

INTI SARI

KARTIKASARI A.L.N., 2020, OPTIMASI FORMULA DAN UJI MUTU FISIK KRIM SUNSCREEN NARINGENIN KOMBINASI EMULGATOR TWEEN 80 DAN SPAN 80 DENGAN METODE *SIMPLEX LATTICE DESIGN*, PROPOSAL SKRIPSI, FAKULTAS FARMASI UNIVERSITAS SETIA BUDI, SURAKARTA.

Naringenin merupakan isolat murni yang termasuk kedalam golongan senyawa flavonoid yang memiliki efek farmakologis seperti antiinflamasi, antikanker, antiatherogenik, antifibrogenik, dan antioksidan. Flavonoid pada naringenin memiliki gugus kromofor yang merupakan sistem aromatik terkonjugasi yang menyebabkan memiliki kemampuan untuk menyerap kuat sinar UV (Panjang Gelombang sinar UV A dan UV B). Tujuan dari penelitian ini adalah untuk mengetahui pengaruh variasi kombinasi *emulsifying agent* Tween 80 dan Span 80 terhadap mutu fisik dan stabilitas dalam sediaan krim *sunscreen* naringenin, memperoleh komposisi formula optimum dari *emulsifying agent* , dan aktivitas sediaan krim *sunscreen* naringenin dilihat dari nilai SPFnya.

Penelitian menggunakan software *Design Expert 7.1.5* dengan rancangan metode *simplex lattice design*. Setiap formula diuji sifat fisik krim untuk mengetahui respon homogenitas, organoleptis, daya sebar, daya lekat, pH, viskositas, dan stabilitasnya dalam penyimpanan selama 4 minggu. Optimasi formula diperoleh berdasarkan parameter sifat fisik krim yaitu daya sebar, daya lekat, dan viskositas yang dilakukan dengan menggunakan software *Design Expert* versi 7.1.5 metode *Simplex lattice design*. Perbedaan mutu fisik dianalisis dengan menggunakan *Uji One Way Anova*. Uji efektivitas krim *sunscreen* naringenin terhadap radiasi sinar ultraviolet (UV) dilakukan dengan uji SPF (*Sun Protection Factor*) secara in vitro .

Krim *sunscreen* naringenin dengan kombinasi *emulsifying agent* Tween 80 dan Span 80 dalam beberapa variasi konsentrasi memberikan perbedaan bermakna terhadap mutu fisik yang terdiri dari parameter daya sebar, daya lekat, viskositas, dan pH. Parameter Homogenitas, organoleptis, dan stabilitas memberikan hasil yang berbeda-beda. Formula optimum krim *sunscreen* naringenin diperoleh proporsi 9% Tween 80 dan 5% Span 80. Nilai SPF yang dihasilkan pada penelitian isolat naringenin dan beberapa jenis krim *sunscreen* naringenin masuk kedalam kategori maksimal- kategori ultra.

Kata kunci : Naringenin , *Sunscreen*, Tween 80, Span 80, *Simplex lattice design*, SPF

ABSTRACT

LIFIA, A., 2019, FORMULA OPTIMIZATION AND PHYSICAL QUALITY TEST OF SUNSCREEN CREAM NARINGENIN COMBINATION OF EMULGATOR TWEEN 80 AND SPAN 80 WITH SIMPLEX LATTICE DESIGN, THESIS, THE FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA.

Naringenin is a pure isolate that belongs to the group of flavonoid compounds that have pharmacological effects such as anti-inflammatory, anticancer, antiatherogenic, antifibrogenic, and antioxidant properties. Flavonoids in naringenin have chromophore groups which are a conjugated aromatic system which has the ability to absorb strong UV rays (Wavelength UV A and UV B). The purpose of this study was determined the effect of variations in combinations emulsifying agents Tween 80 and Span 80 on physical quality and stability in preparations sunscreen naringenin, obtain the optimum formula composition from emulsifying agent, and activity of naringenin sunscreen cream preparations in terms of their SPF value.

The study used software Design Expert 7.1.5 with the design of simplex lattice design method. Each formula was tested for the physical properties of the cream to determine homogeneity, organoleptic, density test, adhesion test, pH, viscosity, and stability responses in storage for 4 weeks. Formula optimization is obtained based on the physical properties of the cream parameters namely the density test, adhesion test, and viscosity which is done using software Design Expert version 7.1.5 Simplex lattice design method. Differences in physical quality were analyzed using the One Way Anova Test. The effectiveness test of cream sunscreen naringenin against ultraviolet (UV) radiation is carried out by the SPF (Sun Protection Factor) in vitro.

cream sunscreen naringenin with a combination of emulsifying agents Tween 80 and Span 80 in a variety of concentrations gives a significant difference to the physical quality consisting of the parameters of density, adhesion, viscosity, and pH. Homogeneity, organoleptic, and stability parameters give different results. The optimum formula for cream sunscreen naringenin obtained a proportion of 9% Tween 80 and 5% Span 80. Value of SPF produced in the study naringenin isolates and several types of creams sunscreen naringenin range into the ultra-maximum category.

Kata kunci : Naringenin, *Sunscreen*, Tween 80, Span 80, *Simplex lattice design*, *SPF*