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Mucuna laticifera, a new species from north-eastern India

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Abstract

Mucuna laticifera, a new species of Fabaceae from Sikkim state of India is described and illustrated here. It can be distinguished from its closely related species by the presence of a watery latex, uniformly green to pale yellow corolla, glabrous standard and wings and parallel pod margins.

Introduction

The genus *Mucuna* Adansson (1763: 579) belongs to family Fabaceae (Stevens 2001 onwards) and consists of about 105 species (Mabberley 2009) distributed predominantly in tropical regions while some species also distributed in sub-tropical regions. Ten species are recognized from the Indian subcontinent, three of which are endemic (Wilmot-Dear 1987, Aitawade and Yadav 2012). The genus is characterized by a combination of morphological characters such as the climbing habit (woody or herbaceous; rarely erect), pinnately trifoliolate leaves, subumbellate or condensed paniculate inflorescences, often falsely racemose due to reduction of lateral branches, large showy flowers, partially fused keel petals that are hooked at apex, free vexillary stamen, dimorphic anthers (basifixed long and dorsifixed short) and fruits that are often covered with irritant bristles (Wilmot-Dear 1984).

During the recent field survey of the Sikkim Himalayas of the north-eastern part of India, we came across a woody species of *Mucuna* that was morphologically similar to *M. macrocarpa* Wallich (1830: 41) and *M. birdwoodiana* Tutcher (1905: 65) in certain floral and fruit features. However, critical examination of the material and a comparison with its morphologically related species revealed differences in the inflorescence, colour and indumentation of the corolla, pod morphology as well as presence of a watery latex. Based on these differences and a thorough literature review of Asian *Mucuna* (Wilmot-Dear 1984, 1987, 1992) we described it as a new species for the genus *Mucuna* in India.

Taxonomy

Mucuna laticifera Ingalhalikar, N V Page & Gaikwad, *sp. nov*., Figs. 1& 2

Type:—INDIA. Sikkim: North Sikkim district, Kabi, 23 km from Gangtok on N. Sikkim Highway, 27.40405 N, 88.61747 E, 1550 m, 20th June 2016 (with flowers and fruits). *Swaroopsingh 040* (holotype K!, isotype SUK!)

Diagnosis:—*Mucuna laticifera* is similar to *M. macrocarpa* and *M. birdwoodiana* with respect to habit, type and position of inflorescence and large, woody nature of the pod. However, it can be distinguished from both these species based by the presence of a watery latex, distinctly pedunculate side branches of the inflorescence, persistent bracteoles that are longer than the calyx, glabrous standard and wing petals and pod margins that are parallel without constrictions between the seeds.

