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Henckelia medogensis (Gesneriaceae), a new endemic species from Xizang, China

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ABSTRACT: *Henckelia medogensis*, a new species from Mêdog (SE Xizang, China), is described and illustrated. The new species is mostly similar to *H. lallanii* and *H. peduncularis,* but clearly differs from the former mainly by its densely red pubescent stems and leaves, purple flowers, larger corolla size, and with white pubescent outside of the corolla tube. It also differs from the latter mainly by its single flower, free and smaller bracts*,* corolla tube nearly straight and ovary hairy*. H. medogensis* was assessed to be vulnerable based on criteria outlined by IUCN Red List Categories.

KEY WORDS: Gesneriaceae, *Henckelia lallanii*, *H. peduncularis*, new species, Xizang, China.

INTRODUCTION

The genus *Henckelia* (Gesneriaceae) was described by Sprengel (1817) but was subsequently included in synonymy of *Didymocarpus* Wall (Wallich 1819). Weber and Burtt (1997) resurrected *Henckelia* Spreng. from the synonymy of *Didymocarpus*. The traditional circumscription of *Henckelia* was delimited by morphological characters (Weber and Burtt, 1997) but supported as a paraphyletic grade (Möller *et al*., 2009). Based on molecular phylogenetic results and morphological features of *Henckelia* and related genera, Weber *et al*. (2011) recircumscribed *Henckelia* as a monophyletic genus to include 56 species. At present, the genus *Henckelia* comprises 77 species, mainly distributed across south and east Asia and the adjacent Himalayan regions (Borah *et al.*, 2019; Cai *et al.*, 2019; Janeesha and Nampy, 2015, 2020; Kanthraj *et al.*, 2020; Krishna & Lakshminarasimhan, 2018; Kumar*,* 2014; Manudev *et al.*, 2012; Rajakumar *et al.*, 2009; Ranasinghe *et al.*, 2016; Sirimongkol *et al*., 2019; Shi *et al*. 2021; Shi and Yang, 2021; Taram *et al*., 2020, 2021; Yang *et al.*, 2019).

In China, the genus is so far represented by 30 species (http://gccc.gxib.cn/cn/about-68.aspx. Accessed 27 August 2021; Taram *et al*., 2021; Shi *et al*. 2021), and twelve species of *Henckelia* were recorded in Xizang Autonomous Region, namely *H. collegii-sancti-thomasii* A.Joe, D.Borah, M.Taram & Sandhya (Borah *et al.*, 2019)*, H. connata* X.Z.Shi & Li H.Yang (Shi and Yang, 2021), *H. dasii* Taram, D.Borah, R.Kr.Singh & Tag (Taram *et al.*, 2021)*, H. infundibuliformis* (W.T.Wang) D.J.Middleton & M.Möller, *H. lachenensis* (Clarke) D.J.Middleton & M.Möller, *H. lallanii* Taram, D.Borah, Tag & R.Kr.Singh (Taram *et al.*, 2021), *H. oblongifolia* (Roxburgh) D.J.Middleton & M.Möller (Weber *et al*. 2011), *H. pathakii* G. Krishna & Lakshmin. (Krishna & Lakshminarasimhan, 2018), *H. peduncularis* (B.L.Burtt) D.J.Middleton & Mich.Möller (Weber *et al*. 2011), *H. pumila* (Don) Dietrich. (Dietrich, 1831), *H. siangensis* Taram, D.Borah & Tag (Taram *et al.*, 2020), *H. umbellata* Kanthraj & K.N.Nair (Kanthraj *et al.*, 2020).

In July 2020, the authors discovered an unknown species of Gesneriaceae during field explorations of Mêdog County in Xizang (Tibet), China. After examining the specimens and literature of Gesneriaceae from China and adjacent regions, as well as a comparison between this unknown species and its related species, we concluded that this species represents a new member of *Henckelia*. Descriptions and illustrations of the new species are presented here, and the morphological characters are also compared with its closely related species (Table 1).

