

HENCKELIA MULTIFLORA (GESNERIACEAE), A NEW SPECIES FROM THE EASTERN HIMALAYAN REGION OF ARUNACHAL PRADESH, INDIA

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Henckelia multiflora, a robust, caulescent herb, is described from the Upper Siang District of Arunachal Pradesh, India. The species is morphologically similar to *Henckelia khasiana* and *H. oblongifolia* but differs in having up to 30 (occasionally more) flowers per inflorescence, and a longer calyx with caudate-acuminate lobes. The species is presently known from only the Upper Siang District of Arunachal Pradesh.

Keywords. Caulescent, endemic, erect, Upper Siang district.

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Introduction

The genus *Henckelia* Spreng. (Gesneriaceae) was described by Sprengel (1817) and subsequently merged with the genus *Didymocarpus* Wall. (Wallich, 1819; Janeesha & Nampy, 2020). The genus was later resurrected by Weber & Burtt (1997), separating it from South Indian and Malesian *Didymocarpus*. Another genus, *Chirita* Buch.-Ham. ex D.Don, was formally described by Don (1822) and revised by Clarke (1883) and Wood (1974). Weber et al. (2011) recircumscribed the genus *Chirita* and transferred all the species of *Chirita* sect. *Chirita* into *Henckelia* and other related genera. Hence, the present-day *Henckelia* consists of plants from *Henckelia* sect. *Henckelia* (described by Weber & Burtt, 1997) and *Chirita* sect. *Chirita* (Wood, 1974). After the recircumscription by Weber et al. (2011), there has been a surge of new discoveries in the genus, with around 20 species newly described since then (Shi & Yang, 2021; Taram et al., 2021). *Henckelia* belongs to subtribe Didymocarpinae G.Don in tribe Trichosporae Nees of subfamily Didymocarpoidae Arn. (Weber et al., 2013).

Henckelia consists of erect or trailing, caulescent or acaulescent herbs (Wood, 1974; Weber et al., 2011; Möller et al., 2017) usually growing in moist, shady and damp locations (Borah et al., 2024). The genus, along with *Microchirita* (C.B.Clarke) Yin Z.Wang, can be distinguished from other Indian gesneriads in having a chiritoid stigma (upper lobe of the stigma absent or very small, while the lower lobe is enlarged, usually emarginate or bifid) (Weber et al., 2011; Möller et al., 2017). The other genera that have a chiritoid stigma include *Chayamaritia* D.J.Middleton & Mich.Möller, *Damrongia* Kerr ex Craib, *Liebigia* Endl. and *Primulina* Hance, but these are not distributed in India. The genus *Microchirita* differs from *Henckelia* in being annual and monocarpic (Wood, 1974), and it grows exclusively on limestone rocks (Weber et al., 2011).

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The genus *Henckelia* consists of around 70–80 species globally (Möller et al., 2017; Shi & Yang, 2021; Borah et al., 2024; GRC, 2024), distributed in South India and Sri Lanka, the Himalaya, and continental Southeast Asia (Myanmar, South China, northern Vietnam and northern Thailand) (Weber et al., 2011). Within India, around 42 species have been reported to date; they are distributed in Western Himalaya (3 species), Northeast India (29 species) and South India (15 species) (Möller et al., 2017; Krishna & Lakshminarasimhan, 2018; Naithani et al., 2019; Janeesha & Nampy, 2020; Borah et al., 2024; Taram & Borah, 2024). Within Northeast India, the highest concentration of species in the genus is in the state of Arunachal Pradesh, with 27 species reported so far (Singh et al., 2020; Taram et al., 2021; Taram & Borah, 2024), including the two recently described species *Henckelia davidwoodii* D.Borah, Taram & R.Maity, described from Shi-yomi district (Borah et al., 2024) and *H. arunachalensis* D.Borah, V.Sahani & Pertin, from Changlang district (Sahani et al., 2024).

