Biomaterial For Wound Healing

Tech ID: 33589 / UC Case 2022-99M-0

BRIEF DESCRIPTION

Researchers at UC Irvine have developed a novel biomaterial to heal and regenerate tissues for chronic wounds. The biomaterial, referred to as GelMA-AN, has immunomodulating properties engineered for complete incorporation into injured tissue while enhancing the regenerative healing activities of immune and stromal cells. It is based on a gelatin scaffold supplemented with Methacrylic Anhydride and immunomodulating apoptotic neutrophil cells. All components have high biocompatibility due to structural and biochemical similarities to the host wound environment. This combination of the hydrogel scaffold and apoptotic neutrophils has uncovered a wound healing mechanism that acts through immunomodulation to enhance regenerative healing. The mechanism works by modulating immune cells to drive them from inflammatory to healing activities that in turn stimulate stromal cells to repair the skin and regenerate health skin appendages such as vasculature.

SUGGESTED USES

Treatment of:

·Wounds from diabetic ulcer

·Critical ischemic limb

·Wounds/scar post-surgery (including plastic surgery)

·Graft-versus host disease (GVHD) implants

FEATURES/BENEFITS

·Novel cell-based wound healing hydrogel for chronic wounds that uses apoptotic neutrophils to stimulate tissue growth.

·Biocompatible materials to reduce infection and immune rejection.

·Potential to become an active healing product for chronic wounds.

TECHNOLOGY DESCRIPTION

This technology presents a novel wound-healing hydrogel comprising a gelatin scaffold encompassing apoptotic neutrophils. Prototype studies, within a wound-healing animal model, have shown that treatment with the GelMA-AN improved wound healing, vasculature length and cell growth compared to control hydrogels. In addition, GelMA-AN may also stimulate production of wound-healing cytokines and other immune mediators. GelMA-AN represents a low-cost biocompatible regenerative treatment for chronic wounds.

STATE OF DEVELOPMENT

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Disease: Cardiovascular and Circulatory System
  - Disease: Dermatology
  - Therapeutics

RELATED CASES

2022-99M-0

In vitro and in vivo studies ongoing

RELATED MATERIALS

» Biomaterial for wound regenerative healing. Sergei Butenko, Wendy Liu,Maksim Plikus. - 02/22/2024

PATENT STATUS

Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ Scar Minimization Treatment: Fibrotic to Fat Cell Conversion

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