

Henckelia umbellata (Gesneriaceae), a new species from the eastern Himalaya of India

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Abstract: A new species of *Henckelia*, *H. umbellata* is described from Arunachal Pradesh, India. *H. umbellata* sp. nov. can be easily distinguished by its umbellate inflorescence from other congeners. It superficially resembles *H. longisepala* (H.W.Li) D.J.Middleton & Mich.Möller in the large paired involucre bracts enclosing the flowers. It also shows similarity with *H. urticifolia* (Buch.-Ham. ex D.Don) A.Dietr. in habit, presence of glandular trichomes inside the corolla tube and glabrous ovary but several other characters are distinct between the species. A detailed description of the new species along with colour photographs, distribution, affinities and comparison with related species is given.

Keywords: Arunachal Pradesh, Didymocarpoideae, Gesneriaceae, *Henckelia*, New species.

Introduction

The genus *Henckelia* Spreng. currently includes c. 70 species of perennial, caulescent or scapigerous or rarely creeping herbs, distributed in Sri Lanka, India, Bangladesh, Nepal, Bhutan, S China, Myanmar, N Vietnam, N Laos, and N Thailand (Möller *et al.*, 2017; Krishna & Lakshminarasimhan, 2018; Borah *et al.*, 2019; Cai *et al.*, 2019; Sirimon-gkol *et al.*, 2019; Yang *et al.*, 2019). *Henckelia* was redefined by the inclusion of species formerly placed in *Didymocarpus* Wall. sect. *Orthoboea* Benth., *Chirita* Buch-Ham. ex D.Don sect. *Chirita*, and the monotypic *Hemiboeopsis* Wang (Weber & Burtt, 1998[“1997”]; Weber *et al.*, 2011; Middleton *et al.*,

2013). The re-circumscribed *Henckelia* is characterized predominantly by a chiritoid stigma and plagiocarpic or orthocarpic capsules (Möller *et al.*, 2017).

In India, *Henckelia* is represented by 35 species, including the five recently described species *H. pradeepiana* Nampy, Manudev & A.Weber (Manudev *et al.*, 2012), *H. sivagiriensis* (Rajakumar, Selvak., S.Murug. & Chellap.) E.S.S.Kumar (Kumar, 2014), *H. bracteata* Janeesha & Nampy (2015), *H. pathakii* G.Krishna & Lakshminarasimhan (2018), *H. collegii-sancti-thomasi* A.Joe, D.Borah, Taram & Sandhya (Borah *et al.*, 2019), and a new species described by Janeesha and Nampy (this issue). Möller *et al.*, (2017) grouped the Indian species of *Henckelia* in two groups: (i) species previously placed in *Chirita* sect. *Chirita*, with a caulescent habit with internodes and leaves in whorls of 2 or 3 and orthocarpic capsules—19 species in W and E Himalayas and NE India; (ii) species corresponding to *Henckelia* sect. *Henckelia* (Weber & Burtt, 1998[“1997”]), characterised by scapigerous habit with leaves in basal rosette and plagiocarpic capsules—16 species mostly in S Western Ghats, of which 15 are endemic and one species, *H. humboldtiana* (Gardner) Weber & Burtt, has a distribution which extends into Sri Lanka (Ranasinghe *et al.*, 2016).

During recent plant explorations in 2018 and 2019, one of the authors (KAS) collected some gesneriad specimens from Lower Subansiri, Kra Daadi and Kurung Kumey districts of Arunachal Pradesh in India. Further comparative studies with relevant

specimens available in ASSAM, BSD, BSHC, CAL, CALI, DD, FRC, LWG, MH & TBGT and digital specimen images accessed from virtual herbaria of BM, E, G, K, L, P & W and taxonomic literature (Don, 1822, 1825; Candolle, 1845; Clarke, 1874, 1883, 1885[“1884”]; Wood, 1974; Li, 1983; Wang *et al.*, 1998; Sinha & Datta, 2016) revealed that the new collections represented a hitherto undescribed species of *Henckelia* and is described here as new.

