OMICS International
conferenceseries.com

Rebeca Simancas Herbada, J Pharma Care Health Sys 2015, 2:4
http://dx.doi.org/10.4172/2376-0419.S1.006

European Pharma Congress

August 25-27, 2015 Valencia, Spain

Influence of pH in swelling capacity and dissolution profiles of Budesonide formulated in tablets of a novel hydrogel

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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 anti-inflammatory 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 then 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's degree in Pharmacy and Pharmaceutical Technology at the same University, with an experimental project on 'Development of a hydrogel for oral administration' supervised by Ana Isabel Torres Suarez and Ana Fernandez Carballido.

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