OPTIMASI FORMULA DAN ANALISIS KADAR ANDROGRAFOLID SEDIAAN TABLET DISPERSIBEL EKSTRAK ETANOL HERBA SAMBILOTO *(Andrographis paniculata* (Burm.f.) Wall ex Nees.)

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ABSTRAK

Latar Belakang : Andrografolid dalam ekstrak etanol herba sambiloto terbukti dapat menurunkan kadar glukosa darah. Kekurangan andrografolid adalah rasanya pahit dan kelarutannya rendah di air. Keterbatasan tersebut menyebabkan sambiloto perlu diformulasikan menjadi sediaan dengan rasa *acceptable*, laju dispersinya cepat, dan mampu meningkatkan kelarutan andrografolid.

Tujuan : Penelitian ini bertujuan mengetahui perbandingan optimum konsentrasi bahan penghancur SSG dan CCS dalam tablet dispersibel herba sambiloto.

Metode : Ekstrak herba sambiloto dibuat dengan metode maserasi. Ekstrak diformulasikan menjadi tablet dispersibel dengan metode granulasi basah. Evaluasi granul, evaluasi tablet, serta pengujian kadar andrografolid tablet dengan HPLC akan dilakukan dalam penelitian ini. Formula tablet dioptimasi dengan metode *Simplex Lattice Design* (SLD) menggunakan *Design Expert*®. Formula optimum diverifikasi menggunakan metode *one sample t-test*.

Hasil : Persamaan SLD menunjukkan semakin tinggi konsentrasi SSG, maka rasa, kekerasan, waktu terdispersi, waktu pembasahan, dan volume pembasahan tablet akan meningkat; sedangkan kerapuhan tablet akan menurun. Pengujian secara statistik menunjukkan variasi konsentrasi bahan penghancur SSG dan CCS berpengaruh signifikan terhadap sifat fisik tablet dispersibel. Kadar andrografolid dalam tablet menunjukkan penurunan kadar dibandingkan teoritisnya.

Kesimpulan : Komposisi formula optimum tablet dispersibel herba sambiloto adalah 65,931% SSG dan 34,069% CCS. Kadar andrografolid dalam tablet formula optimum sebesar 0,11%.

Kata Kunci : tablet dispersibel, herba sambiloto, antidiabetes, dan Simplex Lattice Design (SLD).

FORMULA OPTIMIZATION AND ANDROGRAPHOLIDE CONTENT ANALYSIS IN DISPERSIBLE TABLET OF ETHANOLIC EXTRACT SAMBILOTO (*Andrographis paniculata* (Burm.f.) Wall ex Nees.)

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ABSTRACT

Background : Andrographolide in sambiloto herb is proven to reduce blood glucose levels, but andrographolide has bitter taste and poor solubility in water. These limitations can be overcome by formulated sambiloto into a drug delivery system with an acceptable taste, fast dispersion rate, and able to increase andrographolide solubility.

Objectives : This study aims to determine the optimum ratio of SSG and CCS as disintegrant materials in the sambiloto herb dispersible tablets.

Methods : The extract of sambiloto herb was prepared by maceration. The extract will be formulated into dispersible tablets by wet granulation. In this study, evaluation of granules, tablets, and testing of andrographolide levels using HPLC will be carried out. The tablet's formula will be optimized using the Simplex Lattice Design (SLD) method using Design Expert®. The optimum formula will be verified using the one sample t-test method.

Results: The equation of SLD shows that the taste, hardness, dispersion time, wetting time, and tablet wetting volume will increase when the concentration of SSG is higher; while the friability of the tablet will decrease. Statistical tests show that variations in the concentration of SSG and CCS as disintegrant materials significantly affect the physical properties of dispersible tablets. Andrographolide content analysis of the tablets showed a decrease in yield compared to the theoretical one.

Conclusions : The result shows that the optimum formula for sambiloto herb dispersible tablets is 65,931% SSG and 34,069% CCS. The optimum formula of andrographolide in tablets is 0,11%.

Keywords: dispersible tablets, sambiloto herb, antidiabetic, and Simplex Lattice Design (SLD).