# ABSTRACT

**The Effect of Coating Methods on Physical Characteristic and in vitro Release of Theophylline-Chitosan-Alginat Microparticles**
(Prepared by Orifice-ionic gelation methods)

Theophylline is a methilxanthine derivate which has side effect such as nausea,vomiting and gastric irritation. Microparticles of theophylline could be developed to decrease gastric irritation, extend absorption. The aim of research is investigate the effect of alginate coating methods on physical characteristic and drug release of theophylline microparticle with polymer combination of chitosan and alginate. Microparticle of theophylline was prepared by orifice-ionic gelation methods by two different methods of coating, The first method is done by dropping a mixture containing chitosan-theophylline into a solution containing alginate and cross-linker agent with ratio of 1:1 (F1)and 1:0,5 (F2). The second methods is done by forming chitosan microparticles first and then soaked in a solution containing alginate with ratio of 1:1 (F3)and 1:0,5 (F4).

The obtained microparticles were evaluated for morphology and particle size, drug content, and drug release. The result showed microparticle F1 had a smoother surface and spherical in shape. The result of percent teofilin content in microparticles for F1, F2, F3 and F4 are 22,10±0,36% , 35,33±0,34%, 23,36±0,37%, dan 35,24±0,37%. In vitro release of microparticles in artificial gastric fluid (pH 1.2) and phosphate buffer (pH 6,8) was slower than theophylline powder. Microparticles F1 have the slowest release. It can be concluded that microparticles with first coating method had a better morphology and slower release compared to a second method.

Keywords: theophylline, microparticle, chitosan, sodium alginate, orifice ionic gelation, coating methods.