

Flora of Singapore precursors, 5. Some resolution of a long-standing problem in *Psychotria* (Rubiaceae) of Singapore

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ABSTRACT. Owing to a mix-up by Wallich, there has been confusion over the application of three names in *Psychotria* based on collections made by William Jack, purportedly in Penang in 1819. As pointed out by Merrill, *Psychotria malayana* Jack is the same species as *P. stipulacea* Wall. and not *P. aurantiaca* Wall. The plants from Java that were referred by Blume to *Psychotria aurantiaca* were renamed *P. valetonii* by Hochreutiner. However, there is an earlier name available, *Psychotria megacoma* Miq. While specimens from Singapore that were referred to as *Psychotria* sp. 9 by Wong show some differences from much of the material from Java, the wide variation in material from Borneo leads to the decision to treat *P. megacoma* Miq. as the correct name for plants from Singapore, Sumatra, Java and Borneo. A second-step lectotypification is made for *Psychotria malayana* Jack and lectotypes are designated for *P. stipulacea* Wall., *P. megacoma* Miq., *Grumilea aurantiaca* var. *lutescens* Miq. and *G. aurantiaca* var. *subplumbea* Miq.

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Introduction

On the last day of 1818, William Jack disembarked at Penang (Burkill, 1916). Jack was a young doctor from Scotland. He had lately been recruited by Sir Stamford Raffles, Lieutenant-Governor of Bencoolen in Sumatra, as botanist in his staff. Jack remained on Penang until late May 1819. During this period, he collected plants, sending some of his collections to Nathaniel Wallich, the superintendent of the East India Company's Botanic Garden in Calcutta. After a few weeks in the newly founded Singapore, Jack travelled to Bencoolen, where he was to be based. Unfortunately, Jack died of fever in 1822. Before his final illness, Jack had described some new plant species in a series of papers (Jack, 1820a, 1820b, 1822) published in Bencoolen in the *Malayan Miscellanies*. One of the earliest of these was *Psychotria malayana* Jack based on one of his collections from Penang. Soon after, Wallich included descriptions of three *Psychotria* species in the second volume of the first edition of William Roxburgh's *Flora Indica* (1824). These were *Psychotria stipulacea* Wall., *P. aurantiaca* Wall. and

P. curviflora Wall., all based entirely on the Jack collections from Penang – the first two are relevant to the current paper. In a Corrections and Additions section at the end of the book, Wallich noted that *Psychotria malayana* Jack should be added under his own *P. aurantiaca*. As this insertion was, as far as is known, published at the same time as the species description, the name *Psychotria aurantiaca* is rendered superfluous, to be based on the type of *P. malayana* Jack. Wallich's equating of *Psychotria malayana* Jack with his own *P. aurantiaca* appears to have strongly influenced subsequent authors. Hooker (1880), King & Gamble (1906) and Ridley (1923) all used *Psychotria malayana* in the sense of Wallich's *P. aurantiaca*.

This confusion over the application of names led Hochreutiner (1934), following Valetton (1909), to the belief that the plants from Java to which Blume had applied the name *Psychotria aurantiaca* Wall. were not the same as the plant that Wallich had described. Hochreutiner therefore validated the new name *Psychotria valetonii* Hochr. for the species from Java.

Merrill (1950) noted that the foregoing interpretation of *Psychotria malayana* Jack was wrong. It was *Psychotria stipulacea* rather than *P. aurantiaca* that represented *P. malayana*. This is fairly obvious from Jack's original description that notes the characteristic ridges below the base of the petioles and is confirmed by a specimen in the Edinburgh herbarium that is labelled *Psychotria malayana* in Jack's hand.

What then of the plants that have previously been called *Psychotria aurantiaca* Wall.? The combination itself is not available for use as Wallich rendered it superfluous when published. Hochreutiner (1934) typified *Psychotria valetonii* to a Blume specimen in the Prodromus Herbarium in Geneva. I have seen a photograph of this specimen and it appears fairly typical of Java material. Valetton (1909) provided an excellent illustration under the name *Psychotria aurantiaca*. The terminal inflorescences with a more-or-less sessile flower in the ultimate fork of the inflorescence branches, and a cupular calyx with scarcely discernible lobes that persists on the fruits when dry as an inverted open-topped fustrum are important characters of the species. The Java material is generally very similar to the Jack collection attributed to Penang that Wallich first named *Psychotria aurantiaca*. Actually, I wonder if this collection did not really come from Sumatra as I have not seen any identical material from Peninsular Malaysia.