TAXONOMIC TREATMENT

Henckelia medogensis W.G.Wang, J.Y.Shen & F.Wen**,** ***sp. nov.*** **Figs 1 & 2**

Type**:** China. Xizang Autonomous Region, Mêdog County, Beibeng Town, from Beibeng to Hanmi, in shade on wet rock or under the damp forest, 29°17′N, 95°10′E, elev. 1600 m, 2 July 2020, *W.G. Wang, X.D Ma & J.Y Shen*, *1978* (holotype, HITBC!).

Diagnosis**:** *Henckelia medogensis* is morphologically similar to *H. lallanii* in having a single flower and share the similar infundibuliform corolla shape*,* but can easily distinguish by having a larger (5.7–8.0 cm *vs*. 4.3–5.4 cm long in *H. lallanii*) and white to purple (*vs*. corolla reddish-orange) corolla, densely white pubescent outside

Table 1. Comparison of ***Henckelia medogensis***, ***H. lallanii*** and ***H. peduncularis***.

Character	*H. medogensis*	*H. lallanii*	*H. peduncularis*
Blade	3.0–10 × 2.0–7.5 cm, ovate to oval or obovate, abaxially densely red pubescent along veins	3.0–7.5 × 2.0–4.0 cm, elliptic-ovate, abaxially sparsely white pubscent	5.0–12.0 × 4.0–7.0 cm, ovate, both surface sparsely stout hairy
Flower colour	white to purple	reddish-orange	white
Bracts	bractes 2, free, nallowly lanceolate, 0.2–0.5 × 0.1–0.2 cm	bracts 2, free, foliaceus, opposite, narrowly ovate- lanceolate, 1– 2.5 × 0.3– 0.8 cm,	bracts paired, connate, sub cordate, 1.5–1.7 × 1.5–1.6 cm
Corolla	5.7–8.0 cm long, tube nearly straight, densely pubescent outside	5.0–6.5cm long，tube slightly curved and pouched, glabrous outside	3.5–4 cm long, tube slightly curved，slightly hairy
Stamens	1.6–1.8 cm long, inserted ca. 2 cm from base of corolla tube	1.2–1.5 cm long, inserted 1.7–2 cm from the base of corolla tube	1 cm long, filaments inserted c. 1 cm from base of corolla tube
Ovary	sparsely glandular hairs	glabrous	glabrous

of the corolla tube (*vs*. glabrous). This new species also resembles *H. peduncularis* share the same dense pubescence on the stems and leaves and purple flowers, but differs in having free (*vs.* fused each other in the lower third to form a shallow cup), nallowly lanceolate (vs. broadly ovate) and smaller (0.2–0.5 × 0.1–0.2 cm *vs.* 1.5–1.7 × 1.5–1.6 cm) bracts, straight infundibuliform (vs. slightly curved and pouched) corolla tube and hairy (vs. glabrous) ovary.

