TECHNICAL DATA SHEET

PATENT ES P201600173
PCT ES 2017000029

CHARACTERISTICS

Electrospun material simulating the microscopic structure of the extracelular matrix in different body tissues and organs. Provides the structural scaffold for cellular adhesion, proliferation, migration and differentiation.

ADVANTAGES

Versatile product:

1a) Flexible orientation of nanofibers depending on the electrospinning parameters.

1b) Possible addition of bioactive agents (eg. growth factors) to enhance the effects. 1c) Guidance for tissue regeneration in different organs. 1d) Biocompatible and biodegradable material

1) Tested in vitro

Guidance of neurite outgrowth in ganglionar explants.

2) Tested in vivo

(mouse) as structural scaffold

Research of the University of Las Palmas de Gran Canaria (ULPGC)

HIBRID NANOFIBERS OF ALOE VERA

This biocompatible and biodegradable material serves as structural scaffold for the cell guidance and tissue regeneration, especially in the nervous tissue. This product offers more possibilities of successful tissue regeneration than others do.

Original research studies

Research group Neurogliociencia y Reparación Axonal (Nyra), Instituto Universitario de Investigaciones Biomédicas y Sanitarias (IUIBS-ULPGC)

The in vitro experimental data show a higher rate o neurite outgrowth (developing axons and dendrites) in presence of hibrid nanofibers of Aloe vera in comparison with similar experimental conditions in the presence of nanofibers with no Aloe vera composition and with other nanofibers described in the literature. We conclude that the presence of Aloe vera is key for this suscessful nerve growth.

What is the innovation?

The nervous tissue is present in all the body organs and systems and regulates the conditions of health, the inflammation and the healing process. It is one of the body tissues with more limited capacity of spontaneous regeneration. To date, the star procedure for nerve damage is the replacement with authologous (same body) and heterologous (different body) trasplantations. However, this procedure presents important limitations as the reduced disponibility of the former and the posibility of immunological rejection of the latter.

Alternatively, natural and synthetic materials mimetizing the microscopic structural organization of the extracelular matrix in healthy tissues can provide suitable microenvironmental conditions for the cell adhesion, proliferation, migration and differentiation.

There are other biocompatible and biodegradable materials with similar characteristics. However, none of them has demonstrated better results on neurite outgrowth and tissue regeneration than the invention described here.

"Possible development of dressings, sutures, meshes, nervous connection bridges" – "The nanofibers are biocompatible and biodegradable" –

INVENTORS

ULPGC

Maximina Monzón-Mayor, Ph.D.

Professor of Cell Biology in the ULPGC. Neurobiologist and gliologist. She has ivestigated on the development and regeneration of the nervous system

María-del-Mar Romero-Alemán, M.D./Ph.D.

Associate Professor of Cell Biology in the ULPGC. Neurobiologist, gliologist. Physician.

The inventors are members of the following entities:

Sociedad Española de Neurociencia (SENC).

Red Glial Española (RGE).

Federation of European Neuroscience Societies (FENS).

International Brain Research Organization (IBRO).

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State of the technique

Product tested in vitro and in vivo testing (mouse).

Sectors of industrial application

Tissue engineering products: nervous connection bridges and others.

Sanitary products: wound dressings, sutures, surgical meshes.

INDUSTRIAL PROPERTY

Patent – Know How

Title owner: Universidad de Las Palmas de Gran Canaria (100%)

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Specific knowledge linked to the research for its development and the placing on the market.

CONTACT

María Sacristán Rodríguez

Oficina de Propiedad Industrial e Intelectual de la ULPGC

maria.sacristan@fpct.ulpgc.es

+34 928 45 49 76

Artemis Rivero González

Oficina de Transferencia de Resultados de Investigación de la ULPGC

arivero@fpct.ulpgc.es

+34 928 45 99 56

UNIVERSIDAD DE LAS PALMAS DE GRAN CANARIA

Fundación Parque Científico Tecnológico
Universidad de Las Palmas de Gran Canaria