The correct name for the plant from Java and Sumatra would be *Psychotria valetonii* Hochr. unless there is an earlier synonym available. In this case there is such a candidate. This is *Psychotria megacoma* Miq. The original material of *Psychotria megacoma* consists of three sheets collected by Junghuhn. Two sheets consist of very similar flowering shoots, the third bears just four large leaves. The last sheet has one of Junghuhn's labels in printed Gothic script stating Java. The other two have labels written by Miquel, one stating the collecting locality as Java and the other Sumatra. In the protologue, Miquel stated that the species was from Java, so I here select the flowering specimen labelled Java by Miquel as the lectotype. I suspect that all the material does come from Java as it is so uniform in appearance. The specimens are similar to much of the material referred to *Psychotria aurantiaca* or *P. valetonii* from Java and Sumatra, but they are notably robust, particularly in the size of the inflorescences and flowers. Merrill has left notes with the specimens stating that they

are different from *P. valetonii*, but I do not agree. They simply seem to be at the upper end of the size range for *Psychotria valetonii*. I suggest that Junghuhn located some particularly vigorous specimens. I therefore believe that *Psychotria valetonii* should be treated as a synonym of *P. megacoma*.

Wong (1989) included *Psychotria* sp. 9 in his account of the tree and shrub species of *Psychotria* in Peninsular Malaysia and Singapore. He only referred specimens collected in Singapore to sp. 9. These had been referred erroneously to *Psychotria malayana* by Ridley (1923), who used *P. stipulacea* Wall. for the true *P. malayana*. This Singapore *Psychotria* sp. 9 material is undoubtedly close to *P. megacoma*, having the same inflorescence feature of ultimate triplets of flowers, a sessile one in the fork of the two branches bearing the lateral flowers, one on each side; a more-or-less truncate calyx that persists on the fruits; and a marginal rim that is notably flat and broad at the basal end of the pyrene, like the peak of a cap, and three broad ridges on the apical raised portion. The seeds of both are ruminant but give a negative reaction to the ethanol test (Sohmer & Davis, 2007), failing to liberate seedcoat pigments. The differences include the leaves typically drying red-brown with hairs on the abaxial surface of the midrib and scattered short ones on the lamina in *Psychotria* sp. 9, compared to green or grey dry leaves that are glabrous in typical *P. megacoma*. Also, the inflorescence is typically about as broad as long in *Psychotria* sp. 9 but certainly more elongate in *P. megacoma*. However, even in material from Java there are collections that dry red-brown and occasionally hairs can be found on the leaves. A specimen collected on the Anambas Islands (SFN 20131) seems very close to *Psychotria* sp. 9, indicating that the entity is unlikely to be confined to Singapore. The whole picture gets even more complicated when Borneo material is considered. There seem to be yet further variations on the general theme of *Psychotria megacoma* found on Borneo. A form with leaves that generally dry reddish brown with hairs on the midrib and lamina surface below, and an elongate inflorescence, is widely collected from Sabah (Fig. 1 is a photograph of such a plant), but there are collections from Sarawak that are much closer to the typical Javanese plant.

I conclude that, at least for the interim, it is best to take a broad view of *Psychotria megacoma* and accept it as the correct name for the specimens from the Malay Peninsula, Sumatra, Java and Borneo, including *Psychotria* sp. 9. Future work, beyond the scope of the present investigation, may lead to the recognition of infraspecific taxa or even further splits at species level.

Lectotypifications

1. *Psychotria malayana* Jack, Malayan Misc. 1(1): 3 (1820). – *Psychotria aurantiaca* Wall. in Roxburgh, Fl. Ind. 2: 165, 574 (1824), nom. illeg. (superfl.). – *Grumilea aurantiaca* Miq., Fl. Ned. Ind. 2: 296 (1857), nom. illeg. (superfl.). – *Uragoga malayana* (Jack) Kuntze, Revis. Gen. Pl. 2: 961 (1891). – TYPE: Penang, 1819, *W. Jack s.n.* [EIC 8329A] (lectotype K-W [K001125258], first step designated by Merrill, Webbia 7: 322 (1950), second step designated here).

