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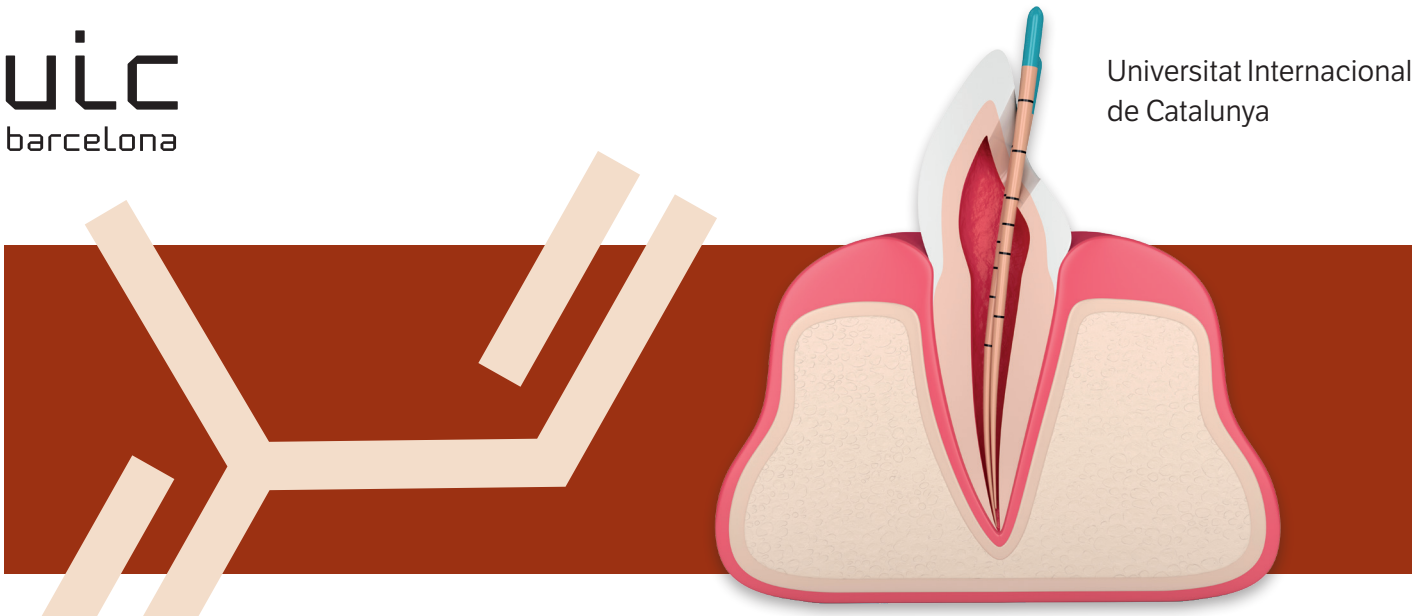

An isoprene-based matrix composition

uic.es/patents

Goal

The group is looking for a license agreement and collaboration partners.

Patent

International patent application.
Priority date: 8-10-2020

Reference

PCT/EP2021/077676

Contact

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Introduction

Currently, root canal treatment is the most common solution to maintaining the teeth of patients that have suffered from a trauma or a profound caries that has resulted in root canal infection. For this purpose, Gutta-percha (GP) is one of the main materials used to fill root canals, presenting excellent biocompatibility and good sealing ability. However, GP poor bonding ability to dental tissues has led to high failure rates in endodontic treatments. Among the different options that are being explored as novel endodontic materials, bioactive elements are a promising strategy to improve root canal treatments. For instance, silica-based microspheres (SiMS), are an example of bioactive elements that present an active surface and chemical composition that may provide a stronger adhesion to dentin tissue, biocompatibility and the possibility to serve as a possible drug delivery system.

Description

A multidisciplinary research group with wide experience in dentistry and biomaterials, has generated a modification of Gutta-percha material by adding silica microspheres and maintaining the same original form of the current material. This process increases the bioactivity of the Gutta-percha, enhancing its adhesion properties to the dental tissue and predicting better endodontic treatment results.

Moreover, these microspheres can be used as a drug delivery system, for example an anti-inflammatory or antibiotic drug.

In addition, the next step will be to focus on large scale manufacturing and improving the process to make it more competitive in the dental market.

Advantatges

— Bioactive and resistant material
— Bonding ability to dentin or bioactive sealer
— No shrinkage of endodontic treatment, limiting the number of voids for bacteria to colonise
— Easy method to increase the therapeutic effect
— The biomaterial can have a variety of indications and individualised treatments
— It can be added an ion or a molecule in order to have a sustained drug release

Current stage of development

There is an ongoing development plan to increase the method of manufacturing. Explore scalability and the industrialisation process.