

Abstract

Aims
To evaluate a novel antimicrobial Silver Hydro-Alginate Wound Dressing, which has been developed for use on moderately to highly exuding chronic wounds.

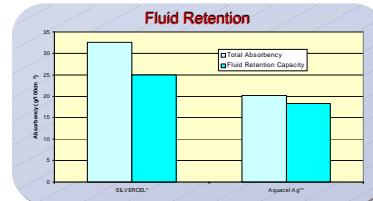
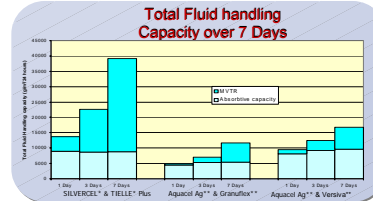
Methods
Simulated in-use tests were developed to assess performance characteristics considered important in the effective management of chronic wounds:
Absorbent Capacity – conducted over several days in combination with a secondary dressing.
Fluid Retention Capacity – assesses the ability of the dressing to retain fluid under a weight to simulate use under compression bandaging.
Antimicrobial Activity – dressings challenges over a number of days with simulated wound fluid and the amount of silver released measured.
Microbiological Activity – Zone of inhibition assay, re-challenging the wound dressing to a fresh microbial population over a number of days.

Results
The Silver Hydro-Alginate Dressing demonstrated Antimicrobial and Microbiological activity over the entire test period. In combination with a secondary dressing we have shown that the Silver Hydro-Alginate Dressing processes excellent fluid handling over seven days and retained a large amount of fluid under simulated compression.

Conclusion
The properties evaluated in the simulated in-use tests demonstrated the suitability of the use of the Silver Hydro-Alginate Dressing in the effective management of chronic wounds.

Objectives

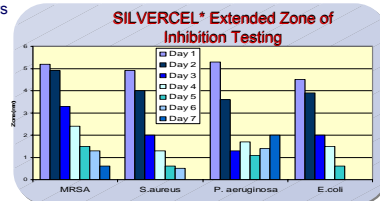
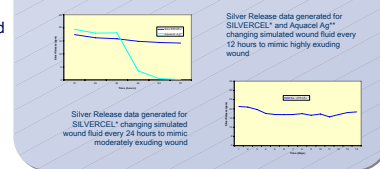
- Demonstrate by means of *in-vitro* tests the sustained antimicrobial properties of SILVERCEL* Antimicrobial Alginate Dressing
- Combination of tests mimic highly exuding microbially contaminated wounds – challenging dressing for suitability of use in chronic wound management



Results

- High Total Fluid handling Capacity demonstrated over 7 days with SILVERCEL* Dressing and TIELLE* Plus
- High absorbency and fluid retention under simulated compression.
- Elemental Silver content sufficient to maintain silver release over 14 days. Ionic silver dressing showed greatly reduced silver release after 36hrs as demonstrated in highly exuding *in-vitro* test.
- Sustained antimicrobial activity of SILVERCEL* Dressing effective using *Pseudomonas aeruginosa*, *Staphylococcus aureus*, MRSA and *Escherichia coli*

Silver Release

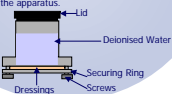


Methods

- Total Fluid Handling Capacity (based on BS EN ISO 13726)
- Silver Release by Atomic Absorption
- Fluid Retention under simulated compression
- 7 Day repeat challenge zone of inhibition test using common wound pathogens. Each day the dressing was transferred to a freshly inoculated agar plate.

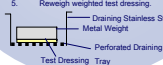
Total Fluid Handling

1. Cut out combination of dressings into a circle (5.5 cm diameter) and weigh.
2. Clamp the dressing combinations together and weigh.
3. Add a known volume of deionised water and weigh.
4. Incubate at 37°C for the appropriate length of time.
5. Reweigh the apparatus.

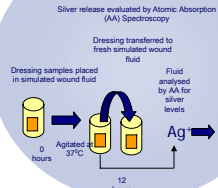


Fluid Retention Capacity

1. Weigh test dressing.
2. Immerse in calcium chloride / sodium chloride solution. Incubate at 37°C for 30 minutes.
3. Remove dressing and allow to drain for 10 seconds, reweigh test dressing.
4. Add weight to dressing and allow to stand draining for 30 seconds.
5. Reweigh weighted test dressing.



Silver Release



Zone of Inhibition

1. Pre-wet dressing in simulated wound fluid
2. Place dressing on bacterial lawn Inc. 24 hours 37°C
3. Measure average zone of inhibition

Conclusions

- Demonstrates high degree of absorbency and fluid retention under simulated compression.
- Demonstrates high exudate management when used alone and in combination with TIELLE* secondary dressing.
- Sustained antimicrobial activity compared to ionic silver dressing
- Demonstrates effectiveness against common wound pathogens for up to 7 days
- This combination makes SILVERCEL* Antimicrobial Alginate Dressing ideal for the management of chronic wounds