

INTISARI

Penelitian ini bertujuan untuk mengetahui aktivitas *sun protection* ekstrak etil asetat isoflavon tempe pada kulit dan untuk mendapatkan komposisi optimum formula dari larutan carbopol 940 3% b/v sebagai *gelling agent* dan *Virgin Coconut Oil* (VCO) sebagai fase minyak agar didapatkan formula emulgel yang memiliki sifat fisis dan stabilitas yang baik. Aktivitas *Sun Protection Factor* (SPF) isoflavon di uji secara *in vitro*.

Penelitian ini merupakan rancangan eksperimental murni dengan variabel eksperimental ganda dua faktor, yaitu Carbopol-VCO dan dua level, yaitu level tinggi-level rendah. Optimasi komposisi formula dilakukan dengan metode desain faktorial pada berbagai variasi kombinasi larutan carbopol 3% b/v sebagai *gelling agent* dan VCO sebagai fase minyak. Optimasi dilakukan terhadap parameter sifat fisis dan stabilitas emulgel yang meliputi daya sebar, viskositas, perubahan viskositas dan ukuran droplet selama penyimpanan 1 bulan. Parameter sifat fisis dan stabilitas emulgel dianalisis menggunakan persamaan desain faktorial dan teknik analisis statistik *Yate's treatment*.

Hasil penelitian menunjukkan nilai SPF pada konsentrasi 500 mg% adalah 18,7524. Diperoleh area optimum komposisi *gelling agent* dan VCO yang meliputi sifat fisis dan stabilitas emulgel. Daya sebar optimal sebesar 3-5 cm. Viskositas optimal yang dipilih 190 d.Pa.s-250 d.Pa.s. Pergeseran viskositas yang dikehendaki $\leq 10\%$. Dengan menggabungkan ketiga respon tersebut diperoleh area *countour plot superimposed* sebagai respon kombinasi formula pada level yang diteliti. Hasil menunjukkan bahwa Larutan carbopol 940 3% b/v dominan dalam menentukan respon daya sebar dan viskositas. Interaksi antara larutan Carbopol 3% b/v dan VCO dominan dalam menentukan pergeseran viskositas.

Kata kunci : emulgel, isoflavon, *sunscreen* , carbopol 940, VCO, desain faktorial.

ABSTRACT

This research is about the formulation of emulgel sunscreen tempe isoflavon ethyl acetate extract with carbopol 940 as the *gelling agent* and Virgin Coconut Oil (VCO) as the oil phase. This factorial designed application has aimed to analyze the effect of isoflavon sun protection towards the skin and to analyze the formula of carbopol 940 as the *gelling agent* and VCO as the oil phase in order to get emulgel formula which has qualified physical characteristic and stability. The activity of isoflavon sun protection will be tested in vitro using Sun Protection Factor (SPF) test.

This research used pure experimental design with double factor experimental variable: Carbopol-VCO and two levels: high level and low level. The optimization of formula composition was conducted by using factorial designed method towards some combinations of carbopol solution 3% b/v as the *gelling agent* dan VCO as the oil phase. Optimasi was done toward physical characteristic parameter and emulgel stability which covered spreadability, viscosity, viscosity and droplet's size shift over one month storage. Physical characteristic parameter and emulgel stability were analyzed using factorial design and Yate's treatment statistic analysis technique.

The result show that SPF level at concentration 500 mg% was 18,7524. From this research, gain an optimum area compotition of *gelling agent* and oil phase, which include physical characteristic and emulgel stability. The optimal spreadability was 3-5 cm. The optimal viscosity that was selected 190 d.Pa.s up to 250 d.Pa.s. Viscosity shift that was required ≤ 10 %. By mixing the three respon gained the countour plot superimposed area as the combination respon formula at the level that was researched. The result showed that the effect of carbopol 3% w/v solution was the dominant factor in the spreadability and viscosity. While the effect of interaction between carbopol 3% w/v solution was dominant factor in alteration of gel viscosity.

Keyword : emulgel, isoflavon, sunscreen , carbopol 940, VCO, factorial design