

# Exudates absorption capacity of different superabsorbent dressings

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## Introduction

Chronic wound or non-healing skin wound such as venous leg ulcer represent a significant clinical problem. However several studies have shown that impaired healing is associated with excessive levels of exudates and proteases activities such as matrix metalloproteinases (MMPs) [1], elastase [2]. These proteases degrade growth factors [3, 4] and newly formed extracellular matrix [5]. Superabsorbent dressings may be particularly effective for wound healing by exudates absorption. We are interested in comparing a new polyacrylate superabsorbent\* with either other superabsorbents dressings marketed in France or classic dressings used traditionally in venous leg ulcer. The aim of this study was to evaluate absorptive capacity of different superabsorbents as well as classic non superabsorbent dressing in order to better manage exudative wounds.

## Materials and methods

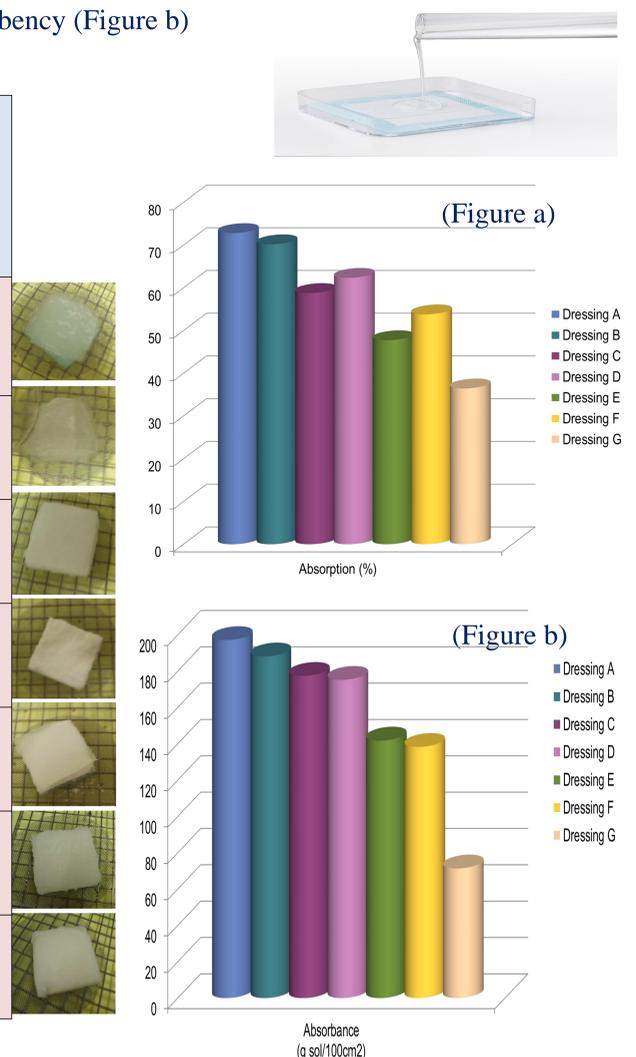
The absorbency tests have been performed by LNE (Laboratoire National de métrologie et des Essais) according to the French and European Standard EN 13726-1:2002\*\*. LNE is a recognized organization in France. EN 13726-1 standard describes recommended test methods for determining certain aspects of absorbency of primary wound dressings. Briefly in our study a 5 cm x 5 cm (25 cm<sup>2</sup>) test specimen is cut out in the center of the dressing, the specimen is placed in a Petri dish over a fine mesh, and weighed. A quantity of test solution prepared and warmed at 37°C, corresponding to 40 times the mass of the specimen is added in the Petri dish. The Petri dish with its cover is transferred to an oven and allowed to stand 30 min at 37°C. The specimen was placed on a grid for 30 seconds and then weighed, the test is repeated with further nine for each sample. Results are expressed as amount of solution (in g) retained per 100 cm<sup>2</sup> of dressing [6].

## Results

### Exudates absorption

Average of percentages of absorption (Figure a) and the absorbency (Figure b) (n=10).

Dressing "name"	%Absorption (average of 10 tests)	g sol absorbed /100 cm <sup>2</sup> (average of 10 tests)
"Dressing A"	72,81	<b>197.1</b>
"Dressing B"	70,19	<b>188.1</b>
"Dressing C"	58,79	<b>177.4</b>
"Dressing D"	62,34	<b>175.2</b>
"Dressing E"	47,75	<b>141.8</b>
"Dressing F"	53,80	<b>138.3</b>
"Dressing G"	36,47	<b>71.4</b>



The **express absorptive capacity is the most important for "Dressing A"** 197,1 g/100 cm<sup>2</sup> compared to other "dressings (B, C, D, E, F and G)" which shows the value of 188.1, 177.4, 175.2, 141.8, 138.3 and 71,4 g/100 cm<sup>2</sup> respectively.

## Conclusion

In this study we reported that a new generation of polyacrylate superabsorbent\*, **Dressing A**, according to the French and European Standard tests, has the most absorptive capacity when compared to other superabsorbents and classic dressings. These data may contribute to improve exudative wounds management as seen frequently in venous leg ulcers.

### Products References

[Dressing A]: **Tegaderm Superabsorber**  
[Dressing B]: **Drymax Extra**  
[Dressing C]: **Mextra**  
[Dressing D]: **Resposorb**  
[Dressing E]: **Vlivosorb**  
[Dressing F]: **Zetuvit Plus**  
[Dressing G]: **Zetuvit**

### Bibliographic References

[1] Wysocki AB, Staiano-Coico L, Grinnell F. Wound fluid from chronic leg ulcers contains elevated levels of metalloproteinases MMP-2 and MMP-9. *J Invest Dermatol* 1993;101:64-8.  
[2] James TJ, Hughes MA, Cherry GW, Taylor RP. Evidence of oxidative stress in chronic venous ulcers. *Wound Repair Regen* 2003;11:172-6.  
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[4] Trengove NJ, Bielefeldt-Ohmann H, Stacey MC. Mitogenic activity and cytokine levels in non-healing and healing chronic leg ulcers. *Wound Repair Regen* 2000;8:13-25.  
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[6] Test Report : LNE

\* **3M™Tegaderm Superabsorber**

\*\* **Maine deviation: sample draining was made horizontally instead of vertically**