KANDUNGAN METABOLIT KANTONG DAUN PADA TUMBUHAN KANTONG SEMAR (*Nepenthes gymnamphora* Nees)

SKRIPSI

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Sarjana Sains
Program Studi Biologi

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PROGRAM STUDI BIOLOGI
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UNIVERSITAS PENDIDIKAN INDONESIA
2025

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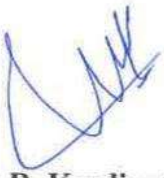

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Dengan ini saya menyatakan bahwa skripsi dengan judul "**Kandungan Metabolit Kantong Daun pada Tumbuhan Kantong Semar (*Nepenthes gymnamphora* Nees)"** ini beserta seluruh isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung risiko/sanksi apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

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Yang membuat pernyataan,

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Penulisan skripsi ini bertujuan untuk mengidentifikasi kandungan metabolit pada organ kantong tumbuhan *Nepenthes gymnamphora* Nees dengan variasi warna kantong, serta menganalisis potensi senyawa yang terkandung. Penulis berharap informasi yang dipaparkan dalam skripsi ini dapat menambah wawasan pembaca serta mendorong pengembangan potensi tumbuhan ini, sehingga pemanfaatannya lebih luas sekaligus mendukung upaya pelestarian tumbuhan ini.

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KANDUNGAN METABOLIT KANTONG DAUN PADA TUMBUHAN KANTONG SEMAR (*Nepenthes gymnamphora* Nees)

ABSTRAK

Tumbuhan kantong semar (*Nepenthes gymnamphora* Nees) menunjukkan modifikasi ujung daun dengan membentuk sulur dan kantong perangkap pasif dengan warna yang bervariasi untuk menangkap serangga sebagai sumber nutrisi. Beberapa metabolit diketahui terlibat dalam proses penangkapan mangsa. Penelitian ini bertujuan untuk menganalisis kandungan metabolit kantong daun berdasarkan variasi warna kantong. Sampel yang digunakan adalah kantong terbuka dengan warna hijau, hijau bercorak, dan merah. Sampel kantong diperoleh dari Gunung Pasir Cadas Panjang, Patengan, Kecamatan Rancabali, Kabupaten Bandung, Jawa Barat. Sampel kantong dikeringkan menggunakan *Vacuum Freeze Dryer* dan diekstraksi secara maserasi dengan pelarut metanol p.a, kemudian dianalisis menggunakan instrumen *Gas Chromatography-Mass Spectrometry* (GC-MS). Hasil analisis kandungan metabolit menunjukkan bahwa ketiga variasi warna kantong mengandung senyawa golongan naftokuinon, furan, ester asam lemak, flavonoid, fenolik, dan triterpenoid. Pada kantong hijau (KH) dan kantong hijau bercorak (KHB) masing-masing terdeteksi 9 senyawa, sedangkan pada kantong merah (KM) terdeteksi 31 senyawa. Senyawa plumbagin merupakan komponen dominan pada KH (35,8%) dan KM (17,09%). Pada KHB senyawa dominannya adalah 5-hidroksimetilfurfural (42,24%). Dari total ekstrak yang dianalisis, terdapat empat jenis senyawa yang terdeteksi pada semua ekstrak dengan konsentrasi yang berbeda, yaitu plumbagin, 5-hidroksimetilfurfural (5-HMF), metil palmitat, dan 2,3-dihidro-3,5-dihidroksi-6-metil-4H-piran-4-on (DDMP). Penelitian ini menunjukkan kantong *N. gymnamphora* hijau, hijau bercorak, dan merah mengandung berbagai senyawa dengan jenis dan konsentrasi yang berbeda. Variasi warna kantong berkaitan dengan komposisi metabolit, yang berpotensi mempengaruhi strategi penangkapan mangsa dan adaptasi ekologisnya.

Kata kunci: GC-MS, Metabolit, Metabolomik, Morfologi, *Nepenthes*,

METABOLITE CONTENT OF THE PITCHER LEAVES IN THE PITCHER PLANT (*Nepenthes gymnamphora* Nees)

ABSTRACT

The pitcher plant (Nepenthes gymnamphora Nees) exhibits leaf tip modification by forming tendrils and passive pitfall traps with color variations to capture insects as a source of nutrition. Several metabolites are involved in the process of capturing prey. This study aims to analyze the metabolite content of the pitcher leaves based on pitcher color variations. The samples used were open pitchers with green, patterned green, and red colors. The Pitcher samples were obtained from Mount Pasir Cadas Panjang, Patengan, Rancabali District, Bandung Regency, West Java. The pitcher samples were dried using a Vacuum Freeze Dryer and extracted by maceration with methanol p.a solvent, then analyzed using a Gas Chromatography-Mass Spectrometry (GC-MS) instrument. The results of metabolite analysis showed that the three variations of pitcher color contain compounds from the naphthoquinone, furan, fatty acid ester, flavonoid, phenolic, and triterpenoid groups. In the green pitchers (GP) and patterned green pitchers (PGP) each detected 9 compounds. In contrast, the red pitchers (RP) detected 31 compounds. The plumbagin compound was the most dominant in GP (35.8%) and RP (17.09%). In PGP, the dominant compound was 5-hydroxymethylfurfural (42.24%). Of the total extracts analyzed, there were four types of compounds detected in all extracts with different concentrations, namely plumbagin, 5-hydroxymethylfurfural (5-HMF), methyl palmitate, and 2,3-dihydro-3,5-dihydroxy-6-methyl-4H-pyran-4-one (DDMP). The green, patterned green, and red N. gymnamphora pitchers contained various compounds with different types and concentrations. Variations in pitcher color are related to metabolite composition, which has the potential to affect prey capture strategies and ecological adaptation.

***Keywords**: GC-MS, Metabolites, Metabolomics, Morphology, Nepenthes*

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DAFTAR GAMBAR

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DAFTAR LAMPIRAN

Lampiran **Halaman**

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