

VARIASI MORFOLOGIS DAN FITOKIMIAWI ANDALIMAN (*Zanthoxylum acanthopodium* DC.) DI TAPANULI UTARA, SIMALUNGUN, DAN SAMOSIR, PROVINSI SUMATRA UTARA

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INTISARI

Andaliman (*Zanthoxylum acanthopodium* DC.) merupakan tumbuhan liar yang dimanfaatkan sebagai bumbu masakan khas suku Batak yang menghasilkan rasa pedas dan getir. *Z. acanthopodium* dikenal dengan nama lokal yang berbeda berdasarkan bahasa dan morfologis pada organ tumbuhan. Penelitian ini bertujuan untuk mendokumentasikan variasi infraspesifik andaliman berdasarkan morfologis dan fitokimiawi. Bahan penelitian berupa organ vegetatif dan reproduktif andaliman pada 11 individu di tiga kabupaten. Data morfologis diperoleh dari organ daun, bunga, buah, dan biji diperoleh melalui pengamatan dan pengukuran langsung di lapangan dan laboratorium. Data fitokimiawi berupa profil terpenoid diperoleh menggunakan metode kromatografi gas – spektrometri massa (*GC-MS*). Data morfologis dan fitokimiawi digunakan untuk analisis kluster dan analisis komponen utama. Hasil analisis kluster terhadap karakter morfologis menunjukkan dua kluster utama. Analisis komponen utama diketahui terdapat tujuh karakter morfologis dengan nilai *loading* lebih besar dari 0,2 pada komponen utama pertama. Hasil analisis kluster menunjukkan kekerabatan aksesori dipengaruhi oleh lokasi tumbuh di wilayah administratif kabupaten. *Z. acanthopodium* di Provinsi Sumatera Utara menunjukkan variasi morfologis pada organ batang, daun, bunga, dan buah. Hasil analisis terhadap teknik *GC-MS* pada 11 aksesori *Z. acanthopodium* menunjukkan variasi senyawa terpenoid. Variasi data kualitatif dan kuantitatif tersebut menjadi dasar pengelompokan aksesori ke dalam tiga kemitipe, yaitu Kemitipe I dicirikan oleh keberadaan senyawa *Limonene dioxide 1*, *citronellyl acetate*, *alpha-humulene*; Kemitipe II ditandai oleh senyawa *8-acetoxylinalool*, *alpha-terpineol*, *limonene dioxide 3*; Kemitipe III memiliki penciri senyawa *1-limonene*, *8-hydroxy geraniol*, *clinonasterol*, *germacrene B*. Hasil penelitian ini diharapkan menjadi kontribusi dalam menentukan dan mengembangkan status taksonomi *Z. acanthopodium* serta mengungkap penggunaan potensial aspek etnobotani dan farmakologis.

Kata kunci : karakterisasi, variasi populasi, taksonomi, terpenoid, *GC-MS*

MORPHOLOGICAL AND PHYTOCHEMICAL VARIATION OF ANDALIMAN (*Zanthoxylum acanthopodium* DC.) FROM TAPANULI UTARA, SIMALUNGUN, AND SAMOSIR, NORTH SUMATRA PROVINCE

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ABSTRACT

Andaliman (*Zanthoxylum Acanthopodium* DC.) is a wild plant that is used as a spice in Batak tribe that produces a spicy and bitter taste. *Z. acanthopodium* is known by different local names based on language and morphological in plant organs. This study aims to document the variations of *Z. acanthopodium* in North Sumatra based on morphological and phytochemicals. Materials used in this study were vegetative and reproductive organs of 11 individuals from three different districts. Morphological data from stem, leaves, flowers, fruits, and seeds were obtained from observation and measurements either in the field or laboratory. Phytochemical data in the form of terpenoid compounds from green fruit extract were obtained from gas chromatography method-mass spectrometry (GC-MS) analysis. Morphological and phytochemical data were subjected to cluster analysis and principal component analysis. Results of cluster analysis on morphological data revealed two main clusters. Seven morphological characters were identified as the major distinguishing characters for these two clusters based on principal component analysis. Results of the cluster analysis showed that the kinship of accessions was influenced by the location of growing in the administrative area of the district. Analysis on the GC-MS chromatograms of 11 *Z. acanthopodium* accessions revealed the infraspecific variation on terpenoid compounds from green fruit extract. The qualitative and quantitative infraspecific variation was used to differentiate accessions into three chemotypes. They were recognized chemotype I was characterized by the presence of *Limonene dioxide 1*, *citronellyl acetate*, *alpha-humulene*; Chemotype II was characterized by the presence of *delta-acetoxylinalool*, *alpha-terpineol*, *limonene dioxide 3*; and Chemotype III was characterized by the presence of *1-limonene*, *delta-hydroxy geraniol*, *clonasterol*, *germacrene B*. The results of this study are expected to be a contribution in determining and developing the taxonomic status of *Z. acanthopodium* in North Sumatra and revealing the use of potential aspects of ethnobotanical and pharmacological.

Key Word : characterization, population variation, taxonomy, terpenoid, GC-MS