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PENINGKATAN DISOLUSI FUROSEMIDA DENGAN PEMBENTUKAN KOMPLEKS INKLUSI MELALUI KOPRESIPITASI MENGGUNAKAN β-SIKLODEKSTRIN

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ABSTRACT

Furosemide is a diuretic drug, which is insoluble in water. Due to this condition, it is needed a way to increase the dissolution rate with forming of inclusion complex in copresipitation system which produce as solid dispersion product using β-cyclodextrin carrier. The copresipitation system was made up of 1 : 0,5; 1 : 1; 1 : 1,5 and 1 : 2 variation concentration of furosemide- β-cyclodextrin. The characteristic forming of inclusion complex in solid dispersion system was evaluated by infrared analysis and then followed by HyperChem molecular model analysis. The dissolution test was done in order to see the increasing of dissolution rate and this test is used buffer phosphate pH 5,8 as the medium with rotation speed 100 rpm at $37 \pm 0,5^0$C for 60 minutes. The amount of dissoluted furosemide was then analyzed by spectrophotometric test. The dissolution parameter with Dissolution Efficiency (DE) is conducted in 10, 30, and 60 minutes. The data were analyzed with Two Way ANOVA at $p<0.05$ then continued with t-test. The result of this experiment shows that the solid dispersion of furosemide- β-cyclodextrin with ratio 1 : 1,5 and 1 : 2 have the highest percentage of dissolution. The increasing of dissolution of inclusion complex in copresipitation system using β-cyclodextrin (1 : 1,5) is 37,06% and (1 : 2) is 44,75% when they were compared with single furosemide. The result of spectral test and the changing of spectral profile explicit the hypothesis that there was an interaction between furosemide and β-cyclodextrin and in addition, the result of HyperChem molecular model analysis show that the inclusion complex has been made.

Key Words: Furosemide, β-cyclodextrin, inclusion complex , copresipitation, solid dispersion, dissolution.