

Pollen Morphology and Taxonomy in Malesian *Phyllanthus* (*Phyllanthaceae*)

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Pollen morphology in 89 of 127 Malesian *Phyllanthus* species (*Phyllanthaceae*) was investigated. Thirty-four pollen types are recognized. They are grouped into five pollen classes. These pollen classes are I. Colporate pollen, II. Incomplete synaperturate pollen, III. Synaperturate pollen, IV. Clypeate pollen, and V. Porate pollen. A key for the pollen classes and types is provided. Evolutionary trends in pollen morphology and infrageneric classification in *Phyllanthus* are discussed.

Key words: *Euphorbiaceae*, Malesia, *Phyllanthaceae*, *Phyllanthus*, pollen class, pollen type.

A total number of 110 *Phyllanthus* species in Malesia was estimated in 2001 (Malesian *Euphorbiaceae* Newsletter 11). Since then, several regional taxonomic revisions accompanying pollen studies of Malesian *Phyllanthus* have been done by the authors including Peninsula Malaysia (Chang 2012), Borneo (Hsu 2011), Central Malesia (Wu 2012), the Philippines (Chen 2009, Chen et al. 2009) and New Guinea (Chang 2010, Tseng 2012). Based on these studies, 127 Malesian *Phyllanthus* species are recognized. In this paper, palynological data of these studies and some new data collected from Java (Liu 2015) and Sumatra (Kaewmuan 2016) are compared and integrated for grouping pollen types and pollen classes to discuss evolutionary trends in pollen morphology and infrageneric classification in

Phyllanthus. Pollen morphology of 89 out of 127 species was investigated. Previous palynological studies on Malesian *Phyllanthus* species were reported mainly by Punt (1980) and Chen et al. (2009). Punt examined 37 New Guinea *Phyllanthus* and reported nine pollen types, and Chen et al. examined 21 Philippine *Phyllanthus* and recognized eight pollen types. Many authors have discussed pollen morphology, phylogeny and infrageneric classification in *Phyllanthus* and concordance with the value of palynological data in *Phyllanthus* taxonomy. Punt (1967) proposed evolutionary trends of seven pollen characters to discuss evolutionary trends in *Phyllanthus* pollen types. Webster (1957) and Webster and Carpenter (2002, 2008) discussed pollen morphology and systematics of neotropical and paleotropical *Phyllanthus*, and grouping sections

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2001年にマレーシア地域には110種のコミカンソウ属 (ミカンソウ科) が知られていた。その後、われわれ

はマレー半島 (Chang 2012), ボルネオ (Hsu 2011), 中部マレーシア地域 (Wu 2012), フィリピン (Chen 2009,

Chen et al. 2009), およびニューギニア (Chang 2010, Tseng 2012) のコミカンソウ属を花粉形態とともに分類学的研究を行ってきた。その結果, マレーシア地域に 127 種を認めることができた。本研究ではその内, 89 種の花粉形態を調べ, 34 の花粉型を認めた。これらは I. 溝孔粒 Colporate pollen class, II. 不完全合流溝型花粉 Incomplete synaperturate pollen class, III. 合流溝型花粉 Synaperturate pollen class, IV. 楯型花粉 Clypeate pollen class, および V. 孔粒花粉 Porate pollen class の 5 花粉群

pollen classes にまとめることができた (Table 2)。各花粉型と花粉群との区別点を検索表で示した。また, 花粉型における進化方向とマレーシア地域のコミカンソウ属の属内分類について論議した。

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