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ANTIBIOTIC SUSCEPTABILITY OF BIOFILM RESIDING BACTERIA IN CHRONIC HORSE WOUNDS

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Background: Wound healing is a well orchestrated sequence of events that can be interrupted by the presence of biofilms, equine lower limb wounds are notoriously problematic, and pose similar problems to those encountered with human pressure and diabetic foot ulcers. Biofilms are naturally recalcitrant towards antimicrobial agents, and the host's immune system, as such their presence has a significant effect on the effectiveness of antimicrobial treatment.

Aim: This study aimed to investigate the antimicrobial susceptibility of three bacterial genus frequently isolated from wounds populated by biofilms.

Method: Fifty equine wounds were swabbed according to standard protocols and categorized as acute or chronic. Bacteria were cultured and identified using traditional culture techniques, and grouped according to their biofilm forming potential as identified in a previous study. Isolates were tested for antimicrobial susceptibility using the Bauer-Kirby disc diffusion method.

Results: The Gram positive Enterococcus faecalis and Staphylococcus aureus isolates from chronic wounds showed significantly decreased susceptibility compared to acute wound isolates when treated with ampicillin ($P<0.1$), and Trimethoprim ($P<0.05$) respectively. Furthermore, Enterococcus biofilm forming bacteria were significantly less susceptible to Trimethoprim compared to non biofilm formers ($P<0.01$). Gram negative Pseudomonas aeruginosa isolates obtained from chronic wounds displayed less susceptibility to Erythromycin and Tetracycline compared to acute wound isolates ($P<0.05$).

Conclusions / discussion: This study suggests that chronic equine wounds, in particular those containing biofilms are more likely play host to antibiotic resistant bacteria than bacteria isolated from wounds that heal in a timely manner.