

A NEW SPECIES OF *HEDYOTIS* (*RUBIACEAE*) FROM INDIA

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A new species of *Rubiaceae*, *Hedyotis kottangathattiensis* M.B.Viswan. & U.Manik., is described from the Kalakkad-Mundanthurai Tiger Reserve in the Agastyamalai hills of the southwestern Ghats in South India. *Hedyotis kottangathattiensis* is allied to *Hedyotis barberi* (Gamble) Henry & Subram. but differs in its branching, leaf shape and colour, the presence of raphides, the colour and shape of the stipules, the inflorescence structure, calyx lobe shape, corolla lobe shape and colour, and capsule shape. A conservation status is proposed.

Keywords. *Hedyotis*, India, IUCN Red List, *Rubiaceae*.

INTRODUCTION

Hedyotis L. (*Rubiaceae*) has about 515 species distributed in the warmer parts of the world, mainly Australia, Africa, Eastern and Southeast Asia and the Americas (Dutta & Deb, 2004). The genus is very variable and includes annual or perennial herbs, subshrubs, weak stragglers, weak climbers, shrubs or small trees; the stipules are various, entire and triangular to deltoid or ovate to obovate, hoop-like with apex fimbriate or pectinate or connate into a sheathing tube, often sheathing and persistent, often glandular, rarely chaffy; the leaves are various; and the inflorescence is terminal or axillary, cymose or thyrsoid or in dense axillary fascicles, pedunculate or in dense condensed capitulate cymes (Bremekamp, 1952). Some authors (e.g. Ridsdale, 1998) have disputed the sectional treatment provided by Bremekamp (1952), while others have followed it (e.g. Fosberg & Sachet, 1991). Ridsdale (1998) commented that some of the sections proposed by Bremekamp (1952) could possibly be raised to generic level but that this would require a monograph for the whole of Asia and Malesia. Without a monograph, he suggested, any treatment would be chaotic and incomplete. *Hedyotis fruticosa* L. is the conserved type species of *Hedyotis* (Terrell & Robinson, 2003). Dutta & Deb (2004), while revising *Hedyotis* in India, cited *Hedyotis auricularia* L. incorrectly as the type and included 74 species under seven sections, namely *Hedyotis*, *Oldenlandia*, *Kohautia*, *Scleromitron*, *Involucrella*, *Diplophragma*

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and *Anotidopsis*, based on a review of characters used by earlier workers. Further, they provided chromosome counts for 13 species ($2n = 18, 36, 54$ and 72). After an examination of the literature (Hooker, 1880; Trimen, 1894; Gamble, 1921; Bremekamp, 1952; Shetty & Vivekananthan, 1969; Henry & Subramanyam, 1972; Vajravelu *et al.*, 1983; Deb & Dutta, 1984, 1985; Sivarajan & Biju, 1990; Fosberg & Sachet, 1991; Biju *et al.*, 1992; Ridsdale, 1996, 1998; Terrell & Robinson, 2003; Dutta & Deb, 2004) and the herbarium specimens present in the Botanical Survey of India, Southern Circle (MH), a collection of *Hedyotis* from Kottangathatti, an inaccessible hilly area near Naraikadu in the Kalakkad-Mundanthurai Tiger Reserve of the Agasthyamalai hills in South India, turned out to be an undescribed species related to *H. barberi* (Gamble) Henry & Subram. (see Table 1).

Hedyotis kottangathattensis M.B.Viswan. & U.Manik., **sp. nov.** **Fig. 1.**

Hedyotidi barberi (Gamble) Henry & Subram. affinis, sed plantis profuse ramosis, foliis ovato-lanceolatis vel oblongo-lanceolatis, base cuneate acutis vel acute cuneatis, apice acutis vel subacuminatis, viridi-luteis, raphidibus praebentibus in facie inferiore foliorum et superiore stipularum, calycum et corollarum, stipulis base orbicularibus, apicem versus deltoideo-ovatis, atris, viscidis, incrassatis ubi siccas, tantum margine glandularibus, inflorescentiis 3–15-floribus, axillaribus, pedunculatis, cymose paniculatis, bracteolis saepe foliaceis, oblongo-lanceolatis, floribus majoribus (6–7 mm longis), lobis calycum oblongo-ellipticis, lobis corollarum lanceolatis, pallide luteolo-albis et capsulis subglobosis, 2–2.5 mm longis differt. – Type: India, Tamil Nadu, Kalakkad-Mundanthurai Tiger Reserve, Kottangathatti, 1100 m, 4 i 2001, *M.B. Viswanathan & U. Manikandan* 7574 (holo MH; iso Sri Paramakalyani Centre for Environmental Sciences).

