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INTRODUCTION

Biofilm plays an important role in some cases of pyoderma and otitis externa in dogs, as it may contribute to treatment failures and antimicrobial resistance. There is an increasing interest today to investigate on alternative treatments.

The aim of this study was to assess *in vitro* the interest of two topical products containing N-acetylcysteine combined with essential fatty acids extracted from plants and essential oils in inhibiting microbial biofilm formation and weakening an already formed biofilm.

MATERIAL AND METHODS

Products tested & microbial strains

Two Dermoscent® products, PYOclean® Oto and PYOclean® Spray, were tested and sterile water was used as a control.

Malassezia pachydermatis and *Pseudomonas aeruginosa* were tested with PYOclean® Oto and *Staphylococcus pseudintermedius* with PYOclean® Spray.

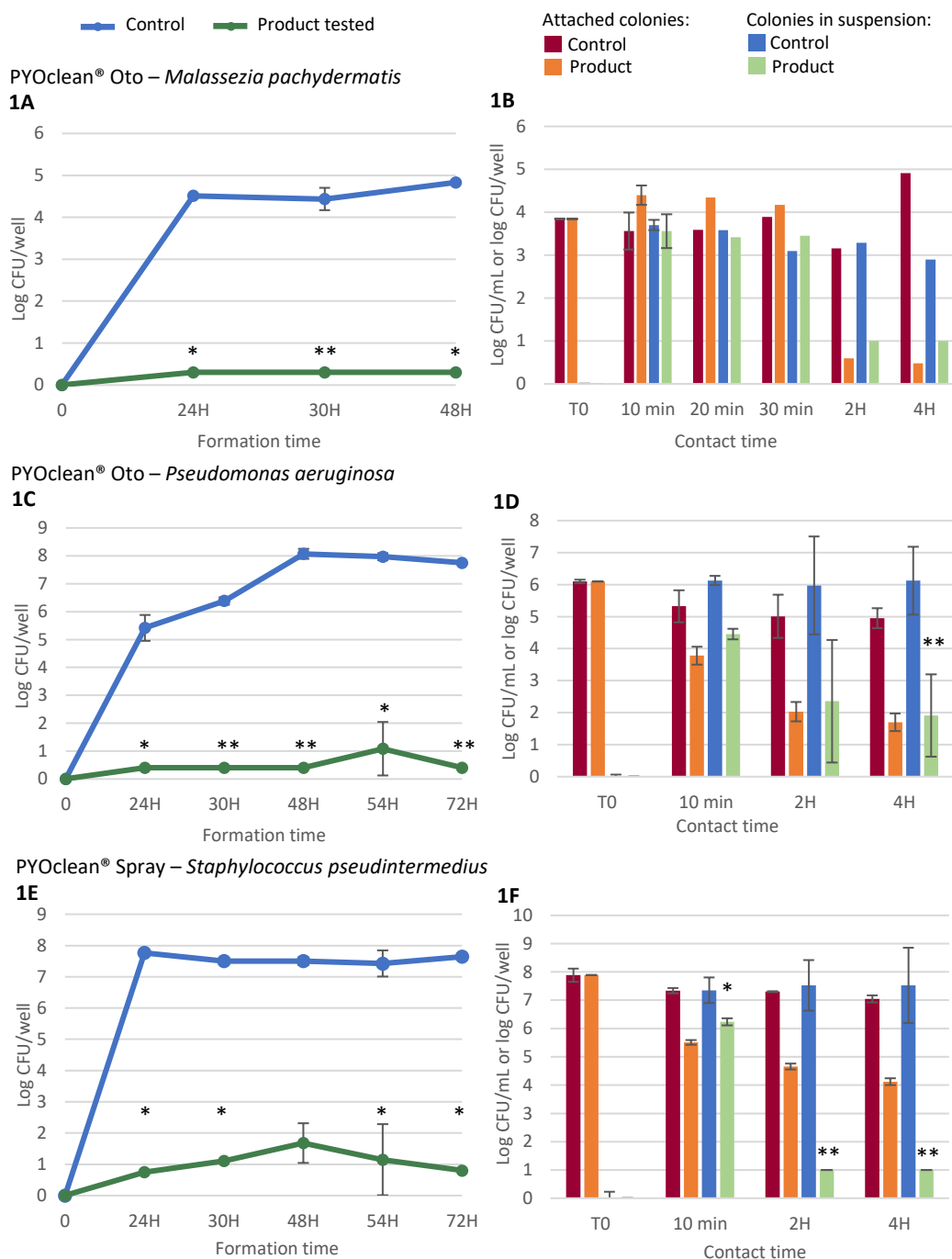
Assessment of efficacy

Inhibition of biofilm formation was assessed in microtiter plates versus control. Numbers of adhering cells⁴ were counted at 24H, 30H, 48H, 54H and 72H. Weakening of mature biofilm was assessed with a confocal microscope and counting of adhering cells was performed after 10', 20', 30', 2H and 4H. Numbers were calculated as log CFU/mL or log CFU/well (CFU = colony-forming unit). Products were tested pure on mature biofilms or diluted to 50 % for biofilm formation.

RESULTS

A statistically significant (*p<0.05, **p<0.01) efficacy of the tested product versus control was demonstrated on *Malassezia pachydermatis* and *Pseudomonas aeruginosa* with a reduction of 4 log and 8 log for biofilm formation (figures 1a & 1c) and a reduction of 3 log and 4 log for weakening of mature biofilm respectively after 2H (figures 1b & 1d). A similar trend was observed on *Staphylococcus pseudintermedius* with a reduction of 7 log for biofilm formation (figure 1e) and 4 log for weakening of mature biofilm after 4H (figure 1f).

Figure 1: Effect of PYOclean® Oto or PYOclean® Spray on microbial biofilm formation (curve) and structure of a mature biofilm (histogram)



CONCLUSION

The *in vitro* efficacy of these two topical products containing N-acetylcysteine and other natural ingredients in helping eliminate microbial biofilm and preventing the formation of new biofilm is confirmed. *In vivo* studies should be conducted to confirm the *in vitro* results obtained with these products.