

ACNE, ROSACEA, AND RELATED DISORDERS (INCLUDING HIDRADENITIS SUPPURATIVA)

A FACEWASH CONTAINING PLANT DERIVED MONOTERPENES RESTORED IMBALANCED MICROBIOME PROFILE IN ACNE SKIN

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Background: Acne vulgaris is a multifactorial skin disorder. While proliferation of Cutibacterium acnes is historically considered to play a contributory role, recent advances in sequencing technology reveal that acne is associated with an altered microbiome profile involving multiple taxa that can be restored through appropriate interventions.

Objective: Previous studies showed that a facewash containing plant derived monoterpenes, thymol and terpineol, can effectively reduce acne lesions and bacteria-derived porphyrin. This study aimed to compare facial microbiome profile between acne lesions and non-acne healthy skin, and to understand the effect of the facewash on acne microbiome.

Materials and Methods: A double-blind, IRB-approved, clinical study was conducted with 30 acne and 30 non-acne volunteers aged 18-30 years. The acne volunteers were given a facewash containing thymol and terpineol to use twice daily for four weeks while the non-acne control volunteers were given a marketed non-anti-acne mild face cleanser. Facial microbiome samples were collected using a cup scrub method, at baseline and 4-week after product usage. The microbiome samples were characterized by 16s amplicon sequencing of the V1-V3 region. Two major bacteria species were quantified by qPCR.

Results: Compared with the normal skin in the non-acne group, acne lesions have higher levels of Cutibacterium acnes and Staphylococcus epidermidis as quantified by qPCR. The microbiome compositional profile is different at the phylum and genus levels, and acne lesions have a decreased microbial diversity. After a 4-week application of the facewash containing thymol and terpineol, these altered microbiome features, including bacteria numbers, compositional profiles, and diversity were significantly improved to a status resembled that of the healthy microbiome. Restoration of the microbiome profile was accompanied by a reduced total acne lesional count.



Conclusions: Acne lesions are associated with altered microbiome, and a facewash containing thymol and terpineol can relieve acne symptoms and restore the microbiome balance.

