

**A NEW VARIETY OF TYLOPHORA TETRAPETALA
(ASCLEPIADACEAE)**

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SUMMARY

In the species *Tylophora tetrapetala* (Dennst.) Suresh two varieties are recognized, var. *tetrapetala* (India, Sri Lanka, Burma, Malaysia, Singapore, and Java) and var. *tenuissima* Swarupanandan (India and Burma).

Tylophora tetrapetala (Dennst.) Suresh is a recent combination for a species hitherto known as *T. tenuissima* (Willd.) Wight & Arn. or *T. tenuis* Blume. Plants of the species are thin twiners with wiry branchlets, ovate, elliptic-ovate, oblong-elliptic, or oblong-lanceolate leaves, dichotomous or flexuous extra-axillary inflorescence, minute flowers with fleshy subglobose inconspicuous staminal corona and narrowly lanceolate merocarps. The species is known from South and Southeast Asia (India, Sri Lanka, Bangladesh, South China, Burma, Vietnam, Malaysia, Singapore, Indonesia and Borneo; cf. Tsiang, 1939).

Wight & Arnott (in Wight, 1834: 49) first differentiated between *Asclepias tenuissima* Roxb. (1832) and 'A. *dichotoma* Herb. Rottler', treating them as distinct species: *Tylophora tenuissima* (Willd.) Wight & Arn. (incl. *Asclepias tenuissima* Roxb.) and *T. carnosa* Wall. ex Wight & Arn. (incl. *Asclepias dichotoma* Rottler). They differentiated *T. tenuissima* from *T. carnosa* by the oblong-lanceolate leaves which are nearly twice the length and much narrower in the former but ovate in the latter.

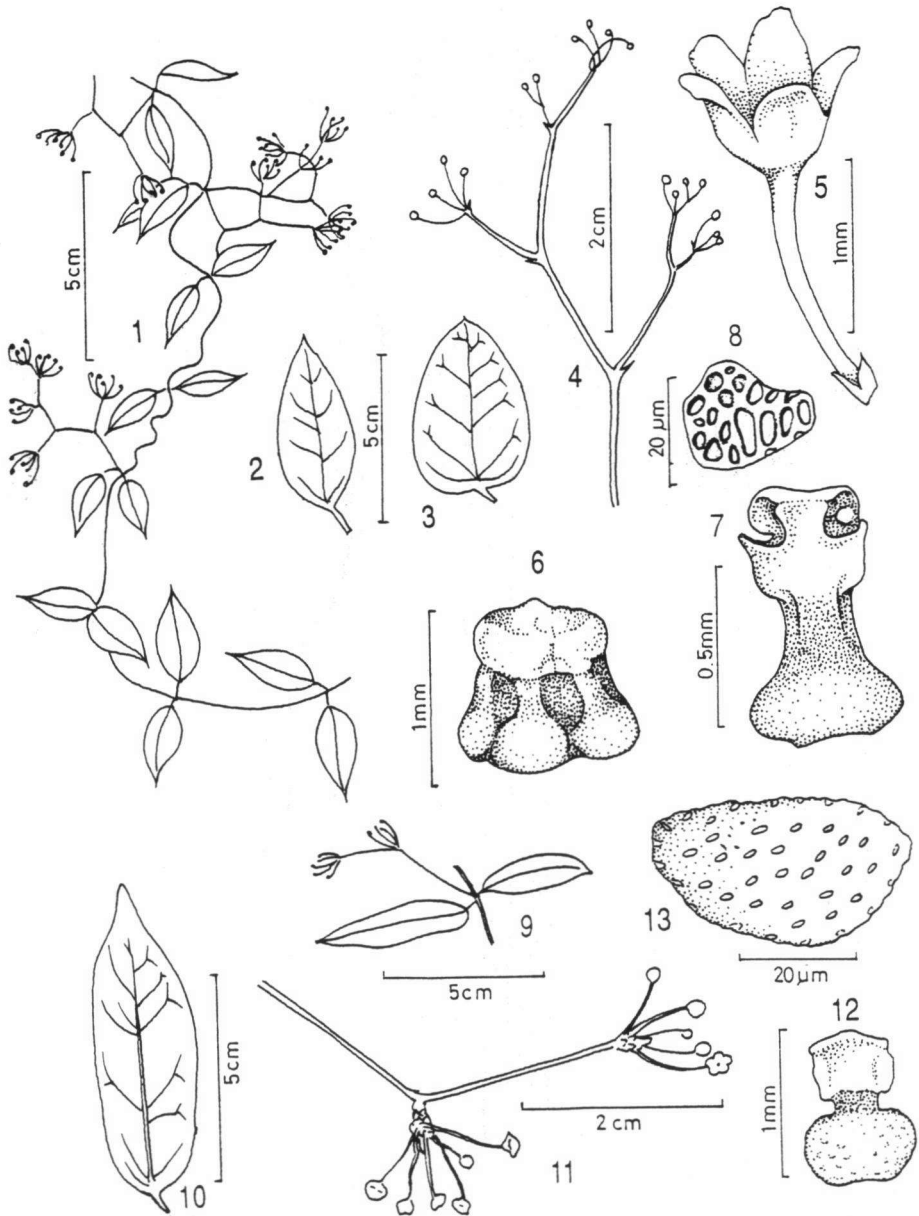
Subsequently Hooker (1883: 42) merged the two under *Tylophora tenuis* Blume, which he thought to be the earliest valid name for the taxon. Most subsequent authors accepted Hooker's taxonomic conclusion, e. g., Hüber (1973, 1983) and Nicolson et al. (1988). There had been no discussion of the high morphological variability of the species, which Hooker (1883) noted when he merged *T. tenuissima* and *T. carnosa*.

