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**FORMULASI DAN AKTIVITAS TABIR SURYA SECARA *INVITRO* KRIM  
NANOEMULSI MINYAK BIJI LABU KUNING  
(*Cucurbita moschata Seed Oil*)**

**ABSTRAK**

**Latar Belakang:** Minyak biji labu kuning dengan kandungan flavonoid dan terpenoid memiliki kemampuan sebagai aktivitas tabir surya. Formulasi dilakukan dengan menggunakan metode homogenisasi. Tujuan penelitian ini memformulasikan minyak biji labu kuning menjadi krim nanoemulsi dan mengevaluasi karakteristik fisik serta aktivitas tabir surya.

**Metode:** Penelitian eksperimental dimulai dengan skrining fitokimia minyak biji labu kuning, kemudian formulasi krim nanoemulsi dengan konsentrasi (F1) 0,5% dan (F2) 1% serta pengujian karakteristik fisik organoleptis, homogenitas, pH, daya sebar, daya lekat, sentrifugasi, tipe emulsi, viskositas. Pengukuran aktivitas tabir surya menggunakan metode *in vitro* secara spektrofotometri UV-Vis, interval 5 nm dari panjang gelombang 290 nm - 320 nm diukur absorbansinya dan dianalisis dengan persamaan Mansur. Data karakteristik fisik dan nilai SPF dianalisis menggunakan *Anova One Way* taraf kepercayaan 95%.

**Hasil:** Skrining fitokimia positif flavonoid dan terpenoid. Karakteristik fisik organoleptis krim nanoemulsi (F1) dan (F2) berwarna putih, homogen dan tidak terjadi pemisahan fase. Uji pH (F1)  $4,33 \pm 0,57$ ; (F2)  $4,66 \pm 0,577$ ; viskositas (F1)  $9,58 \pm 0,36$  cP; (F2)  $8,64 \pm 0,707$ . Daya sebar (F1)  $3,56 \pm 0,34$  cm; (F2)  $4,86 \pm 0,37$  cm; daya lekat (F1)  $1,4 \pm 0,11$  detik ; (F2)  $1,43 \pm 0,07$  detik. Nilai SPF krim nanoemulsi (F1) 5 dan (F2) 6, proteksi sedang hingga ekstra. Analisis (F1) dan (F2) perbedaan signifikan  $p=0,000$ .

**Kesimpulan:** Konsentrasi nanoemulsi minyak biji labu kuning berpengaruh terhadap karakteristik fisik daya sebar krim nanoemulsi tetapi tidak berpengaruh pada daya lekat, viskositas, pH dan nilai SPF.

**Kata kunci:** minyak biji labu kuning, krim, nanoemulsi, tabir surya

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**FORMULATION AND INVITRO SUNSCREEN ACTIVITY OF PUMPKIN SEED  
OIL NANOEMULSION CREAM  
(Cucurbita moschata Seed Oil)**

**ABSTRACT**

**Background:** Pumpkin seed oil contains flavonoids and terpenoids which have the ability to act as a sunscreen. Formulation was carried out using the homogenization method. The aim of this research was to formulate pumpkin seed oil into a nanoemulsion cream and evaluate its physical characteristics and sunscreen activity.

**Methods:** Experimental research began with phytochemical screening of pumpkin seed oil. Making nanoemulsion cream with different concentrations of (F1) 0.5% and (F2) 1% as well as testing the physical characteristics of organoleptic, homogeneity, pH, spreadability, stickiness, centrifugation, emulsion type, viscosity. Sunscreen activity was measured using the in vitro method using UV-Vis spectrophotometry, the absorbance was measured at 5 nm intervals from a wavelength of 290 nm -320 nm and analyzed using the Mansur equation.

**Results:** Phytochemical screening was positive for flavonoids and terpenoids. The organoleptic physical characteristics of nanoemulsion cream (F1) and (F2) are white, homogeneous and there is no phase separation in the centrifugation test. pH test (F1)  $4.33 \pm 0.57$ ; (F2)  $4.66 \pm 0.577$ ; viscosity (F1)  $9.58 \pm 0.36$  cP; (F2)  $8.64 \pm 0.707$ . Spreadability (F1)  $3.56 \pm 0.34$  cm; (F2)  $4.86 \pm 0.37$  cm; adhesion power (F1)  $1.4 \pm 0.11$  seconds; (F2)  $1.43 \pm 0.07$  seconds Nanoemulsion cream SPF values (F1) 5 and (F2) 6, medium to extra protection. Analysis (F1) and (F2) significant difference  $p=0.000$ .

**Conclusion:** The concentration of pumpkin seed oil nanoemulsion affects the physical characteristics of the spreadability of pumpkin seed oil nanoemulsion cream but it has no effect on adhesion, viscosity and pH. The SPF value of nanoemulsion cream has medium to extra protection

**Keywords:** pumpkin seed oil, nanoemulsion cream, sunscreen