Pengaruh Jenis Daun dan Metode Distilasi Terhadap Kualitas dan Komposisi Kimia Minyak Atsiri Serai
Wangi
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PENGARUH JENIS DAUN DAN METODE DISTILASI TERHADAP KUALITAS DAN KOMPOSISI KIMIA MINYAK ATSIRI SERAI WANGI

Jasmin Febiani[1], Rini Pujiarti[2]

INTISARI

Serai wangi merupakan tanaman penghasil minyak atsiri bernilai ekonomi tinggi yang berpotensi dikembangkan sebagai komoditas Hasil Hutan Bukan Kayu (HHBK). Mutu minyak atsiri serai wangi dipengaruhi oleh faktor genetik tanaman dan metode distilasi. Penelitian ini bertujuan untuk menganalisis pengaruh jenis serai wangi dan metode distilasi terhadap rendemen, komposisi kimia, serta sifat fisiko-kimia minyak atsiri serai wangi.

Penelitian disusun menggunakan Rancangan Acak Lengkap (RAL) faktorial dua faktor, yaitu jenis serai wangi yang terdiri atas Lenabatu (*Cymbopogon nardus*), Mahapengiri (*Cymbopogon winterianus*), dan Aster (*Cymbopogon nardus* var. *Aster*), serta metode distilasi rebus dan kukus, masing-masing dengan tiga ulangan. Parameter yang diamati meliputi karakter morfologi, rendemen, komposisi kimia menggunakan *Gas Chromatography–Mass Spectrometry* (GC-MS), serta sifat fisiko-kimia yang meliputi warna, bau, bobot jenis, indeks bias, putaran optik, dan kelarutan dalam etanol berdasarkan SNI 3953:2019. Data dianalisis menggunakan analisis ragam (ANOVA) dua arah dan uji Tukey HSD pada taraf nyata 1% apabila terdapat interaksi yang signifikan.

Hasil penelitian menunjukkan bahwa Mahapengiri menghasilkan rendemen rata-rata tertinggi sebesar 0,384%, diikuti Aster 0,373% dan Lenabatu 0,341%. Metode distilasi berpengaruh nyata terhadap bobot jenis dan putaran optik, tetapi tidak berpengaruh terhadap rendemen maupun indeks bias. Geraniol merupakan komponen dominan pada seluruh sampel dengan persentase tertinggi 87,34% pada Mahapengiri, sedangkan sitronelal tertinggi terdapat pada Lenabatu (23,59%) dan Aster (19,59%) hasil distilasi rebus. Aster menunjukkan profil komposisi kimia yang menyerupai kemotipe Lenabatu dengan dominasi geraniol dan kadar sitronelal yang relatif rendah. Seluruh sampel memenuhi persyaratan bobot jenis, putaran optik, dan kelarutan dalam etanol berdasarkan SNI 3953:2019, namun sebagian besar nilai indeks bias masih berada sedikit di bawah batas minimum standar.

Kata Kunci: minyak atsiri serai wangi, komponen kimia, distilasi, rendemen, sifat fisiko-kimia.

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EFFECT OF VARIOUS LEAF TYPES AND DISTILLATION METHODS ON CHEMICAL COMPOSITION, AND PHYSICOCHEMICAL PROPERTIES OF CITRONELLA ESSENTIAL OIL

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ABSTRACT

Citronella (*Cymbopogon* spp.) is an essential oil-producing plant with high economic value and considerable potential as a non-timber forest product (NTFP). The quality of citronella essential oil is influenced by both the plant's genetic characteristics and the distillation method employed. This study aimed to evaluate the effects of citronella type and distillation method on essential oil yield, chemical composition, and physicochemical properties.

The experiment was arranged in a two-factor factorial Completely Randomized Design (CRD). The first factor consisted of three citronella types: Lenabatu (*Cymbopogon nardus*), Mahapengiri (*Cymbopogon winterianus*), and Aster (*Cymbopogon nardus* var. *Aster*). The second factor comprised two distillation methods: water distillation and water-steam distillation, with three replications for each treatment combination. The observed parameters included morphological characteristics, essential oil yield, chemical composition determined by Gas Chromatography–Mass Spectrometry (GC–MS), and physicochemical properties, including color, odor, specific gravity, refractive index, optical rotation, and solubility in ethanol, following the requirements of SNI 3953:2019. Data were analyzed using two-way analysis of variance (ANOVA), followed by Tukey's Honestly Significant Difference (HSD) test at the 1% significance level when significant interactions were detected.

The results showed that Mahapengiri produced the highest average essential oil yield (0.384%), followed by Aster (0.373%) and Lenabatu (0.341%). The distillation method significantly affected specific gravity and optical rotation but had no significant effect on essential oil yield or refractive index. Geraniol was the dominant compound in all samples, reaching the highest proportion (87.34%) in Mahapengiri, whereas the highest sitronelal contents were found in Lenabatu (23.59%) and Aster (19.59%) obtained by water distillation. Aster exhibited a chemical composition profile resembling the Lenabatu chemotype, characterized by a predominance of geraniol and relatively low sitronelal content. All samples complied with the SNI 3953:2019 requirements for specific gravity, optical rotation, and ethanol solubility; however, most refractive index values were slightly below the minimum standard.

Key words: citronella, essential oil, GC-MS, water distillation, water-steam distillation, yield, physicochemical properties.

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