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Brain delivery of Gatifloxacin loaded poly(D, L lactide-co-glycolide) labrafil nanoparticles

P Marcianes-Moreno[1], **S Negro**[1, 2], **Garcia-Garcia L** and **A Fernandez-Carballido**[1, 2]
[1]Universidad Complutense de Madrid (UCM), Spain
[2]Instituto Universitario de Farmacia Industrial, Spain
[3]Instituto Pluricisciplinar, Spain

Tuberculosis (TB) is a highly contagious persistent infection caused by *M. tuberculosis*, which has higher mortality rate than any other infectious diseases. According to the WHO one-third of the population is infected and 1.8 millions of people die every year. TB appears mainly in the lungs but can also develop as extra pulmonary tuberculosis in the Central Nervous System (CNS). The control of resistant TB represents an important challenge, so it has showed that quinolones family such as Gatifloxacin (GAT) is an alternative treatment for resistant TB. However, this drug is low lipophilic which makes it difficult to cross the BBB. Nanocarriers can cross biological barriers like Blood-Brain Barrier (BBB) and are a new strategy in treating TB to hydro soluble compound as GAT. The aim of our study was developed biodegradable GAT-loaded PLGA-labrafil Nanoparticles (NPs) and study their transport through the BBB. NPs were prepared using poly(D, L-lactic-co-glycolic acid) Resomer (PLGA 502®) and prepared by nano precipitation technique. Particles were characterized by SEM, encapsulation efficacy and *in vitro* release at pH 7.4. SEM revealed that NPs were spherical and with smooth surfaces. Mean particles sizes were around of 189 nm and an encapsulation efficiency of 15%. Cerebral cortex images showed a marked increase of fluorescence when the surfactant-coated NPs were administered to rats. These results suggest that the formulations are adequate systems to access into the brain.

Biography

P Marcianes-Moreno has finished her Pharmacy degree in 2012 at Complutense University of Madrid. In 2013 she completed a Master's degree in Pharmacy and Pharmaceutical Technology, with a research study entitled 'Elaboration of Tolcapone Nanoparticles'. Currently, she is a PhD student at Complutense University.

patri_1905@hotmail.com

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