

Development and *in vitro* Release Study of 2-Aminobenzothiazole Loaded Microspheres

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Abstract. The aim of the present study is the preparation and development of prolonged drug release microspheres based on 2-aminobenzothiazole-loaded cellulose derivatives microspheres for controlled release. Microencapsulation by simple emulsion (O/W) solvent evaporation method was carried out to prepare these formulations using two cellulose derivatives as matrices: ethylcellulose (EC) and cellulose acetate butyrate (CAB). The optimization of the experimental parameters such as the polymer/solvent ratio, the matrix type, stirring speed and the number of blades was studied to get high encapsulation efficiency of drug. The effect of the selected parameters on microsphere characteristics, as well as the release rate was investigated. SEM analysis showed spherical microspheres. The effective actual entrapment of 2-ABZT were confirmed by FTIR spectroscopy and X-ray diffraction. The encapsulation efficiency was improved when the polymer concentration increased reaching 89.48%. We have obtained microspheres in the range of 61-278 μm with EC by varying process conditions and closed to 113 μm with CAB. The *in vitro* release kinetics of the cation of 2-ABZT were established at 37°C in simulated gastric medium pH 1.2 and the obtained data were analyzed according to Fick's law.

Keywords: Microencapsulation, Drug Release, Diffusion.