Assessment of the performance characteristics of a new multilayer foam dressing

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Abstract #67

Introduction

- Effective wound management is essential for promoting healing, preventing complications, and improving patient outcomes[1]
- Dressings play a pivotal role in this process, serving as the primary interventions for both exuding and non-exuding wounds, as well as for the prevention of pressure injuries[2]
- The development of an advanced dressing tailored to meet these specific needs is imperative to optimize outcomes and enhance patient comfort and quality of life

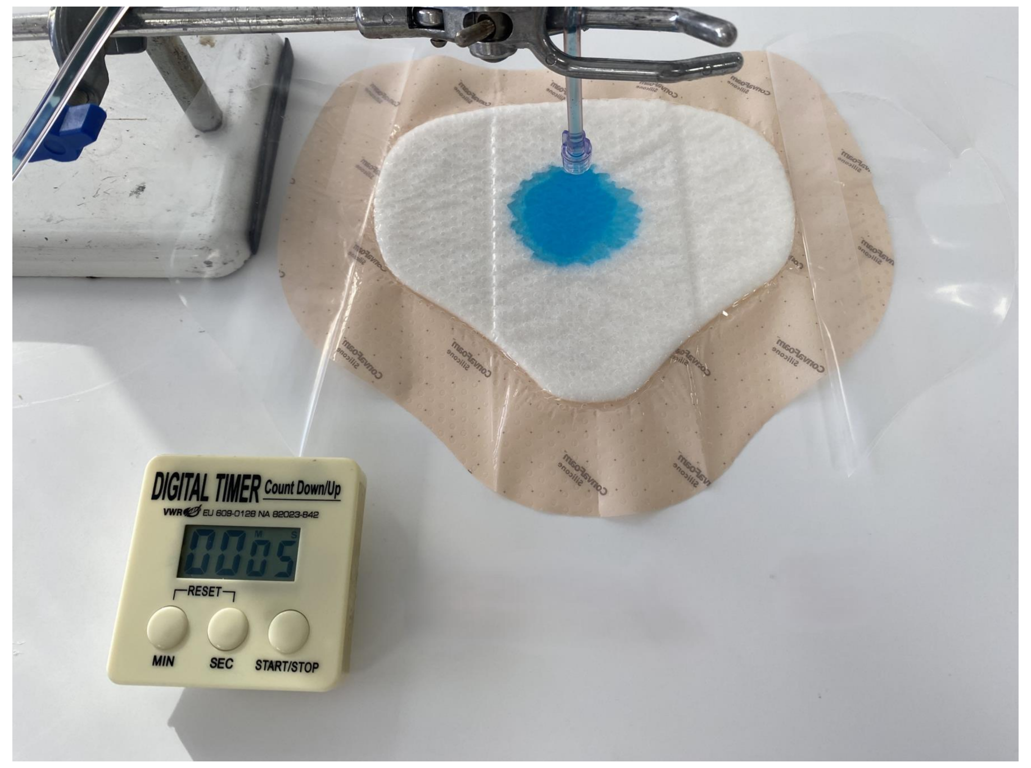
STUDY OBJECTIVE

To examine the *in vitro* performance characteristics of a new multilayer foam dressing, A*, when tested against two competitor dressings, B† and C°.

Methods

- Three dressings were tested: A*, B† and C°
- The speed of absorbency, defined as the rate at which 5ml of coloured saline solution is transmitted through the dressing pores into the dressing's absorbent pad, was assessed for all dressings **(Figure 1)**
- The adhesive strength of the dressings was assessed by the force required to peel a sample of the adhesive border of each dressing from a polycarbonate substrate by the Zwick, Universal Testing Machine
- Seven-day fluid handling, absorbency and retention testing were carried out following the principles of BS EN 13726

Figure 1. Testing set up for speed of absorbency



Results

Speed of absorbency

- Dressings A*, B† and C° absorbed all the fluid within the set time of 300s **(Figure 2)**
- Dressing A* resulted in the fastest fluid uptake rate (9.1 seconds), when compared to dressings B† (224.3 seconds) and C° (52.8 seconds)[3]

Adhesive strength

- A significantly stronger force was needed to remove dressing A* (3.35 N/2.5 cm) from a polycarbonate substrate than dressings B† (2.18 N/2.5 cm) and C° (1.60 N/2.5 cm; $p<0.001$; **Figure 3**)[3]

Seven-day fluid handling

- All dressings absorbed similar amounts of fluid; however, the significantly higher moisture vapour transmission rate (MVTR) of Dressing A* demonstrated its superior fluid handling capacity over 7 days than B † and C° ($p<0.05$; **Figure 4**)[3]

Figure 2. Comparison of the mean-time taken for 5mls of fluid to be absorbed into the wound contact layer of the dressing.

