

Muhammad Naufal Aziz. 22.03.4.1.1.00062. Analisis Kandungan Fenolik dan Tanin Daun *Sonneratia alba* dengan Perlakuan Lama Waktu Ekstraksi Berbeda. Di bawah bimbingan **Kartika Dewi, S.Pi., M.Pi.**

ABSTRAK

Daun muda mangrove *Sonneratia alba* kaya akan metabolit sekunder polifenol yang berpotensi tinggi sebagai antioksidan alami dan alternatif pangan fungsional, seperti teh daun mangrove. Penelitian ini bertujuan untuk menganalisis hasil rendemen simplisia, efektivitas waktu ekstraksi infundasi terhadap aktivitas antioksidan (IC₅₀), serta kadar kandungan fenolik total (*Total Phenolic Content*/TPC) dan kandungan tanin total (*Total Tannin Content*/TTC) pada daun muda *Sonneratia alba* asal Desa Martajasah, Kabupaten Bangkalan. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dengan perlakuan lama waktu ekstraksi infundasi air mendidih (95°C) berdurasi 45, 50, dan 55 menit dengan tiga kali pengulangan. Analisis data statistik menggunakan uji One-Way ANOVA ($\alpha = 0,05$). Hasil penelitian menunjukkan proses preparasi kering angin menghasilkan rendemen simplisia sebesar 43,92% dengan 48,90% dan mengubah struktur daun menjadi berpori. Seluruh perlakuan waktu ekstraksi menghasilkan aktivitas antioksidan kategori sangat kuat (IC₅₀ < 50 ppm), dengan nilai optimum pada durasi 45 menit (9,127 ± 0,400 ppm). Kadar tanin total meningkat seiring bertambahnya waktu dan mencapai nilai tertinggi pada 55 menit (1,328 ± 0,107 mg TAE/g), yang masih berada jauh di bawah batas aman konsumsi harian. Sementara itu, kadar fenolik total optimum dicapai pada durasi 50 menit (0,208 ± 0,004 mg GAE/g) sebelum mengalami sedikit penurunan di menit ke-55 akibat sifat polifenol yang termolabil terhadap pemanasan berlebih. Hasil analisis ANOVA menunjukkan tidak terdapat perbedaan yang nyata secara statistik ($p > 0,05$) antar perlakuan pada seluruh parameter uji. Oleh karena itu, durasi ekstraksi 45 menit disimpulkan sebagai waktu perlakuan terbaik karena paling efektif dan efisien dalam menarik metabolit sekunder tanpa memicu risiko degradasi termal.

Kata Kunci: *Sonneratia alba*, Infundasi, Fenolik, Tanin, Antioksidan, Teh Mangrove.

ABSTRACT

Young leaves of the mangrove Sonneratia alba are rich in polyphenol secondary metabolites, which possess high potential as natural antioxidants and alternative functional foods, such as mangrove leaf tea. This study aimed to analyze the yield of dried simplisia, the effectiveness of infusion extraction time on antioxidant activity (IC₅₀), as well as the Total Phenolic Content (TPC) and Total Tannin Content (TTC) in young leaves of Sonneratia alba from Martajasah Village, Bangkalan Regency. This research employed a Completely Randomized Design (CRD) with boiling water (95°C) infusion extraction time treatments of 45, 50, and 55 minutes, performed intruplicate. Statistical data analysis was conducted using One-Way ANOVA ($\alpha = 0.05$). The results showed that the air-drying preparation process yielded a dry simplisia percentage ranging from 43.92% to 48.90% and transformed the leaf structure into a porous texture. All extraction time treatments produced very strong antioxidant activity ($IC_{50} < 50$ ppm), with the optimum value achieved at the 45-minute duration (9.127 ± 0.400 ppm). Total tannin content increased along with extraction time, reaching its highest value at 55 minutes (1.328 ± 0.107 mg TAE/g), which remained well below the maximum safe daily consumption limit. Meanwhile, the optimum total phenolic content was reached at 50 minutes (0.208 ± 0.004 mg GAE/g) before experiencing a slight decrease at 55 minutes due to the thermolabile nature of polyphenols against excessive heating. The ANOVA results indicated no statistically significant difference ($p > 0.05$) among the treatments across all tested parameters. Therefore, an extraction duration of 45 minutes was concluded as the best treatment time, as it is the most effective and efficient in extracting secondary metabolites without triggering the risk of thermal degradation.

Keywords: *Sonneratia alba, Infusion, Phenolic, Tannin, Antioxidant, Mangrove Tea.*