

STANDARISASI SEDIAAN EKSTRAK DAUN GAHARU (*Gyrinops versteegii* (Gilg.) Domke) DARI TIGA LOKASI BERBEDA DI INDONESIA

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ABSTRAK

Gaharu merupakan salah satu produk hasil hutan yang memiliki banyak manfaat. *Gyrinops versteegii* merupakan salah satu jenis tanaman gaharu yang terdistribusi di daerah Indonesia Timur. Daun *G. versteegii* memiliki aktivitas antioksidan yang tinggi, sehingga berpotensi untuk dikembangkan sebagai obat herbal. Penelitian ini dilakukan untuk mengetahui nilai parameter spesifik, non spesifik, dan pengaruh lokasi tumbuh terhadap nilai parameter spesifik dan non spesifik ekstrak etanol daun *G. versteegii*. Sampel diperoleh dari Balai Pengembangan Teknologi Hasil Hutan Bukan Kayu (BPTHBK) Kota Mataram, Perkebunan di Klaten Jawa Tengah, dan Perkebunan di Desa Sebus, Kalimantan Barat. Sampel diekstraksi secara maserasi dengan menggunakan pelarut etanol. Kandungan golongan senyawa fenolik dan flavonoid dievaluasi dengan spektrofotometer. Kandungan mineral tanah tempat tumbuh tanaman gaharu dianalisis dengan spektrofotometer serapan atom. Pengamatan anatomi daun berupa sayatan melintang dilakukan dengan metode penyelubungan paraffin dan diamati dengan menggunakan optilab. Analisis data dengan analisis variansi satu arah ANOVA dan dilanjutkan dengan posthoc Tukey untuk data yang berbeda nyata. Uji organoleptik ekstrak menunjukkan hasil ekstrak berupa pasta kental, warna hijau kehitaman, bau khas (aromatik), dan rasa pahit. Kadar fenolik total tanpa penyimpanan pada Mataram, Klaten, dan Kalimantan berturut-turut $29,90 \pm 8,89$ mgGAE/g; $84,59 \pm 20,98$ mgGAE/g; $77,82 \pm 22,10$ mgGAE/g, sedangkan setelah penyimpanan sebulan yaitu $68 \pm 1,80$ mgGAE/g; $36,67 \pm 19,28$ mgGAE/g; $27,82 \pm 4,42$ mgGAE/g. Kadar flavonoid total sampel Mataram, Klaten, dan Kalimantan tanpa penyimpanan berturut-turut $416,36 \pm 72,77$ mgQE/g; $371,61 \pm 10,65$ mgQE/g; $214,2 \pm 19,96$ mgQE/g, sedangkan setelah penyimpanan sebulan yaitu $212 \pm 45,51$ mgQE/g; $112,96 \pm 10,92$ mgQE/g; $335,07 \pm 2,96$ mgQE/g. Ekstrak Mataram memiliki kandungan senyawa terlarut etanol 80%, diikuti oleh Klaten dan Kalimantan sebesar yang hampir sama yaitu berturut-turut $76,67 \pm 5,77\%$ dan $76,67 \pm 11,55\%$. Senyawa terlarut air ekstrak Mataram $60 \pm 10\%$ dan diikuti oleh ekstrak Klaten $46,67 \pm 5,77\%$ dan Kalimantan sebesar $26,67 \pm 15,27\%$. Nilai kadar susut pengeringan untuk lokasi Mataram $14,33 \pm 1,53\%$, Klaten $2,67 \pm 0,58\%$, dan Kalimantan $5,0 \pm 1\%$. Anatomi daun dari ketiga lokasi memiliki ukuran sel dan jaringan yang berbeda nyata, yaitu pada jaringan epidermis atas, mesofil, palisade, dan epidermis bawah. Terdapat 4 kadar unsur tanah yang berbeda signifikan antara ketiga lokasi, yaitu K, Ca, Fe, dan Zn. Pada ketiga lokasi tidak ditemukan adanya logam berat Cd, sedangkan logam berat Pb dari ketiga lokasi masih di bawah batas normal, yaitu Mataram $5,42 \pm 0,51$; Klaten $2,86 \pm 0,48$; dan Kalimantan $5,05$.

Kata kunci: *Gyrinops versteegii*, parameter, metabolit sekunder, lokasi tumbuh.

STANDARDIZATION OF GAHARU LEAF EXTRACT (*Gyrinops versteegii* (Gilg.) Domke) FROM THREE DIFFERENT LOCATION IN INDONESIA

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ABSTRACT

Agarwood is one of the forest products that has many benefits. *Gyrinops versteegii* is a type of agarwood plant distributed in Eastern Indonesia. *G. versteegii* leaves have high antioxidant properties, so it has the potential to be developed as an herbal medicine. This research was conducted to determine the value of specific, non-specific parameters, and the effect of growing location on the specific and non-specific parameter values of ethanol extract of *G. versteegii* leaves. Samples were obtained from the Non-Timber Forest Product Technology Development Center (BPTHHBK) of Mataram, Plantation in Klaten, Central Java, and Plantations in Sebus Village, West Kalimantan. Samples were extracted by maceration using ethanol as a solvent. The profile of secondary metabolites in the form of phenolics and flavonoids was evaluated by spectrophotometer. The mineral content of the soil on which the agarwood plants grow is analyzed by atomic absorption spectrophotometer method. Observation of *G. versteegii* agarwood leaf anatomy in the form of transverse incision was carried out by the paraffin embedding method and observed using optilab. Data flavonoid and phenolic were analyzed using ANOVA with Tukey test. The organoleptic test on the extract obtained the extract in the form of a thick extract, blackish green color, distinctive smell (aromatic), and a bitter taste. The results of total phenolic content without storage in Mataram, Klaten, and Kalimantan were 29.90 ± 8.89 mgGAE/g; 84.59 ± 20.98 mgGAE/g; 77.82 ± 22.10 mgGAE/g, while the results of the one monthly storage were 68 ± 1.80 mgGAE/g; 36.67 ± 19.28 mgGAE/g; 27.82 ± 4.42 mgGAE/g. The results of total flavonoid levels without storage were $416, 36 \pm 72.77$ mgQE/g; 371.61 ± 10.65 mgQE/g; 214.2 ± 19.96 mgQE/g, while the one monthly storage was 212 ± 45.51 mgQE/g; 112.96 ± 10.92 mgQE/g; 335.07 ± 2.96 mgQE/g. The ethanol dissolved compounds at the location of Mataram was 80%, Klaten $76.67 \pm 5.77\%$ and Kalimantan was $76.67 \pm 11.55\%$. The results of water dissolved compounds at the locations of Mataram $60 \pm 10\%$, Klaten $46.67 \pm 5.77\%$, and Kalimantan were $26.67 \pm 15.27\%$. The drying shrinkage value for the location of Mataram was $14.33 \pm 1.53\%$, Klaten $2.67 \pm 0.58\%$, and Kalimantan $5.0 \pm 1\%$. Leaf anatomy from the three locations has significantly different cell and tissue sizes, the upper epidermal tissue, mesophyll, palisade, and lower epidermis. There were 4 levels of soil elements that differed significantly between the three locations, namely K, Ca, Fe, and Zn. In the three locations, heavy metal Cd was not found, while heavy metal Pb from the three locations was still below the normal limit, namely Mataram 5.42 ± 0.51 ; Klaten 2.86 ± 0.48 ; and Kalimantan 5.05.

Key words: *Gyrinops versteegii*, parameter, secondary metabolites, growing location.