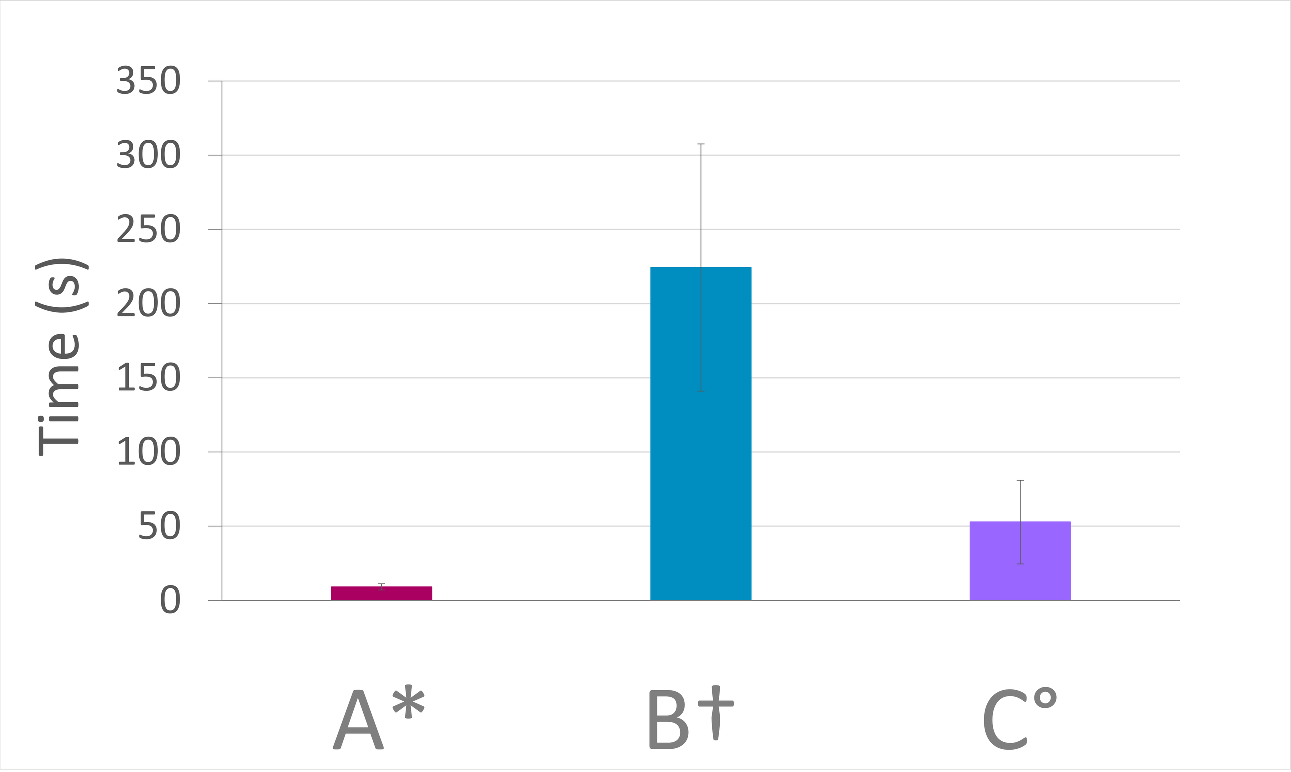


Figure 3. Comparison of the force required to peel the adhesive silicone layer from a polycarbonate substrate.

