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## EXPOSURE OF BACTERIAL BIOFILMS, DEVELOPED IN A CDC BIOFILM REACTOR, TO SILVER BASED HYDROGELS

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**Aim:** To evaluate the efficacy of commercially available, and next generation silver hydrogels, on *in-vitro* biofilms.

**Methods:** The microorganisms used in this study included *Staphylococcus aureus* ATCC6538, *Candida albicans* ATCC10231 and *Pseudomonas aeruginosa* ATCC9027. Bacterial biofilms were generated using the CDC biofilm reactor\*. The biofilm reactor was inoculated with 1ml respective test strain culture and the reactors were maintained at steady state for 8 hours. The biofilm reactor was then maintained at a continuous flow rate for 72 hours. Coupons were then aseptically removed from the CDC biofilm reactor and transferred to sterile 12 well microtitre plates containing respective hydrogels. Bacterial biofilms were exposed in triplicate to the hydrogels for periods of 2, 8 and 24 hours at 37°C. Subsequent to this, coupons were transferred to 10ml neutralisation buffer and agitated in a Griffin shaker for 60 seconds, followed by 30 seconds pulse-vortex mixing. Exposure data was expressed graphically using Sigma Plot 8.0. A students T-test was used to compare the CFU counts obtained between exposure times. Data was analysed using SPSS version 16.

**Results:** When *P. aeruginosa* biofilms were exposed to the 'next generation' silver gels this resulted in a 5 log reduction following 2h exposure (P<0.05) and a 5.57 log reduction in *S. aureus* following 8 hours exposure (P<0.05).

**Conclusion:** The 'next generation' silver gels evaluated in this study exhibited anti-biofilm characteristics to a significantly higher degree than existing commercially available silver hydrogels.

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