***Description*:** Perennial herb with annual or monocarpic flowering stem. Stem 15–50 cm tall, rarely branched, prostrate at base, fleshy, red pubescent. Leaves 3–5 pairs, opposite, slightly subequal in each pair. Petiole light green, cylindric, 0.5–3.2 cm long, ca. 2 mm in diameter, densely red pubescent. Leaf blade light green, ovate to oval or obovate, 3.0–10 cm long, 2.0–7.5 cm wide, adaxially densely white puberulent, abaxially densely red pubescent along veins, base broadly cuneate, asymmetrical or subequal, margin serrate, apex subacute or rounded; pinnately veined, lateral veins 5–8 on each side of midrib. Inflorescence axillary, 1(2)-flowered; Peduncles 0.2–1.4 cm long, glabrous or sparsely pubescent, bractes 2, free, nallowly lanceolate, 2–5 × 1–2 mm, glabrous or sparsely pubescent outside, margin entire, apex acute; pedicels light green to brown, 5–9 mm long, ca. 2 mm in diameter, glabrous or sparsely pubescent. Calyx base pink to brown, upper light green, campanulate, 1.8–2 cm long, 5-lobed, tube 1.2–1.3 cm long, sparsely pubescent outside, glabrous inside; calyx lobes free to ca. 1/3 length of calyx, triangular, margin entire, apex acute. Corolla white to light purple, infundibuliform, 5.7–8.0 cm long; corolla tube, straight, 4–5.4 cm long, white at base and light purple towards apex, with two or four yellow stripes near the throat and several purple stripes on the abaxial lip, inside with white glandular hairs, outside densely pubescent; corolla lobes 5, suborbicular, lower lip with 3 lobes, 15 mm long, 13–14 mm wide, upper lip with 2 lobes slightly smaller than those of lower lip. Fertile stamens 2, anterior; inserted ca. 2 cm above corolla base, filaments white, geniculate, swollen at knee, twisted in lower half, glabrous, lower part 4–5 mm long, upper part ca. 7 mm long; anthers adaxially fused, pale yellow, ca. 5 mm long, sparsely puberulent; staminodes 3, reduced to thin filaments, lateral ones 5–7 mm long, inserted ca. 1.5 cm from base, the other one 1–1.5 mm long, glabrous, inserted ca. 1.3 cm from base. Disc annular, glabrous, ca. 1 mm high. Pistil ca. 3.3 cm long, ovary sparsely glandular hairs, ca. 1.6 cm long, 1–2 mm diameter, dark brown; style white, ca. 1.6 cm long, ca. 1 mm diameter, densely white glandular hairs; stigma 2-lobed, lobs 3–4 mm long, pubescent. Capsule young, green, ca. 8 cm long. Seeds unknown.

Phenology: Flowering from May to July; fruiting from August to September.

***Distribution and ecology*:** Endemic to Mêdog County, in SW China, at elevations of 1600–1980 m, growing in shade on wet rock, or near the stream and growing on wet humus under the forest.

***Etymology*:** The specific epithet '*medogensis*' refers to the type locality in Mêdog County, southeastern Xizang Autonomous Region, China.

Local name/Vernacular name: The Chinese name is proposed here as "雅魯藏布漢克苣苔". Phonetics is "Yǎ Lǔ Zàng Bù Hàn Kè Jù Tái".

***Conservation status*:** A preliminary conservation assessment for *H. medogensis* has been carried out using IUCN criteria (IUCN, 2019), and we suggest the category of Vulnerable (VU, D2) due to < 20 km^2 area of occupancy with severely fragmented habitat consisting of only three known populations. The observed expansion of the road form Mainling to Mêdog Counties may have a negative impact on the habitat of *H. medogensis* soon, and one locality very near to Renqinbeng temple where road building and tourists have an effect on *H. medogensis* in the future.

***Additional specimens examined*:** **China.** Xizang Autonomous Region, Mêdog County, Renqinbeng, near stream, grow on wet humus under the damp forest, elevation 1980 m, 8 September 2020, *Fang Wen, Dai-Ke Tian & Qing-Gong Mao, WF200908-04* (IBK!).

