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Skripsi, Januari, 2024
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AKTIVITAS TABIR SURYA NANOEMULSI *SUNSCREEN SPRAY GEL* MINYAK BIJI LABU KUNING (*Cucurbita moschata Seed Oil)* SECARA *IN VITRO*

ABSTRAK

Latar Belakang: Sediaan tabir surya penting untuk melindungi kulit dari paparan sinar *ultraviolet*. Minyak biji labu kuning (*Cucurbita moschata Seed Oil*) memiliki senyawa metabolit sekunder yaitu flavonoid yang diduga dapat berperan sebagai *sunscreen*. Tujuan penelitian untuk mengevaluasi pengaruh konsentrasi nanoemulsi minyak biji labu kuning terhadap karakteristik fisik dan aktivitas tabir surya *sunscreen spray gel*.
Metode: Penelitian ini menggunakan minyak biji labu kuning yang diformulasikan menjadi nanoemulsi dan dibuat *sunscreen spray gel* dengan seri konsentrasi 1% dan 5%. Evaluasi karakteristik fisiknya meliputi organoleptis, homogenitas, pH, viskositas, ukuran partikel, indeks polidispersitas, daya lekat sebar, waktu kering, pola penyemprotan, stabilitas dan aktivitas tabir surya secara *in vitro*. Data dianalisis menggunakan Anova satu jalan.
Hasil: Nanoemulsi memiliki ukuran partikel 208 nm, pH 5,75, viskositas 4 cps dan indeks polidispersitas 0,489. Hasil karakteristik fisik *spray gel* konsentrasi 1% dan 5% pada uji organoleptis bau khas oleum rosae, warna putih bening, konsistensi cair dan homogen, pH antara 5-6, formula dapat menyebar dan melekat dengan waktu kering <5 menit, tidak mengalami sineresis, penyemprotan optimal pada jarak 15 cm. Saat disentrifugasi tidak memisah dan tidak mengalami perubahan fisik saat *cycling test*. Nilai SPF Minyak biji labu kuning sebesar 18,79; nanoemulsi minyak biji labu kuning sebesar 25,66; *sunscreen spray gel* konsentrasi 1% rata-rata ± SD sebesar 15±0,1 dan konsentrasi 5% sebesar 25,66 ± 0,8. Kekuatan proteksi dari semua formula termasuk dalam kategori ultra (≥15).
Kesimpulan: Konsentrasi nanoemulsi minyak biji labu kuning berpengaruh terhadap ukuran partikel, stabilitas dan nilai SPF sediaan *sunscreen spray gel* nanoemulsi minyak biji labu kuning.

Kata kunci: nanoemulsi, *sunscreen, spray gel,* minyak biji labu kuning

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***SUNSCREEN ACTIVITY OF NANOEMULSION SUNSCREEN SPRAY GEL IN VITRO PUMPKIN SEED OIL* (*Cucurbita moschata Seed Oil*)**

ABSTRACT

Background: *Sunscreen preparations are important to protect the skin from exposure to ultraviolet rays. Pumpkin seed oil (Cucurbita moschata Seed Oil) has secondary metabolite compounds, namely flavonoids, which are thought to act as sunscreen. The aim of the research was to determine the effect of pumpkin seed oil nanoemulsion concentration on the physical characteristics and sunscreen activity of spray sunscreen gel.*
Methods: *This research used pumpkin seed oil which was formulated into a nanoemulsion and made into a spray sunscreen gel with a series of concentrations of 1% and 5%. Evaluation of physical properties includes organoleptic, homogeneity, pH, viscosity, particle size, polydispersity index, spread adhesion, dry time, spray pattern, stability and in vitro sunscreen activity. Data were analyzed using one-way ANOVA.*
Results: *The nanoemulsion has a particle size of 208 nm, pH 5.75, viscosity of 4 cps and, polydispersity index of 0.489. The results of the physical characteristics of spray gel concentrations of 1% and 5% in the organoleptic test have a typical oleum rosae odor, clear white color, liquid and homogeneous consistency, pH between 5-6, the formula can spread and adhere with a dry time of <5 minutes, does not experience syneresis, Optimal spraying at a distance of 15 cm. When centrifuged it does not separate and does not experience physical changes during the cycling test. The SPF value of pumpkin seed oil is 18.79; pumpkin seed oil nanoemulsion of 25.66; sunscreen spray gel with a 1% concentration mean ± SD of 15 ± 0.1 and a 5% concentration of 25.66 ± 0.8. The protective strength of all formulas is included in the ultra category (≥15).*
Conclusion: *The concentration of pumpkin seed oil nanoemulsion affects the particle size, stability and SPF value of the pumpkin seed oil nanoemulsion sunscreen spray gel preparation.*

Keywords: *nanoemulsion, sunscreen, spray gel, pumpkin seed oil.*