INTISARI

Penuaan kulit merupakan proses biologis yang dipercepat oleh paparan radikal bebas, terutama akibat radiasi sinar ultraviolet, yang menyebabkan penurunan elastisitas, terbentuknya keriput, dan perubahan tekstur kulit. Kondisi ini mendorong pengembangan sediaan topikal berbasis antioksidan untuk menekan dampak radikal bebas. Bunga kecombrang (*Etlingera elatior*) diketahui mengandung senyawa bioaktif berpotensi antioksidan sehingga berpeluang dimanfaatkan sebagai bahan aktif dalam krim *anti-aging*. Penelitian ini bertujuan mengevaluasi mutu fisik, aktivitas antioksidan, serta stabilitas fisik dan aktivitas antioksidan krim ekstrak etanol bunga kecombrang.

Ekstrak etanol bunga kecombrang diformulasikan dalam krim tipe minyak dalam air (M/A) dengan konsentrasi 2,5% (F1), 5% (F2), dan 7,5% (F3). Evaluasi mutu fisik meliputi uji organoleptis, homogenitas, pH, daya sebar, daya lekat, viskositas, dan tipe krim. Aktivitas antioksidan diuji menggunakan metode DPPH melalui persentase inhibisi dan nilai IC_{50}. Uji stabilitas dilakukan dengan metode *cycling test* selama tiga siklus pada suhu 4°C dan 40°C.

Hasil penelitian menunjukkan seluruh formula memiliki karakteristik organoleptis yang baik, homogen, dan bertipe M/A dengan pH 4,3–4,6. Daya sebar masing-masing formula adalah 6,20 cm (F1), 5,92 cm (F2), dan 5,32 cm (F3). Daya lekat meningkat seiring kenaikan konsentrasi ekstrak, yaitu 7,32 detik (F1), 9,64 detik (F2), dan 10,23 detik (F3), disertai peningkatan viskositas dari 8.983 mPa·s (F1) menjadi 16.733 mPa·s (F3). Setelah uji stabilitas, tidak terjadi perubahan organoleptis, homogenitas, dan tipe krim, namun terjadi penurunan pH dan daya sebar serta peningkatan daya lekat dan viskositas. Aktivitas antioksidan menunjukkan peningkatan konsentrasi-dependen dengan persentase inhibisi pada 4000 ppm sebesar 30,64–37,69% (F1), 50,46–55,31% (F2), dan 60,33–63,86% (F3). Nilai IC_{50} sebelum uji stabilitas masing-masing sebesar 6227,06 ppm, 3928,56 ppm, dan 2972,37 ppm, kemudian meningkat menjadi 6853,56 ppm, 4847,18 ppm, dan 3711,87 ppm. Uji *Paired Sample t-test* menunjukkan perbedaan signifikan nilai IC_{50} sebelum dan sesudah uji stabilitas ($p = 0,012$; $p < 0,05$).

Kata kunci : krim *anti-aging*, *Etlingera elatior*, antioksidan, IC_{50}, DPPH

ABSTRACT

Skin aging is a biological process accelerated by exposure to free radicals, particularly ultraviolet radiation, leading to decreased elasticity, wrinkle formation, and changes in skin texture. This condition encourages the development of topical antioxidant formulations to mitigate free radical–induced damage. Torch ginger (Etlingera elatior) flowers are known to contain bioactive compounds with antioxidant potential and therefore may be utilized as active ingredients in anti-aging cream formulations. This study aimed to evaluate the physical quality, antioxidant activity, and physical and antioxidant stability of ethanol extract cream of E. elatior flowers.

The ethanol extract of E. elatior flowers was formulated into an oil-in-water (O/W) cream at concentrations of 2.5% (F1), 5% (F2), and 7.5% (F3). Physical quality evaluation included organoleptic properties, homogeneity, pH, spreadability, adhesiveness, viscosity, and cream type. Antioxidant activity was assessed using the DPPH method by determining percentage inhibition and IC_{50} values. Stability testing was conducted using a cycling test for three cycles at 4°C and 40°C.

The results showed that all formulations exhibited acceptable organoleptic characteristics, were homogeneous, and classified as O/W creams, with pH values ranging from 4.3 to 4.6. Spreadability values were 6.20 cm (F1), 5.92 cm (F2), and 5.32 cm (F3). Adhesiveness increased with higher extract concentrations, measuring 7.32 s (F1), 9.64 s (F2), and 10.23 s (F3), accompanied by an increase in viscosity from 8,983 mPa·s (F1) to 16,733 mPa·s (F3). After stability testing, no changes in organoleptic properties, homogeneity, or cream type were observed; however, pH and spreadability decreased, while adhesiveness and viscosity increased. Antioxidant activity increased in a concentration-dependent manner, with percentage inhibition at 4000 ppm of 30.64–37.69% (F1), 50.46–55.31% (F2), and 60.33–63.86% (F3). The IC_{50} values before stability testing were 6227.06 ppm, 3928.56 ppm, and 2972.37 ppm, which increased after stability testing to 6853.56 ppm, 4847.18 ppm, and 3711.87 ppm. Paired sample t-test analysis indicated a significant difference in IC_{50} values before and after stability testing ($p = 0.012$; $p < 0.05$).

***Keywords** : anti-aging cream, Etlingera elatior, antioxidant, IC_{50}, DPPH*