



Hoya papaschonii (Apocynaceae: Asclepiadoideae), a new species from southern Thailand with a peculiar corona

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Abstract

The new *Hoya* species, here described and fully illustrated, is an epiphytic shrub with white-cream coloured flowers superficially similar to those of *Hoya telosmoides*. Its gynostegial corona includes five staminal and five interstaminal lobes, the latter never before observed in *Hoya*. The placement of the new species within *Hoya* was confirmed by a phylogenetic analysis based on nuclear ribosomal ITS and 5'-ETS regions, and chloroplast *psbA-trnH* and *trnT-trnL* intergenic spacers. It belongs to a group of species including *Hoya multiflora* and *Hoya praetorii*, characterised together with *H. papaschonii* by non-climbing habit, thin leaves lacking basal colleters, and short-lived peduncles.

Keywords: *Hoya* sect. *Centrostemma*, *Hoya* sect. *Cystidianthus*, *Hoya* sect. *Plocostemma*, ITS, 5'-ETS, *psbA-trnH*, *trnT-trnL*.

Introduction

The flowers of Apocynaceae subfamilies Asclepiadoideae and Periplocoideae are characterised by an extreme diversification in the morphology of the corona (Endress & Bruyns 2000, Fishbein 2001, Kunze 2005). A general system to describe the corona devised by Liede & Kunze (1993) defined basic corona types and subdivided them as corolline and gynostegial. Corolline coronas (Cc) are situated primarily in the petal sinuses or form a continuous ring around the base of the gynostegium (Ca), while gynostegial coronas are connate with the stamens. These can be staminal (Cs), attached at the back of the stamens, or interstaminal (Cis), originating at the base of the filament tube in the interstaminal sections. Liede & Kunze (1993) suggested that complex corona morphologies arise from the combination and fusion of these basic corona types. In contrast, Fishbein (2001) postulated that staminal and interstaminal coronas may be treated as homologous, differing simply in the varied elaboration of different segments of the flower, as observed in *Sarcostemma* Brown (1810: 463) (now *Cynanchum* Linnaeus [1753: 212]) by Endress & Bruyns (2000).

The most common corona type in *Hoya* Brown (1810: 459) (Apocynaceae-Asclepiadoideae-Marsdenieae [Endress *et al.* 2014]) is staminal and its lobes are typically inrolled on the outer edge (Forster & Liddle 1991, Forster *et al.* 1998). In a recent study on corona morphology of *Hoya* by Kunze & Wanntorp (2008a), the staminal corona was described as the combination of two non-homologous elements: (1) the staminal lobe, formed by an inner and an outer process (Rintz 1978), and (2) two latero-basal lobes of the anther that can form two homologous structures, the revolute margins and the anther skirt. The lobes of the anther skirt originating from adjoining staminal corona lobes are usually separated by the guide rails. However, in *Hoya spartioides* Kloppenburg (2001: 8), in contrast, the anther skirts are fused in the interstaminal sector (Kunze & Wanntorp 2008b). In addition, a few *Hoya* species, e.g. *Hoya multiflora* Blume (1823: 49), and *Hoya curtisii* King & Gamble (1908: 563), exhibit an annular corona (Ca) situated below the gynostegium, connate to the pollen tube (Kunze & Wanntorp 2008a). Annular corolline coronas are rare in other Marsdenieae but instead commonly observed in Gonolobinae and Ceropegieae (Liede & Kunze 1993, Fishbein 2001, Krings 2008).

Based on phylogenetic analyses (Wanntorp *et al.* 2006a,b), a reassessment of morphological synapomorphies for *Hoya* was undertaken by Wanntorp & Kunze (2009). However, the recently described *Hoya ignorata* Trần *et al.*

The general morphology of the corona of *H. papaschonii* is dissimilar from all known species belonging to the genus, but instead superficially resembles the corona of a group of species of *Cynanchum* formerly included in *Sarcostemma* (Meve & Liede-Schumann 2012), in which the corona exhibits 5 distinct erect staminal lobes and a continuous basal ring of staminal and interstaminal elements. However, in *Cynanchum* the guide rails are linear and terminate shortly below the pollinaria, while in *H. papaschonii* they are very long and terminate at the umbonate tip of the interstaminal lobe. A separation of guide rail and nectar tube as suggested by Kunze & Wanntorp (2008a) is not evident in *H. papaschonii*.

Additional specimens examined:—THAILAND. Yala, Betong, Hala-Bala, 22 June 1999, *C. Niyomdham 5715* (BKF!)

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