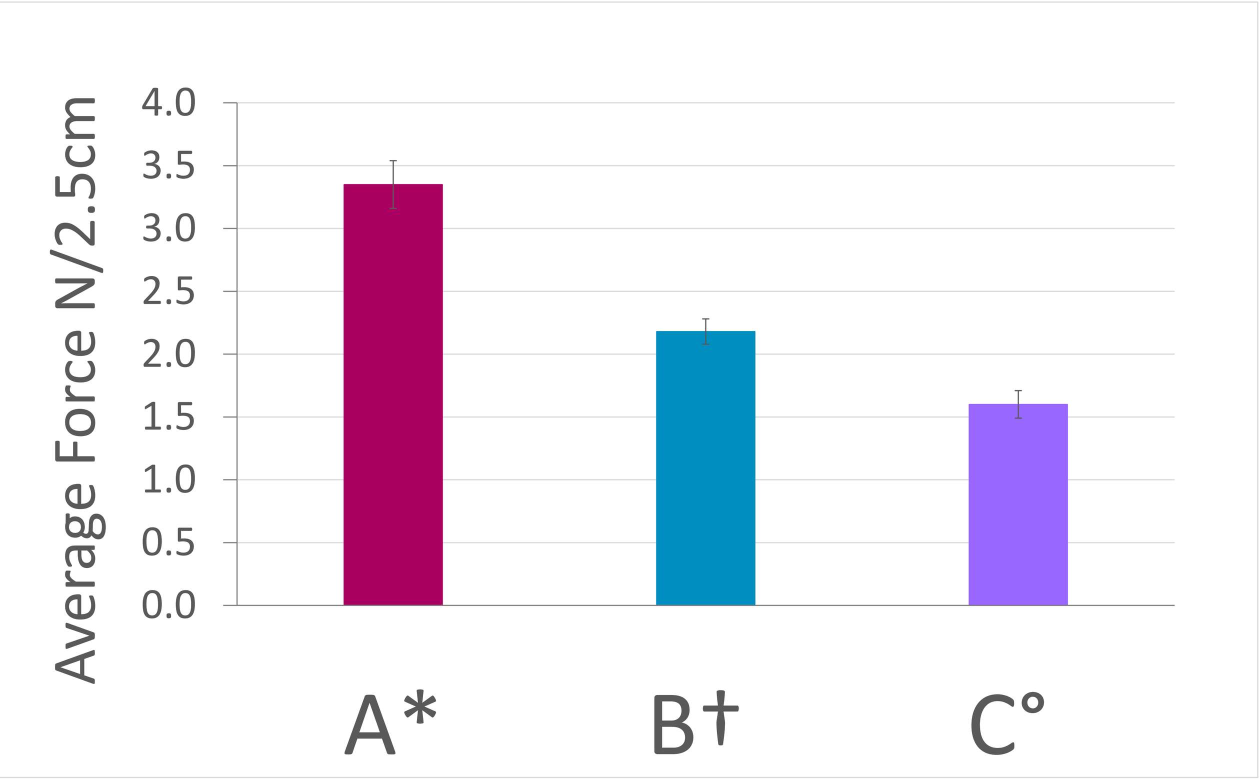
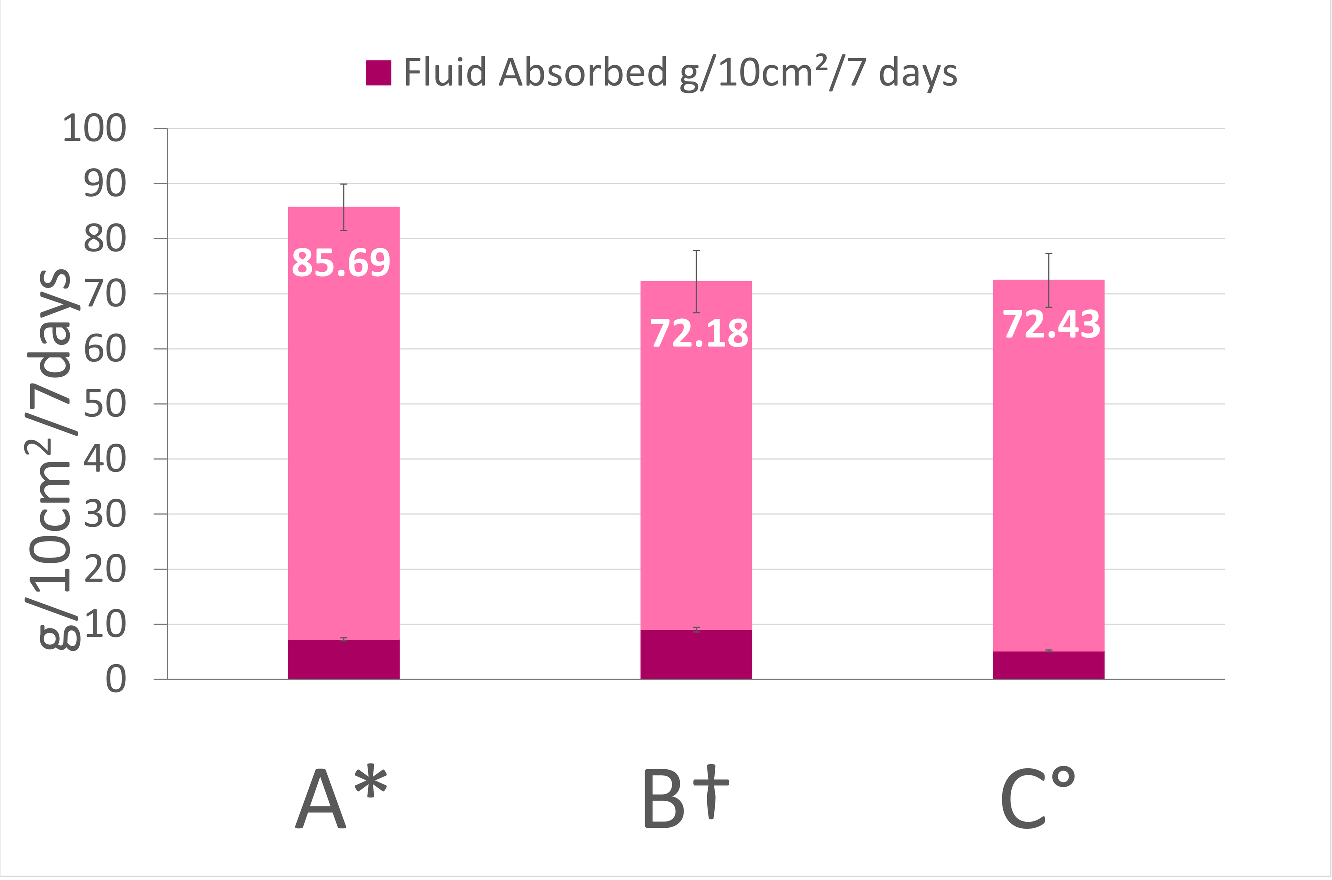


