Gónzalez RC et al., J Nanomed Nanotechnol 2016, 7:5 (Suppl)
http://dx.doi.org/10.4172/2157-7439.C1.044

11th International Conference and Expo on
Nanoscience and Molecular Nanotechnology
October 20-22, 2016 Rome, Italy

Ketoprofen loaded nanoparticles PLGA–PEG conjugated with a peptide of ocular delivery

Gónzalez RC[1], **Espina M**[1], **Calpena AC**[1], **Gómara MJ**[2], **Haro I**[2] and **Garcia ML**[1]
[1]University of Barcelona, Spain
[2]Institute for Advanced Chemistry of Catalonia, Spain

In this work, the Peptide Ocular Delivery (POD) was conjugated with poly(lactic-co-glycolic-acid) (PLGA)-polyethylene glycol (PEG)-nanoparticles (NPs) loaded with ketoprofen (KT) with the aim to increase the ocular bioavailability of the KT. The NPs were prepared using the solvent displacement method. Through the assembling of the PLGA and PEG, and conjugation of peptide, the copolymer (PLGA-PEG-POD) used to prepare the nanoparticles was synthesized. For optimization and to investigate the influence of several independents variables (such as the pH of aqueous phase, concentration of poloxamer 188 and of the drug) on the dependents variables (particle size, polydispersity index (PI), zeta potential (ZP) and encapsulation efficiency (EE)), a factorial design was applied. Following this biopharmaceutical behavior (release *in vitro*) and the ex vivo ocular permeation of the optimized NPs formulation was studied using Franz cells. The conjugation of the PEG and the peptide was confirmed using proton nuclear magnetic resonance spectroscopy. Due to the conjugation of the peptide with the polymer PLGA-PEG, the surface charge of the NPs was positive, facilitating ocular penetration. The factors that most influence the NPs formulation were the PI and the EE. The optimized formulation showed a slow and prolonged release. Also, it was observed that the permeation of the NPs creates a reservoir, which allows a nanostructured prolonged release system.

Biography

Gónzalez RC completed his studies at University of Valparaiso, Chile with a thesis on the validation of the process of the fabrication of tablets in a pharmaceutical laboratory. After his studies he started to work at the National Agency of Medicines in Chile for 2 years as Inspector of the validation of the pharmaceutical processes. Subsequently, he went to Barcelona to do a Post-graduate course called Research, Development and Control of Drugs. Currently he is doing his PhD at University of Barcelona. His PhD project is about the development and characterization of nanostructured systems.

roberto.cgp647@gmail.com

Notes: