



Variasi Kadar Ekstraktif, Kadar Fenolat, dan Keasaman Kayu Mangium (*Acacia mangium* Willd)

Akbar Tri Fajar Widodo¹⁾ dan Ganis Lukmandaru²⁾

INTISARI

Kayu mangium merupakan salah satu *fast growing* spesies yang banyak ditanam di Indonesia. Penggunaan kayu mangium digunakan untuk pulp dan kertas, kayu konstruksi dan kayu perkakas lainnya. Sifat kimia seperti kadar ekstraktif, kadar fenolat dan keasaman kayu sangat berpengaruh pada ketahanan kayu, keawetan kayu, perubahan warna, dan bioaktivitas. Untuk itu, penelitian ini bertujuan untuk mengetahui variasi kadar ekstraktif, kadar fenolat dan keasaman kayu mangium dalam satu pohon.

Bahan yang digunakan dalam penelitian ini yaitu kayu mangium berumur 25 tahun dari Hutan Pendidikan Wanagama, Gunung Kidul, Yogyakarta sebanyak 2 pohon. Penelitian ini menggunakan 2 variabel yaitu arah radial (kayu gubal, kayu teras dalam, dan kayu teras luar), dan arah aksial (ketinggian pohon 0%, 20%, 40%, 60% dan 80%). Dari setiap bagian diambil sampel serbuk berukuran 40-60 mesh untuk diukur kadar ekstrak (diklorometana, etanol dan air panas) dan nilai pH. Kadar fenolat total, flavonoid, flavanol, bilangan Stiasny diukur dari ekstrak etanol. Analisis korelasi antar parameter menggunakan uji korelasi Pearson.

Hasil penelitian ini menunjukkan kadar diklorometana, etanol dan air panas berkisar 0,55-3,2%, 1,44-22,7% dan 0,83-7,12% secara berurutan. Ekstraktif total didapatkan dari jumlah total ekstraksi berturutan berkisar 4,6-27,3%. Secara umum kadar ekstraktif kayu gubal lebih rendah dibanding kayu teras dalam dan teras luar dibandingkan pada arah aksial cenderung naik dari pangkal ke ujung. Kadar fenolat, flavonoid, flavanol dan bilangan Stiasny berkisar 5,78 – 76,18%, 0,73 – 8,19%, 0,31 – 12,56%, dan 0,0-4,28%, secara berturutan. Hasil menunjukkan kadar fenolat, flavonoid naik dari kayu gubal ke teras luar dan teras dalam, dan naik dari pangkal ke ujung, dan tidak ada pola untuk kadar flavanol dan bilangan Stiasny. Nilai pH berkisar 4,6-5,96 dan menurun dari teras dalam ke teras luar, variasi aksial cenderung turun dari pangkal ke ujung. Analisis korelasi Pearson menunjukkan kadar fenolat berkorelasi dengan kadar ekstraktif total (KTL) di kayu gubal dan teras, nilai pH berkorelasi negatif dengan kadar flavonoid, dan kadar flavanol berkorelasi negative dengan bilangan Stiasny di kayu teras.

Kata kunci: Ekstraktif, aksial, radial, kayu mangium, fenolat, pH

¹⁾Mahasiswa Departemen Teknologi Hasil Hutan, Fakultas Kehutanan UGM

²⁾Dosen Departemen Teknologi Hasil Hutan, Fakultas Kehutanan UGM



The Contents of Extractive, Phenolic, and Acidity of Mangium Wood (*Acacia mangium* Willd)

Akbar Tri Fajar Widodo¹⁾ and Ganis Lukmandaru²⁾

ABSTRACT

Mangium wood is one of the fast growing species that is widely planted in Indonesia. Mangium wood is utilized for pulp and paper, wood construction and other tools. Chemical properties i.e. extractive, phenolic, and acidity of wood there affect on wood resistance, durability, color change, and bioactivity. This study aims to determine the intra-tree variation of extractive contents, phenolic contents, and acidity of mangium wood.

The materials of this study were two logs of 25 year old mangium wood from Wanagama Educational Forest in Gunung Kidul, Yogyakarta. This study used 2 variables: radial direction (sapwood, inner heartwood, and outer heartwood), and the axial direction (0%, 20%, 40%, 60%, and 80% of tree height). From each section, the samples were grounded into 40-60 mesh powder for measuring the extractive contents (dichloromethane, ethanol and hot water), and pH value. Total phenolics, flavonoids, flavanols, and Stiasny number were measured from the ethanol extracts. Correlation analysis between parameters was calculated using Pearson correlation analysis.

The results of this study showed that dichloromethane, ethanol and hot water levels ranged from 0.55 to 3.2%, 1.44 to 22.7% and 0.83 to 7.12%, respectively. The total extractive was obtained from the total of successive extractions ranged from 4.6 to 27, 3%. In general, extractive levels of the sapwood were lower than those in inner heartwood and outer heartwood. Those values in the axial direction tend to increase from the bottom to the top. Total phenolic, flavonoids, flavanol and Stiasny number ranged from 5.78- 76.18%, 0.73-8.19%, 0.31-12,56% and 0.0-4.28%, respectively. The results showed that the phenolic and flavonoid contents increased from the sapwood to the outer and inner heartwood and rise from the bottom to the top. There was no pattern for flavanol contents and Stiasny number. The pH values ranged from 4.6 to 5.96 and they decreased from the inner heartwood to the outer heartwood, and in the axial direction decreased from the bottom to the top. Pearson correlation analysis showed that phenolic contents significantly correlated with the total extractives contents (TEC) in a sapwood and heartwood, where is the pH value was negatively correlated with flavonoid, and flavanol correlated with Stiasny number.

Keyword: Extractives, axial, radial, mangium wood, phenolic, pH

¹⁾Student of Forest Product Technology Departement, Faculty of Forestry Universitas Gadjah Mada

²⁾Lecturer of Forest Product Technology Departement, Faculty of Forestry Universitas Gadjah Mada