

6th International Conference on

Clinical and Experimental Dermatology

May 04-06, 2016 Chicago, USA

Precision skin microbiome using skin probiotic bacteria against pathogens

Eric Huang

University of California, USA

Microbial imbalance with the over-growth of microbes in the human skin microbiome is termed “skin dysbiosis”. We have demonstrated that many skin (probiotic) bacteria in the human skin can exploit the skin endogenous carbohydrates to undergo fermentation and produce short-chain fatty acids (SCFAs) to rein in the over-growth of microbes in the skin. Our approach here is to selectively amplify the fermentation activity of probiotic bacteria to rebalance the skin dysbiosis. Various selective fermentation initiator (SFIs) including carbohydrate analogs have been used to exclusively trigger the fermentation of skin probiotic bacteria. The concept of using SFIs to enhance the probiotic activity of skin bacteria against pathogens will be applied for development of post-antibiotic adjuvant therapy for treatment of skin disorders. Two disease models [Acne vulgaris and *Staphylococcus aureus* (*S. aureus*) infection] are used to test the efficacy of SFIs. We envision that precision microbiome approaches using SFIs are able to specifically intensify the probiotic ability of skin bacteria, produce SCFAs to “beat” out its pathogen competitors and reduce inflammation via the inhibition of histone deacetylase (HDAC). The SFIs will be developed as “antibiotic adjuvants” and tested their ability to reduce the effective dose of topical antibiotics for treatment of skin disorders and minimize the non-specific killing effect of antibiotics on skin commensals. When successful, SFIs will be the first antibiotic adjuvants that are designed based on natural strategy (fermentation) of human skin commensals.

Biography

Eric Huang has been an Assistant Professor at Department of Dermatology, University of Alabama, Birmingham for four years. He is currently a Professor at Department of Dermatology, University of California, San Diego. In the past nine years at UCSD, his research focuses on the development of vaccines and probiotics for treatments of various skin diseases including acne vulgaris and *S. aureus* infection. His results demonstrate that carbohydrate fermentation of the human skin microbiome functions as the innate immunity against pathogens. Many skin probiotic bacteria have been isolated in his lab and developed as bacteriotherapy for treatments of skin disorders.

chh001@ucsd.edu

Notes: