ABSTRACT

STUDY IN VIVO OF \( p \)-METHOXYCINNAMIC ACID (\( p \)MCA)-HYDROXYPROPIL-\( \beta \)-CYCLODEXTRIN (HP\( \beta \)CD) INCLUSION COMPLEX (Prepared By Slurry Method)

IKRIMATUL KHULUQIYAH PRIHANTINI

\( p \)-methoxycinnamic acid (\( p \)MCA) is an active compound obtained from hydrolysis of ethyl \( p \)-methoxycinnamate acid (\( E_p \)MC) which is isolated from \textit{Kaempferia galanga} Linn. and has an analgesic effect. \( p \)MCA has low solubility in water, hence absorption and bioavailability \( p \)MCA in the body becomes imperfect and slow. One of the methods to increase the solubility of drug is by forming inclusion complex of \( p \)MCA with Hydroxypropil-\( \beta \)-siklodekstrin (HP\( \beta \)CD) (1:1). The inclusion complex is prepared using slurry method. The aim of this study was determine the bioavailability (\( t_{\text{max}} \), \( C_{\text{max}} \) and \( \text{AUC}_{0\rightarrow\infty} \)) of \( p \)MCA-HP\( \beta \)CD inclusion complex prepared by slurry compared to \( p \)MCA and \( p \)MCA-HP\( \beta \)CD physical mixture. Bioavailability test is performed using 5 New Zealand male rabbits each treatment group. There are three treatments: \( p \)MCA, \( p \)MCA-HP\( \beta \)CD physical mixture, and \( p \)MCA-HP\( \beta \)CD inclusion complex. Rabbits are given treatment by oral using sonde and blood samples are taken at a certain time. Blood samples of each rabbit are prepared and determined sample concentration using HPLC. Sample concentration in each treatment group are calculated and analyzed parameters bioavailability (\( t_{\text{max}} \), \( C_{\text{max}} \), \( \text{AUC}_{0\rightarrow\infty} \)) using ANOVA one way (\( \alpha = 0.05 \)). The result of ANOVA is bioavailability (\( t_{\text{max}} \), \( C_{\text{max}} \), \( \text{AUC}_{0\rightarrow\infty} \)) of \( p \)MCA-HP\( \beta \)CD inclusion complex increased significantly compared to \( p \)MCA but bioavailability of \( p \)MCA-HP\( \beta \)CD inclusion complex is equal with \( p \)MCA-HP\( \beta \)CD physical mixture.

Keyword: inclusion complex, \( p \)MCA, hidroxypropil-\( \beta \)-siklodekstrin, bioavailability, slurry method