P 15

REDUCING WOUND COLONIZATION BY "REPLACEMENT THERAPY" (PROBIOTICS) USING LACTOBACILLUS REUTERI, IN A TRIPHASIC WOUND MODEL

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Aim: To evaluate the use of *Lactobacillus reuteri* on biofilms containing wound pathogens.

Methods: Biofilms were made using singular, paired, and three species of *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Candida albicans,* suspended in 30% poloxamer F127. Mouse fibroblast cells were maintained using tissue culture media with 10% fetal bovine serum and standard antibiotics. The biofilms were separated by a filter (Whitman #3) to determine diffusible products transferred between the biofilm and fibroblasts. Two strains of *L. reuteri* were obtained*. The completed triphasic model was incubated at 37°C for 24 hours in 5% CO_2 at pH 7.0 or 5.5.

Results: The model optimized individual growth of the eukaryotic and prokaryotic cells. The impact upon fibroblasts and positive trypan blue dead cells increased with the number of biofilm prokaryotes (1-3) ranging from $2x10^4$ to $9x10^4$ after 24 hours. Interestingly, the monospecies toxicity was observed the most with *S. aureus* and least with *P.aeruginosa*. A 24 hour biofilm of *L. reuteri* decreased the toxicity by ≥40% for each of the pathogenic combinations (1-3). Pretreatment with *L. reuteri* was most effective in reducing the consequences of the complex biofilm.

Conclusion: Replacement therapy represents a viable non-antibiotic/antimicrobial option for chronic wound management paticularly for early treatment.

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