

A NEW SPECIES OF THE GENUS TETRAPETALUM (ANNONACEAE) FROM BORNEO

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SUMMARY

A new species is described in *Tetrapetalum*, a small genus of which two species have been known. Although Van Heusden (1992) stated that *Tetrapetalum* differs from *Cyathostemma* only in its dimerous flowers, *Tetrapetalum* seems to be more closely related with *Uvaria* than with *Cyathostemma*, because of spreading petals and unlobed stigmas. A key to the three species of *Tetrapetalum* is provided here.

Key words: Annonaceae, *Uvaria* group, *Tetrapetalum*.

INTRODUCTION

Tetrapetalum Miq. is a small genus of the family Annonaceae, which was described by Miquel (1865). Previously only two species have been reported. It belongs to the *Uvaria* group sensu Van Heusden (1992: 143), which is characterised by the presence of stellate hairs, valvate sepals, imbricate petals, etc. Among her *Uvaria* group, *Tetrapetalum* is unique in having dimerous flowers.

***Tetrapetalum lambirensis* K. Momose, spec. nov. — Fig. 1**

Haec species *T. volubili* Miq. et *T. borneensi* Merr. affinis, sed differt foliis tenuioribus, nervis pluriis, floribus grandioribus et staminodiis praesentibus. — Typus: *K. Momose 5069* (holo KYO; iso L, SAR), Sarawak, Lambir Hills National Park, Miri.

Woody climber. Young twigs brown, stellate-pubescent, later becoming glabrous and black, striations distinct. *Leaves* subcoriaceous, elliptic or ovate, 16–23 × 6–8 cm, apex acute, base cordate, glabrous above except the stellate-pubescent sunken midrib, pale brown when dry, glabrous beneath except the stellate-pubescent raised midrib, brown when dry; nerves 11–16 pairs, curving, prominent beneath, reticulation forming a fine network, visible on both surfaces; petiole 4–5 mm long, stellate-pubescent. *Inflorescence* a cyme with 1 or 2 flowers, opposite to the leaves; pedicels 8–16 mm, with a bracteole on the upper part; bracts and bracteoles 1.5–3.5 mm long, orbicular; flower buds depressed globose; flowers 30 mm across when fully expanding. *Sepals* 2, valvate, 5 × 9 mm, orbicular, apex rounded, concave inside, convex outside, subcoriaceous, stellate-pubescent on both surfaces. *Petals* 4 in two whorls, subequal but inner petals slightly narrower, fully expanding on anthesis, separated at bases and overlapped at tips in bud, rounded at apex, concave on inside, convex on outside, coriaceous, stellate-pubescent on both surfaces; outer ones orbicular, 12 × 12 mm; inner ones elliptic, 12 × 10 mm. *Torus* convex, depressed ovoid, 7 mm high, 11 mm in



Fig. 1. *Tetrapetalum lambirensis* K. Momose (Momose 5069, KYO). a. Flowering twig; b. flower (stamens and petals removed); c. stamen (lateral view); d. staminode (dorsal and lateral view). — Scale bar of a & b = 1 cm, of c & d = 1 mm.

diameter, the first whorl from outside consists of staminodes. *Staminodes* oblanceolate or linear, acute or obtuse at apex, 3.5–4 mm long, strongly or weakly incurved. *Stamens* numerous; filament 0.2 mm long, anthers latrorse, 1.7 mm long; elongation of anther connectives 1.6–3.2 mm, shorter in inner whorls, tongue-shaped, truncate at apex, incurved, granulate. *Ovaries* numerous, 2.7 mm long, stellate-tomentose; style absent; stigma flat. *Ovules* 12 in two rows. *Fruits* unknown.

Distribution — Only known from the type specimen in Sarawak.

Notes — Van Heusden (1992: 148) noted that “*Tetrapetalum* differs from *Cyathostemma* only in its dimerous flowers. *Cyathostemma excelsum* of Borneo so closely resembles *Tetrapetalum volubile* that they may be one species in which 2-merous and 3-merous flowers occur.”

Although these two species she noted are very similar in vegetative characters, the differences are not only in the number of tepals. *Tetrapetalum volubile* Miq. has unlobed convex stigmas and its petals are large and rounded at the apex, fully expanding on anthesis. Stigmas of *Cyathostemma excelsum* (Hook. f. & Thomson) J. Sinclair are completely different, being bilobed and split down the inner side, and its petals are smaller and subacute at the apex, not expanding on anthesis.

Bilobed stigmas and subacute petals not expanding on anthesis are very constant characters in the genus *Cyathostemma* (Sinclair, 1955), and never seen in *Tetrapetalum*, which has flat, convex, or slightly concave stigmas and expanding petals with rounded apex. These characters are common to some species of *Uvaria*. Among the *Uvaria* group sensu Van Heusden, staminodes have been known only in *Uvaria*, although their presence or absence is not constant within the genus. The staminodes found in the new species of *Tetrapetalum* also suggests the affinity to *Uvaria*.

If one considers that the difference in the number of tepals is not worth dividing genera (and *Cyathostemma* is kept separated from *Uvaria*), *Tetrapetalum* must be reduced to *Uvaria*, not to *Cyathostemma*. However, the decision whether *Tetrapetalum* is reduced to *Uvaria* or not should not be made until *Uvaria* and several genera related to *Uvaria* are revised thoroughly.

Key to the species of the genus *Tetrapetalum*

- 1a. Leaves thinly coriaceous; nerves more than 11 pairs. Flowers c. 3 cm across; the torus c. 1 cm across *T. lambirensis* K. Momose
- b. Leaves thickly coriaceous; nerves less than 10 pairs. Flowers less than 2 cm across; the torus less than 0.7 cm across 2
- 2a. Leaves densely stellate tomentose beneath; petals coriaceous . . . *T. volubile* Miq.
- b. Mature leaves glabrous beneath; petals chartaceous *T. borneense* Merr.

Specimens examined (all in SAR):

Cyathostemma excelsum (Hook. f. & Thomson) J. Sinclair — Ng KFN100032, RRI Experiment Sta., Malaya; Hardial & Sidek 417, Selangor, Malaya; Purselglobe P4965, Bako, Sarawak; Haron S 21376, Lambir, Sarawak.

Tetrapetalum borneense Merr. — Havaland 422, Kuching, Sarawak; Ashton BRUN 5167, Brunei; Krispinus SAN 86687, Sabah.

Tetrapetalum volubile Miq. — Havaland 2462/1968, Kuching, Sarawak; Murthy S 22619, Tinjar, Sarawak; Ashton BRUN 606, Brunei.

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REFERENCES

- Miquel, F.A.W. 1865. Annonaceae Archipelagi Indici. *Ann. Mus. Bot. Lugduno-Batavum* 2: 1–45.
Sinclair, J. 1955. A revision of the Malayan Annonaceae. *Gdns' Bull. Sing.* 14: 149–516.
Van Heusden, E.C.H. 1992. Flowers of Annonaceae: morphology, classification, and evolution. *Blumea Suppl.* 7: 1–218.