After a study of the Asclepiadaceae of Kerala, the first author is convinced that the variability of the species falls into two varieties. While the leaf shape alone was important for Wight & Arnott, there are hitherto unconsidered features of the inflorescence and leaves, supported by anatomical differences of the leaves and stigma.

The varieties recognized here are not congruent with the two species that Wight & Arnott recognised. Indeed, type material of the synonyms and subsequent misapplications often involve mixtures of both varieties.

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Figs. 1–8. *Tylophora tetrapetala* (Dennst.) Suresh var. *tetrapetala*. 1. Flowering twig; 2 & 3. leaves of the main stem; 4. inflorescence; 5. flower; 6. gynostegium; 7. stamen and corresponding coronal scale; 8. stigmatic xylem element. — Figs. 9–13. *T. tetrapetala* var. *tenuissima* Swarupnandan. 9. Piece of flowering twig; 10. leaf; 11. inflorescence; 12. stamen and corresponding coronal scale; 13. stigmatic xylem element.

KEY TO THE VARIETIES

- 1a. Inflorescence dichotomously branched, individual cymes stalked; twigs pale green (pallid); leaves ovate, fleshy when fresh; plants inhabiting banks of backwaters var. **tetrapetala**
- b. Inflorescence flexuous, individual cymes sessile; twigs deep green; leaves elliptic, oblong-elliptic or oblong-lanceolate, not fleshy; plants of inland (plains and uplands) var. **tenuissima**

Tylophora tetrapetala (Dennst.) Suresh var. **tetrapetala** – Figs. 1–8

Tylophora tetrapetala (Dennst.) Suresh in Nicolson et al., *Interpr. Rheede's Hort. Malab.* (1988) 64.

— [*Parparam* Rheede, *Hort. Malab.* 9 (1689) t. 17.] — *Asclepias tetrapetala* Dennst., *Schlüssel Hort. Malab.* (1818) 14, 18, 35. — Type: Rheede, l.c., t. 17 (the sole basis of the name).

Tylophora tenuis Blume, *Bijdr.* (1827) 1062. — Type: *Blume s.n.* (L 202480; photo seen). Note: *T. tenuis* of most other authors is a mixture of var. *tetrapetala* and var. *tenuissima*.

Tylophora carnososa Wall. ex Wight & Arn. in Wight, *Contr. Bot. India* (1834) 49, et auct. pl., p. p. — Lectotype: '*Asclepias dichotoma* Rottler' in Herb. Wight (*Wallich 8200B*; K-W; microfiche seen), possibly from Tanjore, India (here selected).

Cynanchum? Griffith, *Ic. Pl. Asiat.* 4 (1854) 402, t. 2, f. 1–8.

Tylophora tenuis var. *ovata* Miq., *Fl. Ned. Indië* 2 (1857) 489. — Type: *Horsfield s.n.*, Blambangan, Java (not seen).

Branchlets with leaves pale green or yellowish green. Leaf blade 3–5 × 2–3 cm, ovate, tip acute, mucronulate, base obtuse or cordiform. Inflorescence dichotomously branched, individual cymes stalked. Pedicels 4–5 mm long. Corolla 1–1.5 mm across. Coronal scales rather smooth.

