

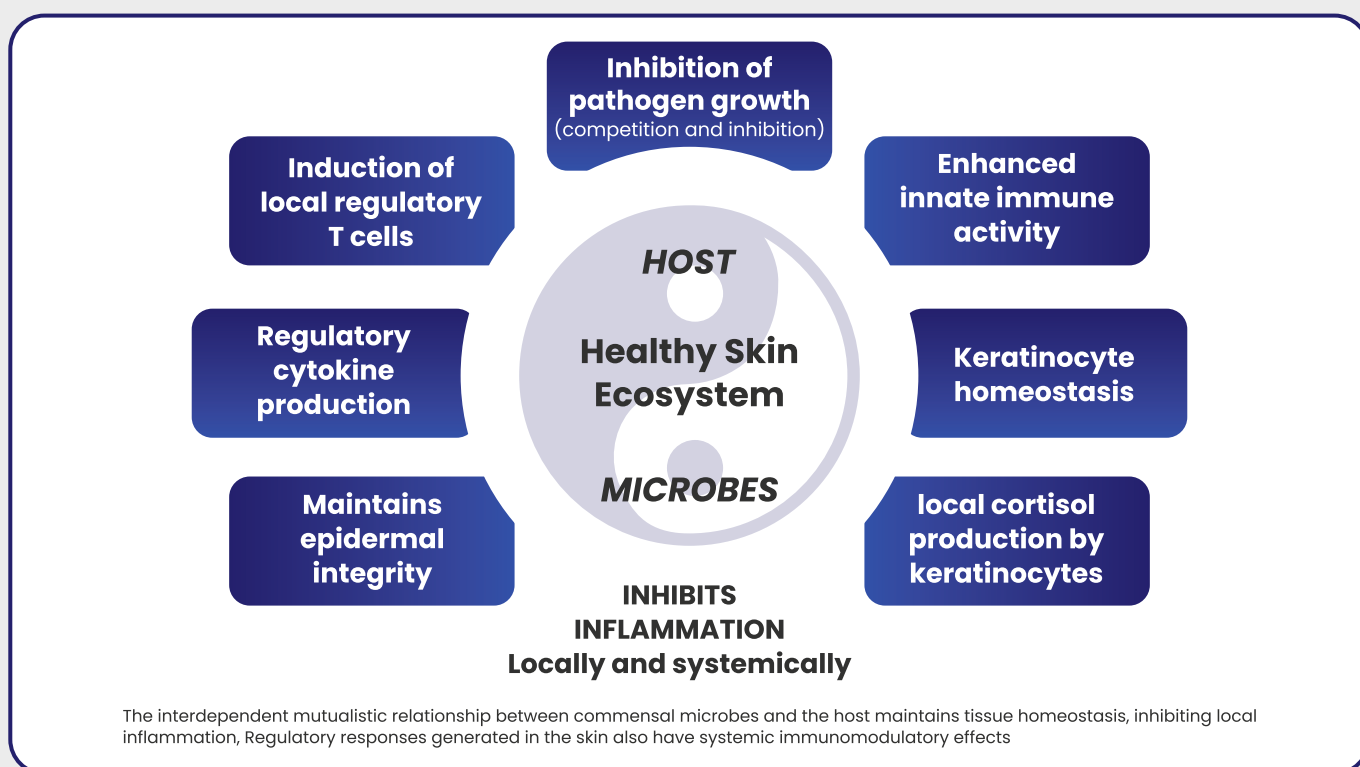
The skin microbiome: impact of modern environments on skin ecology, barrier integrity, and systemic immune programming

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The skin microbiome: The importance of cutaneous ecosystems

Skin microbiota play an integral role in the maturation and homeostatic regulation of keratinocytes and host immune networks with systemic implications. Thus, factors which alter the establishment and health of the skin microbiome have the potential to predispose to not only cutaneous disease, but also other inflammatory non-communicable diseases (NCDs).



Barrier Disruption in Allergic disease

Abnormal skin colonization may contribute to abnormalities of epithelial development, integrity and predispose to local and systemic immune dysregulation – often first manifest as food allergy and eczema.

Staphylococcus aureus colonization and reduced microbial diversity is seen in over 90% of individuals with eczema compared with less than 5% of unaffected individuals.

Human colonization with *S. aureus* in epidemiological studies has been associated with relative loss of mutualistic microbes particularly a subset of *S. epidermidis* which inhibits and destroys *S. aureus* biofilm formation by the production of serine proteases.

A complex feedback loops suggested by the observation that improving barrier function and reducing skin inflammation significantly reduces *S. aureus* burden in children and adults with eczema.

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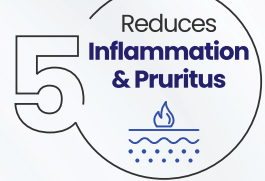
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