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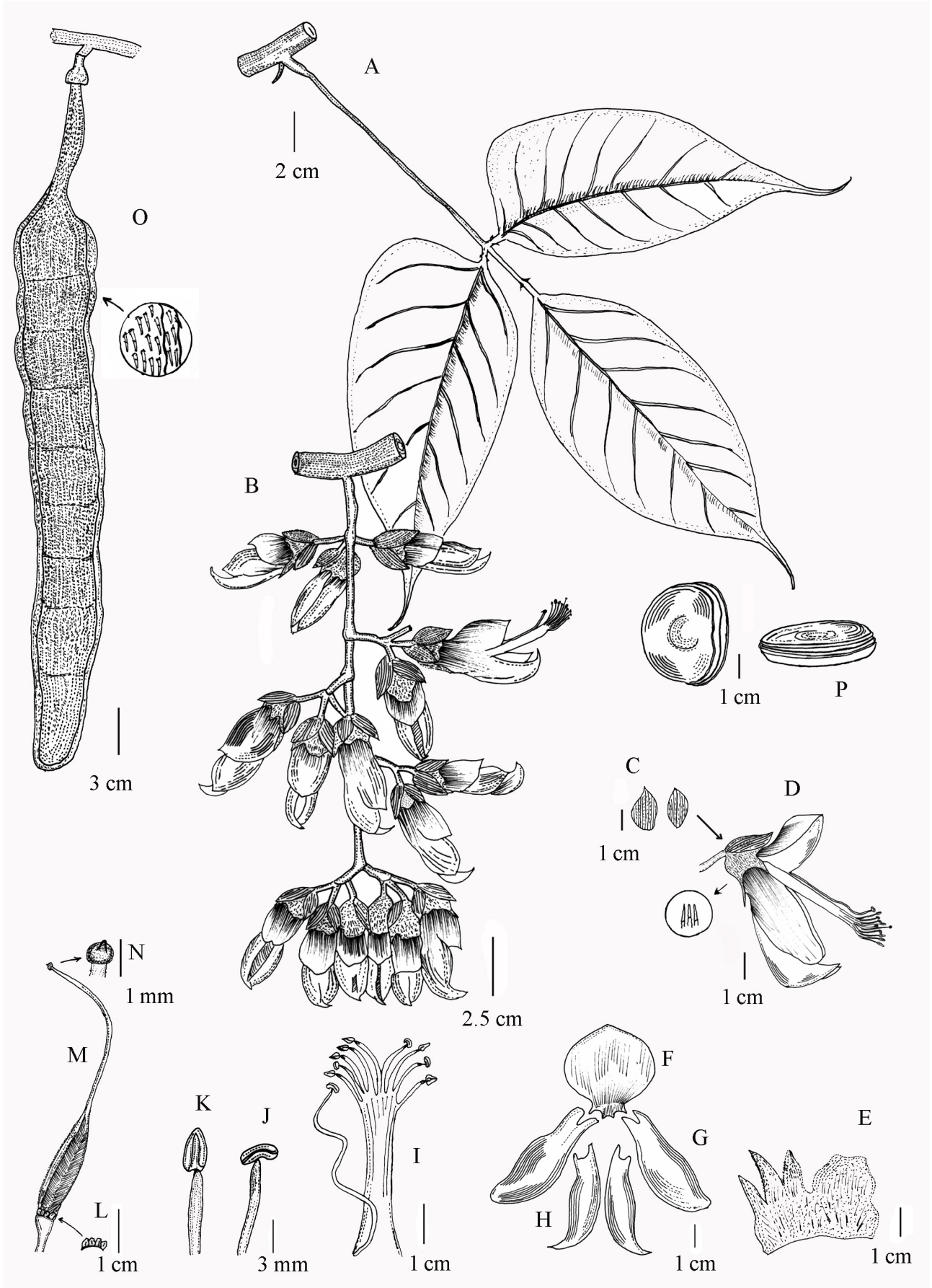

FIGURE 1. *Mucuna laticifera* A–Leaf, B–Inflorescence, C–Bracts, D–Flower, E–Calyx, F–Standard, G–Wing, H–Keel, I–Staminal tube, J and K–Stamens, L–stipitate gland, M–Gynoecium, N–Enlarged portion of stigma, O–pod with hairs, P–Seeds. All from *Swaroopsingh 040*. Illustration by Swaroopsingh Gaikwad.

