

INTISARI

Daun ruku-ruku (*Ocimum tenuiflorum* L.) memiliki aroma kuat dan khas sehingga sering digunakan sebagai rempah untuk menambah selera cita rasa. Aroma daun ruku-ruku ditimbulkan oleh keberadaan minyak atsiri, sehingga daun ruku-ruku memiliki potensial sebagai bahan baku untuk produksi minyak atsiri.

Salah satu metode ekstraksi minyak atsiri yang umum digunakan adalah destilasi air dan uap, karena metode ini dinilai lebih ekonomis dan peralatannya sederhana. Perlakuan pendahuluan terhadap bahan baku merupakan hal yang penting dalam metode ekstraksi minyak atsiri. Perlakuan pendahuluan dimaksudkan untuk meningkatkan rendemen minyak atsiri.

Tujuan penelitian ini untuk menentukan karakteristik Fisikokimia, mengidentifikasi komponen senyawa dan aktivitas antioksidan minyak atsiri dari daun ruku-ruku. Daun ruku-ruku diberi perlakuan pengeringan yang berbeda, sehingga didapatkan daun segar, daun layu dan daun kering. Mikrostruktur jaringan akibat beda perlakuan diamati dengan Scanning Electron Mikroskop (SEM). Ekstraksi minyak atsiri dilakukan dengan menggunakan metoda distilasi air dan uap selama 3, 4, 5, dan 6 jam. Minyak atsiri hasil distilasi diuji sifat fisikokimia (berat jenis, indeks bias, bilangan asam, dan kelarutan dalam alkohol), komposisi senyawa dilakukan dengan Gas Chromatography-Mass Spectrometry (GC-MS), aktivitas antioksidan ditentukan dengan DPPH (*1,1-difenil-2-pikrilhidrazil*)

Hasil penelitian menunjukkan bahwa penyulingan selama 5 jam menghasilkan rendemen minyak tertinggi pada daun segar sebesar 0,62%, daun layu sebesar 0,50%, dan daun kering sebesar 0,32%. Sifat fisikokimia pada daun segar (berat jenis 0,9862g/ml, indeks bias 1,33, bilangan asam 1,8mg/KOH g, kelarutan dalam alkohol 1:1); daun layu (berat jenis 0,9660g/ml, indeks bias 1,33, bilangan asam 1,8 mg/KOH g, dan kelarutan dalam alkohol 1:1); dan pada daun kering (berat jenis 0,9762g/ml, indeks bias 1,34, bilangan asam 1,6 mg/KOH g, kelarutan dalam alkohol 1:1). Minyak atsiri ruku-ruku didominasi oleh methyl isoeugenol (20,50%), beta-elemene (15,07%), eugenol (13,59%), germacrene D (14,2%), dan ylangene (7,46%). Hasil uji aktivitas antioksidan minyak atsiri *Ocimum tenuiflorum* termasuk kategori antioksidan alami yang sangat kuat dengan nilai IC₅₀ pada daun segar sebesar 11,1851 µg/ml, daun layu sebesar 8,603 µg/ml, dan daun kering sebesar 7,895 µg/ml.

Kata Kunci : daun ruku-ruku; minyak atsiri; SEM; GC-MS; aktivitas antioksidan

ABSTRACT

Ruku-ruku leaves (*Ocimum tenuiflorum* L.) have a distinctive strong aroma that is often used as a spice to give flavor of as spices to add flavor sense. This aroma is due to the presence of essential oils on the leaves, so the potential leaves are developed for the production of essential oils.

Water and steam distillation is one of the essential oil extraction methods that is commonly used because this method is considered more economical and the equipment is simple. Pretreatment of raw materials is important in the method of extracting essential oils. Pretreatment is intended to increase the yield of essential oils.

The purpose of this study was to obtain the physicochemical characteristics, identify volatile compound, and antioxidant activity of essential oils from ruku-ruku leaves. Ruku-ruku leaves were given different drying treatments, so that fresh leaves, wilted leaves and dry leaves were obtained. The microstructure tissue due to different treatments was observed with a Scanning Electron Microscope (SEM). Extraction of essential oils was carried out using the water and steam distillation method for 3, 4, 5, and 6 hours. The distilled essential oil was tested for physicochemical properties (specific gravity, refractive index, acid value, and solubility in alcohol), the composition of the compounds was carried out by Gas Chromatography-Mass Spectrometry (GC-MS), antioxidant activity was determined by DPPH (1,1-diphenyl- 2-picrylhydrazyl).

The results showed that distillation for 5 hours produced the highest oil yield in fresh leaves of 0.62%, wilted leaves of 0.50%, and dry leaves of 0.32%. The physicochemical properties Fresh leaves (specific gravity 0.9862 g/ml, refractive index 1.33, acid value 1.8mg KOH/g, 1:1 alcohol solubility); wilted leaves (specific gravity 0.9660 g/ml, refractive index 1.33, acid value 1.8mg KOH/g, 1:1 alcohol solubility); and dry leaves (specific gravity 0.9762 g/ml, refractive index 1.34, acid value 1.6mg KOH/g, 1:1 alcohol solubility) . Ruku-ruku essential oil was dominated by methyl isoeugenol (20.50%), beta-elemene (15.07%), eugenol (13.59%), germacrene D (14.2%), and ylangene (7.46%). The results of the antioxidant activity test of *Ocimum tenuiflorum* essential oil included in the category of very strong natural antioxidants with IC₅₀ values in fresh leaves of 11.1851 g/ml, wilted leaves of 8.603 g/ml, and dry leaves of 7.895 g/ml.

Keywords: ruku-ruku leaves; essential oil; SEM; GC-MS; antioxidant activity

