



Mucuna yadaviana sp. nov. (Leguminosae: Papilionoideae) from the Andaman Islands, India

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Abstract

A new species *Mucuna yadaviana* is described and illustrated. It grows in the tropical evergreen forests of the Andaman Islands of India. It resembles *Mucuna imbricata* in having lamellate and winged pods, but differs by a set of characters relating to habit, leaf and seeds.

Key Words: South Andaman Island, *Mucuna imbricata*, *Mucuna atropurpurea*, seed, hilum

Introduction

The genus *Mucuna* Adanson (1763: 579) comprises ca. 105 species distributed in pantropical regions of the world (Lewis *et al.* 2005). Wilmot-Dear (1987), in her taxonomic revision of the genus from Indian subcontinent, recognised nine species and three varieties from India. Subsequently, Sanjappa (1992) also recognised 11 taxa from India, which includes nine species and two varieties. Aitawade and Yadav (2012) recently added a new species, *M. sanjappae* Aitawade & S. R. Yadav (2012: 539), to the list from Western Ghats of India. A variety *Mucuna pruriens* var. *thekkadiensis* Thoth. & Ravi Kumar (1998: 703) was described by Thothatri and Ravikumar (1998) which was later reduced to a synonym of *M. pruriens* var. *hirsuta* (Wight & Arn. 1834: 254) Wilmot-Dear (1987: 44) by Krishanraj and Mohanan (2012). Recently *Mucuna laticifera* Ingalhalikar, N V Page & Gaikwad (2017: 118) is described from Sikkim, North East India. In total 14 taxa are recognised from India which includes 11 species and three varieties. Out of these, two taxa viz. *M. sanjappae*, and *M. pruriens* var. *hirsuta* are endemic to India. *Mucuna atropurpurea* (Roxburgh 1814: 54) DC. (1825: 406) ex Wight (1834: 254) and *M. imbricata* DC. (1825:406) ex Baker (1876: 185) are known from India and Sri Lanka.

During a botanical tour to Andaman Islands, the authors came across some interesting specimens of *Mucuna*. A critical study of literature (Wilmot-Dear 1984, 1990, 1991, 1992, 2008) and herbarium consultations (ASSAM, BSD, BSHC, BSID, CAL, PBL) revealed that these represent as yet undescribed species which is formalised here.

Taxonomy

Mucuna yadaviana Gaikwad, Lawand & Gurav, sp. nov. (Fig 1–2)

Type:—India, Andaman Islands: South Andaman, Kedalganj, 20–50 m, 11°42' 42.25"N 92°39' 39.24"E, 13th May, 2013 Swaroopsingh 035 (holotype: CAL!, isotypes SUK!, BSI!).

Large woody climber; stems 8–10 m long, blackish, glabrous, lenticellate; branches slender, glabrous. Leaves pinnately trifoliolate, up to 280 mm long; petiole 120–130 mm long, canaliculated above, glabrous, rachis 6–45 mm long; stipules lanceolate, 2–4 mm long, pubescent; terminal leaflet 100–120 × 60–70 mm, ovate, apex mucronate, lateral veins 5–7 pairs; lateral leaflets asymmetrical, 100–120 × 60–65 mm, rounded at base, margins entire, indumentum 1 mm long,

