



COMPARATIVE MICROMORPHOLOGY LEAF SURFACE OF SELECTED *HOYA* SPP. (APOCYNACEAE) FROM SARAWAK

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ABSTRACT

KHALEEDA, R. & MEEKIONG, K. 2023. Comparative micromorphology leaf surface of selected *Hoya* spp. (Apocynaceae) from Sarawak. *Reinwardtia* 22(2): 69–77. — Traditionally, morphological parameters have been used for several taxonomic and ecological identifications. The morphological characteristics alone would be difficult to distinguish the evidence for species identification. Hence, a study of leaf anatomy was conducted to compare the structural characteristics which focused on the epidermal cells, stomata, and trichomes by using a Compound Microscope and Scanning Electron Microscope (SEM). Four selected species of *Hoya* from various localities within western of Sarawak were studied: *H. caudata*, *H. coronaria*, *H. omlorii*, and *H. verticillata*. The results showed stomatal types of *Hoya* species have stephanocytic stomata, except for two species which have slightly significant differences: *H. coronaria* has anomocytic stomata and *H. omlorii* has paracytic stomata. Meanwhile, in terms of the stomatal presence, all species possessed hypostomatic stomata, only *H. verticillata* has amphistomatic stomata which stomata presence on both sides of the adaxial and abaxial surfaces. Highest stomatal density was recorded in *H. omlorii* whereas the lowest were recorded in *H. coronaria*. Stomatal index were calculated and *H. caudata* has the highest with 12.80% and *H. coronaria* has the lowest value which is 6.28%. All four species were completely absence of trichomes except for *H. coronaria* which has simple unicellular non-glandular trichomes. The result indicates that the anatomical characteristics provide additional information and could be a great assist in the distinction within *Hoya* species.

Key words: Amphistomatic, Borneo, epiphyte, systematic, wax plant.

ABSTRAK

KHALEEDA, R. & MEEKIONG, K. 2023. Perbandingan morfologi mikro permukaan daun *Hoya* spp. (Apocynaceae) terpilih dari Sarawak. *Reinwardtia* 22(2): 69–77. — Secara konvensional, parameter morfologi telah digunakan untuk mengidentifikasi secara taksonomi dan ekologi. Karakter morfologi saja sulit dipakai untuk membedakan bukti identifikasi jenis. Oleh karena itu, kajian anatomi daun telah digunakan untuk membandingkan karakter struktur sel epidermis, stomata, dan trikoma dengan menggunakan Mikroskop Majemuk dan Mikroskop Pemindai Elektron (SEM). Empat jenis *Hoya* terpilih dari berbagai lokasi di bagian barat Sarawak telah dipelajari yaitu *H. caudata*, *H. coronaria*, *H. omlorii*, dan *H. verticillata*. Hasil penelitian menunjukkan kebanyakan tipe stomata keempat jenis *Hoya* mempunyai stomata stefanositik, kecuali dua jenis yang mempunyai perbedaan yang sedikit, yaitu *H. coronaria* yang mempunyai stomata anomositik dan *H. omlorii* mempunyai stomata parasitik. Hasil pengamatan stomata menunjukkan semua jenis mempunyai stomata hipostomatik dan hanya *H. verticillata* yang mempunyai stomata amfistomatik yaitu adanya stomata pada kedua belah permukaan adaksial dan abaksial. Kerapatan stomata tertinggi terdapat pada *H. omlorii*, sedangkan yang terendah pada *H. coronaria*. Indeks stomata tertinggi pada *H. caudata* ialah 12,80% dan terendah pada *H. coronaria* yaitu 6,28%. Trikoma tidak terdapat pada keempat jenis *Hoya* yang diperiksa, kecuali pada *H. coronaria* yang mempunyai trikoma tanpa kelenjar uniselular yang sederhana. Hasil penelitian menunjukkan karakter anatomi dapat memberi informasi tambahan dan dapat menjadi alat bantu untuk membedakan jenis-jenis *Hoya*.

Kata kunci: Amfistomatik, Borneo, epifit, sistematik, tumbuhan lilin.

INTRODUCTION

The genus *Hoya* belongs to the family Apocynaceae (subfamily Asclepiadoiceae) which is known as the wax-plant, wax-vine, wax-flower, or simply *Hoya*. *Hoya* R.Br. is a large and complex genus with approximately 350–450 species (Rodda, 2015). The Indomalaysian-Australian-Western Pacific Region is home to this plant (Rodda &

Simonsson, 2011), followed by Philippines, Borneo, and New Guinea which serving as diversity hotspots (Cabactulan *et al.*, 2017). Recent study by Rahayu (2021) revealed that Indonesia leads the most diverse *Hoya* which recorded with more than 110 species. Therefore, multiple papers describing new *Hoya* species have been published previously (Lamb *et al.*, 2014; Rodda, 2015) resulting increasing the number of *Hoya* taxa occurring in Borneo