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**Paper Poster Session**
**New treatments for skin infection**

## Pseudomonas aeruginosa in vitro response to novel antibacterial and biological burn wound bandage formulations

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**Background:** *Staphylococcus aureus* and *Pseudomonas aeruginosa* are the main pathogens involved in burn wound infections, causing high morbidity and costs. Currently, two types of burn wound bandages are used: (i) conventional dressings made of gauze which may contain topical antiseptics such as silver ions, and (ii) biological bandages made of a collagen or a hyaluronic acid gel matrix to which progenitor cells can be added to promote wound healing. The SwissTransMed-funded platform B[5] (Biological, Biodegradable and anti-Bacterial Burn wound Bandages) aims to design novel bandage formulations that combine both approaches by adding a novel type of antimicrobial peptides (AMP) together with progenitor cells loaded on a biological matrix.

**Material/methods:** We assessed bacterial responses by performing growth and killing assays using different combinations of matrices (collagen, hyaluronic acid gel) and antimicrobial peptides in a microtiter plate format.

**Results:** We investigated the response of burn wound pathogens to different bandage formulations. *P. aeruginosa* degraded the collagen matrix resulting in increased bacterial cell densities after 24h of incubation. In contrast hyaluronic acid gel matrices did not support bacterial growth. Clinical burn wound isolates of *P. aeruginosa* were susceptible to three different AMPs (MICs ≤ 16 mg/L). Killing kinetics for one of the AMPs (2-3 log reduction within 5 min) was faster compared to silver nitrate. AMPs added at sub-cytotoxic levels (100 mg/l) to the collagen or to hyaluronic acid gel matrices showed bactericidal activity and prevented collagen degradation by *P. aeruginosa* Experiments combining AMPs with progenitor cells on hyaluronic acid gel matrices are ongoing.

**Conclusions:** Combination of hyaluronic acid gel matrix with antimicrobial peptides seems a promising strategy to prevent burn wounds infection by *P. aeruginosa*.