New Findings from the Study of Seed Testa Surface Characters Using SEM on Microchirita, Damrongia and Utricularia Section Phyllaria of Peninsular Malaysia

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The genus Microchirita (C.B.Clarke) Y.Z. Wang and the closely related genus Damrongia are herbs of limestone while Utricularia L. species are small carnivorous herbs of wet habitats. Seed testa surface proves to provide diagnostic characters for Microchirita and Damrongia replacing stigma character that was previously used and that has caused confusion in the past. Damrongia has a reticulate testa while species from the genus Microchirita possess knobbly or cannicolate testa. For the genus Utricularia, species from section Phyllaria (Kurz) Kamienski often show variable macro-characters, but micro-characters such as seed testa are less variable and provide diagnostic characters for species determination. For example, a specimen from the highlands of Kelantan was distinguished from the morphologically similar but more common Utricularia striatula Sm. by its testa and could be identified as U. furcellata Oliv., a rare species formerly recorded only from North East India. The testa cells of U. furcellata have long processes with knobbly tips, while those of U. striatula have glochidiate processes with stellate tips. SEM model JOEL and FEI were used to examine seeds of both genera.

Keywords: Microchirita, Damrongia, Utricularia, Phyllaria, testa, SEM

INTRODUCTION

General Characters of Microchirita, Damrongia and Utricularia

The genus Microchirita (C.B.Clarke) Y.Z. Wang and the closely related genus Damrongia were formerly both included in the genus Chirita Buch.-Ham. ex D.Don (Gesneriaceae) [1, 2]. They are small herbs restricted to limestone hills where they grow in wet and shady places on limestone hills, at the cliff base, on cliff walls in crevices and in cave mouths [3, 4]. Microchirita species are short-lived, the inflorescences axillary and sometimes epiphyllous (where the peduncles are sometimes adnate to the petiole), crested or cymose one- to many-flowered and Damrongia is perennial and the inflorescences are scapiform.

Utricularia L. (Lentibulariaceae) is a cosmopolitan genus of small carnivorous herbs of wet habitats with minute submerged or subterranean suction traps [5]. In Peninsular Malaysia, it can be found from sea level [6] to the highest peak of Gunung Tahan, usually in acidic conditions [7]. Locally, two habits are observed, i.e. the terrestrial, semi-aquatics with small linear or rosulate leaves and the free-floating aquatics with much-divided, floating leaf-masses. Both habits produce erect, racemose inflorescences held above the water or moist substrate surfaces [8].

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