ABSTRACT

EFFECT OF SODIUM ALGINATE CONCENTRATION ON THE RELEASE OF CIPROFLOXACIN HCL FROM ALGINATE MICROSPHERE

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The aim of this research was to investigate the effect of alginate concentration on release profile of ciprofloxacin HCl from alginate microspheres prepared by ionotropic gelation method with aerosolization technique using sodium alginate as polymer and $CaCl_2$ as crosslinker. Ciprofloxacin HCl-alginate microspheres formed were dried using freeze drying method with maltodextrin as lyoprotectant. The concentrations of alginate used were 1,5%; 2,0%; and 2,5% and $CaCl_2$ concentrations were 1,5M.

Drug release studies of ciprofloxacin HCl from microspheres was carried out using thermoshaker for 24 hours which is simulated lungs fluid (PBS pH 7,2 ± 0,1). The percentage of ciprofloxacin HCl released from microspheres in 24 hours was within the range 73,72% ± 18,18 to 82,95% ± 2,59. The release rates of these microspheres were 0,0432% ± 0,01 (F1); 0,0458% ± 0,01 (F2); and 0,0455% ± 0,01 (F3).

By using Factorial Design ANOVA, it was found that release rate of ciprofloxacin HCl from alginate microspheres is no significantly increased with increasing concentration of alginate simultaneously.

Coefficient correlation used as a reference for determination of kinetic models. Based on the results obtained, the most suitable kinetic release model is zero order.

Keyword (s) : Ca-alginate micropheres, ciprofloxacin HCl, aerosolization, release rate, profile, kinetic