Occlusive Dressings: Study of Their Effect on 5 Wound Pathogen *In Vitro*

MF Oliveira-Gandia, SC Davis, PM Mertz
University of Miami, School of Medicine
Department of Dermatology & Cutaneous Surgery
Miami, FL

Wound Repair and Regeneration
Volume 5, Number 1
January, 1997

We have previously reported results from *in vitro* model of bacterial colonization that a hydrogel dressing (***Elasto-Gel ™***), reduced the number of *Pseudomonas aeruginosa* in inoculated wounds. To better understand the mechanism of this pathogenic bacterial reduction, we devised an *in vitro* assay system. We compared three occlusive dressings: 1) a hydrogel (***Elasto-Gel ™***), 2) another hydrogel (ClearSite®) and 3) a hydrocolloid (DuoDERM®). Either blood agar or a selective media plate for methicillin-resistant *Staphylococcus aureus* (MRSA) were inoculated with 1 drop of a 0.25 ml. Suspension per half plate (2 drops per plate). Two concentrations of bacteria (10^2 and 10^4 CFU/ml) were evaluated from 5 different wound pathogens: 1) *Pseudomonas aeruginosa, Staphylococcus aureus, Escherichia coli, Streptococcus pyogenes,* and MRSA. The occlusive dressings were cut 2 cm^2 sections, placed over the inoculated bacteria drop and then incubated at 37°C for 24 hours (48 hours - MRSA). One 8 mm biopsy section of agar was removed from under the center of each dressing for quantitation. The two biopsies and dressing samples were placed in individual sterile bag containing 5 ml scrub solution and processed with a stomacher. The resulting solutions were spiral plated for quantitation. The results from these studies suggest that the composition of dressings can influence the growth of pathogens. We found one of the hydrogel dressings (***Elasto-Gel ™***) to be the most effective in reducing the bacterial counts when compared to the other hydrogel and hydrocolloid dressing.

This work was supported by the Dermatology Foundation of Miami.