

HUBUNGAN KEKERABATAN ANGGREK *Dendrobium* spp. BERDASARKAN ANATOMI DAUN DAN SEKUEN *trnL-F*

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INTISARI

Dendrobium merupakan genus anggrek terbesar kedua, dengan jumlah anggota kurang lebih 1.500 spesies. *Dendrobium* memiliki keragaman morfologi tinggi dan identifikasi spesiesnya terutama didasarkan pada karakter bunga. Peran karakter anatomis daun dalam identifikasi dan klasifikasi *Dendrobium* belum banyak dikaji. Penelitian ini bertujuan untuk menganalisis kekerabatan antar spesies *Dendrobium* berdasarkan anatomi daun dan sekuen *trnL-F*, serta perannya dalam identifikasi spesies dan klasifikasi di bawah level genus. Preparat anatomi daun dibuat dengan metode penyelubungan parafin, menggunakan pewarnaan safranin-fast green. Data karakter anatomis daun digunakan untuk menyusun kekerabatan fenetik menggunakan analisis kluster dan analisis komponen utama. Kekerabatan berdasarkan penanda molekuler *trnL-F* dianalisis dengan algoritma *Maximum Likelihood* dengan bootstrap 1000 kali. Hasil analisis kekerabatan fenetik berdasarkan 60 karakter anatomis daun pada 17 spesies *Dendrobium* menunjukkan pembentukan tiga kluster yang sesuai dengan pengelompokan pada tingkat *section*. Hasil analisis filogenetik dibagi menjadi dua yaitu berdasarkan sekuen dengan panjang 587-608bp dan 977-1322bp untuk menghindari pembentukan klad berdasarkan panjang pasang basa. Kekerabatan filogenetik berdasarkan sekuen *trnL-F* 23 spesies *Dendrobium* menunjukkan terbentuknya klad yang sejalan dengan klasifikasi intragenerik pada tingkat *section* secara keseluruhan. Karakter anatomis daun dan penanda *trnL-F* terbukti berperan dalam mengungkap variasi antar spesies, mendukung identifikasi spesies, dan dalam pemetaan kekerabatan spesies dalam genus *Dendrobium*.

Kata kunci: Karakter, variasi, filogenetik, *section*

ORCHID RELATIONSHIPS *Dendrobium* spp. BASED ON LEAF ANATOMY AND *trnL-F* SEQUENCES

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ABSTRACT

Dendrobium is the second-largest genus of orchids, with approximately 1,500 species. *Dendrobium* has high morphological diversity and its species identification is mainly based on floral characters. Studies on the role of leaf anatomical characters in the identification and classification of *Dendrobium* is still limited. This study aims to analyze the taxonomic relationships of *Dendrobium* species based on leaf anatomy and *trnL-F* sequences, as well as their role in species identification and classification at intragenetic level. Microscopic slides of leaf section were made using the paraffin embedding method, with safranin-fast green staining. Leaf anatomical character data were used to construct phenetic relationships using cluster analysis and principal component analysis. Phylogenetic relationships based on molecular markers *trnL-F* were analyzed using the Maximum Likelihood algorithm with 1000x bootstrap. Result of the phenetic relationship analysis based on 60 leaf anatomical characters of 17 *Dendrobium* species showed the formation of three clusters which is in agreement to the grouping at the section level. Result of the phylogenetic analysis were divided into two parts, namely based on sequences with lengths of 587-608bp and 977-1322bp to avoid clade formation based on differences in sequence length. The phylogenetic relationship based on the *trnL-F* sequence of 23 *Dendrobium* species showed the formation of clades that is in line with the intrageneric classification at the overall section level. Leaf anatomical characters and *trnL-F* markers were proven to be reliable taxonomic evidence to reveal variations between species, supporting species identification, and in determining species relationships within the genus *Dendrobium*.

Keywords: Character, variation, phylogenetic, section