

Title: The role of skin biofilm in pathogenesis of atopic dermatitis

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Background: Atopic dermatitis is a chronic, multifactorial, relapsing inflammatory skin condition which is one of the main known health problem worldwide. Atopic dermatitis lesions are frequently colonized by *Staphylococcus aureus* and *Staphylococcus epidermidis*. Their susceptibility to form biofilms, ability to form adhesive skin colonies which lead to extremely resistant to antibiotics and immune responses. Formation of skin Biofilm resulted in complex bacterial communities that have unique effects on human keratinocytes, mouse fibroblasts and host immunity.

Aims: The aims of this study to confirm the specificity of *S. aureus* or its secreted factors in induction of pro-inflammatory cytokines IL-33, TSLP and toxicity on human keratinocytes and mouse fibroblast. The second aim to study the inhibitory effect of co-culture of *S. epidermidis* with *S. aureus* in term of production of pro-inflammatory cytokines and toxicity.

Method and materials:

Human epidermal keratinocytes and mouse embryonic fibroblasts cell lines from 3T3 were used as a control strain to examine production of inflammatory response (IL-33 and TSLP) and cell death induced by *S. aureus* in the presence and absence of *S. epidermidis*. TSLP and IL-33 were detected by ELISA and the apoptosis of *S. aureus* and *S. epidermidis* on these cells was evaluated by flow cytometry.

Result: Recent findings propose the important role of skin biofilms in the pathogenesis of atopic dermatitis. *S. aureus* have been found to induce secretion of pro-inflammatory cytokines and cause apoptosis of human keratinocytes and mouse fibroblasts. Presence of *S. epidermidis* as skin biofilm found to protects the human keratinocytes and mouse fibroblasts from induction of pro-inflammatory cytokines and cytotoxicity.

Conclusions and future work:

S. aureus are essential in production of inflammatory response and cell death of mouse fibroblasts and human keratinocytes. Future work will be carried out to identify the soluble factors that responsible in induction of pro-inflammatory cytokines. In addition, more studies are needed to be able to understand the mechanism by how *S. epidermidis* reduce the induction and cytotoxicity caused by *S. aureus*.

Biography

Abdullah ALKAHTANI is an Assistant Professor, College of Medicine of King Khalid University, Abha, Saudi Arabia.