ABSTRACT BOOK ABSTRACTS



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

## LIPASE, IL-1β, CAMP FACTOR AND BEYOND: INSIGHTS FROM ARTIFICIAL 3D SKIN MODEL EXPERIMENTS INTO PATHOGENESITY OF PROPIONIBACTERIUM ACNES TO ACNE VULGARIS

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Introduction: Propionibacterium acnes (newly proposed as Cutibacterium acnes) is a facultative anaerobe which predominates in the human hair follicles. Although the species has long been considered as one of the causative factors as reflected to its species name, the mechanisms to cause inflammation has not been revealed in detail. We have previously reported that the Type I subspecies of the bacteria (P. acnes subspecies acnes) turns harmful to overly produce inflammation-related proteins, e.g. CAMP factor, when the follicle is blocked to make the microenvironment anoxic. This corresponds to the clinical observations that the subspecies predominates most of the inflammatory lesions, although normal follicles harbours not only Type I but Types II (subspecies defendens) and III (subspecies elongatum). On the other hand, a recent report stated Type II induces more inflammation-related cytokines to the cultured keratinocytes.

Objective: Our aim is to clarify the pathogenic subspecies of P. acnes and to further investigate the mechanisms.

Materials & Methods: Firstly, we re-evaluated the CAMP factor-producing ability of P. acnes by CAMP test. Secondly, we applied three different subspecies of P. acnes to full-thickness skin 3D model under half-anaerobic condition that mimics the oxygen-deprived condition in the blocked follicles.

Results: Although the only erythrocyte-lysing (haemolytic) subspecies is Type I, all three subspecies showed Staphylococcus aureus-induced haemolysis in blood agar plates (positive CAMP test). Two-day inoculation of P. acnes caused a significant degradation of dermal components of the 3D model and five-day inoculation further widens the degradation to the epidermal components. Interestingly, this happened more significantly when we inoculated P. acnes Type II and III than Type I.

Conclusion: Subspecies difference within the species resulted in different modality of the











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inflammation/degradation. P. acnes Type II and III can also play a role in acne vulgaris.



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