

Hydrogels for islet encapsulation and implantation

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BRIEF DESCRIPTION

Islet encapsulation technologies have been intensely investigated for the past two decades as a treatment for diabetes. The technology involves encapsulating islet cells, which are insulin-producing cells, in microcapsules that would protect them from inflammatory reactions and immune attacks, while permitting nutrients to reach the cells. Although a variety of hydrogel matrices have been attempted for islet encapsulation and implantation, they have had issues with biocompatibility, biodegradability, islet viability, and sustainable insulin production. Novel hydrogels made from safe, biodegradable materials would have great potential of being functional matrices for islet encapsulation.

Researchers at the University of California, Irvine have developed a novel hydrogel that can be used as a matrix to encapsulate islets for the treatment of diabetes. This new hydrogel is biocompatible, biodegradable, safe, and non-immunogenic. The researchers have demonstrated that the encapsulated islets are highly functional and viable and can sustainably produce insulin.

SUGGESTED USES

The encapsulated islets may be transplanted into patients for treating diabetes.

ADVANTAGES

The SP hydrogel offers many advantages because it is non-cytotoxic, biocompatible, easy to handle, crosslinkable at mild physiological conditions, and injectable for in situ polymerization for transplantation.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,289,500	03/22/2016	2011-817

CONTACT

Richard Y. Tun
tunr@uci.edu
tel: 949-824-3586.



OTHER INFORMATION

KEYWORDS

Hydrogel, Islet, Islet encapsulation, Diabetes, Microcapsule, Biocompatible, Biodegradable

CATEGORIZED AS

- » Engineering
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