ABSTRACT

THE EFFECT OF CaCl₂ ON PHYSICAL CHARACTERISTICS OF DITERPENE LACTON FRACTION FROM *Andrographis paniculata*-CARBOXYMETHYL CHITOSAN NANOPARTICLES (Prepared by Ionic Gelation)

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The objective of this study was to investigate the effect of calcium chloride (CaCl₂) on physical characteristic (particle size, morphology, and drug entrapment efficiency) of diterpenelacton fraction from *Andrographis paniculata*-carboxymethyl chitosan nanoparticle. The nanoparticles were prepared by ionic gelation with 40mg (F1), 120mg (F2), 160mg (F3), 200mg (F4) of CaCl₂ for CM Chitosan and dried by spray drying. The result showed that CaCl₂ has effect on physical characteristic of that. Nanoparticles was obtained from the ionic gelation. These particle became larger after the drying. The dried particles with irregular hollow shape was obtained from lower CaCl₂. In other hand, the agglomerate particles obtained from F3 and F4 indicated higroscopicity since higher amount of CaCl₂ increased. Based on the infrared spectrum, there was ionic bonding of carboxymethyl chitosan and calcium chloride. The higher amount of CaCl₂ (80 mg to 120 mg) increase the drug entrapment efficiency. The further study of the optimal CM Chitosan and CaCl₂ consentration still needed to gain the homogenous and spherical nanoparticles.

*Keywords:* Nanoparticle; Ionic Gelation; Spray Drying; Carboxymethyl Chitosan, Calsium Chloride