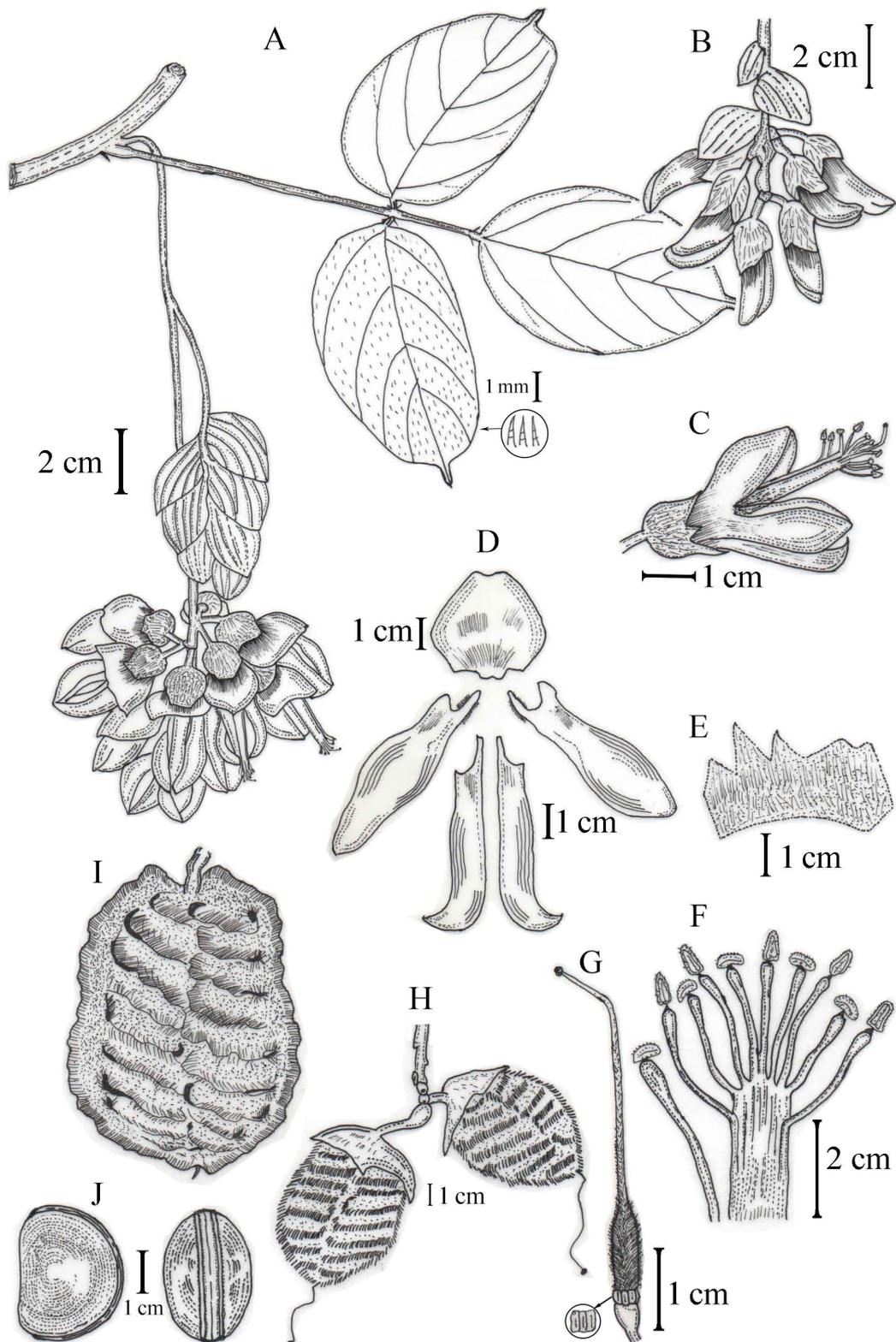


FIGURE 1. *Mucuna yadaviana* A—Leaf with axillary inflorescence (hairs enlarged in circle), B—Buds, C—Flower, D—Dissected flower parts, E—Calyx (outside), F—Enlarged portion of staminal tube, G—Gynoecium with stipitate glands, H—Young pods, I—Mature Pod, J—Seeds. All from Swaroopsingh 035 (Holotype- CAL!). Illustrated by Swaroopsingh Gaikwad.