***Henckelia umbellata* Kanthraj & K.N.Nair, sp. nov.**

Fig. 1

The new species can be easily distinguished from its congeners by its flowers borne in umbels. *H. umbellata* superficially resembles *H. longisepala* (H.W.Li) D.J.Middleton & Mich.Möller mainly in the large paired involucral bracts enclosing the flowers. But it differs from *H. longisepala* in having 4–6-flowered umbellate inflorescences (*vs.* 3–9-flowered umbel-like cymes); fused, narrowly triangular, acuminate sepals (*vs.* free, spatulate-linear, obtuse sepals) and anther connective without any appendage (*vs.* connective with one appendage abaxially).

Type: INDIA, **Arunachal Pradesh**, Kra Daadi district, near Yangte village, 27° 44' 7.23"N, 93° 38' 8.18"E, 1295 m, 12.09.2018, *A.S. Kanthraj* 319888 (holo LWG!; iso CAL!).

Perennial caulescent herbs. Stems erect to sometimes decumbent, 30–150 cm long, scarcely branched, rooting from the woody base, internodes 6.5–11 cm long, cylindrical, green to dark purplish-brown, indumentum white with reddish-brown tips. Leaves opposite, usually in unequal pairs with a large and a slightly smaller leaf; petioles 3–11 cm long, 1–3 mm broad, green-brownish, sparsely hairy with red-brown hairs; lamina ovate to elliptic-oblong, 8–18 × 4–8 cm, apex acuminate, margins crenate-serrate, densely brown pubescent, base oblique, upper surface with many white pilose hairs, lower surface with white and reddish-brown pilose hairs and many white sessile glands; lateral veins 8–12 pairs, more prominent and clothed with red-brown hairs on lower surface. Inflorescence axillary, umbellate, 4–6-flowered; peduncles 3–6 cm long, stout, terete, green to dark purple, densely hairy;

bracts 2, free, enclosing the flower buds, broadly ovate, 2.8–3.5 × 2.4–2.6 cm, apex acuminate, shallowly crenate towards apex, green with prominent purplish veins, with brown hairs outside, glabrous inside, caducous; pedicels enclosed within the bracts, 1.2–2.2 cm long, stout, greenish-white, glabrous. Calyx 5-lobed, fused almost up to middle, 3.5–3.7 cm long, purplish-white; tube 1.7–2.0 cm; lobes narrowly triangular, 1.7–1.8 cm long, acuminate, white pilose hairy outside, glabrous inside. Corolla infundibuliform, 5–7 cm long, tube slightly curved downward, bluish purple, abruptly tapering towards the whitish base, sparsely hairy out, bilabiate, 5-lobed, lower lobes 3, 0.8–1.2 × 1.0–1.4 cm, upper lobes 2, 1.0–1.5 × 1.5–1.8 cm; lobes entire, rounded, bluish purple, throat with yellow, purple markings and dark purple-brown stripes, inner surface with many glandular trichomes. Stamens 2; filaments inserted *c.* 2.5 cm above the base of the corolla, 1.0–1.2 cm long, geniculate, white, sometimes with yellow marking at geniculation, clothed with a tuft of glandular hairs near the connective and below the geniculation; anthers coherent face to face, 2.5–4 × 1.5–2.2 mm, creamy with a purple blotch, glabrous. Staminodes 2, on either side of the stamen, inserted *c.* 2 cm from base of the corolla, *c.* 1 cm long, whitish, sparsely hairy, antherodes incurved, greenish, glabrous. Disc tubular, *c.* 7 mm high, shallowly 5-lobed, greenish; ovary 20–23 × 1.5–2 mm, green, glabrous; style 1.2–1.5 cm long, whitish, glandular pubescent; stigma upper lip absent or very obscure, lower lip deeply bilobed, 3–3.5 mm long, 4.5–7 mm wide, papillose, purplish-white. Capsules 10–16.5 cm long, linear, green, orthocarpic, without persistent disc and calyx. Seeds broadly ellipsoid, 0.4–0.47 × 0.18–0.23 mm, dark brown, pitted.

Flowering & fruiting: Flowering from August to October and fruiting from September to November.

Habitat: On muddy slopes and shady places along moist tropical forest margins at elevation of 770 to 1700 m. The species occurs sporadically in small patchy populations with a few to many plants.

