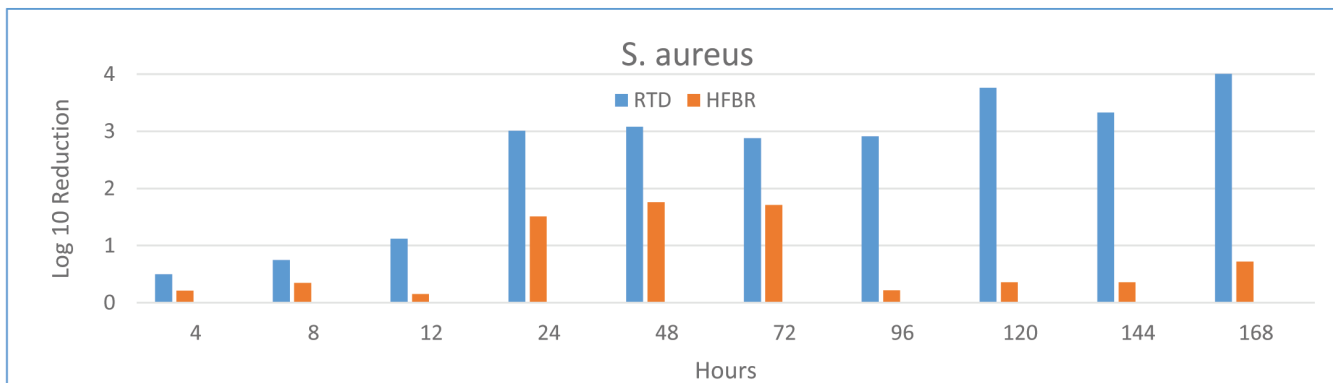
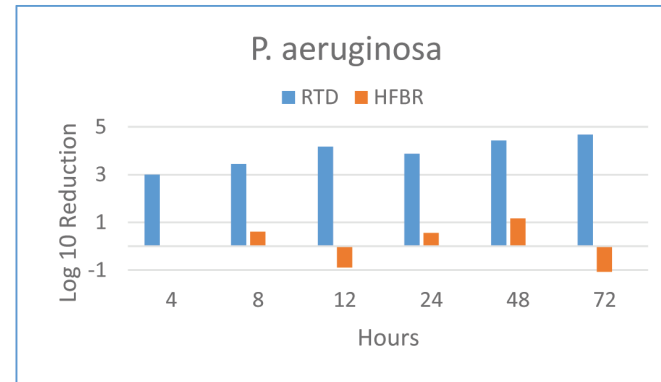
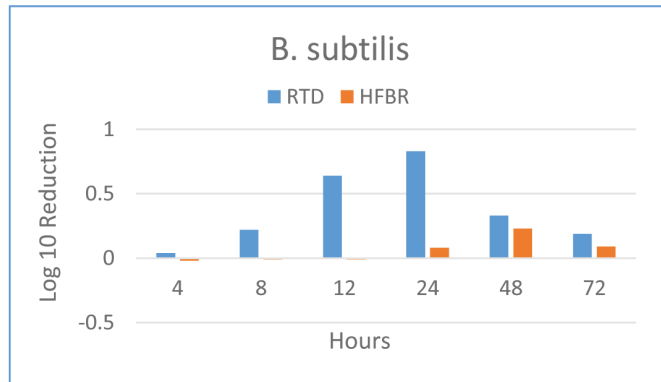
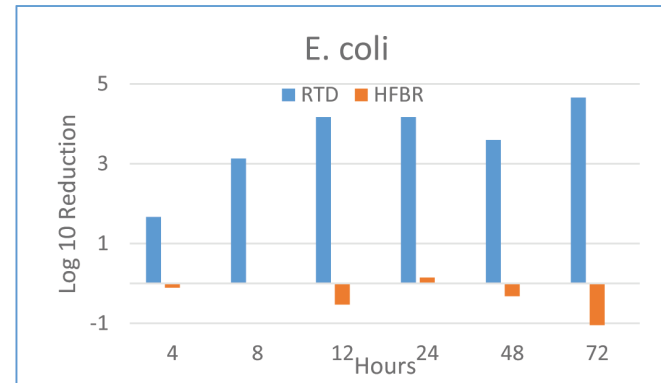
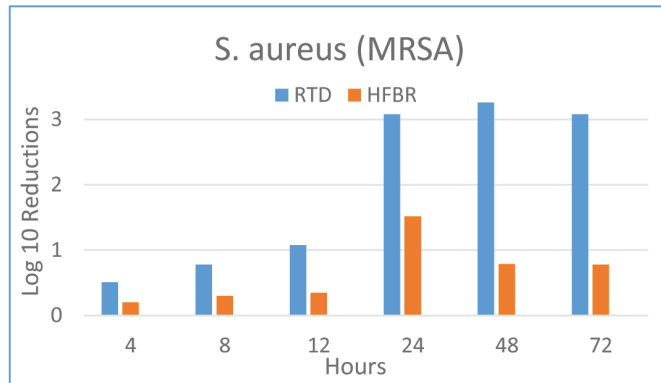