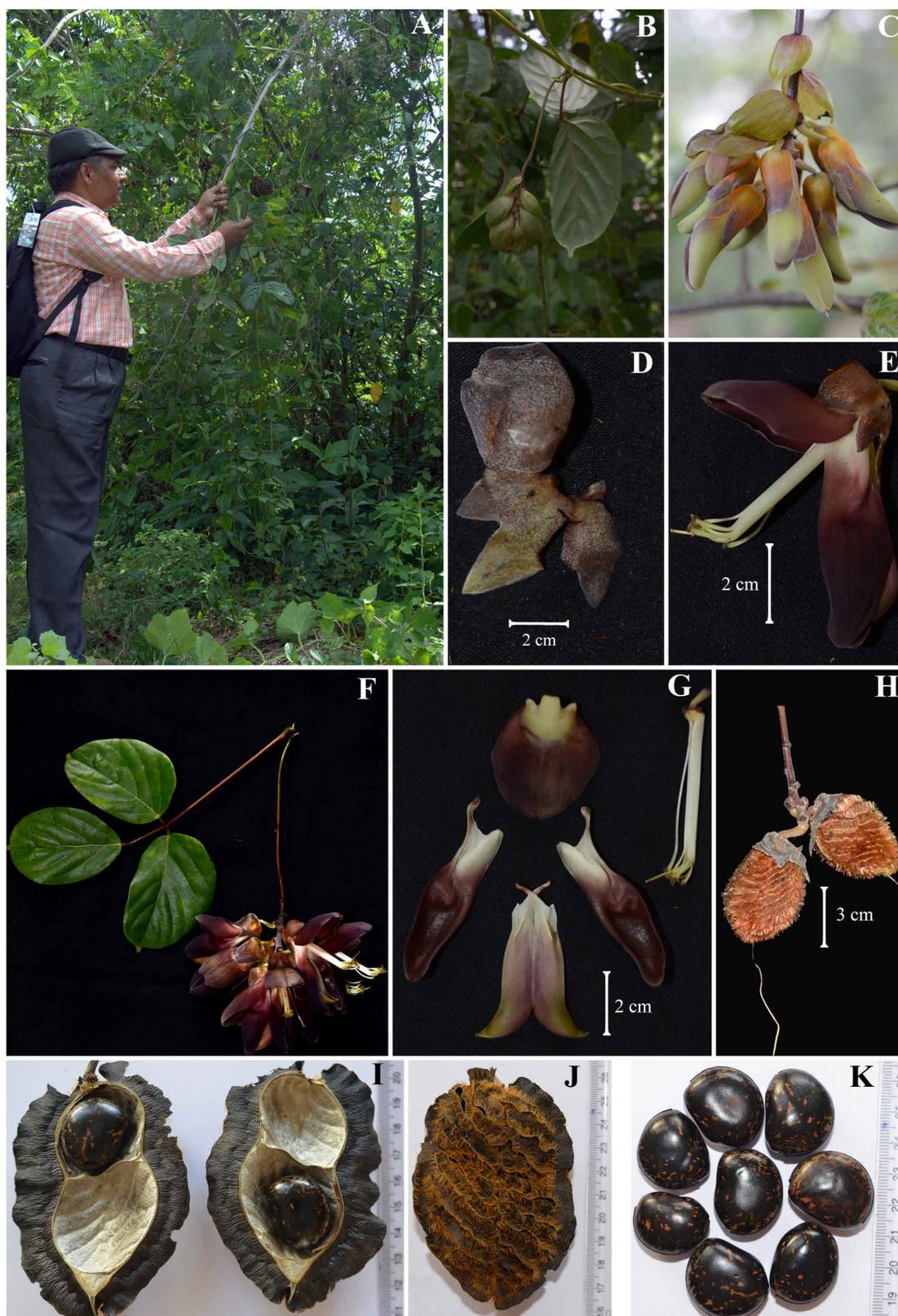


FIGURE 2. *Mucuna yadaviana*: A—Habit, B—Young buds, C—Young flowers with bracts, D—Calyx, E—Single Flower, F—Leaf with Inflorescence, G—Dissected flower parts, H—Young pods, I—Opened pod with seeds, J—Pod, K—Seeds.