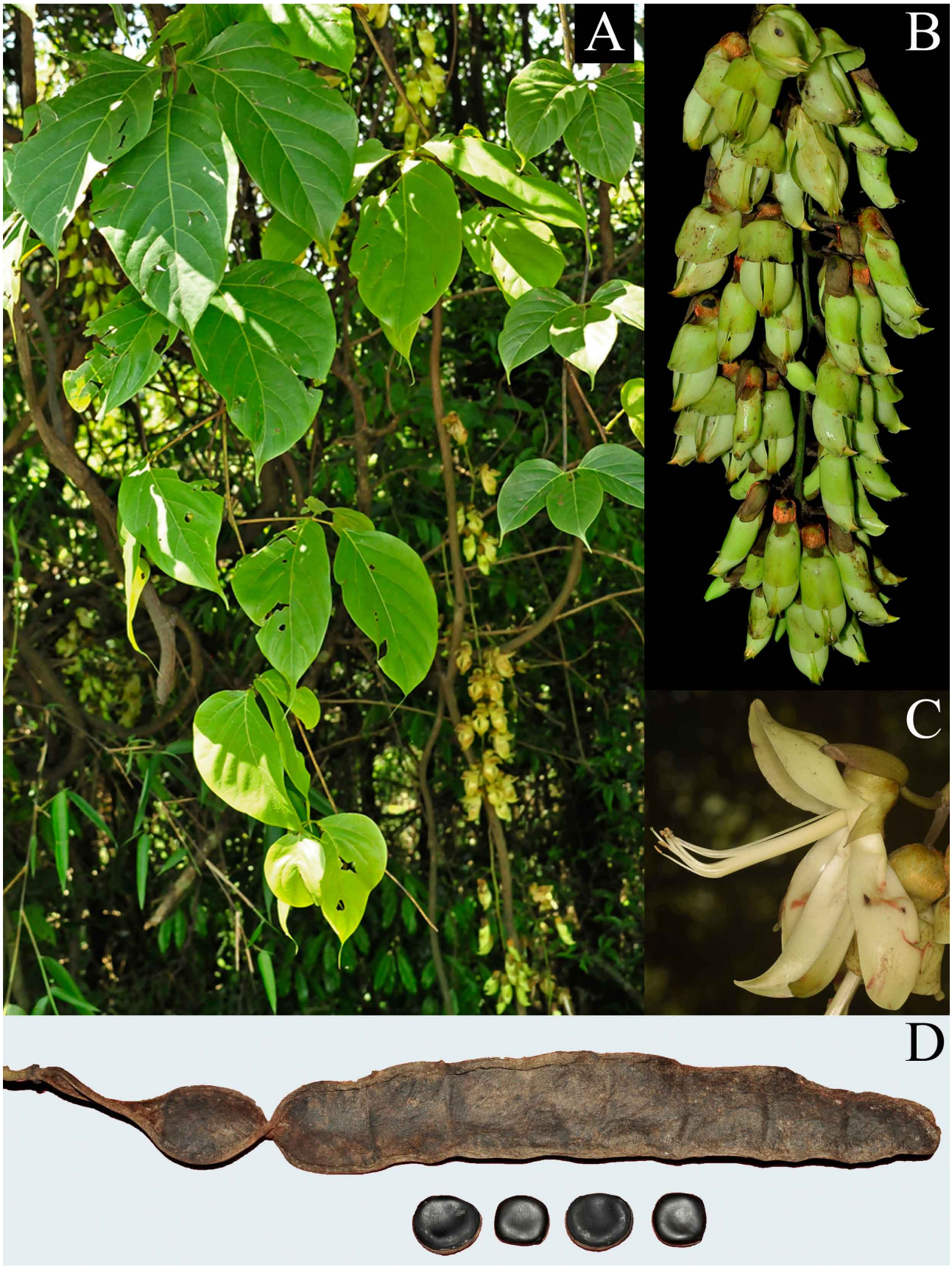

FIGURE 2. *Mucuna laticifera* A. Habit with mature leaves and flowers. B. Inflorescence. C. Flower at anthesis. D. Fruit and seeds. Photographs by Navendu Page.

Description:—Large woody climber; stem 10–20 m long, 5–12 cm diameter; bark dark brown, soft, lenticellate; branches slender, glabrous, exuding watery latex when cut. Leaves 25–30 cm long; petiole 8–12 cm, grooved; stipules lanceolate, 0.7–1.0 cm, glabrous; stipels not persistent; terminal leaflet ovate, cuneate, 15–18 × 7–9 cm, acumen 2.0–2.5 cm; lateral veins 8–10 pairs, merging into margins; petiolules 1 cm; lateral leaflets 14–17 × 6–8 cm, oblique with width ratio of 5:3; leaflets entire, membranous, glabrous. Inflorescence from old branches, falsely racemose, 20–30 cm long, flowers well spaced; peduncles 0.8–1.2 cm; bracts obscure; pedicels 1–3 fascicled on lateral peduncles; bracteoles ovate, acute, 1.5–2.0 cm, brown with pale bands, persistent; calyx greenish brown, covered with pale deciduous bristles, tube 8–12 mm long, lateral lobes 8–10 mm, lower lobe 10–15 mm. Corolla strongly odorous (like over ripe fruit), uniformly greenish during the early stages and turning pale yellow with age; standard, wings and keel up to 4, 6 and 6.5 cm, respectively, keel apex horny. Stamens 10, diadelphous (9+1), dimorphic; staminal tube 4–5 × 0.6 cm, glabrous; lower 6 stamens with basifixed 3 mm long anthers, upper 4 stamens with dorsifixed 1–2 mm long anthers; filaments of united stamens 1.5–2.0 cm long, that of free stamen 5.0–5.5 cm long. Ovary 2.5–3.0 × 0.3 cm with 1 mm wide ridge along the margin, covered with greenish yellow soft hairs, style 4.5–5.0 cm, glabrous; stigma 1 mm, penicillate. Pod linear, straight, 25–40 × 4.0–4.5 cm, 8–10 mm thick, woody, with irregular ridges along margins, pod segments rectangular, apex rounded; covered with dense brown stiff deciduous hairs. Seeds 8–15, smooth, black, rounded on 3 sides and flat on fourth side, depressed at the center, 2.0 × 2.5 cm, 7–10 mm thick, hilum black, ¾ of seed circumference.