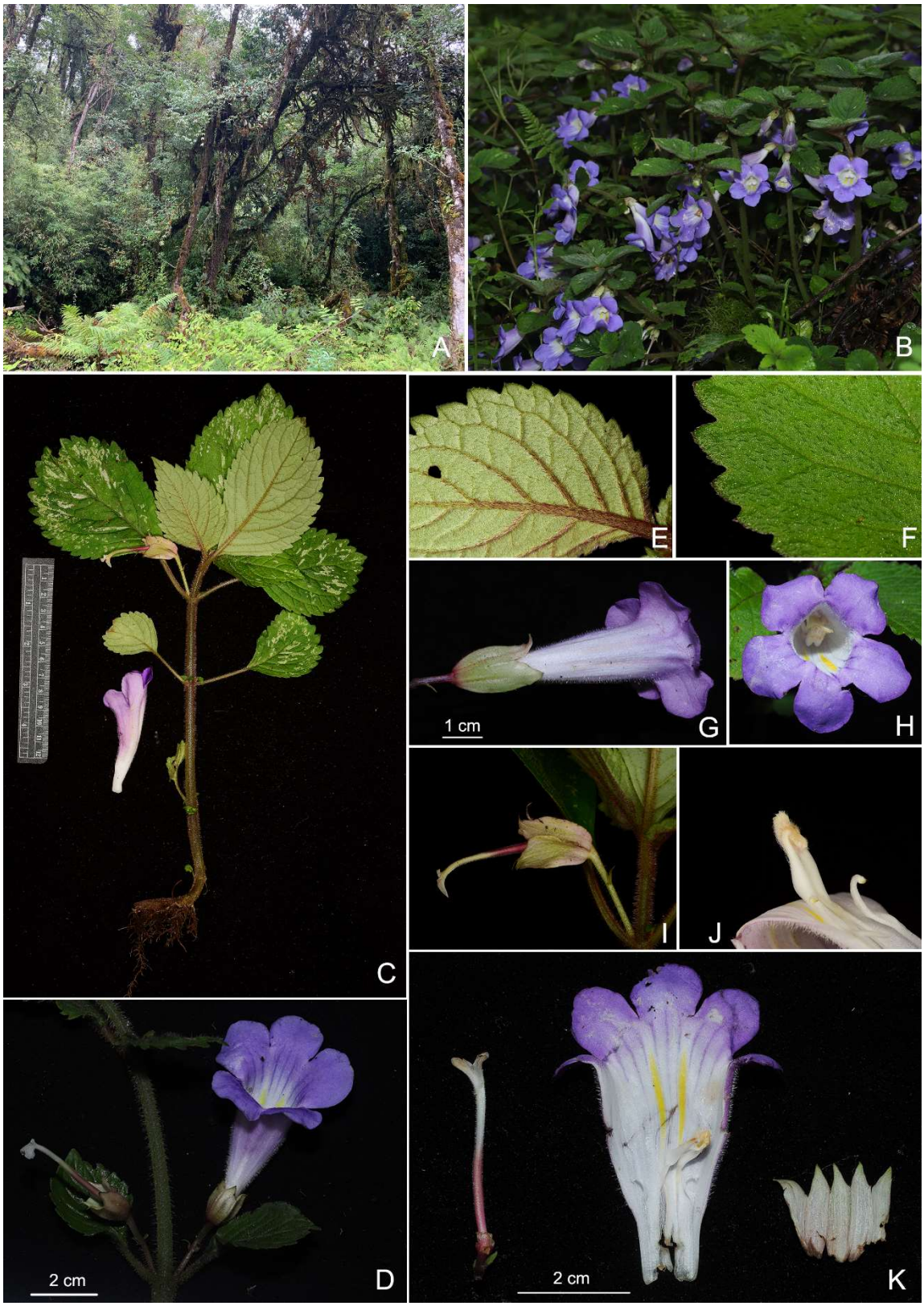

Fig. 1. ***Henckelia medogensis*** W.G. Wang, J.Y. Shen & F. Wen. **A**. Habitat. **B**. Terrestrial habit. **C**–**D**. Flowering plant. **E**. Lower leaf surface. **F**. Margin of upper leaf surface. **G**. Upper view of flower. **H**. Front view of corolla. **I**. Calyx and pistil. **J**. Stamens and staminodes. **K**. Corolla cut open to show pistil, internal corolla striations, stamens and staminodes, and calyx (Photographs: A. by F. Wen; C, I-J. by M.X. Zhao; B, D, G, H, K by W.G. Wang; E, F. by J.Y. Shen).