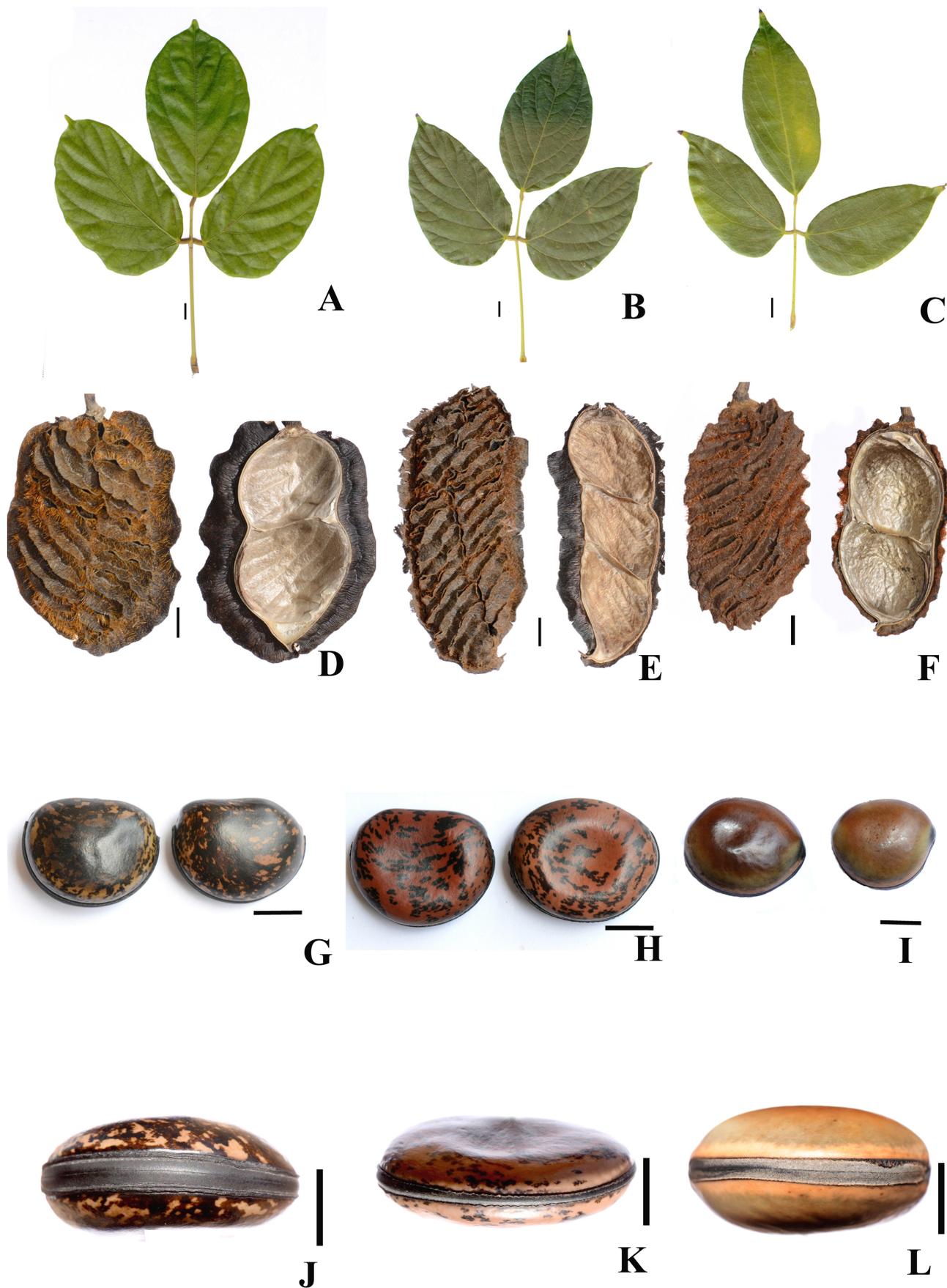


FIGURE 3. *Mucuna yadaviana*: A—Leaf, D—Opened pod, G—Seeds, J—seed with hilum (swaroopsingh 035), *Mucuna imbricata*: B—Leaf, E—Opened pod, H—Seeds, K—seed with hilum (SVG 003), *Mucuna atropurpurea*: C—Leaf, F—Opened pod, I—Seeds, L—seed with hilum (SVG 005) (Scale Bar—1 cm). Photos by S. R. Yadav.

