

Introduction

The ability of a wound dressing to retain moisture under pressure is critical in the treatment of moderate to highly exuding wounds. It helps to support moist wound healing whilst minimising the risk of peri-wound breakdown resulting from seeping wound exudates.

Aim

To investigate free swell, absorption under pressure and bacterial sequestration properties of Kliniderm Superabsorbent wound dressing.

Methods

1. Free swell absorption was measured according to an adapted EN13726 method.
2. Absorption under compression was assessed using a mass equivalent to 40 mmHg.
3. Bacterial sequestration under compression study was repeated using a bacterial inoculum. Following a 10 second suspension stage dressings were transferred onto agar for 30 seconds or 18 hours. Agar was incubated overnight at 37°C and then photographed. One gram of the inner core was dissected and viable recoverable bacteria were quantified, stained and visualised using epi-fluorescent microscopy. Tests were carried out in triplicate.

Results

Absorption

The average free swell absorption and absorption under compression are detailed in Table 1.

Parameter	Result
Average free swell absorption	1.72 ml/cm ²
Average absorption under compression	0.98 ml/cm ²

Table 1. Free swell and absorption under compression results.

Retention

An average of 1.85×10^4 cfu ml⁻¹ viable bacteria were recovered from 1 gram of the inner core.

When the wound dressing was removed from the agar after 30 seconds, bacterial growth was close to confluent however when the dressing remained *in situ* overnight no bacterial growth was observed under the dressing (Figure 1). Fluorescent microscopy also evidenced viable bacteria within the dressing core (Figure 2).

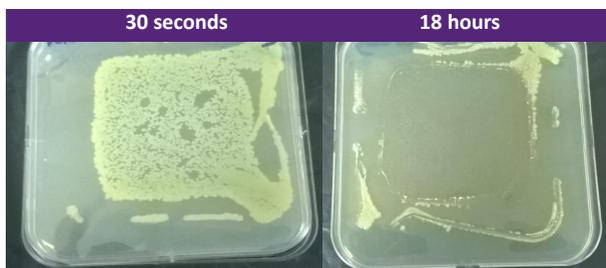


Figure 1. Photographs of bacterial growth following 30 seconds and 18 hours contact time with agar.

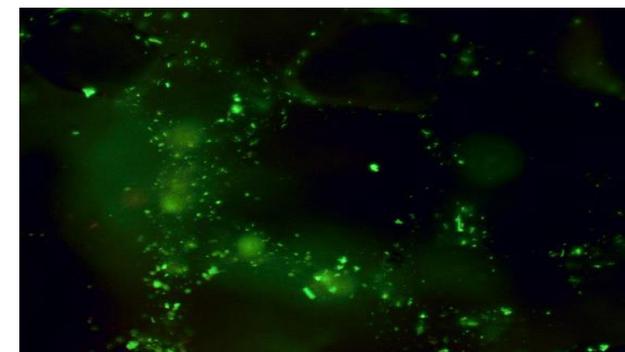


Figure 2. Fluorescent micrograph of bacteria retained in the inner core of the SAP dressing.

Discussion

Fluorescent microscopy images and agar plate photographs supported the quantitative assessment results in that viable bacteria were present within the dressing core. Collectively this suggests that the bacteria were sequestered and retained within the dressing overnight.

This study was carried out over a short time period and since the wear-time of wound dressings is typically 3 days, further testing would be required in order to confirm that the performance demonstrated would be sustained over the entire recommended wear-time.

Conclusions

Kliniderm Superabsorbent wound dressing absorbed and retained fluid and bacteria whilst under compression for 18 hours. Further study is required to determine the dressing's abilities over a longer period.