T G Dacoba et al., Pharm Anal Acta 2016, 7:1 (Suppl)
http://dx.doi.org/10.4172/2153-2435.C1.028

OMICS International
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8th International Conference and Exhibition on
Pharmaceutics & Novel Drug Delivery Systems
March 07-09, 2016 Madrid, Spain

Polymeric matrixes for the controlled release of peptide-loaded chitosan nanoparticles

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Chitosan-based nanoparticles are versatile, biocompatible and biodegradable systems with low toxicity profiles, which make them very interesting for a huge range of applications. Additionally, they can can be readily modified and obtained by ionic gelation; an easy, mild and scalable method. All these properties have led to a worldwide study of these nanosystems,being mucosal peptide-delivery one of the most explored and promising applications.Nevertheless, the oral administration of chitosan nanoparticles comes across a really adverse physiological environment, which causes an immediate peptide release and prevents the effective interaction of both the peptide and nanocarrier with the absorptive epithelium.In order to improve the stability of these nanoparticles and obtain a controlled release of the active molecule, this work was focused on the incorporation of chitosan nanoparticles into a protective matrix. The approach followed was based on the design of an inert matrix of hydroxypropylmethylcellulose in which chitosan nanoparticles were embedded. For this purpose, nanoparticles were freeze-dried in presence of different molecular weights and concentrations of this neutral polymer and further characterized. Peptide release from the nanoparticles-containing matrixes was efficiently controlled in simulated biorelevant media, being the molecular weight and concentration of the polymer the key modulating factors.

Biography

Desirée Teijeiro holds a PhD in Pharmaceutical Technology and has over 14 years of experience,in both academic and private sectors,in researchand development of nanotechnology-based drug/biopharmaceutical formulations and medical devices aimed to address unmet clinical needs.In 2013, she joined Prof. Alonso´s group (USC) as Scientific Project Manager, focusing her activities on management of industry-collaborative and translational research projects.

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