

ABSTRACT

EFFECT OF ERYTHROPOETIN CONCENTRATION (10.000;
20.000; 60.000 IU) ON THE CHARACTERISTICS OF
ERYTHROPOETIN-ALGINATE MICROSPHERES

(Prepared by Ionic Gelation Method Using Aerosolization Technique)

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The aim of this research was to investigate the effect of erythropoietin concentration on the characteristics of erythropoietin-alginate microsphere using gelation ionic method with aerosolization technique.

The concentration of erythropoietin added was 10.000; 20.000; 60.000 IU into 2% alginate. The mixture of erythropoietin-alginate was sprayed into 1M CaCl₂ stirred with magnetic stirrer at stirring speed 1000 rpm 30 minutes.

The result showed that all of formulas had a spherical shape of microsphere. The particle size of microsphere was 2,77 for F1(10.000 IU); 3,89 for F2(20.000 IU); 4,42 for F3 (60.000 IU). From the result of spectrophotometry FTIR showed that there was interaction between alginate and CaCl₂. It was known from shifting wavelength, loss of one wavelength number of carboxylic groups, and loss of guluronate fingerprints. From the result of thermal analysis with DTA showed that there was interaction between alginate and CaCl₂ formed ionic bond. It was known from there was a peak between alginate and CaCl₂'s peak. From the result of *Swelling Index* showed that *Swelling Index* of microsphere increased by increasing concentration of erythropoietin and observation period. The results were in accordance with the size of the microsphere that increases with increasing concentration of erythropoietin. Yield of microsphere obtained respectively 91,92% for F1 (10.000 IU); 87,53% for F2 (20.000 IU); 86,50% for F3 (60.000 IU).

It can be conclude that particle size of microsphere increased by increasing concentration of erythropoietin, *Swelling Index* of microsphere increased by increasing concentration of erythropoietin, and yield of microsphere decreased by increasing concentration of erythropoietin. It was found significant differences for particle size of microsphere and *Swelling Index* of microsphere. Meanwhile yield of microsphere was not found significant differences.

Keywords : erythropoietin, alginate, CaCl₂, microsphere, concentration of drug, gelation ionic, aerosolization