

EP090

ePoster Session

Environment and healthcare-associated infections

Clinical evaluation of the efficacy of a cold air atmospheric pressure plasma prototype for decontamination of hospital surfaces

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Background

Novel approaches to decontaminate hospital surfaces are being sought to augment traditional methods. Previous *in vitro* studies in our laboratory have demonstrated efficient bactericidal and sporicidal activity of cold air atmospheric pressure plasma (CAPP) on different surfaces.

Objective

To evaluate the efficacy of CAPP for decontamination of inanimate surfaces on a hospital ward over an eight week period.

Methods

Aerobic-count petrifilms (25 cm²) were used to sample 12 wooden patient tray-tables (6 controls, 6 tests) on a medical ward of a tertiary referral acute care hospital over an eight-week period. Sampling was carried out on five different areas of the tray-table on three occasions every week, one-day before CAPP, straight after CAPP and one-day afterwards. CAPP treatment was performed during 5min on each tray-table, the distance of the plumes to the surface was of approximately 1cm. Petrifilms were incubated overnight at 37 °C, and aerobic growth was enumerated and expressed in colony-forming units per cm² (CFU/cm²). Statistical analysis was carried out using Graph Pad Prism 5.00 software.

Results

Figure 1 shows the microbial contamination expressed in mean aerobic counts recovered from patient tray-tables, one-day before, straight after and one-day after CAPP treatment. The baseline levels of microbial aerobic contamination varied between 6 and 8 CFU/cm². However, following CAPP treatment the levels of aerobic contamination were significantly ($P<0.05$) reduced to approximately 3 CFU/cm².

Conclusions

The *in situ* evaluation of the CAPP prototype showed an efficient reduction of bacterial contamination on patient tray-tables in approximately 50%. These results confirm our previous *in vitro* studies and suggest CAPP systems to be a potential alternative to augment traditional methods. However, further research is required to make the device more practical and easy-to-use but also to evaluate its efficacy on different surfaces and hospital equipment.

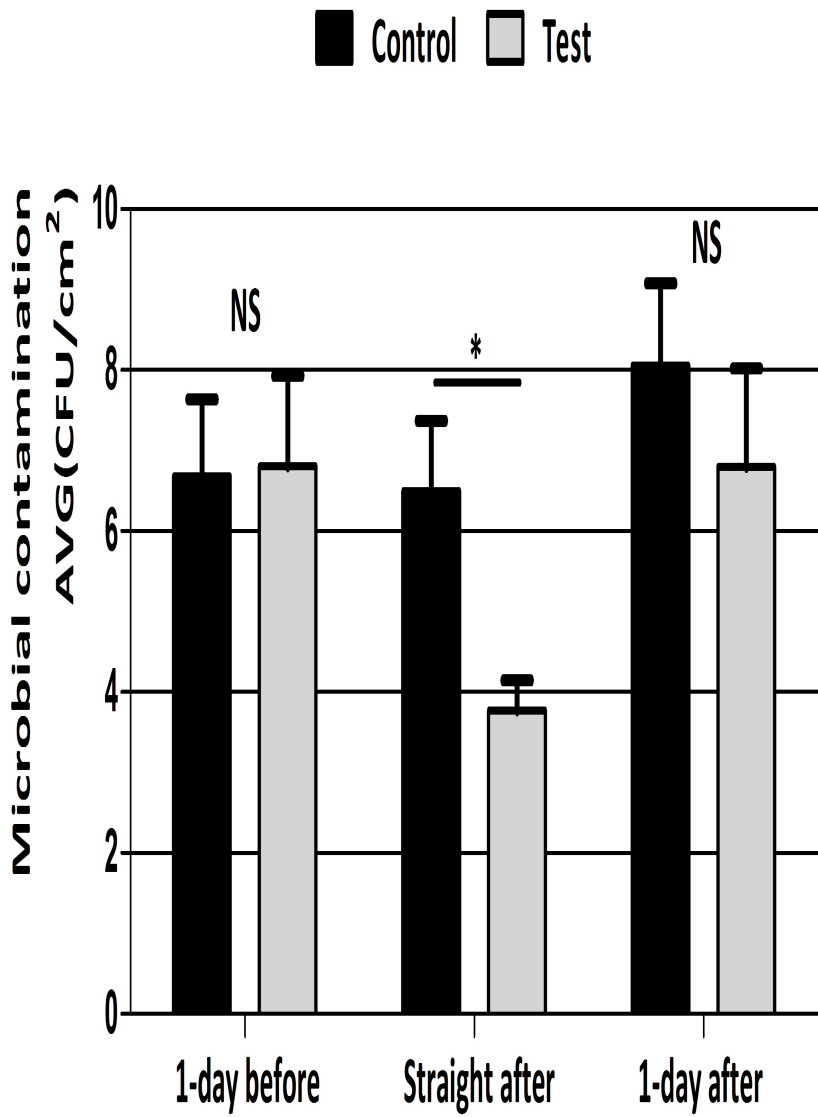


Figure 1- Microbial contamination, expressed in mean aerobic colony forming units (CFU) per cm², on wooden tray-tables one-day before, straight after and one-day after CAPP treatment measured over an eight-week period in a hospital ward. Control and test groups represent two different sets of wooden-tray tables. NS= non-significant, **P*<0.05.