Anatomy – Leaf midrib in transection not raised adaxially, hypodermis noncollenchymatous, mesophyll devoid of druses. Calyx vasculature of the sepals poorly ramified. Corolla adaxial surface devoid of stomata, vasculature of lobes poorly ramified. Pistil with stigmatic xylem elements reticulate-thickened (Fig. 8).

Distribution – Specimens are known from India, Sri Lanka, Burma, Malaysia and Singapore.

Ecology – Inhabits banks of back waters (and sea coasts) and probably does not extend far inland; known up to 200 m above sea level. Flowering Feb., May, Sept.; fruiting Sept.

Vernacular name – Malayalam: *Parparam* (Rheede, 1689).

Note – *Tylophora tenuis* sensu auct. pl. (non Blume, 1827) are mixtures of both var. *tetrapetala* and var. *tenuissima*. The protologue of *T. carnososa* Wall. ex Wight & Arn. involves mixed material. Wallich had three elements, distributed as 8200A–C and commented that C (the only one labelled '*T. carnososa* Wall. ') appeared to be different from A and B (both labelled '*Asclepias dichotoma* Rottler'). Material of 8200C is a poor specimen from Amherst (Burma) and apparently is var. *tenuissima*. A and B are ample specimens, clearly var. *tetrapetala*. Wight and Arnott saw and cited all (including Amherst material) but it is evident that their description could not have been drawn from 8200C. The best lectotype seems to be 8200B, the specimen from Herb. Wight.

Specimens seen: BURMA. Yahudan, Mergui: *Meebold 14874* (CAL), *16560* (CAL).

INDIA. Kerala State, Alleppey Dist., Cherthala: *Swarupanandan 13645* (CALI). Quilon Dist.: *Fischer 4983* (Herb. For. Res. Inst., Coimbatore); *Wight 1836/619* (MH). Trivandrum Dist., Veli: *Joseph Pali 13851* (CALI); *Swarupanandan 13664* (MH). — Gujarat State, Kanchana Dist.: *Kerr 13110* (CAL). — Tamilnadu State, Thanjavur Dist., Tanjore: Collector not known (MH 32540; probably a duplicate of the type of *T. carnosa*?).

INDONESIA. Java: *Blume s.n.* (L 202480).

MALAYSIA. Johore, Sg. Hulu, Sembouj: *Lake & Kelsali 4030* (CAL); Johore Town: *HNR(idley) 9162* (CAL); *Scortechini s.n.* (CAL 295280). Malacca, loc. unknown: *Griffith s.n.* (MH 32547). — Sabah, Sandakan: *Elmer 20028* (CAL). — Sarawak, lake nr Kuching: *Haviland 1823* (CAL); loc. unknown: *Haviland 3060* (CAL). — Province not known: *Soping 6099* (CAL); *Ulu Bubong 10600* (CAL); *Wray Jr. 2125* (CAL).

SINGAPORE. Blakay Mati: *HNR(idley) s.n.* (CAL 29524); Alexandra Rd: *HNR(idley) s.n.* (CAL 295287).

SRI LANKA. Colombo Dist.: *Wallich 8200A* (CAL).

***Tylophora tetrapetala* var. *tenuissima* (Willd.) Swarupanandan, *stat. et comb. nov.* — Figs. 9–13**

Asclepias tenuissima Roxb. [Hort. Bengal. (1814) 20, nom. nud.] ex Willd. in Roemer & Schultes, Syst. Veg. 6 (1820) 86; Roxb., Fl. Ind., ed. 2, 2 (1832) 41. — *Tylophora tenuissima* (Willd.) Wight & Arn. in Wight, Contr. Bot. India (1834) 49; Wight, Icon. Pl. Ind. Orient. 2 (3) (1840/43) t. 538; Decne. in DC., Prod. 8 (1844) 607; Voigt, Hort. Suburb. Calcutt. (1845) 539. — Holotype: *Willdenow Herb. 5273* (B, microfiche seen), possibly from Bengal, India, as indicated by Roxburgh (1814). Note: It also matches Roxburgh's drawing no. 1383 of *Asclepias tenuissima* at K and CAL and the material, *Roxburgh s.n.* (in Herb. Hookerianum-1854; K).

Tylophora carnosa sensu Wight, Icon. Pl. Ind. Orient. 2 (1) (1840) t. 351, non Wall. ex Wight & Arn. in Wight, 1834.

