

**HOMOGENITAS DAN KESTABILAN KRIM ANTI-AGING
DARI BAHAN AKTIF NANOPARTIKEL EKSTRAK DAUN
SELEDRI DENGAN KONSENTRASI YANG BERBEDA**

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ABSTRAK

HOMOGENITAS DAN KESTABILAN KRIM ANTI-AGING DARI BAHAN AKTIF NANOPARTIKEL EKSTRAK DAUN SELEDRI DENGAN KONSENTRASI YANG BERBEDA

Mike Wijaya, Fitriani Kasim, Anwar Kasim

Penelitian ini bertujuan untuk mengkaji homogenitas, kestabilan, dan aktivitas anti-aging krim dari bahan aktif nanopartikel ekstrak daun seledri (*Apium graveolens* L.) dengan konsentrasi berbeda. Hasil uji kualitatif menunjukkan bahwa ekstrak etanol daun seledri mengandung flavonoid, fenolik, alkaloid, dan steroid yang berpotensi sebagai antioksidan dan anti-aging. Proses homogenisasi selama 90 menit berhasil memperkecil ukuran partikel dari 6757,2 nm menjadi 161,7 nm, sehingga meningkatkan luas permukaan dan aktivitas biologisnya. Lima formulasi krim (A=0%, B=0,25%, C=0,5%, D=0,75%, dan E=1%) dikembangkan. Seluruh formulasi memiliki karakteristik yang homogen, dengan tipe emulsi minyak dalam air (M/A), dan tidak menimbulkan iritasi. Konsentrasi optimum yaitu Formula E (1% ekstrak) menunjukkan karakteristik fisikokimia yang sesuai dengan SNI, dengan viskositas = 25.860 cPs, daya sebar = 6,30 cm, serta pH = 6,05 yang aman bagi kulit. Krim yang dihasilkan memiliki karakteristik sensori yang baik dengan skor kesukaan panelis terhadap warna 3,52, aroma 3,68, tekstur 4,04, dan sensasi di kulit 3,96. Uji inhibisi enzim tirosinase menunjukkan bahwa peningkatan konsentrasi ekstrak meningkatkan aktivitas anti-aging. Formula D (0,75% ekstrak) memiliki nilai IC_{50} sebesar 3417,80 ppm, sedangkan Formula E (1% ekstrak) menunjukkan aktivitas lebih tinggi dengan nilai IC_{50} sebesar 2623,73 ppm, dengan kontrol positif asam kojat sebesar 162,18 ppm. Analisis nilai tambah menunjukkan rasio 82,43% pada formula 1%, termasuk kategori tinggi yang mengindikasikan potensi ekonomi yang menjanjikan dalam pengembangan produk kosmetik alami berbasis nanopartikel.

Kata kunci: daun seledri, nanopartikel, homogenitas, kestabilan krim, anti-aging, tirosinase.

ABSTRACT

HOMOGENEITY AND STABILITY OF ANTI-AGING CREAM FROM CELERY LEAF EXTRACT NANOPARTICLE ACTIVE INGREDIENT AT DIFFERENT CONCENTRATIONS

Mike Wijaya, Fitriani Kasim, Anwar Kasim

This study aimed to evaluate the homogeneity, stability, and anti-aging activity of creams formulated with different concentrations of nanoparticle extract of celery leaves (*Apium graveolens* L.). Qualitative analysis showed that the ethanolic extract of celery leaves contained flavonoids, phenolics, alkaloids, and steroids, which have potential as antioxidants and anti-aging agents. The homogenization process for 90 minutes effectively reduced the particle size from 6757.2 nm to 161.7 nm, thereby increasing the surface area and biological activity. Five cream formulations (A = 0%, B = 0.25%, C = 0.5%, D = 0.75%, and E = 1%) were developed. All formulations were homogeneous, oil-in-water (O/W) type emulsions, and non-irritating. The optimum concentration, Formula E (1% extract), exhibited physicochemical characteristics that met the Indonesian National Standard (SNI), with viscosity = 25,860 cPs, spreadability = 6.30 cm, and pH = 6.05, which is safe for the skin. The resulting creams demonstrated good sensory characteristics, with panelists' preference scores of 3.68 for color, 3.60 for aroma, 4.04 for texture, and 3.96 for skin sensation. The tyrosinase inhibition assay showed that increasing the extract concentration enhanced anti-aging activity. Formula D (0.75% extract) had an IC_{50} value of 3417.80 ppm, while Formula E (1% extract) showed higher activity with an IC_{50} value of 2623.73 ppm, compared to kojic acid as the positive control with an IC_{50} of 162.18 ppm. Value-added analysis indicated an 82.43% ratio for the 1% formula, classified as high, suggesting significant economic potential for developing natural cosmetic products based on nanoparticle technology.

Keywords: celery leaves, nanoparticles, homogeneity, cream stability, anti-aging, tyrosinase.