THE ADDITION OF SILVER TO METHYLENE BLUE AND GENTIAN VIOLET: ANTIMICROBIAL BENEFITS OF A POLYURETHANE FOAM WOUND CARE DRESSING

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INTRODUCTION

Silver wound dressings have the advantage of having broad antimicrobial effectiveness against gram-negative and gram-positive bacteria¹ as well as a positive impact on wound healing². Organic pigments such as methylene blue (MB) and gentian violet (GV) have also been used in wound care due to their antimicrobial, analgesic benefit and attraction for protein based chemicals. It is expected that the combination of MB, GV and silver would demonstrate greater antimicrobial activity than MB and GV alone.

The purpose of this study is to demonstrate the antimicrobial benefits of a polyurethane based foam dressing with silver, MB and GV (RTD™ Wound Dressing) versus the same with MB and GV alone (Hydrofera Blue® Ready (HFBR)).

METHOD

An independent laboratory performed the microbial testing. Three uniform, 48 mm x 48 mm sections of each dressing were inoculated with common wound bacteria; S. aureus (MRSA), S. aureus, P. aeruginosa, E.coli and B. subtilis.

The test articles were re-inoculated at 24 and 48 hours. The percent reduction were recorded at 0, 4, 8, 12, 24, 48, and 72 hours exposure periods. For one organism (S. aureus), test articles were re-inoculated every 24 hours and log reductions were measured every 24 hours for 7 days (168 hours).

Log reduction was calculated as the difference between the number of microorganisms recovered from the control dressing and test dressings, for each of the pathogens tested at each period. Sterile gauze was used as the control dressing.

DISCUSSION

This study compared the antimicrobial activity of two commercially available dye based antimicrobial foam dressings: HFBR contains MB and GV and RTD™ contains MB, GV and silver (Ag+). Both dressings are made of a polyurethane foam base.

The dressing containing silver in addition to MB and GV (RTD™) demonstrated significantly better antimicrobial activity and in all cases performed better than HFBR. The dressing containing MG and GV only (HFBR) demonstrated microbial growth after 12 hours with gram (-) bacteria; E. coli and P. aeruginosa. RTD™ continued to demonstrate sustained effective microbial reduction through 7 days for S.aureus however the effectiveness of HFBR declined after 72 hours.

CONCLUSION

The RTD™ dressing containing silver, MB and GV performed better than the dressing containing only MB and GV (HFBR) against S. aureus (MRSA), S.aureus, P. aeruginosa, E. coli and B. subtilis. It is expected that the addition of silver would have a beneficial impact on wound healing. More studies, such as comparative effectiveness would help to demonstrate the clinical benefit of the silver, MB and GV combination over MB and GV alone.

1) Myers BA. Wound Management. Upper Saddle River, NJ: Prentice Hall;3rdEdition 2011
 2) Lo SF, Chang CJ, Hu WY, Hayter M, Chang YT. The effectiveness of silver-releasing dressings in the management of non-healing chronic wounds: a meta-analysis. Journal of Clinical Nursing. 2009 Mar; 18 (5):716-28.
 RTD: RTD® Wound Dressing (Trademark of Keneric Healthcare) Polyurethane, Silver Sodium Hydrogen Zirconium Phosphate (7 mg/gm), Methylene Blue (0.25 mg/gm) and Gentian Violet (0.25 mg/gm)
 HFBR: Hydrofera Blue® Ready (Trademark of Hydrofera, LLC and sold by Hollister Wound Care, LLC) Polyurethane foam, Methylene Blue (0.35 mg/gm) and Gentian Violet (0.35 mg/gm)