

**FAKULTAS KEDOKTERAN DAN ILMU KESEHATAN
UNIVERSITAS MUHAMMADIYAH MAKASSAR**

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**PENENTUAN NILAI *SUN PROTECTION FACTOR* (SPF) FORMULASI
SEDIAAN SUNSCREEN SPRAY MINYAK ATSIRI BUNGA CENGKEH
(*Syzygium Aromaticum L.*) DAN UJI AKTIVITAS ANTIOKSIDAN
DENGAN METODE DPPH**

ABSTRAK

Latar belakang : Paparan sinar ultraviolet (UV) berlebih dapat menyebabkan kerusakan kulit seperti penuaan dini dan kanker kulit. Upaya pencegahan dapat dilakukan dengan penggunaan tabir surya (sunscreen). Minyak atsiri bunga cengkeh diketahui memiliki kandungan senyawa fenolik yang berpotensi sebagai antioksidan dan tabir surya alami.

Tujuan penelitian : Untuk mengetahui stabilitas fisik formulasi sediaan sunscreen spray minyak atsiri bunga cengkeh dan penentuan nilai sun protection factor (SPF) sediaan serta uji aktivitas antioksidan dengan metode DPPH

Metode penelitian : Penelitian ini menggunakan Metode penelitian yang digunakan adalah eksperimental laboratorium dengan memformulasikan minyak atsiri bunga cengkeh dalam beberapa konsentrasi (F0 = 0%, F1 = 5%, F2 = 6%, dan F3 = 7%). Evaluasi stabilitas dilakukan melalui uji organoleptik, homogenitas, pH, viskositas, daya lekat, hedonik, serta *cycling test*. Nilai SPF diukur menggunakan spektrofotometri UV-Vis, sedangkan aktivitas antioksidan ditentukan melalui nilai IC50 metode DPPH.

Hasil penelitian : Dari hasil penelitian menunjukkan bahwa semua formula sunscreen spray memiliki stabilitas fisik yang baik. Nilai SPF meningkat seiring bertambahnya konsentrasi minyak atsiri, dengan formula F3 (7%) menghasilkan SPF 18,63 yang termasuk kategori perlindungan ultra. Aktivitas antioksidan juga tergolong sangat kuat, ditunjukkan oleh nilai IC50 F1 (10 ppm), F2 (8 ppm), dan F3 (6 ppm).

Kesimpulan : minyak atsiri bunga cengkeh berpotensi sebagai bahan aktif alami dalam formulasi sunscreen spray karena mampu memberikan perlindungan terhadap radiasi UV sekaligus berperan sebagai antioksidan alami.

Kata kunci : Sunscreen spray, Minyak atsiri bunga cengkeh, Antioksidan, SPF, DPPH

**FACULTY OF MEDICINE AND HEALTH SCIENCES
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**DETERMINATION OF SUN PROTECTION FACTOR (SPF) VALUES OF
SUNSCREEN SPRAY FORMULATIONS OF CLOVE FLOWER
ESSENTIAL OIL (*Syzygium Aromaticum* L.) AND ANTIOXIDANT
ACTIVITY TEST USING THE DPPH METHOD**

ABSTRACT

Background: Excessive exposure to ultraviolet (UV) rays can cause skin damage such as premature aging and skin cancer. Preventive measures include the use of sunscreen. Clove essential oil is known to contain phenolic compounds that have the potential to act as antioxidants and natural sunscreens.

Research Objective: To determine the physical stability of a clove essential oil sunscreen spray formulation, determine its sun protection factor (SPF), and test its antioxidant activity using the DPPH method.

Research method: This study used laboratory experiments, formulating clove essential oil at several concentrations (F0 = 0%, F1 = 5%, F2 = 6%, and F3 = 7%). Stability was evaluated through organoleptic, homogeneity, pH, viscosity, adhesion, hedonic, and cycling tests. The SPF value was measured using UV-Vis spectrophotometry, while antioxidant activity was determined using the IC50 value of the DPPH method.

Results: The results showed that all spray sunscreen formulas had good physical stability. The SPF value increased with increasing essential oil concentration, with formula F3 (7%) producing an SPF of 18.63, which is rated as ultra protection. Antioxidant activity was also classified as very strong, indicated by the IC50 values of F1 (10 ppm), F2 (8 ppm), and F3 (6 ppm).

Conclusion: Clove essential oil has the potential as a natural active ingredient in sunscreen spray formulations because it can provide protection against UV radiation while acting as a natural antioxidant.

Keywords: Sunscreen spray, Clove essential oil, Antioxidant, SPF, DPPH