INTISARI

SULISTIANA., 2017, KARAKTERISASI DAN OPTIMASI *SOLID SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEM* (S-SNEDDS) ANALOG KURKUMIN TERHADAP ADSORBEN AEROSIL DENGAN METODE *SIMPLEX LATICE DESIGN* (SLD), SKRIPSI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Analog kurkumin merupakan senyawa turunnan dari kurkumin yang dihasilkan dari ekstrak tanaman *Curcuma longa* yang memiliki berbagai aktivitas biologis dan farnakologis lebih poten seperti antitumor, anti inflamasi, antivirus, antioksidan, dan anti HIV yang bersifat sukar larut dalam air. Pembuatan SNEDDS analog kurkumin dengan komposisi minyak zaitun, tween 80 dan PEG 400 dapat mengatasi permasalahan tersebut dengan membentuk nanoemulsi *o/w* dalam saluran cerna. Stabilitas SNEDDS dapat ditingkatkan dengan penambahan bahan adsorben aerosil.

Formula optimum SNEDDS analog kurkumin diperoleh dengan metode *simplex latice design* dalam program Design Expert 7.1.5. Parameter titik kritis yang meliputi *emulsification time, drug load, % transmitan* yang dianalisis data menggunakan *one sample t test*. Selanjutnya dibuat dalam bentuk padat dengan penambahan adsorben aerosil dengan metode *adsorption solid to carier*, dan dikarakterisasi berdasarkan *emulsification time, drug load,* transmitan, disolusi, ukuran partikel, dan FT-IR.

Formula optimum SNEDDS analog kurkumin menghasilkan campuran jernih dan homogen dengan komposisi 0,4 mL minyak zaitun, 1,1 mL tween 80 dan 0,5 mL PEG 400. Nanoemulsi analog kurkumin memiliki *emulsification time* 10,6767±0,239 detik, *drug load* 35,1600±0,144 ppm, dan transmitan 50,5600±0,149 %. Serbuk *solid* SNEDDS membentuk nanoemulsi dengan *emulsification time* 59,33±1,30 detik, *drug load* 37,74±0,00 ppm, transmitan 37,92±0,20 %, dan ukuran partikel 154,2±20,2 nm, randemen serbuk *solid* SNEDDS 96,29 %, uji disolusi *solid* SNEDDS analog kurkumin pada media dapar fosfat pH 6,8 mencapai 97,99 % dalam waktu 5 menit lebih tinggi 14,39% dari analog kurkumin murni, serta dari hasil spektra FT-IR aerosil mampu sebagai bahan pembawa SNEDDS analog kurkumin.

Kata kunci : analog kurkumin, *solid* SNEDDS, aerosil, *simplex latice design*

ABSTRACT

SULISTIANA., 2017, Characterization and Optimization of SOLID SELF-NANOEMULSIFYING DRUG DELIVERY SYSTEM (S-SNEDDS) CURCUMIN ANALOG Against AEROSIL ADSORBEN with SIMPLEX LATICE DESIGN (SLD) Method, Script, Faculty of Pharmacy, SETIA BUDI University, SURAKARTA.

Curcumin analog is derivate compound of curcumin that is result by Curcuma Longa extract that has many potential biological and pharmachological activities such as anti-tumor, anti inflamasi, anti virus, antioxidant, and anti HIV, that is dificult to solve in water. The making process of SNEDDS curcumin analog that used olive oil, tween 80, and PEG 400 composition that can solve those symptoms by forming nanoemulsion o/w in digestive system. The stability of SNEDDS curcumin analog can be increased by adding adsorben aerosil.

The optimum formula of SNEDDS curcumin analog was reached by using simplex latice design in design expert 7.1.5. Critical point parameters that included emulsification time, drug load, percentage transmittance were analyzed by using one sample t test. Then, they were made in solid form by adding aerosil adsorben by using adsorption solid to carier, and were characterized based on emulsification time, drug load, percentage transmittance, dissolution, particle size, and FT-IR.

The optimum foemula of SNEDDS curcumin analog resulted pure and homogeneous mixture consisted of 0.4 mL of olive oil, 1.1 mL tween 80 and 0.5 mL PEG 400. The nanoemulsion of curcumin analog had 10.6767 ± 0.239 second emulsification time, 35, 1600 ± 0.144 ppm drug load, and 50.5600 ± 0.149% transmittance. The solid SNEDDS powder formed nanoemulsion had 59,33 ± 1,30 second emulsification time, 37,74 ± 0,00 ppm drug load, transmittance 37,92 ± 0,20%, and particle size 154,2 ± 20,2 nm, rendement of SNEDDS solid powder 96,29%, solid dissolution test of SNEDDS analog curcumin on buffer phosphate media pH 6,8 reached 97,99% in 5 minutes was higher 14,39% than pure curcumin analog. Moreover, the result of the spectra FT-IR aerosil can become carrier subtance of SNEDDS curcumin analog.

Keywords: curcumin analog, solid SNEDDS, aerosil, simplex lattice design