

In-vitro evidence of a silver foam dressing against a broad spectrum of bacteria and bacterial aggregates

Data on file, Determination of the antimicrobial effectiveness of Biatain Silicone Ag using a modified AATCC 100 test method, Data on file VV-0254113.

Christiansen et al., *In vitro* evaluation of a silver foam dressing with and without silicone adhesive against biofilms and a broad range of microorganisms, EWMA 2018.

Antimicrobial effectiveness against a broad spectrum of bacteria

Aim

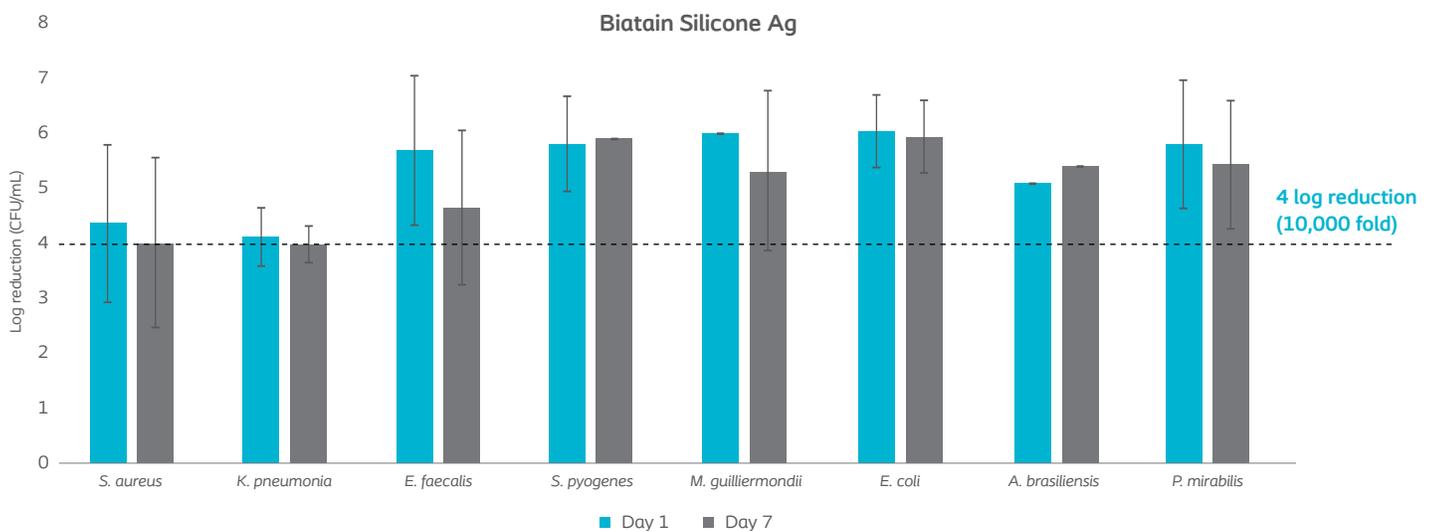
To test the antimicrobial effectiveness of Biatain® Silicone Ag against a broad spectrum of bacteria over the 7 day wear time of the product.

Methods

The antimicrobial performance of Biatain Silicone Ag was evaluated using a modified AATCC 100-2012 protocol. Pre-cut dressing samples (42x42 mm, n=5) were preconditioned with simulated wound fluid (SWF) before being challenged with $\geq 10^6$ CFU/ml of the selected test microorganisms. The number of colony forming units (CFUs) were determined at day 0, day 1 and day 7 to calculate the log reduction.

Results

Antimicrobial activity, defined as ≥ 4 log reduction (10,000 fold), was demonstrated for 3 Gram positive bacteria, 3 Gram negative bacteria, one yeast and one filamentous fungi. The efficacy was similar on day 1 and day 7, indicating a sustained antimicrobial activity for up to 7 days against a broad spectrum of bacteria and fungi, including microorganisms commonly found in wounds.



Antimicrobial effectiveness against bacterial aggregates

Aim

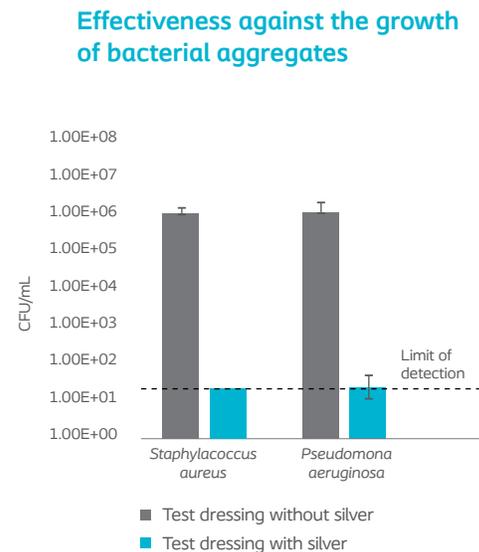
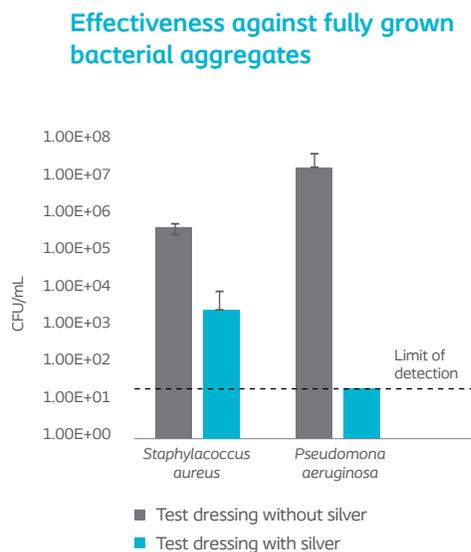
To test the antimicrobial effectiveness of Biatain Silicone Ag against existing bacterial aggregates, as well as against regrowth of bacterial aggregates.

Methods

An *in vitro* model was used based on a study by Crone et al¹ to grow bacterial aggregates (*P. aeruginosa* or *S. aureus*) embedded in semi-solid agar. The microorganisms were inoculated into the semi-solid agar and either 1) grown to maturity for 24 hours or 2) treated shortly after inoculation to demonstrate prevention of growth. In both test setups, the microorganisms were subsequently exposed for 24 hours to samples of the test dressings or comparable dressings without silver (control).

Results

The test dressing showed a statistically significant effect against fully grown bacterial aggregates of both *S. aureus* and *P. aeruginosa*, compared to the control dressing. Bacterial aggregates of *P. aeruginosa* were reduced by >99.99% and bacterial aggregates of *S. aureus* were reduced by 99.3%. The test dressing also prevented growth of both bacterial aggregates to stay within the limit of detection which was set to 25 CFUs.



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1. Crone et al., A novel in vitro wound biofilm model used to evaluate low frequency ultrasonic-assisted wound debridement, *Journal of Wound Care*, 2015.

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