Herb, woody, up to 30 cm high; branches various, subterete to obtusely quadrangular towards apex, rough, leaves clustered towards apex, black when dry; petiole and stipule scars prominent; internodes very short, 1–5 mm, glabrous. *Petiole* 1–3 × 1–1.2 mm, raised beneath. *Stipules* black, opposite, orbicularly sheathing at base, otherwise free, deltoid-ovate, c.2.1 × 2 mm, glandular at margin, with raphides when young, viscid. *Leaf* lamina coriaceous, ovate-lanceolate or oblong-lanceolate, 4–17 × 2–9 mm, cuneate at base, acute or subacuminate at apex, greenish yellow on both sides, glabrous, with raphides beneath; midrib prominent beneath, lateral nerves 3 or 4 each side, obscure above, faintly prominent beneath. *Inflorescence* in axillary cymose panicles; peduncles acutely quadrangular, glabrous, primary ones 2–7.5 × c.0.2 mm, secondary ones if present 2–4 × c.0.2 mm, tertiary ones if present 1.2–2.2 × c.0.2 mm; pedicels 0–1 mm; bracts linear to subulate, 1–2.6 × c.0.2 mm. *Flowers* 6–7 × 3–3.8 mm. *Calyx* tube green, campanulate, c.0.8 × 0.6 mm, with raphides outside; lobes oblong-elliptic, c.0.9 × 0.5 mm, obtuse at apex, with raphides outside. *Corolla* pale white with yellowish tinge, with raphides outside; tube 3–3.8 × 0.9–1.8 mm; lobes 4, lanceolate, c.2 × 1.2 mm, densely villous inside from throat to base, entire at margin, obtusely acute at apex, recurved. *Stamens* 4,

TABLE 1. Characters distinguishing *Hedyotis barberi* and *H. kottangathattensis*

Character	<i>H. barberi</i>	<i>H. kottangathattensis</i>
Habit	Undershrub or shrub	Herb
Branching pattern	Dichotomous	Profuse
Leaves	Ovate, 1–1.5 × 0.6–0.7 cm, rounded to attenuate at base, obtuse at apex, pale brown in colour	Ovate-lanceolate or oblong-lanceolate, 1.7 × 0.2–0.9 cm, cuneate at base, acute or subacuminate at apex, greenish yellow in colour
Raphides	Absent	Present on lower surface of leaves, outer surface of young stipules, calyx and corolla
Stipules	Orbicular throughout, c.4 × 4 mm, white, not viscid, scarious when dry, glandular at margin and also in a ring inside	Orbicular at base, deltoid-ovate above, c.2.1 × 2 mm, black, viscid, thickened when dry, glandular at margin only
Inflorescences	3-flowered cymes in fascicles, in upper axils only	3–15-flowered cymose panicles, in all axils
Peduncles	Absent	Present
Calyx lobes	Lanceolate	Oblong-elliptic
Corolla lobes	Oblong, pale white, tinged violet	Lanceolate, pale white, tinged yellow
Capsules	Ovoid	Subglobose

