INTISARI

NANDITA, SP., 2020. **FROMULASI DAN OPTIMASI *Self-Nanoemulsifying Drug Delivery System* (SNEDDS) FUROSEMID DENGAN VARIASI KONSENTRASI TWEEN 80 DAN PEG 400 DENGAN METODE *SIMPLEX LATTICE DESIGN* (SLD), SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.**

Furosemide adalah obat golongan diuretik kuat yang memiliki bioavailabilitas yang rendah. Furosemide dapat dibuat sediaan nano emulsi dengan metode SNEDDS untuk meningkatkan bioavailabilitasnya, karena SNEDDS mampu membentuk suatu nano emulsi yang stabil dengan ukuran droplet <200 nm. Penelitian ini bertujuan untuk memperoleh formula optimum pada variasi konsentrasi surfaktan Tween 80 dan kosurfaktan PEG 400 sesuai dengan uji karakterisasi waktu emulsifikasi, persen transmitan, dan *drug loading*.

Variabel bebas yang digunakan dalam penelitian ini adalah Tween 80 dan PEG 400. Tujuh formula SNEDDS furosemide dari metode *Simplex Lattice Design* (SLD) diuji karakterisasi nya berupa waktu emulsifikasi, persen transmitan, dan drug loading. Hasil karakterisasi dioptimasi dengan *Simplex Lattice Design*. Formula optimum di karakterisasi kembali meliputi waktu emulsifikasi, persen transmitan, drug loading, ukuran partikel, zeta potensial dan disolusi in vitro, hasilnya dibandingkan dengan nilai teoritis dan dianalisis dengan metode One Sample T-test.

Hasil optimasi diperoleh Tween sebesar 61,4922% dan PEG 400 sebesar 18,5078%dengan hasil karakterisasi waktu emulsifikasi sebesar 15,25 detik, persen transmitan sebesar 94,20%, *drug loading* 50100,2 ppm, ukuran partikel sebesar 12,18 nm, zeta potensial sebesar -17,6 mV, dan kadar disolusi *in vitro* mencapai 106.71% dalam waktu 15 menit.

Kata kunci: Furosemide, SNEDDS, Tween 80, PEG 400, asam oleat, SLD.

ABSTRACT

NANDITA, SP., 2020. FORMULATION AND OPTIMIZATION OF FUROSEMID Self-Nano emulsifying Drug Delivery System (SNEDDS) USING TWEEN 80 AND PEG 400 CONCENTRATION VARIATIONS WITH SIMPLEX LATTICE DESIGN (SLD) METHOD. THESIS. FACULTY OF PHARMACY, UNIVERSITY OF SETIA BUDI, SURAKARTA.

Furosemide is a strong diuretic drug that has low bioavailability. Furosemide can be made Nano emulsion preparations using the SNEDDS method to increase its bioavailability, because SNEDDS is able to form a stable Nano emulsion with a droplet size <200 nm. This study aims to obtain the optimum formula for the variation concentrations of surfactant Tween 80 and cosurfactant PEG 400 according to the characterization test for emulsification time, percent transmittance, and drug loading.

The independent variables used in this study were Tween 80 and PEG 400. Seven SNEDDS furosemide formulas from the Simplex Lattice Design (SLD) method were tested for their characterization in the form of emulsification time, percent transmittance, and drug loading. The results of the characterization were optimized using Simplex Lattice Design. The optimum formula was characterized again including emulsification time, percent transmittance, drug loading, particle size, zeta potential and in vitro dissolution, the results were compared with theoretical values and analyzed using the One Sample T-test method.

The optimization results obtained Tween of 61.4922% and PEG 400 of 18.5078% with the results of the characterization of the emulsification time of 15.25 seconds, the percentage of transmittance is 94.20%, the drug loading is 50 100.2 ppm, the particle size is 12.18 nm. , the zeta potential was -17.6 mV, and the dissolution rate in vitro reached 106.71% within 15 minutes

Keywords : Furosemide, SNEDDS, Tween 80, PEG 400, oleic acid, SLD.