Branchlets with leaves deep green. Leaf blade 4.5–8 × 2–2.7 cm, narrow-elliptic to elliptic-oblong or oblong-lanceolate, narrower and often longer than that of var. *tetrapetala*, tip acute, mucronulate, base obtuse, not cordiform. Inflorescence flexuous, individual cymes at the flexuares, (2 or) 3 or 4, sessile. Pedicels 5–8 mm long. Corolla 2–2.5 mm across, slightly larger than that of the other variety. Coronal scales minutely tuberculate.

Anatomy — Leaf midrib in transection slightly raised adaxially, cuticle thick, colenchymatous hypodermis present along the midrib, druses present in the mesophyll. Calyx vasculature more ramifying than that of var. *tetrapetala*. Corolla stomata present on the adaxial surface, vasculature of the lobes more ramifying than that of var. *tetrapetala*. Pistil with stigmatic xylem elements spirally thickened (Fig. 13).

Distribution — Specimens of this variety are known from India and Burma.

Ecology — Inland habitats ascending to 2500 m altitude. Flowering March–Oct.; fruiting July–Nov.

Vernacular names — Malayalam: Puzhukkolli. Tamil: Sakapoooosepala (Wight, 1840).

Note — Hüber (1973, 1983) erroneously ascribed the validation of *Asclepias tenuissima* to “Roxburgh, Fl. Indica, ed. Carey & Wallich, 2: 41. 1821.” But the binomial was validated even earlier by Willdenow. It appears that Roxburgh sent named material to Willdenow (died 1812) who accepted the name and drafted the validating description that Roemer & Schultes published.

Specimens seen: BURMA. Localities unknown: *Wallich 8200C* (K-W, microfiche seen); *Griffith 3764* (CAL).

INDIA. Karnataka State, South Canara Dist., Jahlsur: *Barber 2427* (MH). Coorg Dist., Mercara: *Hohenacker 634* (K, photo seen). Keala State, Idukki Dist., Umiaiy malai, Devikolam: *Shetty 26573* (MH), *27314* (MH). Kannoor Dist., Ezhimala hill slopes: *Swarupanandan 13755* (CALI). Palghat Dist., Muthukurussi, Mannarghat Taluk: *Swarupanandan 13847* (CALI); Kaikatty, Nelliampathy: *Swarupanandan 13874* (CALI); Tunakkadavu, Parambikulam: *Swarupanandan 13886* (CALI); Mukkali, Attappadi: *Swarupanandan 13958* (CALI); nr Dhoni R.: *Vajravelu 19085* (MH). Trissur Dist., Charpa: *Ramamurthy 27048* (MH); Trichur: Collector not known (MH 32538). Trivandrum Dist., Ponnudi For.: *Swarupanandan 13703* (CALI). Wynad Dist., Sultan's Battery: *Swarupanandan 13935* (CALI). — Tamilnadu State, Coimbatore Dist., nr Thannipallam: *Henry 519* (MH). Madurai Dist., Kodaikanal shola: *Bourne 404* (MH); Vattakanal: *Deb 30966*; Upper Pulneys: *Fischer 2943* (CAL), *3557* (CAL); *St. Munch 27* (CAL); nr Poomparai: *Sebastine 24591* (MH). Salem Dist., Kotagiri RF: *Vajravelu 2411* (MH). Tirunelvely Dist., Karyar, Tirunelvely: *Barber 3194* (MH); road to Mancholai: *Sebastine 4528* (MH); Courtallam hills: Collector not known (MH 32541). Trichinopoly Dist., Kaspia For., Putukottai: *Ramamurthy 24987* (MH). District/locality not known: *Sanlieres 741* (CAL). — West Bengal State, Alipore Dist., Salt lake, Calcutta: *Clarke 21616* (CAL); Taki: *Clarke 217531*, *295301* (CAL); Gangasagar Is.: *Mukherjee 5939*, *8731* (CAL); Kagdip, Sundribuns: *Prain s.n.* (CAL 295299); Kodhara: *Prain s.n.* (CAL 295300). District not known: *Hoos-sain, Shaik Aboo 23* (CAL); *Roxburgh s.n.* (in Herb. Hookerianum-1854; K; photo seen); *Wight s.n. in Wallich 8200B* (CAL; not that in K-W, material K-W 8200B is var. *tetrapetala*); locality not known.

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