

Title: Influence of pH in swelling capacity and dissolution profiles of budesonide formulated in tablets of a novel hidrogel

Name: Rebeca Simancas Herbada[1], Ana Isabel Torres Suarez[1, 2], Jorge Sanchez Retama[3], Enrique Lopez Cabarcos[3], Ana Fernandez Carballido[1, 2]

[1]Departamento de Farmacia y Tecnologia Farmaceutica, Facultad de Farmacia,
[2] Instituto Universitario de Farmacia Industrial
[3]Departamento de Química Fisica II
Universidad Complutense de Madrid, 28040, Madrid, Spain

Email: rebecasimancas@ucm.es

This work presents the synthesis of a poly (magnesium acrylate) hydrogel called PAMgA developed for oral drug delivery systems. The hydrogel synthesized had a concentration of 5 mM of cross-linker agent, ammonium persulfate (PSA) that confers long segments between linking points in the magnesium acrylate monomer (AMgA) chains. Budesonide is a corticosteroid with high glucocorticoid effect and weak mineralocorticoid effect, which provides antiinflamatory activity. It has low solubility in aqueous solutions because of its steroid structure. Tablets of PAMgA containing 9 mg of drug were elaborated. The swelling capacity and the percentage equilibrium water content (EWC) of PAMgA were determined by the gravimetric method; and the drug dissolution from tablets was evaluated using USP method 2. For all these assays three different media were used: distilled water, simulated gastric fluid at pH 1.2 (FaSSGF) and simulated intestinal fluid at pH 6.8 (FaSSIF), where 0.5% sodium lauryl sulfate (SLS) was used as surfactant in order to guarantee sink conditions.
EWC obtained were higher at pH 6.8 (94.02 ± 0.03%) than at pH 1.2 (91.02 ± 0.05%) and than in water (88.94 ± 0.03%), probably due to the increase of the pH and the different ions that contains the media. Budesonide showed a lower dissolution rate from tablets at pH 6.8 although 100% of the drug was released after 24 hours in both media. These results make PAMgA hydrogel a good excipient for sustained drug delivery devices for oral administration.

Biography

Rebeca Simancas Herbada has completed Pharmacy degree in 2014 at Complutense University of Madrid. In 2015 she finished a master degree in Pharmacy and Pharmaceutical Technology at the same University, with an experimental project ("Development of a hydrogel for oral administration") supervised by Ana Isabel Torres Suarez and Ana Fernandez Carballido.