ABSTRACT

The Effect of Drug Entrapment Method on Physical Characteristics and in vitro Release of Theophylline-Chitosan Microparticles

(Prepared by Orifice-ionic gelation Method)

Microparticle of theophylline-chitosan with different entrapment method (adsorption and incorporation) were prepared by orifice-ionic gelation method. The aim of this study was to investigate the effect of drug entrapment method on the physical characteristic, drug content and drug release profile of teofilin-chitosan microparticle. The result showed that microparticle theophylline prepared by adsorption method (F3 and F4) have a smaller size with non spherical shape compare to microparticles prepared by incorporation method. It was showed by the result of particle size evaluation. Microparticle prepared by adsorption method was in the range 1020,00-1728,38 µm and 1303,36-2295,10 µm for incorporation method. Percent drug content of microparticle are F1 : 9,5%±0,26; F2 : 9,30%±0,12; F3 : 2,08%±0,02; F4 : 0,80%±0,07. It showed that incorporation method produced higher drug content for microparticles. In vitro release profile was done in two different media for microparticles prepared by incorporation method, gastric fluid simulated without pepsin (pH 1,2) and phosphate buffer (pH 6,8). It was known that the drug release from microparticles in acidic media was higher than in phosphate buffer. The result also showed that the rate of theophylline release decreased by the increasing of chitosan concentration in microparticle prepared with incorporation method.

Keywords : theophylline, chitosan, microparticle, orifice ionic gelation, adsorption, incorporation