Skin microbiota analysis-inspired development of novel anti-infectives

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Abstract

In the age of antibiotic-resistant microbes, developing new anti-infective alternatives is crucial. A new study takes a novel approach – turning our gaze back on the microbes that colonize us. Commensal skin bacteria are fundamental to maintaining the skin barrier and protecting us from pathogenic microbes. While dysbiosis of the skin microbiome is associated with diseases such as psoriasis and atopic dermatitis, in healthy skin, skin commensals protect the host by supporting the immune system and impairing the growth or virulence of competitors. Researchers screened over 3000 human skin isolates to evaluate bacterial competition. Their results revealed a strain of *Staphylococcus hominis* with activity against Gram-positive pathogens, mediated by a molecule called MP1. Using either a “probiotic” approach or nanoparticles could replicate the effect of MP1, reducing infection by the pathogenic bacteria *Staphylococcus aureus* in mice. While future studies will determine whether *S. hominis* can be used for clinical applications, this study suggests that analyzing interactions within commensal human microbiota may aid in the development of novel anti-infective strategies to combat antibiotic resistance.