

INTISARI

OPTIMASI FORMULA SNEDDS EKSTRAK TERPURIKASI KOMBINASI TEMULAWAK (*Curcuma xanthorrhiza*) DAN SAMBILOTO (*Andrographis paniculata* (Burm.f.) Nees) MENGGUNAKAN MYGLIOL-812N SEBAGAI FASE MINYAK DAN UJI ABSORBSI SECARA INVITRO

Senyawa aktif yang terkandung dalam *Curcuma xanthorrhiza* Roxb atau temulawak adalah kurkumin, dilaporkan kurkumin memiliki kelarutan sangat kecil sehingga menyebabkan rendahnya bioavailabilitas, sedangkan senyawa aktif dalam *Andrographis paniculata* (Nees) atau sambiloto adalah andrografolid, dilaporkan senyawa andrografolit memiliki kristal yang sukar larut dalam air. sehingga keduanya dapat diformulasi menjadi *Self-Nanoemulsifying Drug Delivery System* (SNEDDS) agar absorbsinya menjadi lebih baik.

Identifikasi kurkumin dan andrografolid menggunakan sistem *HPLC*. Metode optimasi menggunakan *D-optimal* dengan *software design expert* versi 7.1.5, mygliol 812N, tween 80 dan PEG 400 sebagai komponen yang dioptimasi, respon yang dinilai adalah % *transmittan* dan *emulsification time*. Formula terbaik yang didapatkan ditentukan *ekstrak loading* nya. Selain itu diamati stabilitas SNEDDS dan karakterisasi ukuran tetesan serta potensial zeta. Untuk mengevaluasi efisiensi formula optimum maka diperlukan uji absorpsi secara *in vitro* menggunakan metode *side by side diffusion* (*Ussing Chamber*) selama 4 jam, sehingga diketahui persentase kurkumin dan andrografolid yang dapat terdifusi melewati membran usus tikus galur wistar.

Persentase perbandingan mygliol 812N, tween 80 dan PEG 400 (10,67%, :70% :19,34%) dengan nilai transmittan 91,13% dan waktu emulsifikasi 30,23 detik. Kadar kurkumin rata-rata yang dapat di *loading* dalam sisitem SNEDDS sebesar 4968,30 $\mu\text{g}/5\text{mL}$, dan andrografolid 11661,37 $\mu\text{g}/5\text{mL}$. Hasil ukuran tetesan nano 28,2 nm, PI sebesar 0,470 dan zeta potensial -16,8 mV. Persentase kurkumin dan andrografolid terabsorpsi melewati membran usus tikus untuk kurkumin rata-rata sebesar 12,53%, dan andrografolid sebesar 9%. SNEDDS tetap stabil setelah penyimpanan selama 60 hari pada suhu kamar dan uji *freeze-thaw* selama 6 siklus.

Kata kunci: kurkumin, andrografolid, *D-Optimal Design*, SNEDDS.

**FORMULA OPTIMIZATION SNEDDS PURIFIED EXTRACT
COMBINATION TEMULAWAK (*Curcuma xanthorrhiza*) AND SAMBILOTO
(*Andrographis paniculata* (Burm.f.) Nees) MYGLIOL-812N USED AS PHASE
OIL AND ABSORPTION TEST FOR INVITRO**

ABSTRACT

The active compounds contained in Curcuma xanthorrhiza Roxb or temulawak is curcumin, curcumin has been reported very small solubility, causing the low bioavailability, while the active compound in Andrographis paniculata (Nees) or sambiloto is andrographolide, reported andrographolide compound has a crystal that is soluble in water. so that both can be formulated into a Self-Nanoemulsifying Drug Delivery System (SNEDDS) in order to be better absorption.

Identification of curcumin and andrographolide using HPLC system. Optimization method using D-optimal design expert software version 7.1.5, mygliol 812N, tween 80 and PEG 400 as a component that is optimized, the response assessed % transmittance and emulsification time. Best formula obtained from design expert determined extract its loading. Additionally observed SNEDDS stability and characterization of droplet size and zeta potential. To evaluate the efficiency of the optimum formula will require the absorption test in vitro using methods side by side diffusion (Ussing Chamber) for 4 hours, in order to know the percentage of curcumin and andrographolide to diffuse pass through the gut membrane wistar strain rats.

Percentage comparison Mygliol-812N, tween 80 and PEG 400 (10.67% : 70% : 19.34%) with a transmittance value of 91.13 and emulsification time value 30.23 seconds. Average levels of curcumin to in loading the system SNEDDS of 4968.30 µg/5mL, and andrographolide 11661.37 µg/5mL. The results of nano droplet size of 28.2 nm, PI of 0.470 and zeta potential -16.8 mV. Percentage of curcumin and andrographolide absorbed pass through the gut membrane mouse for curcumin average of 12.53%, and andrographolide by 9%. SNEDDS remained stable after storage for 60 days at room temperature and freeze-thaw test for 6 cycle.

Keywords: Curcumin, Andrographolide, D-Optimal Design, SNEDDS