

ABSTRACT

DISSOLUTION OF *p*-METHOXYCINNAMIC ACID- β -CYCLODEXTRIN INCLUSION COMPLEX PREPARED BY SOLVENT DROP GRINDING METHOD

Yotomi Desia Eka Rani

Para-methoxycinnamic acid (*p*MCA) is a major substance synthesized from *Kaempferia galanga* L that has an analgesic effect. It has very low solubility in water (0,71 mg/ml at 25°C) which makes several boundaries in its formulation process. Therefore, to improve the solubility, *p*MCA was complexed with β -cyclodextrin (β -CD). Based on the diameter and depth of the cyclodextrin cavity, β -CD can form complexes with aromatic or heterocyclic compounds suitable with *p*MCA structure. The purpose of this study was to determine the dissolution profile of *p*-MCA- β -CD inclusion complex which was prepared in 1:1 molar ratio with 3 hours solvent drop grinding method. The dissolution test was prepared by apparatus 2 (paddle apparatus). The media was 500 mL aquadest pH 6,5 \pm 0,5 with 37 \pm 0,5°C temperature and 75 rpm rotation speed. Concentration of *p*MCA was measured by visible spectrophotometer at maximum wavelength of *p*MCA at 285,8 nm. The inclusion complexes showed an enhancement on the dissolution profile when compared with the single compound of *p*MCA and the physical mixture of *p*MCA- β -CD prepared either by non grinding or grinding method. The result of this study showed that the Efficiency Dissolution (ED₆₀) *p*MCA, non grinding and grinding physical mixture, and inclusion complex of *p*MCA- β -CD were 23,14 \pm 2,86; 23,19 \pm 0,70; 32,20 \pm 1,07; and 61,61 \pm 1,04 respectively. The result was statistically evaluated by one-way ANOVA analysis. It showed that the significant P-value was 0.000 (P-value <0,05) which means have a significant difference. It can be concluded that the inclusion complex of *p*MCA- β -CD increased the dissolution rate of *p*MCA.

Keyword: *p*-methoxycinnamic acid, β -cyclodextrin, inclusion complex, solvent drop grinding method, dissolution