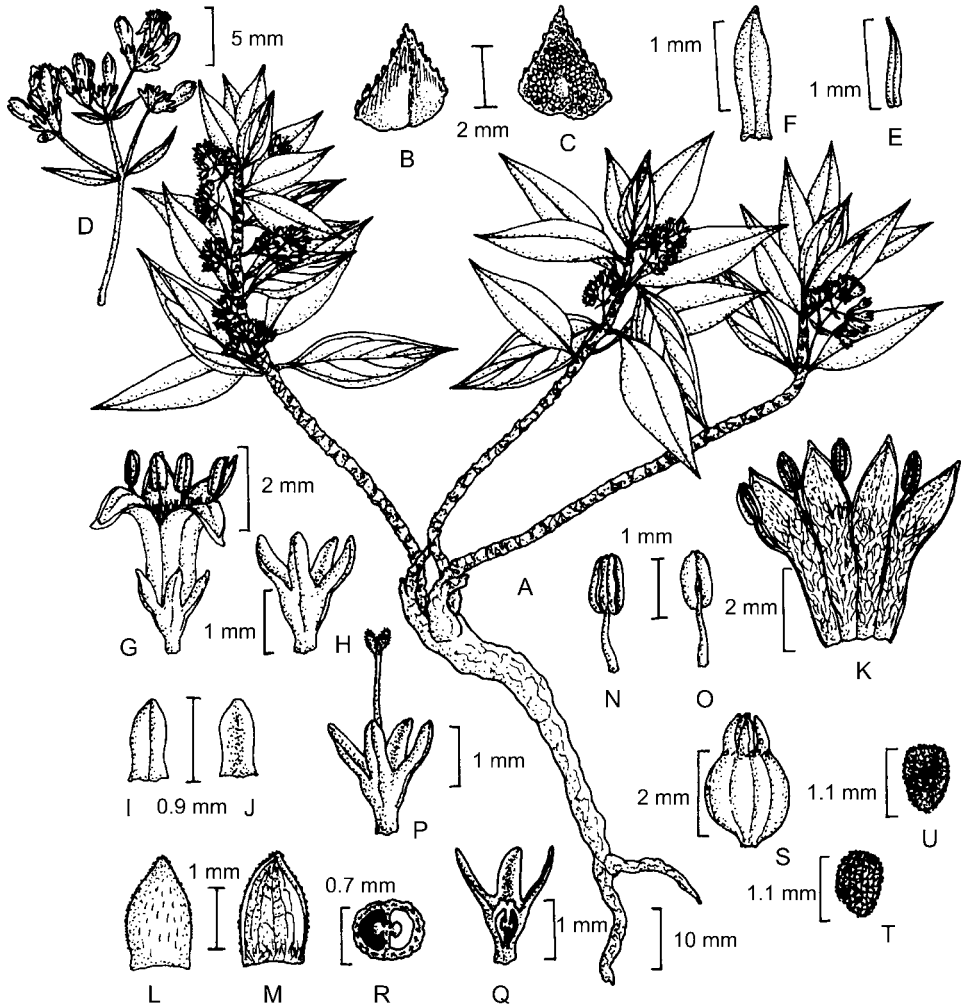


FIG. 1. *Hedyotis kottanghattiensis* M.B.Viswan. & U.Manik. A, habit; B, stipule (dorsal side); C, stipule (ventral side); D, inflorescence; E and F, bracts; G, flower; H, calyx; I, calyx lobe (dorsal side); J, calyx lobe (ventral side); K, opened corolla; L, corolla lobe (dorsal side); M, corolla lobe (ventral side); N, stamen (dorsal side); O, stamen (ventral side); P, calyx and ovary; Q, longitudinal section of ovary; R, transverse section of ovary; S, capsule; T, seed (dorsal side); U, seed (ventral side).

exserted, alternate to corolla lobes, c.2 × 0.6 mm, glabrous; filaments white, filiform, c.1.3 × 0.2 mm, glabrous; anthers bithecous, subglobose, white, dorsifixed, c.1 × 0.6 mm, glabrous, dehiscing longitudinally. *Ovary* ovoid, c.0.4 × 0.4 mm, glabrous, 2-celled; ovules many, axile; style filiform, c.2.1 × 0.2 mm, glabrous; stigma bilobed, c.0.4 × 0.5 mm, papillose, glabrous. *Capsules* pale brown, subglobose, 2–2.5 × 1.8–2 mm, crowned with persistent calyx, glabrous, dehiscing septicidally. *Seeds* 2, dark reddish brown, trigonous, c.1.1 × 0.8 mm; testa reticulate; albumen fleshy.

Flowering. October to December. *Fruiting.* December to January.

Distribution. Endemic to the Agastyamalai hills (Kalakkad-Mundanthurai Tiger Reserve) of Tamil Nadu state in South India, 8°20'–8°53'N, 77°10'–77°35'E.

Habitat and ecology. This species is found in the southern tropical wet evergreen forests. Associates include trees such as *Antidesma menasu* (Tul.) Müll.Arg., *Cinnamomum filipedicellatum* Kosterm., *Goniothalamus wightii* Hook.f. & Thomson, *Isonandra lanceolata* Wight forma *lanceolata*, *Meiogyne pannosa* (Dalzell) J.Sinclair, *Nageia wallichiana* (C.Presl) Kuntze, *Schefflera rostrata* (Wight) Harms var. *micrantha* (C.B.Clarke) Maheshw. and *Symplocos wynadense* (Kuntze) Nooteb.; shrubs such as *Ixora malabarica* (Dennst.) Mabb., *Piper mullesua* Buch.-Ham. ex D.Don, *Sarcandra chloranthoides* Gardner, *Sauropus androgynus* (L.) Merr. and *Sonerila tinneveli* C.E.C.Fisch.; subshrubs such as *Chassalia curviflora* (Wall.) Thwaites var. *ophioxylodes* (Wall.) Deb & B.Krishna and *Psychotria bisulcata* Wight & Arn.; herbs such as *Acrotrema arnottianum* Wight, *Blumea lanceolaria* (Roxb.) Druce, *Impatiens verticillata* Wight, *Leptacanthus rubicundus* Nees, *Peperomia dindygulensis* Miq. and *Peperomia tetraphylla* (G.Forst.) Hook. & Arn.; epiphytes such as *Medinilla beddomei* C.B.Clarke; orchids such as *Bulbophyllum fischeri* Seidenf. and *Peristylus aristatus* Lindl.; and climbers such as *Cyclea peltata* (Lam.) Hook.f. & Thomson.

IUCN conservation status. Following the IUCN guidelines (IUCN, 2001), a threat assessment of Critically Endangered CR B2ab(ii)(iv) is assigned due to its restricted and isolated distribution and the threat of fire in the adjoining grasslands during the summer season.

Etymology. The new species is named after the type locality, 'Kottangathatti'.

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