Coacervate-based wound dressings for the treatment of chronic hand eczema

Barbara Dittrich*[1], Kuan Zhang[1], Marc Burian[2], and Andreas Herrmann[3]

[1]DWI-Leibniz Institute for Interactive Materials – Germany
[2]Universitätsklinikum RWTH Aachen - University Hospital Aachen [Aachen, Germany] – Germany
[3]DWI – Leibniz-Institut für Interaktive Materialien e.V. – Germany

Abstract

The project Co-Text focusses on the development of Coacervate-coated textile wound dressing for the treatment of chronic hand eczema. Chronic hand eczema (CHE) is common, and the prevalence of developing chronic hand or foot eczema is 2–10% in the general population and rises to approximately 30% in occupations involving regular contact with irritants. The condition leads to a significant reduction in quality of life and is a relevant cause of career change or job loss. The work presented here, includes the synthesis of the highly charged recombinant peptides that constitute the basis of the degradable coacervates. The biotechnological process to synthesize the peptides was optimized with respect to cell density and peptide yield. Process parameter were systematically optimized including media composition and timing of crucial process steps. In addition, down stream processing was optimized for high yields and scalable procedures. The peptides were formulated to build coacervate and probed for their viscoelastic properties. To support the coacervate layer, electrospun poly(caprolacton) fleeces were manufactured by an optimized process enabling DIN A4 sheets.

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*Speaker