Analis Morfoanatomi dan Filogenetika Bucephalandra spp. asal Kalimantan Barat = Morphoanatomical and Phylogenetic Analysis of Bucephalandra spp. from West Kalimantan

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Abstrak

Bucephalandra adalah tanaman endemik Kalimantan yang populer dalam aquascape karena nilai ekonominya yang tinggi. Penelitian ini bertujuan mengidentifikasi karakteristik morfoanatomi spesies Bucephalandra di Kalimantan Barat serta menganalisis hubungan filogenetik menggunakan gen rbcL, matK, dan ITS. Struktur morfoanatomi pada akar, batang, dan daun diidentifikasi melalui sayatan melintang, dengan analisis deskriptif dan kuantitatif. Analisis filogenetik dilakukan dengan metode UPGMA dan Pairwise Distance. Hasil penelitian menunjukkan variasi morfologi seperti warna daun (hijau tua, cokelat, keunguan), bentuk ujung daun (berduri, tumpul), tepi daun (rata, berombak), dan permukaan daun (gundul, licin). Panjang tanaman berkisar dari 6,51—29,73 cm, panjang daun 2,59—9,28 cm, dan lebar daun 0,42—2,27 cm. Panjang batang 1,906—15,316 cm dan diameter batang 0,319—0,849 cm. Jarak internode berkisar 0,193—0,818 cm. Panjang akar 1,78 —4,77 cm dan diameter akar 0,09—0,21 cm. Analisis anatomi menunjukkan karakteristik utama seperti berkas vaskular, mesofil palisade, mesofil bunga karang, stomata, epidermis, kutikula, sel penjaga, korteks, berkas serat, eksodermis, empulur, xilem, floem, endodermis, perisikel, jalur kaspari, dan trikoma. Analisis filogenetik menggunakan gen rbcL, matK, dan ITS menunjukkan delapan spesies memiliki jarak genetik berbeda: 0.00—0.13, 0.00—0.01, 0.00— 0.27, dengan gen rbcL membentuk dua clade, gen matK dua clade, dan gen ITS empat clade.

.....Bucephalandra is an endemic Borneo plant that is popular in aquascape due to its high economic value. This study aims to identify morphoanatomical characteristics of Bucephalandra species in West Kalimantan and analyse phylogenetic relationships using rbcL, matK, and ITS genes. Morphoanatomical structures in roots, stems, and leaves were identified through transverse sections, with descriptive and quantitative analyses. Phylogenetic analysis was conducted using the UPGMA and Pairwise Distance methods. The results showed morphological variations such as leaf colour (dark green, brown, purplish), leaf tip shape (spiny, blunt), leaf margin (flat, rippled), and leaf surface (bare, smooth). Plant length ranged from 6.51-29.73 cm, leaf length from 2.59-9.28 cm, and leaf width from 0.42-2.27 cm. Stem length was 1.906-15.316 cm and stem diameter was 0.319-0.849 cm. Internode spacing ranged from 0.193-0.818 cm. Root length was 1.78-4.77 cm and root diameter was 0.09-0.21 cm. Anatomical analysis showed major characteristics such as vascular bundles, palisade mesophyll, spongy mesophyll, stomata, epidermis, cuticle, guard cells, cortex, fibre bundles, exodermis, pith, xylem, phloem, endodermis, pericellicle, caspari line, and trichomes. Phylogenetic analysis using rbcL, matK, and ITS genes showed eight species had different genetic distances: 0.00-0.13, 0.00-0.01, 0.00- 0.27, with the rbcL gene forming two clades, the matK gene two clades, and the ITS gene four clades.