

Injectable Novel Therapeutic for Post-Myocardial Infarction Repair

Tech ID: 28694 / UC Case 2017-336-0

BACKGROUND

Cardiovascular disease manifested as a myocardial infarction (MI) usually results in the irreversible death of heart muscle cells. While medical treatments can mitigate some symptoms, they often fail to prevent heart failure after a MI. The current standard of care for MI relies on surgical intervention via a coronary artery bypass. An alternative therapeutic approach has been taken in the last few years with the introduction of biomaterials designed to promote neovascularization after an MI and help prevent negative left ventricle remodeling by increasing infarct wall thickness and decreasing volume, fibrosis, and infarct size.

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have developed an injectable cyclic peptide pro-gelator which self-assembles into a macromolecular hydrogel at the site of the MI. Constructed with a substrate recognition sequence to inflammatory-related enzymes, the peptides assemble into a hydrogel. Cleavage of these cyclic peptides by an enzyme results in linearization, making these peptides selective to areas with excess inflammation where protease activity is upregulated.

APPLICATIONS

This invention may be used to deliver biosynthetic tissue scaffolds to diseased tissue in a minimally invasive and targeted manner; they also have the potential for therapeutic treatment.

ADVANTAGES

The hydrogel resists gelation in serum and healthy myocardial tissue, which prevents off-target accumulation and reduces risk of gelling in the blood stream. It is also capable of being injected, but amenable to transendocardial catheterization and catheter-based coronary infusion.

STATE OF DEVELOPMENT

Experimental stage with direct epicardial injection of materials into a rat ischemia-reperfusion model.

INTELLECTUAL PROPERTY INFO

International patent rights are available for commercialization.

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	2018227187	12/13/2018	2017-336

Additional Patent Pending

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OTHER INFORMATION

KEYWORDS

hydrogel, injectable, pro-gelator,
myocardial infarction,cardiovascular
disease, tissue repair

CATEGORIZED AS

- **Materials & Chemicals**
 - Biological
- **Medical**
 - Disease: Cardiovascular and Circulatory System
 - Therapeutics

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