ABSTRACT

CHARACTERIZATION DOSAGE FORM AND DRUG RELEASE TEST OF DICLOFENAC SODIUM WITH WATER IN OIL MICROEMULSION SYSTEM FROM HPMC GEL
(Water in Oil Microemulsion with ratio use of Surfactant Span 80-Tween 80 : Co-Surfactant Isopropanol = 4:1)

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The aim of this study was to observe the characterization dosage form and release of diclofenac sodium with water in oil microemulsion system from HPMC gel. Microemulsion contained ratio surfactant Span 80-Tween 80 and co-surfactant isopropanol 4:1. Diclofenac sodium gel with emulsion was used as comparator. The evaluation included homogeneity, characteristic (organoleptic, pH, spread diameter measurement of zero load) and also diclofenac sodium release test from gel base. Data from pH test, spread diameter of zero load, and flux were evaluated based on independent sample t-test with degree of confident 95% (α=0.05).

The result showed that microemulsion system in gel base (formula I) showed more thicker consistency than emulsion system in gel base (formula II). Data analyze showed that pH of formula I was 6.61 ± 0.09 and formula II was 6.55 ± 0.05. Spread diameter measurement of zero load for formula I was 7.65± 0.05 and formula II was 12.73 ± 0.21. Microemulsion in gel base showed significant difference on pH compared to emulsion in gel base and showed significant difference on spread diameter measurement of zero load. Diclofenac sodium release test was carried out with cellulose diffusion using cellulose membrane in phosphate saline buffer 7.4 ± 0.05, temperature 32°C ± 0.5°C with velocity 100 rpm within 480 minutes. The result of sodium diclofenac release study flux which counted from slope of linear regression between √t versus the cumulative amount of diclofenac sodium in formula I was 51.7951 ± 0.6003 µg/cm²/min¹/² and to formula II is not done, because dosage form is broken. So that the flux of formula I and formula II can not be analyzed with statistic programme of SPSS using independent sample t-test with degree of confident 95% (α=0.05).

Keywords: diclofenac sodium, microemulsion, drug release, HPMC, Span 80, Tween 80, isopropanol