Novel Hydrogels For Chronic Wound Healing

Tech ID: 34583 / UC Case 2025-683-0

PATENT STATUS

Patent Pending

BACKGROUND

Chronic wounds affect millions of people in the United States and these numbers are expected to rise due to an aging population and the increasing prevalence of type II diabetes. Unlike typical injuries, chronic wounds fail to progress through the normal stages of healing and are accompanied by issues like prolonged inflammation, high levels of oxidative stress, and biofilms that do not promote healing. Current chronic wound treatment options involve regular, time-consuming appointments and various wound dressings, which have limited success.

BRIEF DESCRIPTION

Professor Iman Noshadi from the University of California, Riverside have developed a choline BIL-functionalized GelMA hydrogel (BioGel) with multifunctional properties for chronic wound treatment. The invention works by enhancing gelatin methacryloyl (GelMA) with a special choline-based bio-ionic liquid, which significantly increases the number of intact vascular tubes compared to standard GelMA. Research results suggest that BioGel can accelerate wound closure, with chronic wounds fully healing in about 21 days. This technology is advantageous over existing treatments because the application of BioGel may accelerate chronic wound closure, reduce biofilm, and promote hair regrowth.

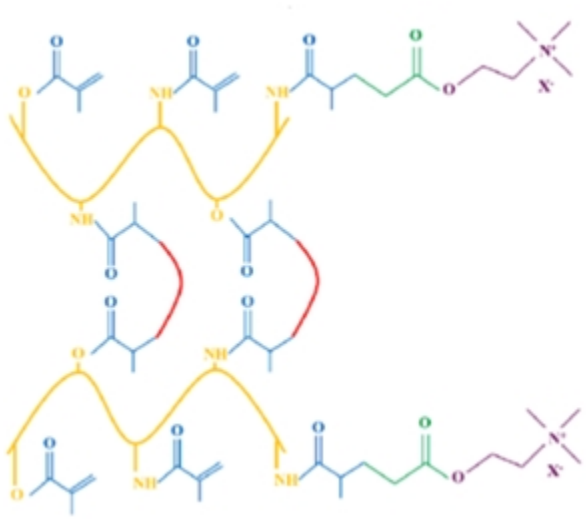


Fig 1: Structure of the UCR choline-based bio-ionic liquid functionalized gelatin methacryloyl hydrogel named BioGel.

SUGGESTED USES

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OTHER INFORMATION

KEYWORDS

Biomaterials, wound cleaning, hydrogels, biomaterial

CATEGORIZED AS

- Medical
  - Other

RELATED CASES

2025-683-0

- For use as a treatment for chronic wounds, such as for individuals with Type II Diabetes.

RELATED MATERIALS

- Banerjee, Aihik, et al. “A Choline Bio-Ionic Liquid-Functionalized Gelatin Methacryloyl Hydrogel for Chronic Wound Healing.” European Polymer Journal, vol. 228, Mar. 2025, p. 113787, https://doi.org/10.1016/j.eurpolymj.2025.113787. - 03/17/2025

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