

Application of Biohydrogels Containing Adaptogens in Innovative Chronic Wound Therapy

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DIAGRAMS AND PHOTOS:



Fig. 1 Hydrogel dressings containing plant adaptogens

Hydrogel based on peptide nanocarriers containing adaptogens

Hydrogel based on adaptogens in a matrix with peptide nanocarriers

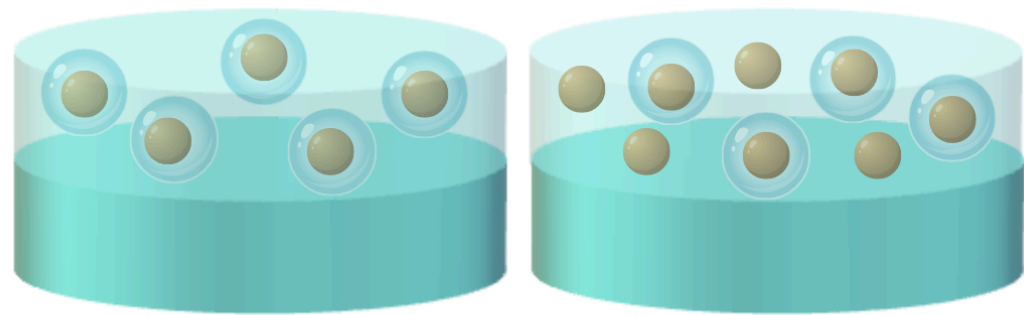


Fig. 2 Two types of hydrogels with plant adaptogens

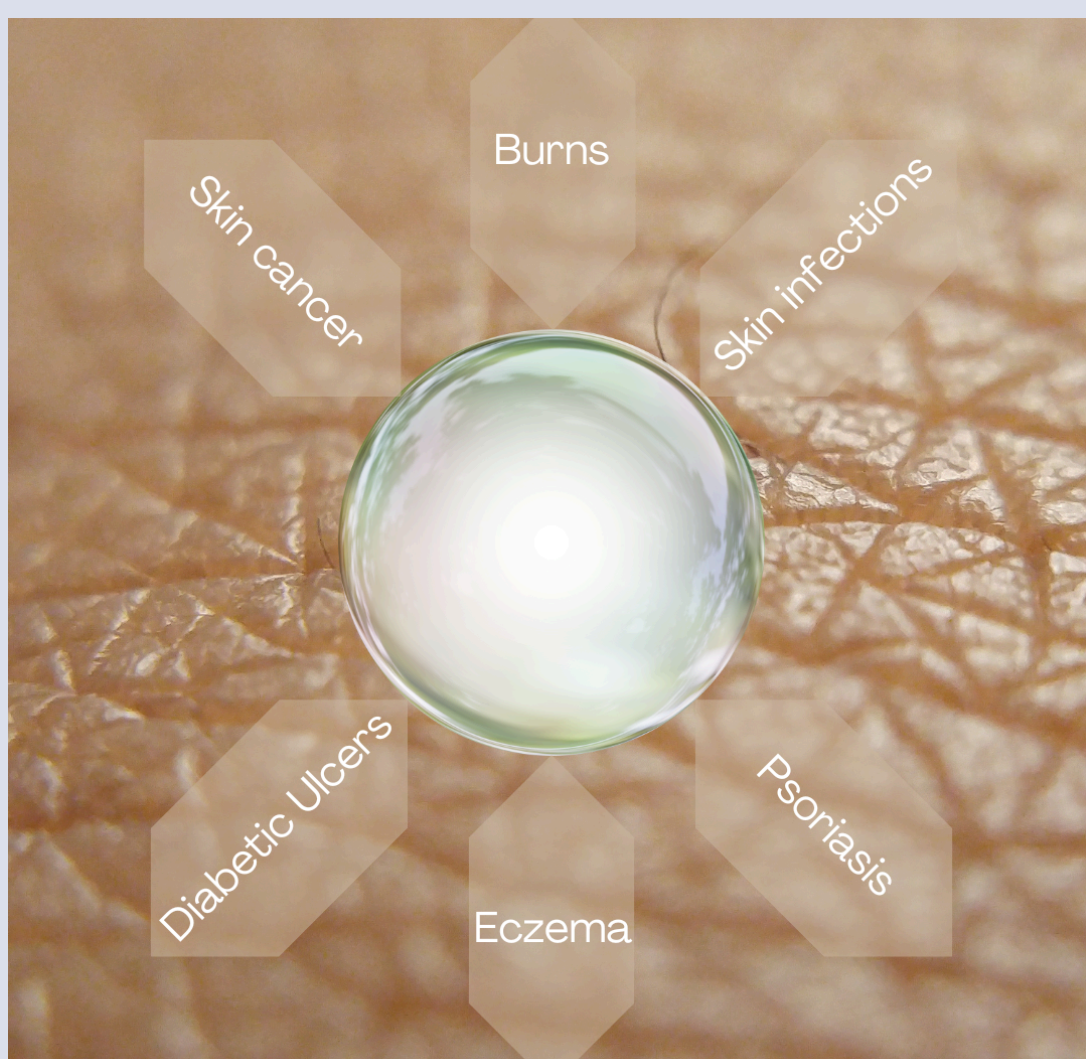


Fig. 3 Application of hydrogel dressings

DESCRIPTION:

Chronic wounds present a significant challenge for modern medicine, often leading to a substantial reduction in patients' quality of life and high treatment costs. In response to these challenges, this project explores the application of biohydrogels containing adaptogens in the therapy of chronic wounds. Due to their unique physicochemical properties, biohydrogels can provide an optimal healing environment, including appropriate moisture, protection against infections, and controlled release of bioactive substances. Adaptogens, known for their antioxidant, anti-inflammatory, and immunomodulatory properties, can further support tissue regeneration processes.

APPLICATION OF INVENTION:

Two distinct types of hydrogel dressings have been developed. The first is based on peptide nanocarriers containing adaptogens, while the second is based on adaptogens in a matrix with peptide nanocarriers. The integration of peptide nanocarriers with adaptogens into a polymeric matrix results in the formation of a novel dressing that enables the regulated release of active compounds. By altering the composition of the matrix and the characteristics of the carriers, the release profile of adaptogens can be precisely calibrated. Direct delivery of adaptogens to injured tissues enhances the efficacy of the treatment.

INNOVATION:

The objective of this project is to develop and evaluate biohydrogels containing selected adaptogens, including Ashwagandha, Rhodiola rosea, and ginseng, with a view to determining their potential applications. This research will include the optimisation of hydrogel composition and in vitro studies on adaptogen release and their effects on skin cells. It is anticipated that the incorporation of adaptogens into biohydrogels will facilitate the reduction of wound healing time, the alleviation of inflammation, and the enhancement of the overall health status of patients with chronic wounds. The findings of this project may facilitate the development of innovative chronic wound therapies, providing effective and safe options for patients and the healthcare system.

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