Introduction

Debridement of devitalised tissue is essential for successful wound healing, as formation of granulation tissue requires a clean wound bed. Devitalised tissue that may have an imbalance of bacteria may retard the healing process. Amorphous hydrogels are primarily designed to promote autolytic debridement of devitalized tissue. Hydrogels contain polymers, or gelling agents that influence the hydrogels consistency. IntraSite® Gel, with its patented formulation, also contains a humectant propylene glycol which helps prevent the hydrogel from drying out and forms a smooth pliable dressing to aid application. However, most importantly, propylene glycol helps to preserve the sterility of the dressing due to its bacteriostatic properties.

Aim

To compare the in-vitro proliferation of three different micro-organisms when grown in INTRASITE GEL or Purilon™ gel over a time period of 72 hours.

Method

Each gel was inoculated with heat inactivated horse serum containing $10^2$ cfu / ml of each of the test organisms at a ratio of 1g of gel : 1ml of serum. Serum controls were also set up containing $10^2$ cfu / ml of each test organism. All test and control samples were thoroughly mixed and incubated at 32°C. At sample times of 0, 4, 24 and 72 hours the number of viable organisms present in each sample was determined by the pour plate technique.

Objectives

- To assess if there were any differences in the micro-organisms present between INTRASITE GEL and Purilon™ gel over the time period.
- To assess if there were any differences in the count of micro-organisms present between INTRASITE GEL and the control and between Purilon™ gel and the control over the time period.

Results

The effect of INTRASITE GEL and Purilon™ gel on microbial proliferation was compared by inoculating each test gel with either S. aureus, P. aeruginosa or C. albicans. Serum controls were also set up to evaluate the growth of each test organism in serum alone.

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**Purilon Gel is a registered Trade Mark of Coloplast A/S
A comparison of the effects of two hydrogels upon the proliferation of three micro-organisms of importance for chronic wound care

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Intrasite Gel showed bacteriostatic activity against the bacteria S. aureus and P. aeruginosa (figure 1&2) and fungistatic activity against C. albicans (figure 3). P. aeruginosa proved to be the most sensitive organism to Intrasite gel, with numbers of this organism being reduced to below detectable levels by the 72 hour time point, (p<0.0001 at each time point), (figure 2).

The test results showed that there was a statistically significant difference in the mean log count of S. aureus, P. aeruginosa and C. albicans between Intrasite Gel and Purilon at times 4, 24, and 72 hours (p<0.0001 at each of these time points).

During the study, the mean log counts of the micro-organisms were higher for Purilon than for the control.

There was an observed statistically significant difference in the mean log count of both S. aureus and C. albicans between Purilon and the control at 24 and 72 hours, with the mean log count for both these micro-organisms being higher for Purilon than for the control.

Similarly, the mean log count of P. aeruginosa was higher for Purilon than for the control at 24 hours and showed statistical significance.

Conclusions

Intrasite Gel and Purilon gel are both hydrogel wound dressings designed to promote the debridement of necrotic tissue. However, the two dressings showed contrasting properties in their ability to control microbial proliferation. In the experiments carried out, Intrasite Gel showed bacteriostatic and fungistatic activity in-vitro against three different test organisms. In contrast, Purilon gel showed no bacteriostatic properties against any of the test organisms.

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