Between 30 September and 25 October 2018, a multitaxa biodiversity expedition was jointly undertaken by the Wildlife Institute of India (WII) and the Arunachal State Forest Department to document the flora and fauna of the Siang River Basin of Arunachal Pradesh. While conducting the floristic survey during this expedition, we found a large (over 2 m tall) perennial, caulescent species of *Henckelia* with multiflowered inflorescences and pale yellow-coloured corolla. We compared this species with those described from the Indo-Chinese and Indo-Burmese region (Wood, 1974; Wang et al., 1998; Sinha & Dutta, 2016; Möller et al., 2017; Sirimongkol, 2020; Nampy et al., 2021; Shi & Yang, 2021; Taram, 2023; Borah et al., 2024; Sahani et al., 2024). Our comparison specifically focused on the key morphological features which have proved to be useful in diagnosing the species within the genus, such as the inflorescence, bracts, calyx, stamens and stigma. These comparisons revealed multiple morphological features that were unique to the tall *Henckelia* from the Siang district. Hence, it is described here as a new species, along with detailed colour photographs highlighting its diagnostic features and a table of characteristics that distinguish it from its two most morphologically similar species.

Materials and methods

Herbarium specimens were made from field collections following the procedures described by Davies et al. (2023). Field images were taken using a DSLR camera (Nikon, Tokyo, Japan). Photographs of the seeds were taken using a stereomicroscope (Leica Stereozoom M205 C; Leica, Wetzlar, Germany). Our putative new species was checked against images available from online herbaria (K, PE), via GBIF – the Global Biodiversity Information Facility (BM, E, L, MICH, US, USF) or in person (DD) (herbarium codes follow Thiers, [continuously updated](#)). The images examined included the lectotype of *Henckelia oblongifolia* (BM) and holotype of *H. khasiana* (CALI). Since we could not physically examine specimens of the two morphologically similar species (mentioned above), detailed investigation of certain

morphological characters, such as those of the indumentum, could not be carried out. However, we could discern a number of other macromorphological differences between the three species. These differences were detected based on field observations of multiple populations of *Henckelia oblongifolia* and on the description and illustrations provided in the protologue of *H. khasiana* (Nampy et al., 2021).

A Red List assessment was made using *IUCN Red List Categories and Criteria*, version 3.1 (IUCN, 2012) and following the IUCN Red List guidelines (IUCN Standards and Petitions Committee, 2024). The map was made by means of RStudio 2025.05.1+513, using *sf*, *terra*, *ggspatial* and *ggplot2* packages.

Species description

***Henckelia multiflora* N.V.Page, sp. nov.**

Henckelia multiflora is morphologically most similar to *Henckelia khasiana* Nampy & M.K.Akhil and *Henckelia oblongifolia* (Roxb.) D.J.Middleton & Mich.Möller in its caulescent habit and many-flowered cymose inflorescence. However, *Henckelia multiflora* differs from *H. khasiana* in having up to 30 (occasionally more) flowers per inflorescence (vs up to 12 in *H. khasiana* and up to 25 in *H. oblongifolia*), a longer calyx which is up to 4.2 cm long (vs 1.4–1.6 cm in *H. khasiana* and 0.6–2.2 cm in *H. oblongifolia*), caudate-acuminate calyx lobes (vs lanceolate in *H. khasiana* and triangular to triangular-acuminate in *H. oblongifolia*) and emarginate or shallowly bilobed stigma (vs chiritoid, distinctly forked in *H. khasiana* and truncate to obscurely emarginate in *H. oblongifolia*). – Type: India, Arunachal Pradesh, Upper Siang District, between Jenging and Bomdo, 10 xi 2024, N.V. Page 101124 (holotype BSD, isotype WII). Figures 1, 2 and 3.

Erect, perennial, robust, caulescent herbs, to 2 m tall. Stems many, branching from the base, terete, hollow, puberulous. Leaves opposite, green adaxially, paler abaxially, elliptic-ovate to ovate-lanceolate, 11–26 × 6–12 cm, base usually oblique, rarely rounded or cordate, apex acuminate, margins crenate-serrate, pubescent adaxially and abaxially, densely so on the midrib and secondary nerves; *midrib* depressed adaxially, prominent and raised abaxially, densely pubescent adaxially and abaxially, especially near the base; *secondary veins* 8–18 pairs, sometimes unequal in number on either sides, impressed adaxially, raised abaxially, thick towards the base, successively thinner towards the apex, arcuate, meeting to form loops near the margins, densely pubescent especially near the base and midrib; *tertiary veins distinct*, pubescent, impressed adaxially, raised abaxially; *petiole* 3.5–7.5 cm long, densely pubescent, clasping the stem. *Inflorescence* a dichasial or rarely polychasial cyme, usually up to 30-flowered, rarely more than 30-flowered, on axils of upper leaves, when polychasial the outermost lateral branches reduced to a single flower; *peduncle* solitary, rarely in pairs, c.3.5 cm long, pubescent; primary lateral *branches* to 1.2 cm long, pubescent; secondary lateral *branches*, to 1 cm long, pubescent; *bracts* two, at the origin of primary lateral



Figure 1. *Henckelia multiflora* N.V.Page, sp. nov. A, Terminal leaves; B, habit; C, abaxial side of leaf. Photographs: Navendu Page.