Figure 4. Comparison of the fluid handling capabilities of the three dressings tested.



Discussion

- Using various *in-vitro* test methods, Dressing A* has been shown to perform better overall than competitors B† and C°
- Dressing A* was able to absorb fluid at a faster rate upon direct contact with the wound fluid compared to Dressings B† and C°
  - In a clinical setting, this may minimise the time where wound exudate would have contact with healthy skin and therefore, could reduce the risk of further maceration of the wound and peri-wound area
- Dressing A* had a stronger adhesive strength than its competitors B† and C°
  - Strong adhesive strength supports patient movement, which may prolong wear time, reduce dressing changes and the risk of bacterial contamination that is high with numerous dressing changes[4]
- Dressing A* had a greater fluid handling capacity across a 7-day wear time compared to its competitors B† and C°
  - The results demonstrated how Dressing A* may be able to manage the wound fluid exuding from chronic and acute wounds during wear, further reducing the need for dressing changes compared to competitors B† and C°

CONCLUSION

This data shows that Dressing A* is better equipped at managing and handling wound fluid when compared against its competitors.

References & Footnotes

1. International consensus. Optimising wellbeing in people living with a wound. An expert working group review. London: *Wounds International* 2012. Available from: http://www.woundsinternational.com
2. Foam Dressings for Wound Healing. Hargis A, et al. *Curr Derm Rep* 2024;13:28–35.
3. Data held on file at Convatec, CTEC, Deeside - AWC-0316b
4. Meuleneire F, Rücknagel H. Soft silicones Made Easy. Wounds International 2013 (May). Available from: www.woundsinternational.com

*ConvaFoam™, Convatec, Inc.

†Mepilex® Border Comfort, Molnlycke, Inc.

°Allevyn™ Gentle Border, Smith & Nephew PLC.

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