

ABSTRACT

The Effect of Different Entrapment Method and Theophylline Amount on Physical Characteristics and In Vitro Release Profile of Theophylline-Alginate Microparticles

(Prepared by Orifice-ionic gelation methods)

Microparticles of theophylline-alginate could be developed to avoid gastrointestinal irritation. Microparticles with different entrapment method (incorporation and adsorption) were prepared by orifice-ionic gelation method. The aim of this research is to know the effect of different entrapment method and theophylline amount on physical characteristics and in vitro release profile of theophylline-alginate microparticles. The result showed that microparticle theophylline prepared by adsorption method have a smaller size than incorporation method but not spherical in shape. Diameter particle of microparticle prepared by incorporation method 1215,84 μm (F I.1); 1361,97 μm (F I.2) and 917,64 μm (F A.1); 950,03 μm (F A.2) for adsorption method. Microparticles with ratio theophylline-alginate 1:1 (F I.2 and F A.2) have a high theophylline content. The release profile showed that the release of theophylline from microparticles in medium phosphate buffer of pH 6,8 was slower than medium simulated gastric fluid without enzyme pH 1,2 because alginate swelled in medium phosphate buffer 6,8 while in medium simulated gastric fluid without enzyme of pH 1,2 alginate didn't swell.

Keywords : theophylline, alginate, microparticles, orifice-ionic gelation, incorporation, adsorption