

Moisture matters in wound bed preparation!

Biosynthetic Cellulose dressings create a healthier wound bed.

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INTRODUCTION

Modern wound treatment calls for hydroactive dressings. Among the variety of materials that have entered the field of wound care in recent years, biosynthetic cellulose (BC) represents one of the most promising candidates as the biomaterial features a high moisture-loading and donation capacity, mechanical stability, moldability, and breathability. [1] Two specific case studies and the results of a multi-center study are reported with focus on autolytic debridement and wound bed preparation.

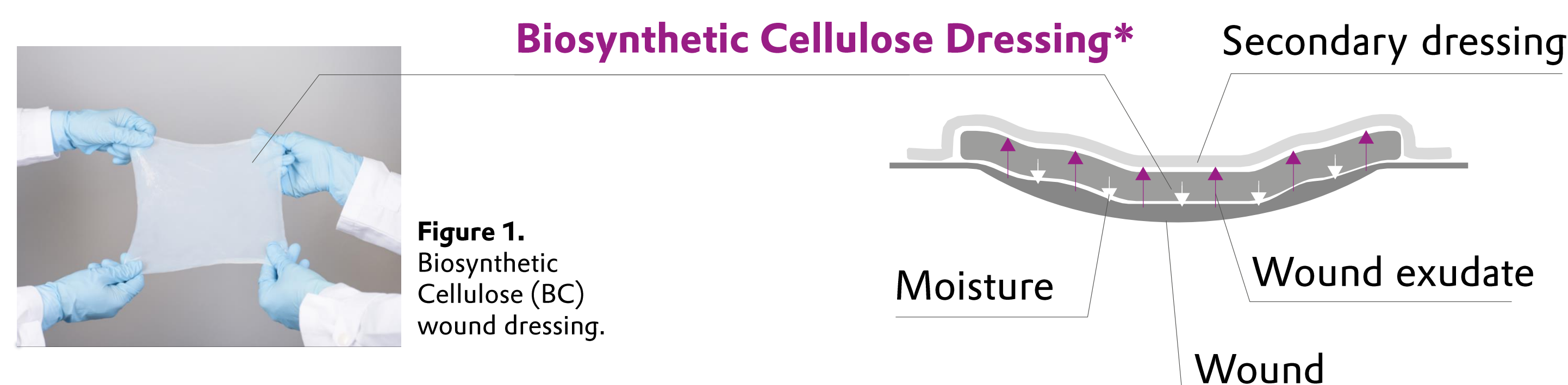


Figure 2. Application of BC wound dressing. Wound exudate is absorbed into the dressing while moisture is donated to the wound simultaneously.