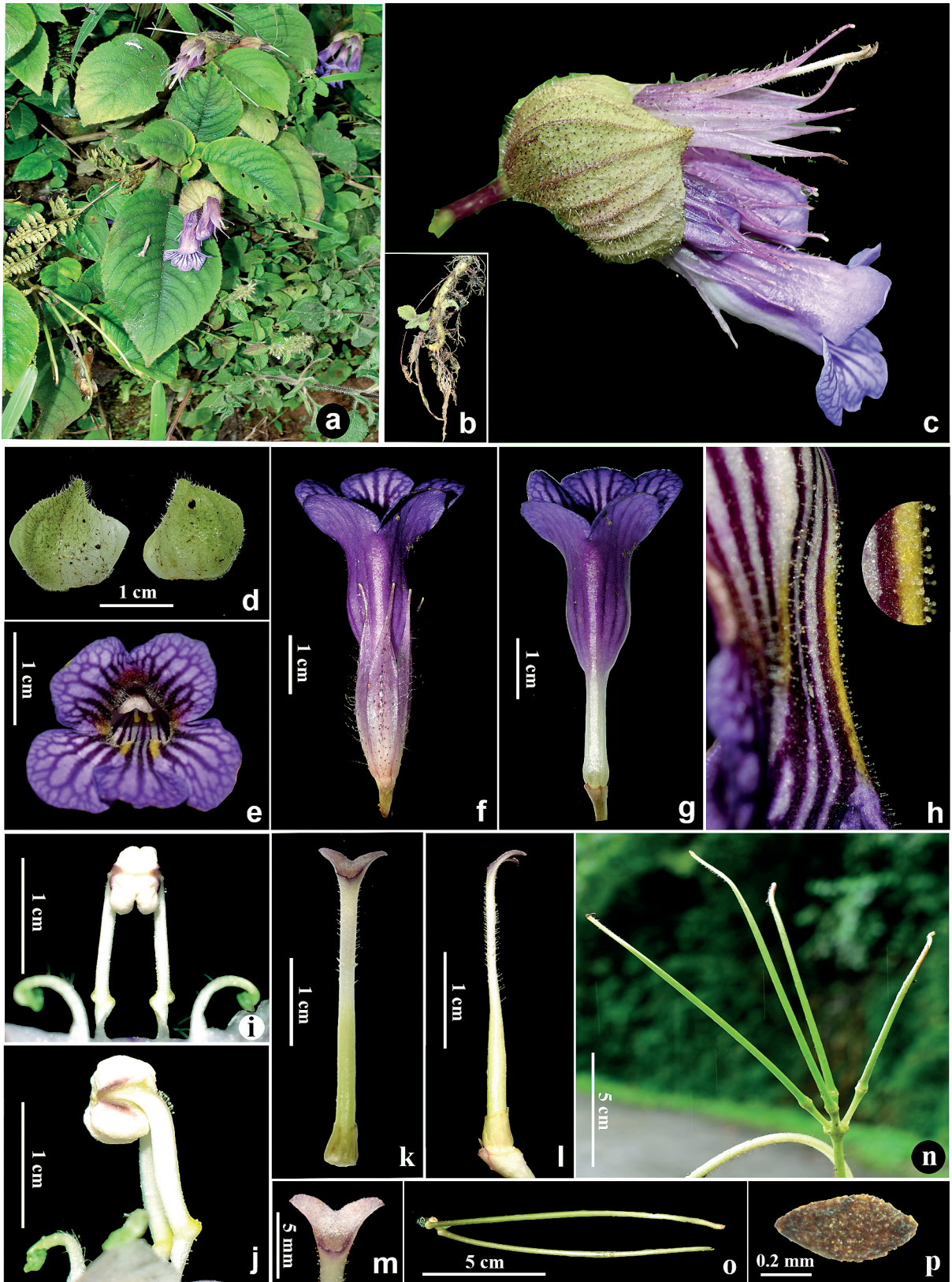


Fig. 1. *Henckelia umbellata* Kanthraj & K.N.Nair: **a.** Habit; **b.** New shoot sprouting from the base of an adult plant; **c.** Umbellate inflorescence with large bracts; **d.** Bracts; **e.** Flower–front view; **f.** Flower–ventral view; **g.** Flower–ventral view, calyx removed; **h.** Glandular trichomes on inner surface of corolla; **i & j.** Stamens and staminodes–**i.** Ventral view; **j.** Side view; **k. & l.** Pistil– **k.** Front view; **l.** Side view; **m.** Chiritoid stigma; **n.** Inflorescence with young capsules; **o.** Mature capsules; **p.** Seed (images by A.S. Kanthraj).

Distribution: So far known only from Arunachal Pradesh, India (Fig. 2).

