ABSTRACT

EFFECT OF $CaCl_2$ *CROSSLINKER* CONCENTRATION ON CHARACTERISTICS OF CIPROFLOXACIN HCL-ALGINATE MICROSPHERES

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The aim of this research was to determine the effect of $CaCl_2$ *crosslinker* concentrations on the characteristics including particle morphology (shape and surface), particle size, swelling index, drug loading, entrapment efficiency, yield of Ciprofloxacin HCl-Alginate. Microspheres were prepared by ionothropic gelation by method with aerosolization technique. Microspheres preparation involved sodium alginat as polymer and $CaCl_2$ as *crosslinker*, Ciprofloxacin HCl-Alginate micropheres were dried using freeze dryer with maltodextrin as lyoprotectant. The concentrations of sodium alginate were used 2%, and concentrations of $CaCl_2$ 2%,3% and 4% were used.

The microspheres were evaluated included DTA, FT-IR, SEM, particle size distribution using optical microscopy, drug loading (DL), entrapment efficiency (EE), and yield. The microspheres size showed the diameter size of particle were below 5 µm. The results of DL formula F1, F2 and F3 were 7,25±0,24%; 6.26±0,79% and 7,20±0,65%, analysis statistics showed sig value>0,05, the effect of $CaCl_2$ concentrations were not significant for DL. Results EE of formula F1, F2, and F3 were 68,11±1,41%; 61,71±7,71% ; 64,67±3,82%, analysis statistics showed sig value>0,05 means the effect of $CaCl_2$ were not significant for EE. Yield formula F1,F2 and F3 were 73.91±3.17 %; 71.75±3.46%;71.81±6.21%, analysis statistics showed sig value>0,05 means the effect of $CaCl_2$ were not significant for yield. And swelling index based on mass and particle size of Ciprofloxacin HCl-alginat microspheres of all formulas showed index value less than 10.

Keywords : Ciprofloxacin HCl-Alginate microspheres, ionothropic gelation, crosslinker, aerosolization, characteristics