Nindia Fairuzi. 2016. Analisis Hubungan Kekerabatan *Curcuma* spp. Berdasarkan Karakter Morfologi Dan Metabolit Sekunder. Skripsi ini dibawah bimbingan Dr. Hamidah, M.Kes dan Prof. H. Hery Purnobasuki, M.Si., Ph.D. Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui variasi karakter morfologi dan metabolit sekunder pada lima *Curcuma* spp., hubungan kekerabatan lima *Curcuma* spp. berdasarkan karakter morfologi dan metabolit sekunder, juga karakter dan karakteristik apa saja yang membedakan dan mempengaruhi pengelompokan lima *Curcuma* spp. Pengamatan dan pengambilan sampel dilakukan di zona Zingiberaceae, Taman Husada Graha Famili, Surabaya. Pengamatan morfologi meliputi karakter perawakan, daun, batang/pseudostem, rimpang dan bunga. Kandungan metabolit sekunder diuji dengan skrining fitokimia (senyawa alkaloid, flavonoid, terpenoid, steroid, tannin, dan minyak atsiri). Data dianalisis dengan metode fenetik (menggunakan SPSS 21) dan deskriptif (deskriptif analitik dan deskriptif diagnostik-diferensial). Hasil analisis deskriptif menunjukkan terdapat variasi karakter morfologi dan metabolit sekunder pada *Curcuma* spp. Hasil analisis fenetik, menunjukkan hubungan kekerabatan antar *Curcuma* spp. ditinjau dari karakter morfologi, metabolit sekunder dan dendogram menghasilkan 2 kelompok utama, yaitu kelompok a yang beranggotakan *C. heyneanae, C. mangga, C. aeruginosa, C. xanthorrhiza* dan *Z. amaricans,* pada nilai similaritas 62,8% dan memisah dengan kelompok b yang beranggotakan *Curcuma domestica* pada nilai similaritas 51,6%. Hal ini membuktikan bahwa *Z. amaricans* (*outgroup)* mempunyai hubungan kekerabatan yang jauh dengan 5 spesies dari genus *Curcuma* dengan nilai similaritas 99,4 %. Sedangkan karakter dan karakteristik yang membedakan dan mempengaruhi pengelompokan antar *Curcuma* spp. berdasarkan analisis PCA (*Principal Component Analysis*) ada 3 komponen. Komponen 1: tinggi; habitus pseudostem; daun: sudut letak daun, ujung, pangkal, lebar, panjang, venasi, pola venasi, warna permukaan atas dan bawah daun; rimpang: habitus, warna daging, warna permukaan; warna korola, dan kandungan flavonoid. Komponen 2: intensitas warna hijau pada batang; pewarnaan anthocyanin di pseudostem; bangun daun; keberadaan warna ibu tangkai daun; warna ibu tangkai daun; rimpang: bentuk, pola internodus, permukaan; warna ujung bractea, warna korola, warna labellum, warna pistilum, dan kandungan steroid. Komponen 3: habitus pseudostem; daun: sudut letak daun, ujung, pangkal, tepi, venasi; rimpang: jumlah induk, warna inner core, dan warna permukaan.

Kata Kunci : Kekerabatan, *Curcuma,* morfologi, skrining fitokimia, dendogram

Nindia Fairuzi. 2016. Phylogenetic Relationship Analysis of *Curcuma* spp. based on Morphological Characters and Secondary Metabolites. This Study was Supervised by Dr. Hamidah, M.Kes and Prof. H. Hery Purnobasuki, M.Si., Ph.D. Biology Department, Faculty of Science and Technology, Airlangga University, Surabaya.

ABSTRACT

This study aims to determine variations of morphological characters and secondary metabolites in five *Curcuma* spp., phylogenetic relationship of five *Curcuma* spp. based on morphological characters and secondary metabolites, character and characteristics that could differentiate and affect grouping of five *Curcuma* spp. Observations and sampling were carried out in Zingiberaceae zone, Taman Husada Graha Famili, Surabaya. Morphological observation included plant habit, leaf, stem/pseudostem, rhizomes and flowers. The content of secondary metabolites were tested with phytochemical screening (alkaloids, flavonoids, terpenoids, steroids, tannins, and essential oils). Data were analyzed with phenetic method (using SPSS 21) and descriptive (analytic and diagnostic-differential description). Variations in morphological characters and secondary metabolites in *Curcuma* spp. shown by Descriptive analysis result. Phenetic analysis results, showed phylogenetic relationship between *Curcuma* spp. based on morphological characters, secondary metabolites and dendogram produce two main groups, group 'a' consist of *C. heyneanae, C. mango, C. aeruginosa, C. xanthorrhiza and Z. americana*, with similarity value of 62,8% and splitting with group 'b' consisti of *C. domestica* with similarity value of 51,6%. This result proves that *Z. americana* (*outgroup*) had distant phylogenetic relationship with other five species of *genus Curcuma* with similarity value of 99,4%. While the character and characteristics that differentiate and affect grouping between *Curcuma* spp. based on Principal Component Analysis are divided into 3 components. 1st component: height; pseudostem habit; Leaf: leaf disposition, tip, base, width, length, venation, venation pattern, upper and lower surfaces color; Rhizome: habit, flesh color, surface color; corolla color, and flavonoid. 2nd component: intensity of green color and anthocyanin coloration in pseudostem; leaf shape; midrib color presence; midrib color; Rhizome: shape, internodus pattern, surface; bractea tip color, corolla color, labellum color, pistillum color, and steroids. 3rd component: pseudostem habit; Leaf: leaf disposition, tip, base, margin, venation; Rhizome: mother rhizome number, inner core color, and surface color.

Key Words : Phylogenetic relationship, *Curcuma,* morphology, phytochemical screening, dendogram