

ABSTRACT

PENETRATION OF DICLOFENAC SODIUM IN NIOSOME SYSTEM SPAN 60 – CHOLESTEROL FROM HPMC 4000 GEL BASES PREPARATION (Niosome System of Diclofenac Sodium – Span 60 – Cholesterol = 1:6:6)

Abdulloh Suyuti

The present study was designed to determine characteristics and penetration of diclofenac sodium in niosome system from HPMC 4000 gel bases preparation. The compositions of niosome are diclofenac sodium, Span 60, and cholesterol with molar ratio 1:6:6. There were two formulas in this study. Diclofenac sodium in HPMC 4000 gel without niosome, and HPMC 4000 gel with niosome system. The result showed that niosome system had effect on color and odor. Niosome system also had effect on pH and spread diameter of zero load. Data analyze showed that pH of formula control was $(6,29 \pm 0,04)$ and formula test was $(6,82 \pm 0,02)$. Spread diameter of zero load for formula control was $(5,47 \pm 0,06)$ cm and formula test was $(4,90 \pm 0,10)$ cm. Penetration test was carried out with dissolution tester with paddle stir in phosphate buffer saline pH $7,4 \pm 0,05$, volume 500 mL, temperature $37 \pm 0,5$ °C, and stirred velocity 100 rpm. The penetration flux was counted from slope of linear regression between time versus the cumulative amount of diclofenac sodium gel. The flux of formula control and formula test were $(0,9505 \pm 0,0451)$ $\mu\text{g}/\text{cm}^2/\text{min}$ and $(0,6357 \pm 0,0747)$ $\mu\text{g}/\text{cm}^2/\text{min}$. Membrane permeability for formula control was $(9,3075 \cdot 10^{-5} \pm 4,4449 \cdot 10^{-6})$ cm/min and formula test was $(6,3158 \cdot 10^{-5} \pm 7,4284 \cdot 10^{-6})$ cm/min. The result was analyzed by statistic programmed using independent sample t-test with degree of confident 95% ($\alpha = 0,05$). Research result revealed that diclofenac sodium penetration from HPMC 4000 gel with niosome system was lower than formula without niosome.

Keywords : diclofenac sodium, HPMC 4000, niosome, Span 60, cholesterol, drug penetration.