



PREPARATION AND CHARACTERIZATION OF SODIUM ALGINATE-CHITOSAN MICROPARTICLES FOR CONTROLLED RELEASE OF IBUPROFEN IN A SUSTAINABLE WAY

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Abstract

The preparation of microspheres containing chitosan, sodium alginate and ibuprofen and the pH dependent drug release were investigated. The microspheres were prepared by two experimental routes: the first one starting with a chitosan/ibuprofen core subsequently coated by an alginate shell (S1) and the second one based on an alginate/ibuprofen core, later coated by a chitosan layer (S2). The physical-chemical characterization was done by using Dynamic Light Scattering (DLS), Atomic Force Microscopy (AFM), Fourier Transform IR Spectroscopy (FTIR) and thermogravimetric analysis. AFM and DLS measurements showed that the average size of the microspheres was around 100 nm for S1 and 300 nm for S2 respectively. The ibuprofen release process depends on the preparation method and is strongly influenced by the pH. In both systems the total amount of released drug was higher in weak alkaline medium (pH 7.4) than in weak acid conditions (pH 5.8). The release of the active agent may be constant over a long period, it may be cyclic over a long period, or it may be triggered by the environment or other external events. As controlled release of ibuprofen are some advantages: reduction in dosing frequency and fluctuation in circulating drug levels, increased patient compliance, reduction in gastro-intestinal irritation and other dose-related side effects.

Key words: chitosan, controlled release, ibuprofen, polymer microspheres, sodium alginate

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