

KERAGAMAN DAN KLASIFIKASI INTRASPEIES GANYONG
(*Canna indica* L.) DI PULAU JAWA BERDASARKAN KARAKTER
MORFOLOGIS DAN MOLEKULAR

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ABSTRAK

Ganyong (*Canna indica* L.) merupakan herba asli Amerika Selatan yang banyak dimanfaatkan rimpangnya dan di Indonesia pemanfaatannya belum maksimal. Karakterisasi morfologis dan molekular diperlukan untuk mendapatkan informasi karakter *Canna indica* untuk keragaman genetik yang dapat digunakan untuk menghasilkan varietas *Canna indica*. Di Indonesia khususnya Pulau Jawa penelitian tanaman ganyong masih kurang. Penelitian ini bertujuan untuk melihat keragaman dan hubungan fenetik ganyong di Pulau Jawa berdasarkan pada karakter morfologis dan molekular menggunakan analisis RAPD. Sampel ganyong diambil dari Balai Besar Bioteknologi dan Sumber Daya Genetik (BB-Biogen). Data karakter morfologis kualitatif dianalisis secara deskriptif untuk karakterisasi dan mendapatkan kunci identifikasi. Data hasil karakterisasi diberikan skor berjenjang. Data skor multistate distandarisasi untuk mendapatkan data biner. Data karakter molekular dianalisis menggunakan RAPD dengan primer OPA-01, OPA-02, OPA-10, OPD-02, dan OPN-05. Berdasarkan data karakter morfologis dan molekular dilakukan penghitungan indeks similaritas untuk analisis pengelompokan dan pembuatan dendrogram yang menggambarkan keragaman dan klasifikasi antar aksesi ganyong dengan metode *Unweighted Pair Group Methods using Arithmetic averages* (UPGMA) menggunakan *software Multivariate Statistical Program* (MVSP) v.3.1. Hasil penelitian menunjukkan *Canna indica* memiliki keragaman morfologis pada warna tunas, pelepah, daun, bunga, dan buah. Berdasarkan karakter morfologis dan molekular didapatkan dendrogram yang membagi *Canna indica* menjadi 2 kelompok besar, *Canna indica* grup kultivar ‘hijau’ dan ‘merah’, grup kultivar ‘hijau’ terbagi menjadi sub-grup kultivar ‘hijau’ dan ‘hijau keunguan’, sedangkan grup kultivar ‘merah’ terbagi menjadi sub-grup kultivar ‘merah’ dan ‘merah keunguan’. Karakter morfologis dan molekular memiliki koherensi yang mendukung pengelompokan group kultivar.

Kata kunci: *Canna indica*, ganyong, hubungan fenetik, RAPD

DIVERSITY AND INTRASPECIES CLASSIFICATION OF EDIBLE CANNA (*Canna indica* L.) IN JAVA ISLAND BASED ON MORPHOLOGICAL AND MOLECULAR CHARACTERS

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ABSTRACT

Edible canna (*Canna indica* L.) is herbaceous plant originated from South America which its rhizome commonly used and its utilization not optimize in Indonesia. Morphological and molecular characterization are needed to determine characters of *Canna indica* for genetic variability to improve edible canna varieties. For that reason, the purpose of this research were to determine diversity and phenetic relationship of *Canna indica* based on morphological and molecular characters using RAPD analysis. Samples were collected from Indonesian Center for Agricultural Biotechnology Research and Development (BB-Biogen). Morphological characters data was analysed by description to construct identification key. Molecular characters data was analysed by RAPD analysis using OPA-01, OPA-02, OPA-10, OPD-02, and OPN-05 primers. Similarity index was counted by *Gower General Similarity Coefficient* formula based on morphological and molecular scoring. Cluster analysis was conducted by *Unweighted Pair Group Methods using Arithmetic averages* (UPGMA) method to create a dendrogram. Principal component analysis (PCA) were also performed to defined role of each morphological characters in grouping of accessions with *Multivariate Statistical Program* (MVSP) v.3.1 software. The result show that *Canna indica* has morphological variation on colour of bud, petiole, leafs, flower, and fruits. Dendrogram based on morphological and molecular characters divided *Canna indica* into two main cluster. There were the *green* and *red* cultivar group. The green cultivar group also divided into *green* and *purplish-green* based on colour of sheaths, tip of bud, rachis inflorescence, petals, brachtea, and colour pattern of staminodia. Red cultivar divided into *red* and *purplish-red* based on colour of sheaths, rachis inflorescence, and petals. There is coherence between morphological and molecular characters which supported grouping of cultivated group.

Key words : *Canna indica* L., cultivar group, morphology, phenetic relationship