Innovations
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Nanosilk Fibers for Pressure Ulcer Prevention

Product

Nanosilk Fibers

Indication

Pressure Ulcer Prevention

Value Propositions

- Improve mechanical properties of compromised skin
- High strength and hypoallergenic

Market

- $6.69 billion—Global Pressure Ulcer Treatment Market Size in 2018 (CAGR of 6.7% through 2026)

Intellectual Property

- Patent Claims Allowed*
- Available for Licensing

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Background on CU3680H

Pressure-induced skin and soft tissue injuries are localized areas of damage to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure or pressure in combination with shear. Pressure-induced skin and soft tissue injuries are considered never events by CMS. Prevention is a cost-effective approach that positively impacts health status. There has been an unmet need for devices for the prevention of pressure ulcers. Recent developments in polymer-based nanofabrication show promise in addressing these challenges.

Technical Innovation

A team led by Dr. Ken Liechty has created a technology for the prevention of pressure ulcers using silk fibroin (SF) nanofibers composed of a two-part cream to improve skin resiliency and the mechanical properties of at-risk skin. Silk fibers increase the elasticity and tensile strength of the skin, which has been demonstrated in skin models (cream alone and combination increased tensile strength by 30 and 45%, respectively). The 4 and 8% cream alone were also shown to prevented stage 4 pressure ulcers in mouse models compared to available therapies (see figures).

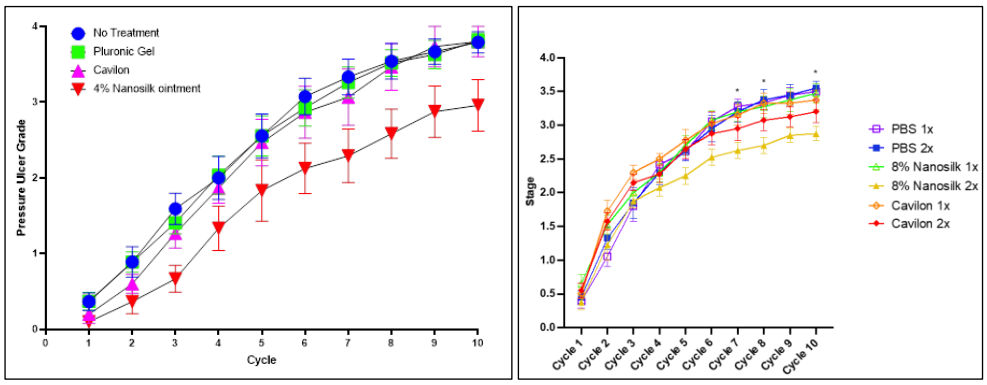

Figure: Left) 4% Nanosilk ointment (red) decreased the pressure ulcer (PU) stage compared to no treatment (blue), pluronic gel (green), and Cavilon® spray (pink). Right) Two applications of 8% nanosilk (yellow) significantly decreased the PU stage compared to one and two applications of phosphate-buffered saline spray (PBS) control (purple and blue), one and two applications of Cavilon® spray (orange and red), and one application of 8% Nanosilk spray (green).

***US issued patent (patent number to be provided)** —"Topical Silk Compositions And Methods Of Using Same"*

Lehmann T, Vaughn AE, Seal S, Liechty KW, Zgheib C. Silk Fibroin-Based Therapeutics for Impaired Wound Healing. *Pharmaceutics*. 2022; 14(3):651. https://doi.org/10.3390/pharmaceutics14030651.

Hilton, Sarah A. MD; Dewberry, Lindel K. MD; Hu, Junyi MD; Xu, Junwang PhD; Seal, Sudipta PhD; Liechty, Kenneth W. MD, FACS; Zgheib, Carlos PhD. Nanosilk Reduces Pressure Ulcer Formation. *Journal of the American College of Surgeons*. 2019; 229 (4). doi: 10.1016/j.jamcollsurg.2019.08.23.