

Oxime Crosslinked Hydrogels To Prevent Postsurgical Cardiac Adhesions

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BACKGROUND

Although a wide variety of hydrogels have been developed for a multitude of uses, various functional characteristics have been hard to capture in a controllable manner. A significant feature is the ability to ‘tune’ the gel so its gelling time can be controlled in a manner suitable to its application. In this disclosure, because the gel is both tunable and its composition allows it to bond to tissue, the inventors believe it can be used to address an unmet medical need – the formation of adhesions after cardiac surgery. Current methods used are either drug therapy or various physical barriers but their success is limited.

TECHNOLOGY DESCRIPTION

Researchers from UC San Diego have patented an improved method of protecting cardiac tissue or another tissue found in the thoracic cavity of an individual with an in-situ postsurgical anti-adhesion barrier. This barrier is composed of an oxime cross-linked biocompatible hydrogel that forms when a first polymer and a second polymer are sprayed or painted directly onto the tissue. The hydrogel that is formed is capable of adhering to the tissue for about two or more weeks and it greatly reduces cellular adhesion and protein adsorption onto the tissue. When a two polymers are mixed, they react to form an oxime cross-linked biocompatible hydrogel on the tissue that creates a protective layer over the tissue to prevent post-surgical tissue adhesions.

These materials are PEG hydrogels crosslinked with oxime bonds, providing a tunable system to control gelling time.

STATE OF DEVELOPMENT

Various gels have been made and tested both for tunable properties and compatability with fibroblasts, coating ability to heart surfaces and evaluation of adhesion prevention in a rat surgery model.

INTELLECTUAL PROPERTY INFO

UC San Diego is seeking partners to commercially develop this technology. An issued patent for the US may be licensed from UC San Diego.

PATENT STATUS

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OTHER INFORMATION

CATEGORIZED AS

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

RELATED CASES

2014-201-0

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,611,810	04/07/2020	2014-201

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