Psychotria stipulacea Wall. in Roxburgh, Fl. Ind. 2: 164 (1824). – *Uragoga stipulacea* (Wall.) Kuntze, Revis. Gen. Pl. 1: 301 (Nov 1891), nom. illeg., non *U. stipulacea* (Blume) K.Schum. (Aug 1891). – TYPE: Penang, 1819, *W. Jack s.n.* [EIC 8329A] (lectotype K-W [K001125258], designated here).

Notes. Merrill (1950) stated that the actual type [of *P. malayana* Jack] was a specimen from Penang collected by William Jack in 1819 and distributed as Wallich list no. 8329. This effectively lectotypifies the plant to the Jack collection that Wallich distributed under the number 8329A, rather than his own gathering from the island (8329B). I am not aware of any other specimen definitely under 8329A than that in K-W, but I feel it best to formally make a second-step typification as a duplicate may yet come to light, or one without the letter suffix indicated might be taken as the type.

There is one specimen of *Psychotria malayana* collected from Singapore.

Singapore specimen examined. **Bukit Timah:** 1897, *Ridley 9122* (SING [SING0030530]).

2. *Psychotria megacoma* Miq., Fl. Ned. Ind. 2: 284 (1857). – *Uragoga megacoma* (Miq.) Kuntze, Revis. Gen. Pl. 2: 961 (1891). – TYPE: Java, *F.W. Junghuhn s.n.* (lectotype L [L0281713], designated here). (Fig. 1)

Psychotria valetonii Hochr., Candollea 5: 266 (1934). – *Psychotria aurantiaca* auct. non Wall.: Blume, Bijdr. Fl. Ned. Ind.: 962 (1826). – TYPE: Java, *C.L. Blume s.n.* (holotype G-DC [G00667566]).

Psychotria sp. 9, K.M.Wong, Tree Fl. Malaya 4: 398 (1989).

Grumilea aurantiaca var. *lutescens* Miq., Fl. Ned. Ind. 2: 297 (1857). – *Psychotria aurantiaca* var. *lutescens* (Miq.) Boerl., Handl. Fl. Ned. Ind. (Boerlage) 2(1): 138 (1891). – TYPE: Java, *H. Zollinger 173* (lectotype L [matrix barcode L.2947299], designated here).

Grumilea aurantiaca var. *subplumbea* Miq., Fl. Ned. Ind. 2: 297 (1857). – *Psychotria aurantiaca* var. *subplumbea* (Miq.) Boerl., Handl. Fl. Ned. Ind. (Boerlage) 2(1): 138 (1891). – TYPE: Java, [Gunung] Gede der fehr. 3-5000', *F.W. Junghuhn s.n.* (lectotype L [L0281723], designated here; possible isolectotypes L [matrix barcode L.2947239], U [matrix barcode U.1580519]).

Notes. I have not seen any likely original material for Miquel's varieties *lanceolata*, *parvifolia* or *polyneura*, so cannot safely dispose of them in synonymy here.

Singapore specimens examined. s.dat., *Hullett 904* (K); s.dat., *Cantley 2807* (SING [SING0045676]); **Bukit Panjang:** 1906, *Ridley 12530* (K, SING [SING0045682]); *ibid.*, 1907, *Ridley s.n.* (K). **Bukit Timah:** 1894, *Ridley 6468* (K, SING [SING0030529]); Bukit



Fig. 1. Photographs of *Psychotria megacoma* Miq. s.l., taken near Kota Kinabalu in Sabah, Malaysia. **A.** General habit of the plant. **B.** An infructescence of ripening fruit. (Photos: K.H. Ong)

Timah Road, W. side 7½ miles, s.dat., *Ridley 904* (SING [SING0045677]). **Bukit Mandai:** 1894, *Ridley 6556* (SING [SING0045681]); *ibid.*, 21 Oct 1901, *Ridley 11238* (K, SING [SING0045679]). **Jurong:** Mar 1891, *Ridley 8422* (SING [SING0045678]). **Stagmount:** 1901, *Ridley 11272* (SING [SING0045683]). **Chan Chu Kang:** 1895, *Hullett s.n.* (SING [SING0045680]).

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