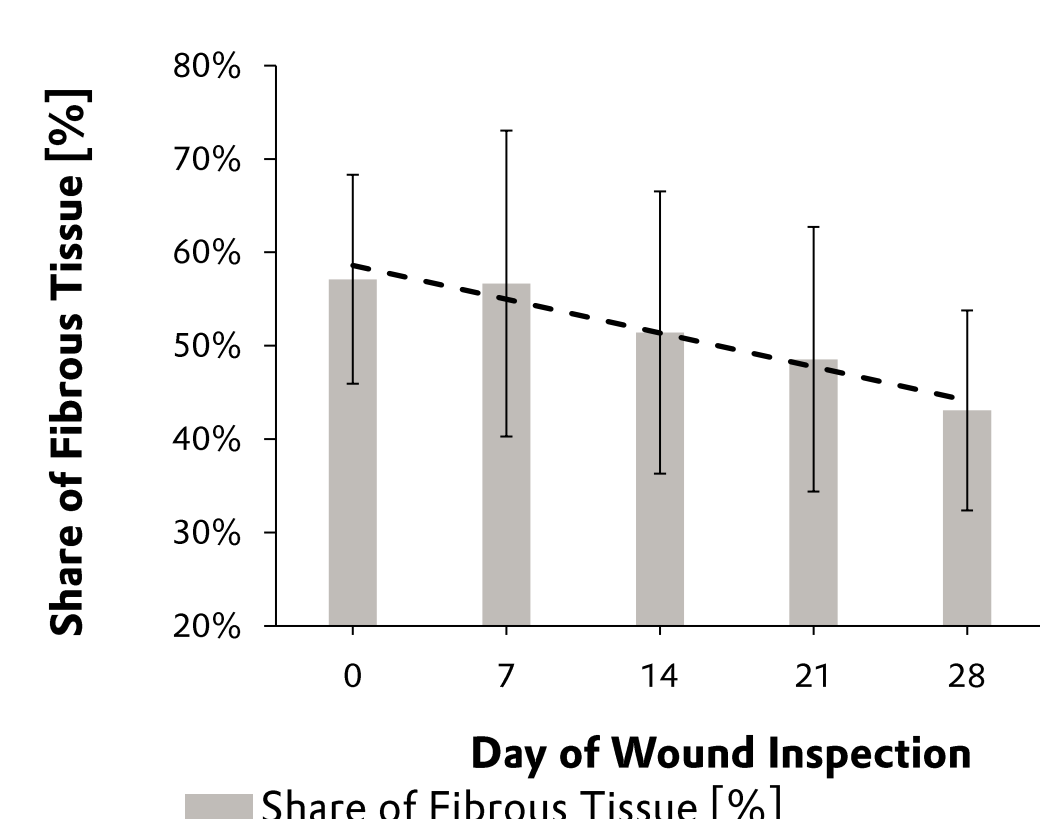
CASE REPORTS

	Before Application	Application	Dressing Change	Dressing Removal
Case 1 Mixed leg ulcer 75-year-old male CVI + PAD, lower leg bypass Limited mobility Dressing change: every 2 days		 Day 1	 Day 1	 Day 2
	<ul style="list-style-type: none"> Massive fibrous plaques, incrustations, severe exudation Critical condition of peri-wound skin 	<ul style="list-style-type: none"> Application of the hydroactive BC dressing with an absorbent compress as secondary dressing 	<ul style="list-style-type: none"> First dressing change after 24 hours of application 	<ul style="list-style-type: none"> Fibrous plaques significantly reduced Granulation peaks Peri-wound skin condition improved
Case 2: Fibromyalgia associated leg ulcer 74-year-old female Stage III CVI + PAD, adapted compression therapy Post-thrombotic venous leg ulcer Dressing change: every 2-3 days		 Day 1	 Day 3	 Day 7
	<ul style="list-style-type: none"> Thin layers of fibrous tissue appeared at the wound margins, which also showed keratosis 	<ul style="list-style-type: none"> Application of the hydroactive BC dressing for 48 hours Secondary dressing: foam dressing 	<ul style="list-style-type: none"> After 48 hours of application, with visible uptake of exudate, debris and fibrin into the dressing 	<ul style="list-style-type: none"> Significant reduction of fibrous tissue and keratosis at the wound margins