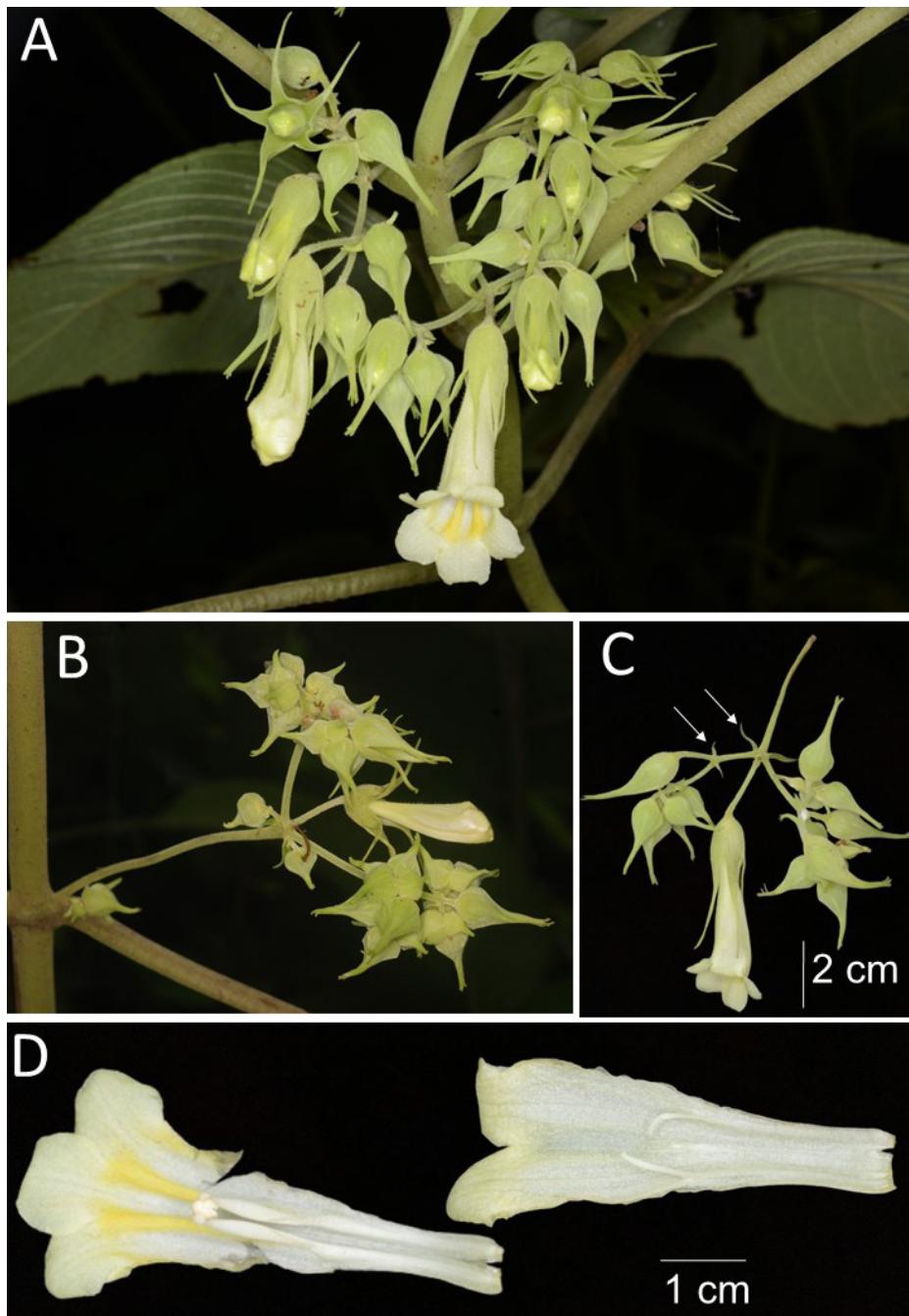


Figure 2. *Henckelia multiflora* N.V.Page, sp. nov. A and B, Inflorescence; C, close-up of inflorescence, with white arrows indicating the position of bracts; D, corolla split between upper and lower lip. Photographs: Navendu Page.

