ABSTRACT

PENETRATION TEST P-METHOXY CINNAMIC ACID
SOLID LIPID NANOPARTICLES SYSTEM BY
COMBINATION LIPID THROUGH RAT SKIN MEMBRANE
(APMS SLN System-Beeswax-Glyceryl Monostearat-Tween)
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Solid Lipid Nanoparticles is attractive innovation of nanoparticulate active substance vehicle for sustained release of lipophilic drugs with poor absorption and water solubility. The aim of this study is compare profile and penetration rate of Solid Lipid Nanoparticles (SLN) p-methoxycinnamic acid in combination lipid beeswax and glyceryl monostearat with three different lipid concentrations which use wistar rat skin. The composition of SLN are p-methoxycinnamic acid 1,67 %, tween 80 10 %, propylene glycol 20 %, and acetate buffer pH $4,2 \pm 0,2$. In formula I p-methoxycinnamic acid SLN beeswax : glyceryl monostearate (10 : 0%), formula II p-methoxycinnamic acid SLN beeswax : glyceryl monostearate (5 :5%), formula III p-methoxycinnamic acid SLN lipid beeswax : glyceryl monostearate (0 : 10%). Penetration test was carried out with apparatus 5-paddle overdisk in phosphate buffer pH $7,4 \pm 0,05$, volume 500 ml, temperature $37 \pm 0,5^0$ C, speed 100 rpm for 24 hours. The penetration rate of drug named flux, which counted from slope of linear regression between time (minute) and the cumulative amount of p-methoxycinnamic acid. The flux of formula I was $(0,1644 \pm 0.0017)$ $\mu g/cm^2/menit$, formula II was $(0,1639 \pm 0,0030)$ $\mu g/cm^2/menit$, and formula III was $(0,1307 \pm 0,0243)$ $\mu g/cm^2/menit$. Membrane permeability for formula I was $(9.8443.10^{-06} \pm 3,6327.10^{-07})$ cm/menit, formula II was $(9,7585.10^{-06} \pm 1,8186.10^{-06})$ cm/menit, and formula III was $(7.8263.10^{-06} \pm 1.4579.10^{-06})$ cm/menit. The result were analyzed statistically using ANOVA one way with degree of confident 95% ($\alpha = 0,05$). Research result revealed that penetration rate of p-methoxycinnamic acid SLN from three formulas had not significant different on flux penetration and permeability membrane.

Keyword : p-methoxycinnamic acid, solid lipid nanoparticles (SLN), drug penetration, beeswax, glyceryl monostearat, rat skin.