

ABSTRACT: Presented at The 25th Conference of the European Wound Management Association, London, England May 2015.

LONG-FIBER ACTIVATED CARBON CLOTH WOUND CONTACT LAYER SPEEDS HEALING OF VENOUS LEG ULCERS: novel antimicrobial properties is probable mechanism.

Martin J Winkler MD FACS
Omaha Creighton Mercy Hospital Wound Care Center
Creighton University Department of Surgery, Contributed Service
Omaha, Nebraska USA

Aim:

Black LFACC, long fiber active carbon cloth, a novel antimicrobial dressing has been used in direct contact with the wound surface in veterinary medicine with impressive results. In 2012, motivated in part by the excellent animal results, we began using LFACC as a contact layer in humans.^{*,1,2} This anecdotal study asks, can LFACC improve healing of venous leg ulcers, VLUs, treated with elastic compression?^{**3} Neil and Davies, 1988, described mechanisms to explain active carbon antibacterial properties in vitro. Microbes are entrapped on LFACC's surface, by weak chemical bonds involving cation bridging and hydrophobic interactions with cell walls.⁴

Methods:

Six patients with refractory VLUs were treated with LFACC as a contact dressing under foam wrap,^{***} textile wrap,^{****} and fuzzy wale^{*****} layered compression dressings. Photographs document treatment and wound healing. Data on wound healing rates, time to complete healing, wound bed preparation, and pain are presented.

Results:

Wound bed appearance improved and patients report pain decreased day #7. Photograph of dressings at day 7 document that LFACC efficiently conducts into absorptive dressings minimizing periwound maceration. VLU healing times are roughly half of the current 29 week average healing time in the US.⁵

Conclusion:

LFACC as a contact layer, in concert with elastic compression, appears anectodotally to: 1. improve wound bed appearance and decrease pain at 7 days; 2. efficiently transport exudate into absorbtive dressing; 3. speed healing of VLU. This study is the lead in study to a formal VLU trial of LFACC.

References:

1. *Survey of 12,444 patients with chronic wounds treated with active carbon cloth.* Stadler et al. *Akt Dermatol* 2002; 28:351-354.
2. *"Malodour and dressings containing active charcoal"*, Proceedings of 2nd European Conference on Advances in Wound Management, Harrogate 1992, Lawrence C. , Lilly H.A. , Kidson A. Macmillan magazines Ltd, Ed. Harding K.G.. 1993, 70-71.
3. *Activated Carbon Cloth in Contact with Venous Leg Ulcer Granulation Tissue is Synergistic with Fuzzy Wale Focused Elastic Compression Therapy*, Sara M Winkler BS, Stanford University, Bioengineering. *Journal of Wound, Ostomy & Continence Nursing*: May/June 2014 - Volume 41 - Issue - p S1-S98 From the WOCN® Society's 46th Annual Conference: Nashville, Tennessee June 21-25, 2014.
4. *Parameters Affecting Adsorption of Microorganisms on Activated Charcoal Cloth.* Neil George & John T Davies. *J.Chem. Tech. Biotechnol.* 1988, 43, 173-186.
5. *The real cost of treating venous ulcers in a contemporary vascular practice.* David Iafrati, Thomas O'Donnel Jr., *J of Vascular Surgery, Venous and Lymphatic Disorders*, 2:4, October 2014, p355.

*Actisorb, Long-Fiber Active Carbon Cloth, Systagenix Global, Gatwick, West Sussex, United Kingdom

**Zorflex® Long-Fiber Active Carbon Cloth, VB-K, Chemviron Carbon Cloth Division, Houghton-le-Spring, Tyne and Wear, DH4 5PP, United Kingdom

*** Coban™Lite, Two Layer Dressings, 3M Corporation, Minneapolis, Minnesota USA

**** Profore Dressing, Smith & Nephew, St. Petersburg, Florida USA

***** EdemaWear®, EdemaWear®LITE™, Compression Dynamics LLC, Omaha, Nebraska USA