ABSTRACT

The present study was designed to determine the characteristic and penetration of diclofenac sodium with w/o microemulsion which consists of Span80-Tween 80 as surfactant : Isopropanol as cosurfactant at 5:1 in Carbopol 940 gel base. There were two formulas in this study, a gel with w/o microemulsion system as the first formula, and gel with w/o emulsion system as the second formula. The characteristic evaluation are shown by appearance, pH, and ability to spread. The result showed that microemulsion system didn’t have effect on pH, color, and odor, but it had effect on consistency and spreadability.

The penetration of diclofenac sodium through Wistar rat skin membrane was determined by dissolution test, which was carried out with apparatus 5-paddle overdisk in phosphate buffer 7,4 ± 0,05, temperature 37± 0,5°C, 100 rpm. The result showed that drug penetration rate for formula 1 and formula 2 were 0,6399 ± 0,1160 (μg/cm²/min) and 0,8304 ± 0,2168 (μg/cm²/min) respectively, and the membrane permeability for formula 1 and formula 2 were (61,865 x ± 1,1211) x 10⁻⁶ and (8,0068 ± 2,0900)x10⁻⁵ cm/min. The result was analyzed by statistic programmed of using Independent sample t-Test with degree of confident 95% (α = 0,05) which revealed that there wasn’t any significant difference in the penetration rate and permeability membrane of the tested formula.

Keyword(s) : diclofenac sodium, microemulsion, Carbopol gel base, characteristic, penetration test.