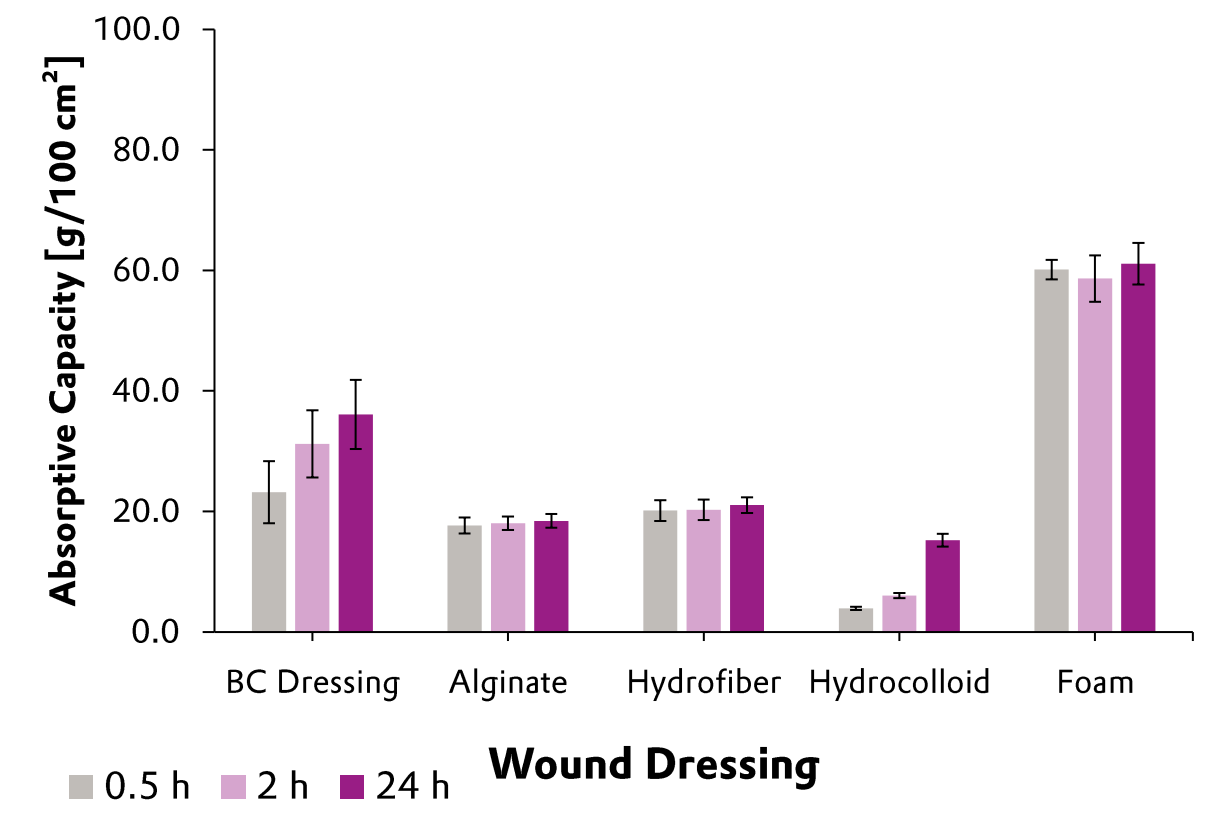
Case 1: While the patient was limited in mobility due to gonarthrosis and coxarthrosis, this mixed leg ulcer was massively covered with fibrous plaques and incrustations, stagnating for over 20 weeks. The application of the BC wound dressing promoted autolytic debridement and led to a significant improvement of the wound bed, peri-wound skin condition and reactivated granulation.

Case 2: This post-thrombotic, venous leg ulcer was associated with fibromyalgia and treated for over 3 years without significant progress. Although wound closure was not achieved within the observation period of 4 weeks, the condition improved significantly after a short time of application, with visible success in autolytic debridement.

