

GELLED MICROSPHERES FOR THE VEHICULATION AND RELEASE OF THERAPEUTIC AGENTS

Technology for Licensing

Keywords:

Antifungal drug, mucositis, candidiasis, dry mouth treatment, dry vagina, cystitis, microspheres, drug delivery, mucoadhesion, stability

Description:

Nowadays, many sustained release pharmaceutical forms exist such as liposomes, bicelles, nanoparticles or microparticles. However, they are intermediate products and require a subsequent vehiculation to constitute the final pharmaceutical form, increasing the production costs.

In order to meet the market needs, a new method for the synthesis of gelled microspheres has been developed. The microspheres can be used by themselves as therapeutic agents or cosmetics, or to vehiculate bioactive compounds (BACs). The microspheres stand out due to their biocompatibility, stability, specificity, even encapsulation, and allow the incorporation of a wide range of biologically active compounds (pharmaceutical, nutraceutical, cosmetics...) for a subsequent sustained release, completely maintaining biological activity.

The production of these microspheres consists of an innovation on the emulsification/internal gelation method wherein the aqueous phase contains an alginate salt or derivative therein, a water-soluble polysaccharide, a calcium salt, and optionally the biologically active compound; the oily phase is made of a mixture of several oils. The aqueous phase is added to the oily phase to form a water-in-oil emulsion, to which is added a fat-soluble acid to generate a dispersion of microparticles.

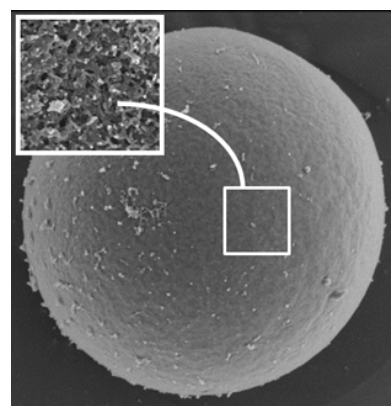
The resulting microparticles show enhanced organoleptic properties and palatability, an increase of the mucoadhesivity and offer protection to the encapsulated compound from inactivation by external agents.

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A new method for synthesis of gelled microspheres that can homogeneously carry biologically active compounds has been developed. The microspheres become of special interest for their use by themselves or as a vehicle. Unlike other common excipients, these microspheres are resistant to enzymatic degradation, stable, biocompatible, safe, mucoadhesive, and allow a controlled and sustained release of active compounds.

Advantages and Benefits

- » Homogeneous encapsulation of BACs (drugs, cosmetics or nutraceuticals)
Useful to vehiculate these compounds or use them directly as a drug.
- » Increased resistance to enzymatic degradation and stability.
- » Biocompatible, enhanced mucoadhesivity, safe, ideal penetration and rheological properties.
- » Sustained release of compounds during up to 15 hours after application.
- » Better organoleptic properties and palatability.
- » Easy formulation of a hydrogel, which allows an improved contact time.
- » Easily scalable to industry and lower production costs.
- » Useful for the treatment of a wide variety of infections: buccal, nasal, bladder, rectal or vaginal infections.



SEM micrograph of a microsphere and its surface detail

Patent status:

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Contact:

Oficina de Transferencia de Resultados de Investigación (OTRI) - Universidad de Granada

patentes@ugr.es

www.otri.ugr.es