Etymology: The specific epithet denotes the characteristic umbellate inflorescence of this species.

Specimens examined: INDIA, **Arunachal Pradesh**, Kra Daadi district, near Choba village, N 27°45'30.6", E 93°36'36.72", 1003 m, 12.09.2018, A.S. Kanthraj 319892; near Yangte village, N 27°44'2.63", E 93°38'15.04", 1288 m, 19.09.2019, A.S. Kanthraj 321076; Palin-Nyapin, near Yangte village, N 27°44'8.08", E 93°38'7.37", 1286 m, 12.09.2018, A.S. Kanthraj 319890 (LWG); Kurung Kumey district, 15 km before Koloriang town, N 27°52'39.05", E 93°26'59.67", 772 m, 19.09.2019, A.S. Kanthraj 321087; Koloriang, N 27°54'12.13", E 93°22'29.27", 843 m, 20.09.2019, A.S. Kanthraj 321088; Yarte, N 27°54'12.13", E 93°22'29.27", 793 m, 19.09.2019, A.S. Kanthraj 321085 (LWG);

Lower Subansiri district, near Deed, N 27°33'30.63", E 93°41'8.16", 1579 m, 18.09.2019, A.S. Kanthraj 321074; New Palin to Deed, N 27°38'53.88", E 93°37'36.48", 1310 m, 13.09.2018, A.S. Kanthraj 319893; Ziro, N 27°32'28.91", E 93°47'35.99", 1695 m, 21.09.2019, A.S. Kanthraj 321089 (LWG).

Conservation status: The species has so far been found at seven localities in three districts in Arunachal Pradesh. Preliminary surveys revealed that the species occurs in small fragmented populations, each with four to fifteen mature individuals. The expansion of the National Highway 713, which connects Joram and Koloriang via Palin in Arunachal Pradesh, is a potential threat to the natural habitat and populations of this species. Further surveys and studies in other likely areas of its occurrence are needed to assess the conservation

