisturizers and emollients are seen as the cornerstone of AD treatment. They help restore and maintain skin barrier integrity, combat xerosis and enhance treatment efficacy. Clinical trials have shown that the application of certain emollients may increase microbiota diversity in atopic skin.

Given the skin dysbiosis in atopic patients, therefore, the focus of AD treatment may shift to a moisturizer with the ingredients to help restore the skin microbiota and barrier function. Moisturizers may offer benefits in atopic patients, in whom antioxidant, antibacterial and appropriate immune activities are important therapeutic strategies.[4]

GOING FURTHER

Managing the skin microbiota with a specific emollient: results of a clinical trial

Methods

- *Double-blind, randomized, comparative study*
- *60 AD patients (SCORAD at D-15=21+/- 8)*
- *Study treatments: emollient supplemented with Aqua Posae Filiformis, a biomass of non-pathogenicbacteria Vitreoscilla filiformis grown in a medium containing thermal spring water (A) vs. another emollient (B)*
- *Study length: 4 weeks*

Results

- *Reduction in SCORAD: group A= -11% / group B= +35% (p=0.01884)*
- *Increased level of Xanthomonas genus in group A*
- *Increased level of Staphylococcus genus in group B*
- *Associated SCORAD lower in group A (46%) than in group B (79%)*

Conclusion

Emollient A is able to regulate skin microbiome and significantly reduce flare-ups.

Seite S., Zelenkova H., Martin R. et al. Using a specific emollient to manage skin microbiome dysbiosis. (Poster)
Seite S., Zelenkova H., Martin R. Clinical efficacy of emollients in atopic dermatitis patients – relationship with the skin microbiota modification. Clinical, Cosmetic and Investigational Dermatology 2017;10:25–33.

Better understanding the skin microbiota

The skin microbiota is represented by around 250 to 500 different types of microorganisms, including bacteria, viruses and mycotic agents.[5] This microbiota is almost a second invisible organ with its own genome[6,7] and is constantly interacting with the innate and adaptive immune systems in the skin. The skin microbiota — because of its exposure at the surface and within an interface organ — is constantly subjected to many factors affecting its composition and diversity.

Schematically, three skin regions are known to host different microbiota profiles: sebaceous regions (face and anterior and medial posterior sides of the trunk), moist zones (axillary and inguinal regions, arm and leg joint folds), and dry zones such as the forearms and buttocks.[8]

The initial skin microbiota composition is highly influenced by the first skin contacts during and after birth. This composition is dictated by the birth delivery route (natural versus C-section), first contact with the mother's skin, and breast milk composition, which is a significant "microbiotic soup". To some extent, we can also see maturation of the skin microbiota during the first twelve months of life, with very marked variations in the so-called "microbiota core". There are major intra- and inter-individual variations because these factors affect the skin microbiota. This also explains why the skin microbiome is the most unstable of all the human body's niches and ecosystems.[9] Moreover, due to the accessibility of the skin and its microbiota, many strategies may be adopted to alter the composition of the microbiota and restore some balance between the different constituents involved in the ecosystem, whose rich diversity seems essential for healthy skin. For the reasons outlined above, changes in microbiota diversity ("dysbiosis") may be expected as a result of skin disorders, irrespective of their origin.

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