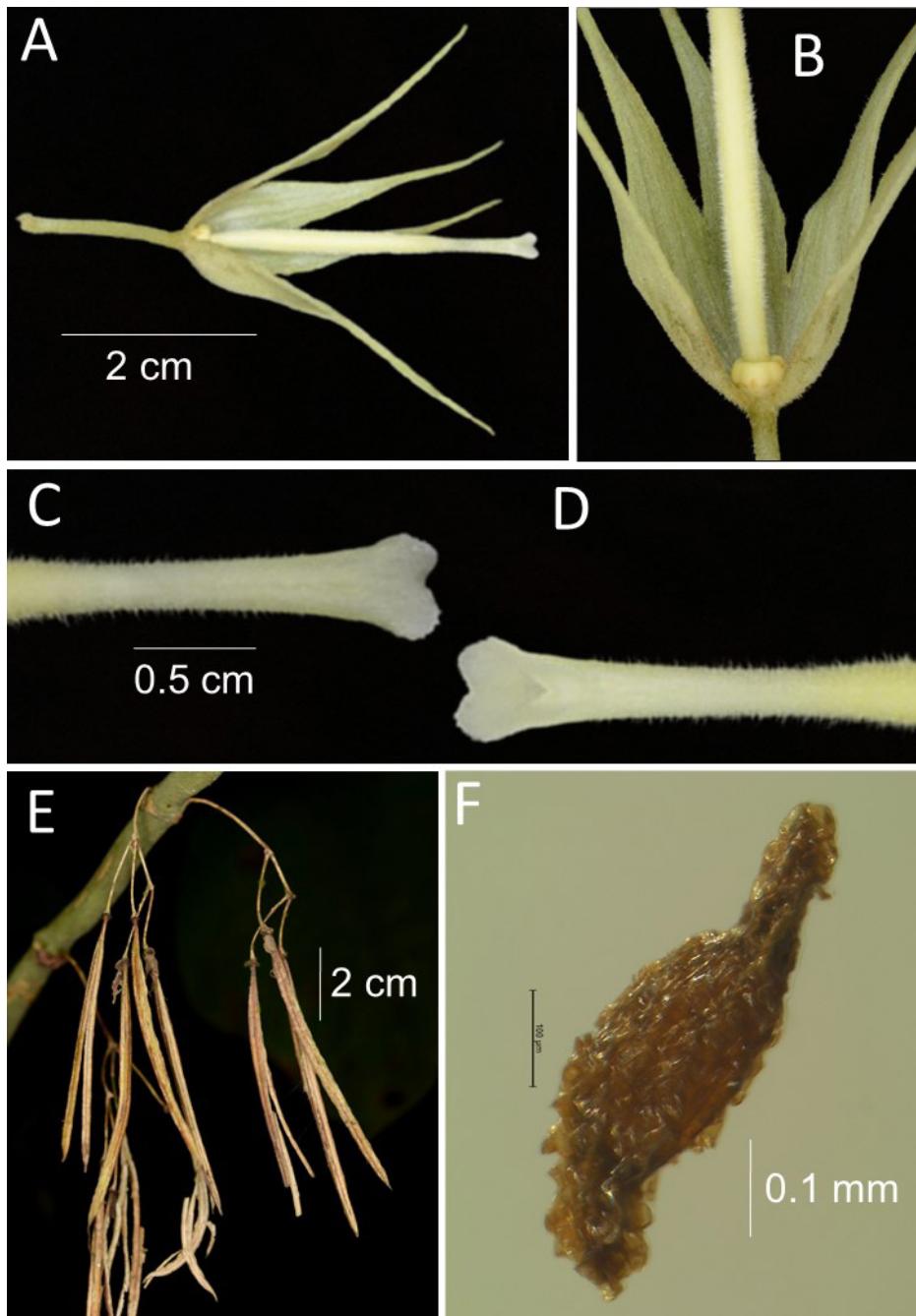


Figure 3. *Henckelia multiflora* N.V.Page, sp. nov. A, Calyx and gynoecium; B, ovary and disc; C and D, stigma and style; E, infructescence with mature and dehisced capsules; F, seed. Photographs: Navendu Page.