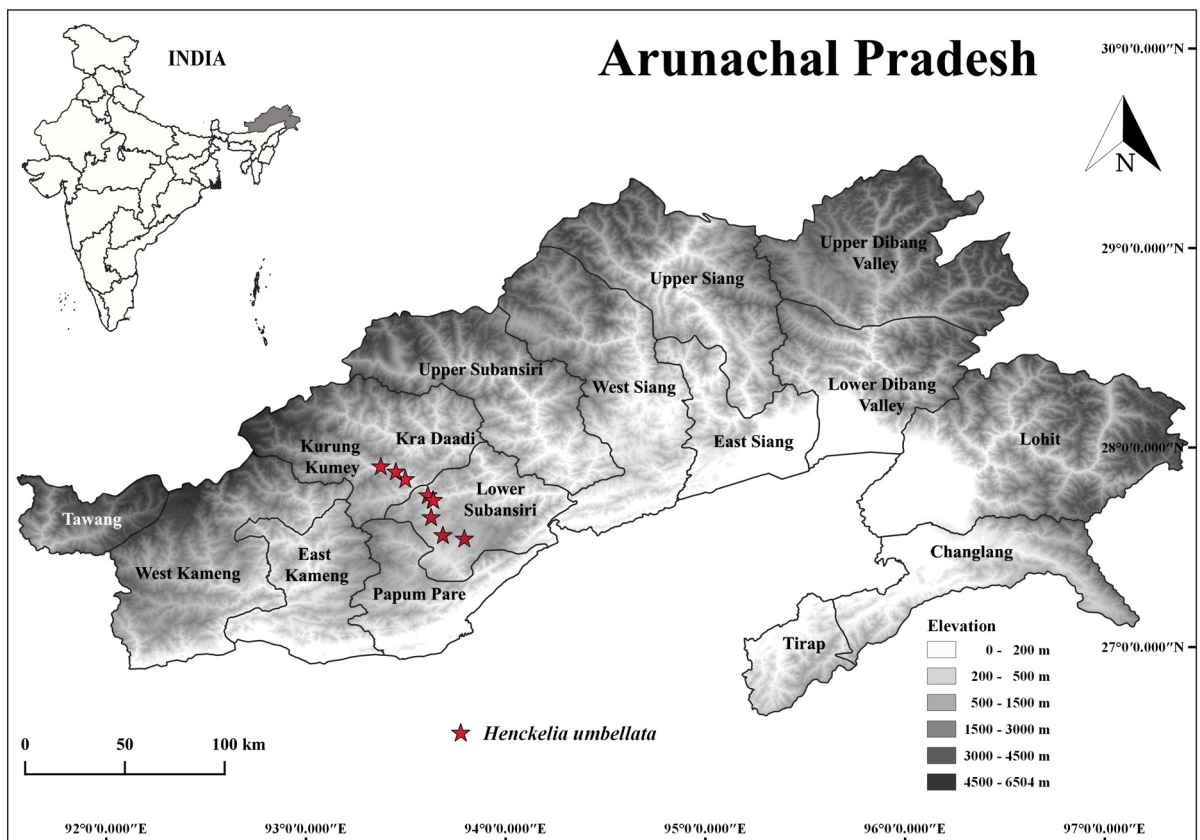


Fig. 2. Map showing the collection sites of *Henckelia umbellata* Kanthraj & K.N.Nair in Arunachal Pradesh, India [drawn using the software QGIS 3.8.2 Zanzibar (QGIS Development Team, 2019)].

Table 1. Comparison of selected morphological characters in *Henckelia umbellata*, *H. longisepala*, and *H. urticifolia*

Characters	<i>H. umbellata</i> Kanthraj & K.N.Nair	<i>H. longisepala</i> (H.W.Li) D.J.Middleton & Mich.Möller*	<i>H. urticifolia</i> (Buch.-Ham. ex D.Don) A.Dietr.
Habit	Erect or sometimes decumbent herbs	Erect or decumbent subshrubs	Decumbent herbs
Leaves	Broadly ovate to elliptic-oblong, 8–18 × 4–8 cm, margins crenate-serrate	Ovate to oblong-ob lanceolate, falcate, 9–24 × 3–6.5 cm, margins repand-crenulate to nearly entire	Ovate to elliptic-oblong, 4–12 × 3.5–7.5 cm, margins crenate-serrate
Inflorescence	4–6-flowered umbels	3–9-flowered umbellate cymes	1–3-flowered cymes
Bracts	Broadly ovate, 2.8–3.5 × 2.4–2.6 cm, at base of the pedicel, enveloping the flowers, green	Ovate-orbicular, c. 2 × 2.5 cm, at the base of pedicel, enveloping the flowers, purplish white to dark purple	Ovate-lanceolate, 0.8–2 × 0.5–1.5 cm, at base of the pedicel, not enveloping the flowers, green
Sepals	Fused almost up to middle, narrowly triangular, acuminate at apex	Free from base, spatulate-linear, obtuse at apex	Fused almost up to middle, triangular, long-acuminate at apex, often deflexed
Colour of corolla lobes	Bluish-purple	Purplish to white	Pinkish to red purple
Staminal filaments	Geniculate with a tuft of glandular hairs at apex and a few at base	Geniculate, glabrous to puberulent near apex	Geniculate, glabrous to glandular hairy, often with sessile glands
Anthers	Connective without any appendage	Connective with one appendage abaxially	Connective without any appendage
Disc	Tubular, c. 7 mm high, greenish	Annular, c. 2 mm high, purplish	Tubular, c. 5 mm high, yellow
Ovary	Glabrous, without sessile glands	Glabrous, without sessile glands	Glabrous, often with sessile glands
Style	Glandular pubescent	Glandular puberulent	Glandular and eglandular pubescent

*Based on descriptions provided by Li (1983), Wang *et al.* (1998) and Bui *et al.* (this issue).

status of the new species. Based on the present data, it is provisionally assessed here as “Data Deficient (DD)” under the IUCN Red List Categories and Criteria (version 3.1) (IUCN 2001, 2012, 2019).

Notes: *Henckelia umbellata* belongs to the group of NE Indian and Himalayan species of *Henckelia* with caulescent habit, internodes with leaves in whorls of 2 or 3, and orthocarpic capsules. *H. longisepala* with which *H. umbellata* shares morphological similarities has an isolated geographic distribution in China and Laos (Li, 1983; Wang, 1984; Wang *et al.*, 1988; Weber *et al.*, 2011) and in Vietnam (Bui *et al.*, this issue). Although *H. umbellata* shows resemblances with *H. longisepala* and *H. urticifolia*, its true phylogenetic affinities with other congeners need to be examined further (see Table 1).

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