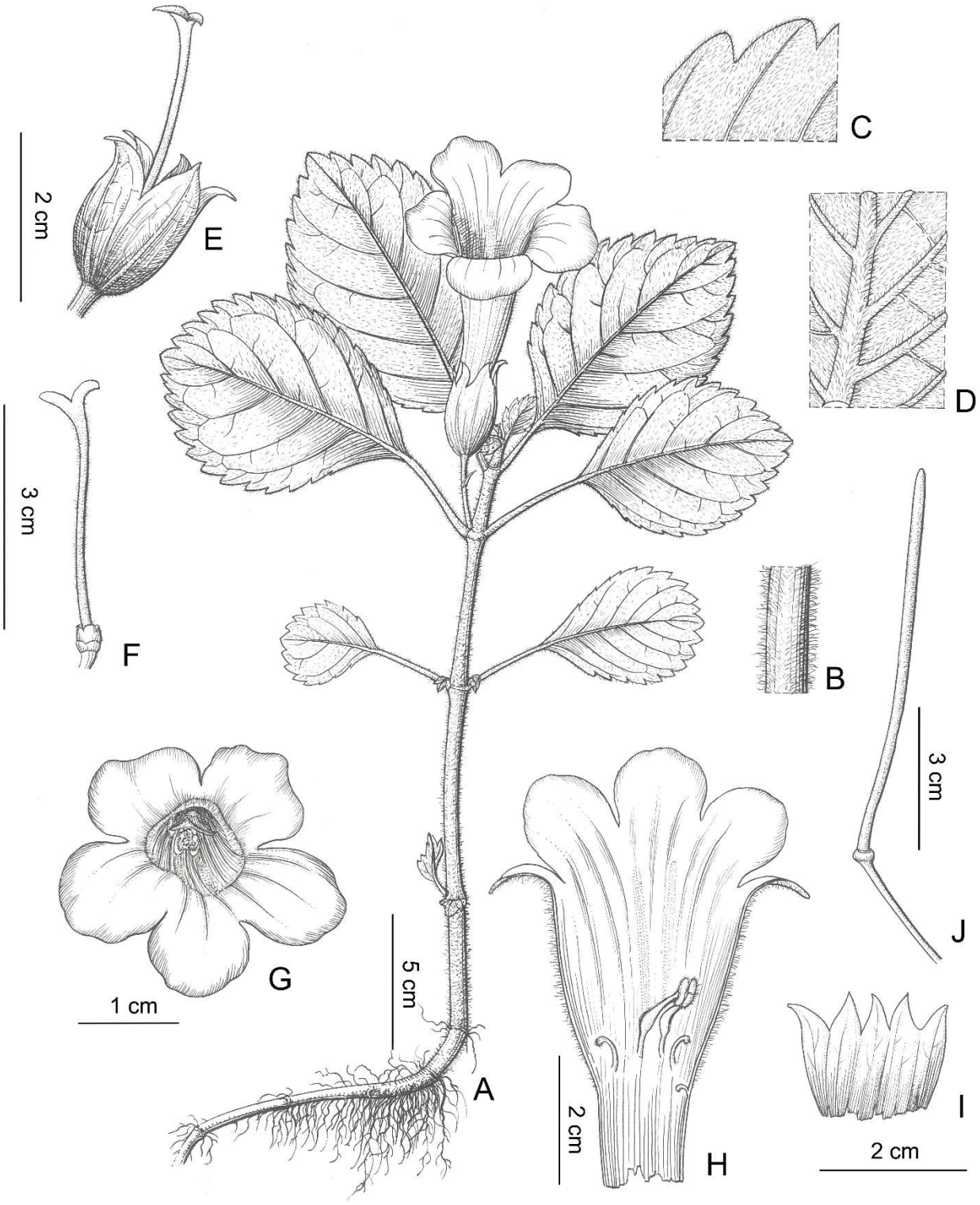

Fig. 2. ***Henckelia medogensis*** W.G. Wang, J.Y. Shen & F. Wen. **A**. Habit. **B**. Trichomes on the stem. **C**. Trichomes on lower leaf surface. **D**. Trichomes on upper surface of leaf margin. **E**. Calyx and pistil. **F**. pistil. **G**. Front view of corolla. **H**. Corolla opened featuringepipetalous stamens and staminodes. **I**. Calyx. **J**. Immature fruit (Drawn by Mr. Zhi-Ming Li).

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