branches, ovate, oblong-lanceolate, to 1 cm long, pubescent; *bracteoles* two each at the origin of secondary lateral branches, ovate-lanceolate, to 0.5 cm long, pubescent; *pedicel* to 0.5 cm long. *Calyx* 5-lobed, fused up to 1.2 cm from base to form a campanulate tube; *lobes* linear-lanceolate, to 3 cm long, caudate-acuminate, pubescent outside, glabrous and 3- to 4-veined inside. *Corolla* tubular, 2-lipped, cream coloured with yellow longitudinal flaps inside the throat, on the lower lip, pubescent with gland tipped hairs outside, glabrous or glabrate inside; *tube* c.4 cm long, gradually enlarging towards the mouth, upper lip 2-lobed, lower lip 3-lobed; upper lobes, ovate to obovate, c.1 cm in diameter; lower lobes ovate to obovate, c.1 cm diameter, middle one slightly broader. *Fertile stamens* 2; *filaments* creamy white, inserted c.20 mm from the base of the corolla, c.10 mm long, glabrous; *anther-thecae* 3 mm across, fused face to face, glabrous. *Staminodes* 3; central one creamy white, c.3 mm long, inserted c.18 mm from the base of the corolla, glabrous; lateral ones creamy white, straight or slightly curved, c.8 mm long, inserted c.16 mm from the base of the corolla, glabrous. *Disc* annular, c.2 mm long, shallowly lobed, glabrous. *Gynoecium* c.32 mm long; *stigma* emarginate, c.2.5 mm across; *style* linear, c.7 mm long, densely pilose; *ovary* c.25 mm long, 2–2.5 mm wide, cylindrical, yellowish, densely pilose. *Capsules* up to 6.5 cm long, 2–3 mm wide, glabrous, dehiscing longitudinally via both dorsal and ventral sutures. *Seeds* minute, 0.5 mm long, numerous, corrugated.

Distribution. Recorded from two localities in the Upper Siang district at the upper limits of the Siang River basin in Arunachal Pradesh, India ([Figure 4](#)).

Habitat and ecology. Evergreen forests at elevations of 500–800 m a.s.l. The plant is usually seen growing on damp soil in shady and narrow gorges along rivulets. It can also be seen in damp and shaded areas along small rivers or water channels.

Etymology. The specific epithet refers to its many-flowered inflorescence, which is one of the diagnostic features of this species.

Proposed IUCN conservation category. The species is currently known from two locations in the Upper Siang district of Arunachal Pradesh, India. Since a minimum of three locations are required to calculate the extent of occurrence, the geographical range size for *Henckelia multiflora* could not be estimated using this measure (Criteria B1). The area of occupancy (AOO), however, is estimated to be 8 km², and hence satisfies the range-size threshold (10 km²) required to qualify for the Critically Endangered (CR) category (see Criteria B2). However, a species needs to additionally meet a minimum of two out of three conditions for it to qualify for one of the three Threatened categories. *Henckelia multiflora* is known from only two locations and hence satisfies the Endangered (EN) threshold (of fewer than five locations), under the condition (a). Further, we also infer a decline in its AOO (ii), quality of habitat (iii) and number of mature individuals (v), on account of road-building and road-widening activities (personal observations during the field surveys),