sparingly scattered on adaxial surface of leaf, stipels 2–3 mm long, lanceolate, pubescent, all leaflets with 4–5 mm long petiolule, pubescent. Inflorescence raceme, 160–200 mm long, axillary. Bract 20–25 × 20 mm, apex rounded, caducous, sparsely brown hairy on adaxial surface; bracteoles–3, equal, 7–8 × 2 mm, linear, lanceolate, caducous, sparsely hairy. Flower 40–45 mm long, pedicellate, pedicel up to 9 mm long, covered with brown hairs. Calyx tube campanulate, tube 8–9 × 8 mm with stiff brown hairs on outer surface and sparsely on inner surface; lobes 4, upper lobe up to 10 mm long, green, two lateral lobes subequal, 5–6 mm long, mucronate. Corolla reddish purple, standard 30–35 × 30 mm, triangular; wings 40–45 × 10 mm, rounded apex, basal claw pubescent, auricle 2 mm long, pubescent; keel 40 × 8 mm, reddish white, claw 5 mm long, auricle 3 mm long, sparsely pubescent. Stamens 10, diadelphous (9 + 1), staminal tube 40–45 × 5–6 mm, glabrous; anthers 5 dorsifixed, 1 mm long; 5 basifixed, 3–4 mm long, filament of united stamens 18–20 mm long, that of free stamen 32–35 mm long. Ovary 6 × 2 mm, densely covered with 1–2 mm long red brown stiff hairs, 10 lobes of stipitate gland at base; style 42–45 mm long, sparsely hairy at apex while densely at base, stigma penicillate. Fruit leathery, broadly oblong, straight, 100–110 × 40–45 mm, 1–2 seeded, lamellae markedly swollen around seed, surface lamellae 9–10, short, fine red–brown, obliquely transverse, bifurcated, each lamellae interrupted along mid line of pod, margin of pod with 10–15 mm wings, pod beak pointed, 8–10 mm long. Seeds 25 × 20 mm, 6–8 mm thick, glossy, black with brown mottling, oblong, hilum 50 mm in length, 4–5 mm wide, covering half of seed circumference.

Diagnostic characters:—*Mucuna yadaviana* is similar to *M. imbricata* and *M. atropurpurea* with its lamellate pod. The similarities and differences between the three species are summarised in Table 1. Furthermore, morphological differences are represented photographically in Fig. 3. The pod of *M. yadaviana* is one to two seeded and the seeds are black with brown mottling, whereas those of *M. imbricata* are three to four seeded, the seeds dark brown red with black mottling while in *M. atropurpurea* the seeds are black.

TABLE 1. Comparative morphology of *Mucuna imbricata*, *M. atropurpurea* and *M. yadaviana*

Character	<i>Mucuna atropurpurea</i>	<i>Mucuna imbricata</i>	<i>Mucuna yadaviana</i>
Leaves	Elliptic, acuminate at apex	Elliptic and acute at apex	Obovate and mucronate at apex
Inflorescence (mm)	100–300	150–200	160–200
Flower (mm)	50–60	50–60	40–45
Corolla	Reddish purple	Dark purple	Reddish purple
Standard/keel/wing length (mm)	Up to 35/50/50	Up to 30/40/40	Up to 30/40/40
Bracts	Acuminate, caducous	Acuminate, persistent	Rounded, caducous
Pod	Ovate, 1–2 seeded	Elliptic, slightly curved, 2–4 seeded	Oblong, 1–2 seeded
Seeds	Discoid, Inflated, 20 × 25 mm, blackish- brown	Flat, Depressed at centre, 25 × 28 mm, brown with black mottling	Discoid, Inflated, 25 × 20 mm, black with brown mottling
Hilum length (mm)	40	30	50
Hilum breadth (mm)	2	3	5
Abortive passage	Absent	Present	Absent

Distribution and Conservation status:—The new species is so far known from four localities in evergreen forests of Andaman Islands and at each locality 6–10 mature individuals were observed. Additional information is required before an accurate assessment of the conservation status of the species can be made. So the status of the species is Data Deficient (DD) according to the IUCN criteria (2017).

Phenology:—Flowering—September to February; Fruiting—February to June.

Etymology:—The species is named in honour of Prof. S. R. Yadav, Department of Botany, Shivaji University Kolhapur, Maharashtra, in recognition of his valuable contribution in the field of Angiosperm taxonomy.

Additional specimens examined:—India, Andaman and Nicobar Islands, South Andaman, on the way to Mount Harriet, 11° 42' 55.60" N, 92° 44' 00.17" E, Elevation 320 m 11th March, 2017, *S. V. Gaikwad 051* (Paratype SUK!); Ferrargunj, 11° 41' 45.55" N, 92° 38' 06.87" E, Elevation 11 m 12th March, 2017, *S. V. Gaikwad 052* (Paratype SUK!).

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