Additional specimens examined:—INDIA, Sikkim, Soreng sub district, 1314m, 27.22841 N, 88.20301 E, 1314 m, 20 June 2016, *Swaroopsingh 050* (BSHC!); West Bengal, Darjeeling district, Ghoom, 27.01304 N, 88.19802 E, 1800 m, 27 April 2016, *Swaroopsingh 045* (SUK!)

Phenology:—Flowering - March to June, Fruiting—September to March.

Etymology:—The specific epithet *laticifera* refers to the presence of a watery latex in the branches.

Distribution and associated species:—This species is so far known from only three localities, two of them in West and North Sikkim districts and one in the Darjeeling district of West Bengal. It is fairly abundant in the evergreen montane forests between 1300–2000 m elevation in shady under canopy of large trees in association with species of *Symplocos* Jacq. (1760: 24), *Ilex* L. (1753: 125), *Styrax* L. (1753: 444) and *Ficus* L. (1753: 1059).

Interrelationships and critical notes:—*Mucuna laticifera* is morphologically closely related to *M. macrocarpa* and *M. birdwoodiana* in having large inflorescences from old stem and laterally flattened large woody torulose pods that are more than 40 cm long.The similarities and differences between the three species are summarized in Table 1.

TABLE 1. Diagnostic characters of *M. laticifera* and its morphologically closely related species.

Character	*M. laticifera*	*M. macrocarpa*	*M. birdwoodiana*
Latex	present	absent	absent
Leaflets	8–9 cm broad	5–10 cm broad	2–6 cm broad
Inflorescence lateral branches	distinctly pedunculate	obscurely/shortly pedunculate	extremely reduced
Bracteoles	up to 2 cm, longer than calyx, persistent	2–5 mm, shorter than calyx, caducous	2 mm, early caducous
Standard/keel/wing lengths	up to 4/6/6.5 cm	up to 3.5/5.6/6.3 cm	up to 4.5/7.1/8.7 cm
Standard and wing margin	glabrous	pubescent	pubescent
Wings and keel color	greenish	purple	greenish
Pod shape	parallel, not constricted between seeds	constricted between seeds	markedly constricted between seeds
Pod margin	narrow irregular ridges along both margins	not winged, wrinkled into irregularly thickened ridges	pair of thick woody wings
Pod apex	rounded	beaked	beaked
Pod segment	rectangular	elliptic	oval with rounded apex and base
Seed	rounded on three sides and flat on the fourth	disc shaped	reniform

Wilmot-Dear (1987) in her revision of the genus *Mucuna* from the Indo-Burmese region, cites a collection made by Stainton from Gangtok of a species of *Mucuna* with pale yellow flowers. In this publication she remarks that Stainton's collection is possibly a colour variant of *M. macrocarpa* lacking the purple wings. *M. laticifera* described here is fairly common in and around forests of Gangtok and exhibits pale yellow flowers as observed by Stainton in his Gangtok collection. We therefore believe that Stainton's collection probably represents *M. laticifera* and not *M. macrocarpa* which is generally distributed at lower elevations and exhibits bicoloured corolla.

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