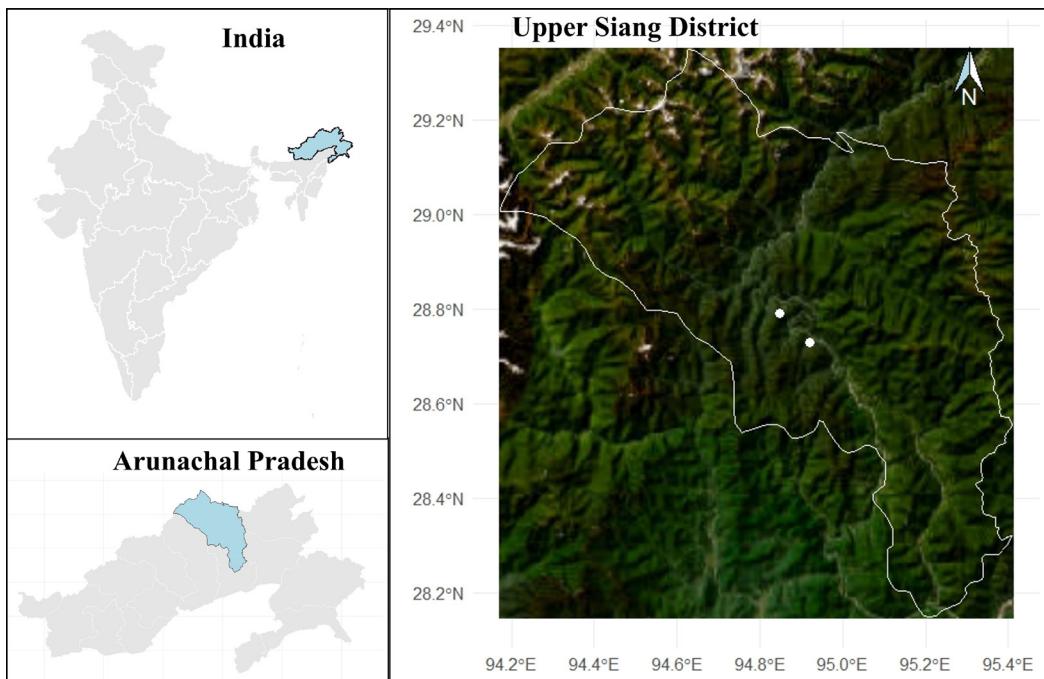


Figure 4. The two known localities (white circles) of *Henckelia multiflora* in the Upper Siang District of Arunachal Pradesh, India.

and associated habitat loss, which pose a major threat to this species and therefore qualify it for condition (b). Since this species qualifies for the Critically Endangered category only as per criteria B2 (AOO) but as not as per condition (a), it is provisionally placed under the Endangered category, for which it satisfies all the required thresholds and conditions.

Notes. The characteristics that differentiate *Henckelia multiflora* from its most morphologically similar species, *H. khasiana* and *H. oblongifolia*, are summarised in the **Table**.

Additional specimen examined. INDIA. Arunachal Pradesh: Upper Siang District, Between Janbo and Palling, 10 x 2018, N.V. Page 101018 (JCB, MH).

Table. Comparison of morphological and geographical characteristics differentiating *Henckelia multiflora* from its morphologically most similar species, *H. khasiana* and *H. oblongifolia*

Character	<i>H. multiflora</i>	<i>H. khasiana</i>	<i>H. oblongifolia</i>
Plant height	Up to 2 m	Up to 1 m	Up to 2.5 m
Inflorescence	Up to 30 (occasionally more) flowers per inflorescence	Up to 12-flowered	Up to 25-flowered
Calyx	Campanulate; lobes linear-lanceolate, caudate-acuminate	Campanulate; lobes lanceolate, acuminate	Variable, campanulate or rotate (with spreading lobes); lobes triangular to triangular-acuminate
Calyx length (tube + lobes)	Up to 4.2 cm long (c.1.2 cm + 3 cm) (lobes more than twice the length of tube)	1.4–1.6 cm (c.1 cm + 0.6 cm) (lobes shorter than the tube)	0.6–2.2 cm (c.0.3–1 cm + 0.3–1.2 cm) (lobes shorter than or as long as the tube, rarely slightly longer than the tube)
Relative length of calyx	Almost as long as corolla tube	More than 1/3 the length of corolla tube	1/3 the length of corolla tube
Corolla colour	Cream coloured	White	White
Corolla upper lip, inner side	Without longitudinal flaps	With two longitudinal flaps along the length of the tube	Without longitudinal flaps
Staminodes	Straight or slightly curved, creamy white throughout	Curved, basally white, apically green	Straight, white throughout
Stigma	Distinctly emarginate to shallowly bilobed	Chiritoid, distinctly forked	Truncate to obscurely emarginate
Ovary	Densely pilose, pale yellow	Glabrous, green	Densely pubescent, white
Seeds	c.0.5 mm	c.0.3 mm	Not seen
Geographical distribution	North of Brahmaputra river; upper reaches of Siang Valley, Arunachal Pradesh, India	South of Brahmaputra river; endemic to Khasi Hills, Meghalaya, India	India (Arunachal Pradesh), China and Northern Myanmar

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