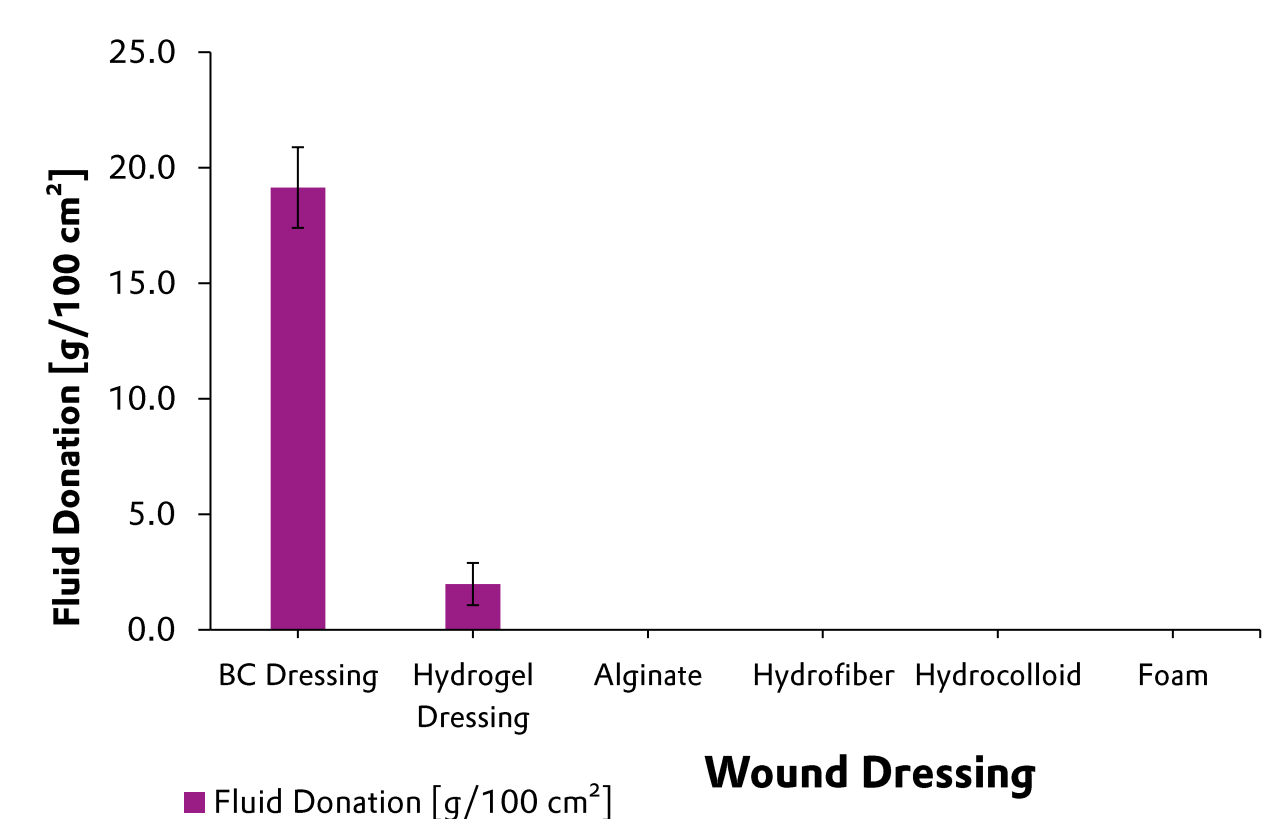
RESULTS



- Significant reduction of fibrous tissue share over the study period of 28 days
- Significant reduction in wound area (34%) over the study period of 28 days (data not shown)



- Hydroactive Biosynthetic Cellulose dressing exceeded absorbency of hydrocolloid, hydrofibrer and alginate dressings



- Superior fluid donation in comparison to alternative dressings ensures a moist wound milieu, even in dry wounds
- Autolytic debridement is facilitated by the moisture donated

REFERENCES

[1] Zahel, P.; Beekmann, U.; Eberlein, T.; Schmitz, M.; Wenz, O.; Kralisch, D. et al., *Pharmaceuticals*, 2022
Eberlein, Th.; Grundtner, P.; Bertram, Ch.; Kruschwitz, S.; Lübke, P.; Bacterial cellulose – Adaptation of a nature-identical material to the needs of advanced treatment of chronic wounds, EWMA Congress 2023, Milan, May 2-5
[3] CEN/TC 205 EN 13726-1:2002; EN 13726-2:2002; Test Methods for Primary Wound Dressings. Beuth: Brussels, Belgium, 2002

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METHODS

A commercially available BC wound dressing* was initially evaluated in a multi-center study in 44 patients with mainly venous leg ulcers, mixed leg ulcers, and diabetic foot syndrome [1], and subsequently by regular collection of further case observations on large/circular ulcers and open structures, specifically observing wound cleansing and autolytic debridement as well as the effect on granulation [2]. These observational data collections have been performed in accordance with current guidelines for post-market clinical follow-up studies. *In vitro* data in comparison to commercially available products was gathered in accordance with EN ISO 13726 [3].

CONCLUSION

The dressings were very comfortable for patients to use both during dressing changes and application and showed promising results in wound bed preparation as well as granulation. By choosing different secondary dressings in dependence of exudation level and phase of wound healing, the unique properties of the dressing (e.g., a simultaneous moisture donation and transfer of excess exudate) could be utilized. In a study with 44 patients, effective wound bed preparation was demonstrated by significant reduction of fibrous tissue share over the treatment period of 28 days. This result can be explained by the unique balance of fluid donation and absorption, which was demonstrated *in vitro* and distinguishes BC dressings from alginates, hydrofibrer and gel dressings. Overall, a high level of satisfaction for patients and professional users can be stated.