KARAKTERISASI SEDIAAN DAN UJI PENETRASI NATRIUM DIKLOFENAK

SISTEM *SOLID LIPID NANOPARTICLES* DENGAN BASIS GEL CARBOMER 940

(Sistem SLN Natrium diklofenak – Setil alkohol – Tween 80 – Propilenglikol)

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ABSTRACT

The present study was designed to determine characteristics and penetration of diclofenac sodium in solid lipid nanoparticles (SLN) system from Carbomer 940 gel bases preparation. The compositions of SLN are diclofenac sodium 1%, setil alcohol 10%, Tween 80 10% and propylene glycol 15%. There were two formulas in this study. Formula I was Carbomer gel with SLN compounds (emulgel) and formula II was Carbomer gel with SLN system. The result showed that SLN system didn't have effect on consistency, color and odor, but it had effect on pH and spread diameter of zero load. Data analyze showed that pH of formula I was ($6,43 \pm 0,02$) and formula II was ($6,58 \pm 0,04$). Spread diameter of zero load for formula I was ($6,80 \pm 0,17$) cm and formula II was ($7,60 \pm 0,17$) cm. Penetration test was carried out with apparatus 5-paddle overdisk in phosphate buffer saline pH $7,4 \pm 0,05$, volume 500 mL, temperature $37 \pm 0,5$ oC, 100 rpm. The drug penetration named flux, which counted from slope of linear regression between t versus the cumulative amount of diclofenac sodium gel with SLN compound and with SLN system were ($0,6596 \pm 0,0711$) µg/cm2/min and ($0,4117 \pm 0,0468$) µg/cm2/min. Membrane permeability for formula I was ($7,2119. 10-5 \pm 7,7204.10-6$) cm/menit and formula II was ($4,3131. 10-5 \pm 4,8957.10-6$) cm/menit. 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 Carbomer gel with SLN system was lower than from Carbomer gel with SLN components (emulgel).

Keywords : diclofenac sodium, solid lipid nanoparticles (SLN), drug penetration, carbomer 940, setil alcohol, Tween 80.