

Hedychium chingmeianum (Zingiberaceae), a new species from Nagaland, India

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Abstract

A new species of the genus *Hedychium* from the Indian state of Nagaland, *Hedychium chingmeianum* N.Odyuo & D.K.Roy is described and illustrated. Relationships with other related species are also discussed, and notes on habitat, distribution and conservation status are provided.

Introduction

The genus *Hedychium* was established by Koenig (1783) with inclusion of *H. coronarium* J.Koenig, based on Rumphius's (1747) illustration. *Hedychium* includes about 80 species with the highest species diversity in the eastern Himalaya region to South China and Southeast Asia. In India, it comprises about 44 taxa, mostly restricted to north eastern India (Jain and Prakash 1995; Sanoj and Sabu 2011; Sanoj et al. 2013).

During fieldwork in the month of November 2015 in the Tuensang district of Nagaland state, North East India, some individuals of ginger were encountered in Chingmei village near Barhong forest reserve. The plant was found growing as an epiphyte in a semi-evergreen forest. Examination of the collected specimens and literature, indicate that it is morphologically distinct when compared against all known species of *Hedychium* (Baker 1890-1892; Ridley 1898; Larsen 1965; Rao and Verma 1972; Jain and Prakash 1995; Wu and Larsen 2000; Chaturvedi and Moakum 2008; Wongsuwan 2008; Picheansoonthon and Wongsuwan 2009, 2011; Wongsuwan and Picheansoonthon 2011; Sanoj and Sabu 2011; Sanoj et al. 2013) and belongs to the group that possess a short anther and deeply cleft labellum. Therefore, the specimen is here described as a new species.

Taxonomic treatment

Hedychium chingmeianum N.Odyuo & D.K.Roy, *sp. nov.*

Type: India, Nagaland: Tsuengsang district, Barhong forest reserve, Chingmei village, alt. 1500–1600 m, N 26°12'45.9'', E 94°55'29.8'', *N. Odyuo 132841*, 12 Nov 2015 (holo: ASSAM. !); Mon district, Monyakshu subdivision, Pessao village, 1598 m, N 26°25'20.8'', E 95°04'61.8'', *N. Odyuo & D.K. Roy 139052*, 20 Apr 2017 (para: ASSAM!); Tobu village, Nyoyang Mountain, 1733 m, N 26°18'83.5'', E 94°57'49.6'', *N. Odyuo & D.K. Roy 137201*, 24 Apr 2017 (para: ASSAM!).

Epiphytic, perennial rhizomatous herbs. Rhizome purplish-brown externally, sheathed, creamy-white inside, 1.5–4.0 cm high. Pseudostems pendulous, 50–60 × 0.5–0.7 cm, glabrous; leaf sheaths green with light purplish margins, bladeless sheaths 3–4, 1.0–6.5 cm long, purplish-green. Ligule non-membranous, ovate, 0.8–1.0 × 0.5–0.8 cm, purplish, glabrous, apex obtuse-rounded. Leaves short petiolate; blade lanceolate, 3.5–13.5 × 1.3–2.8 cm, glabrous on both surfaces, dark green above, pale green beneath, base rounded, apex long acuminate, margin entire, purplish throughout; petiole purplish, glabrous, ca. 2.0 cm long. Inflorescence a terminal spike, erect, oblong, ca. 15 cm long; peduncle purplish-green, ca. 1.5 × ca. 0.4 cm long, densely rusty pubescent; rachis visible, ca. 11.0 × 0.2–0.3 cm, densely rusty pubescent. Bracts folded, ovate, 0.7–1.1 × ca. 0.4 cm, purplish-brown, hairy outside, glabrous inside, apex acute, each subtending of 2-flowers. Bracteoles tubular, membranous, 0.6–0.8 × 0.4–0.5 cm, purplish-brown, hairy outside, glabrous inside, apex acute. Flowers white, 4–5 cm long. Calyx tubular, 1.3–1.5 × 0.12–0.15 cm, purplish, hairy, apex 3-dentate. Corolla tube slender, ca. 2 cm long, creamy-yellow, hairy, 3-lobed; lobes glabrous, spatulate, dorsal lobe ca. 1.8 × 0.15–0.2 cm, yellow, apex acute with purplish tinge, lateral lobes 1.4–1.6 × ca. 0.15 cm, without purple tinge at apex. Lateral staminodes linear-spathulate, ca. 1.8 × ca. 0.15 cm, basal half yellow, apical half white, truncate at apex. Labellum ovate, 1.3–1.5 × 0.4–0.5 cm, white, base attenuate into 2.0–2.5 × ca. 1.4 mm claw, apex deeply divided; lobes ensiform, 1.1–1.2 cm long, unequal. Filament brownish-red, 2.8–3.0 cm long; anther dorsifixed, 0.15 × 0.2 cm, base divaricate, reddish-yellow, glabrous. Ovary 0.15–0.2 × 0.2–0.25 cm, densely silky hairy, 3-loculed; placentation axile. Epigynous glands 2, slender, ca. 0.2 cm long, yellow. Stigma green, ciliate. Fruits 0.5–0.7 × 1.8–1.3 cm, a loculicidal capsule, globose, three-angled, densely hairy, crowned with persistent calyx. Seeds numerous, black, compactly arranged on column. **Figs 1–3.**

Flowering: October–November.

Fruiting: Ripe fruits in March–April.

Etymology: The new species is named after the place of occurrence Chingmei village in Tsuengsang district of Nagaland, India.

Habitat: This new species grows as a lithophyte on rocks, or as an epiphyte on trunks of trees in the semi-evergreen forest, at alt. 1500–1600 m.

Distribution: Known only from the type location.

Conservation status: The initial field assessment at the type location found that the new taxon was rare with a limited population size. Therefore, to determine the IUCN conservation status we recommend further surveys should be carried-out across the Tsuengsang district of Nagaland. At present, the status is considered data deficient.

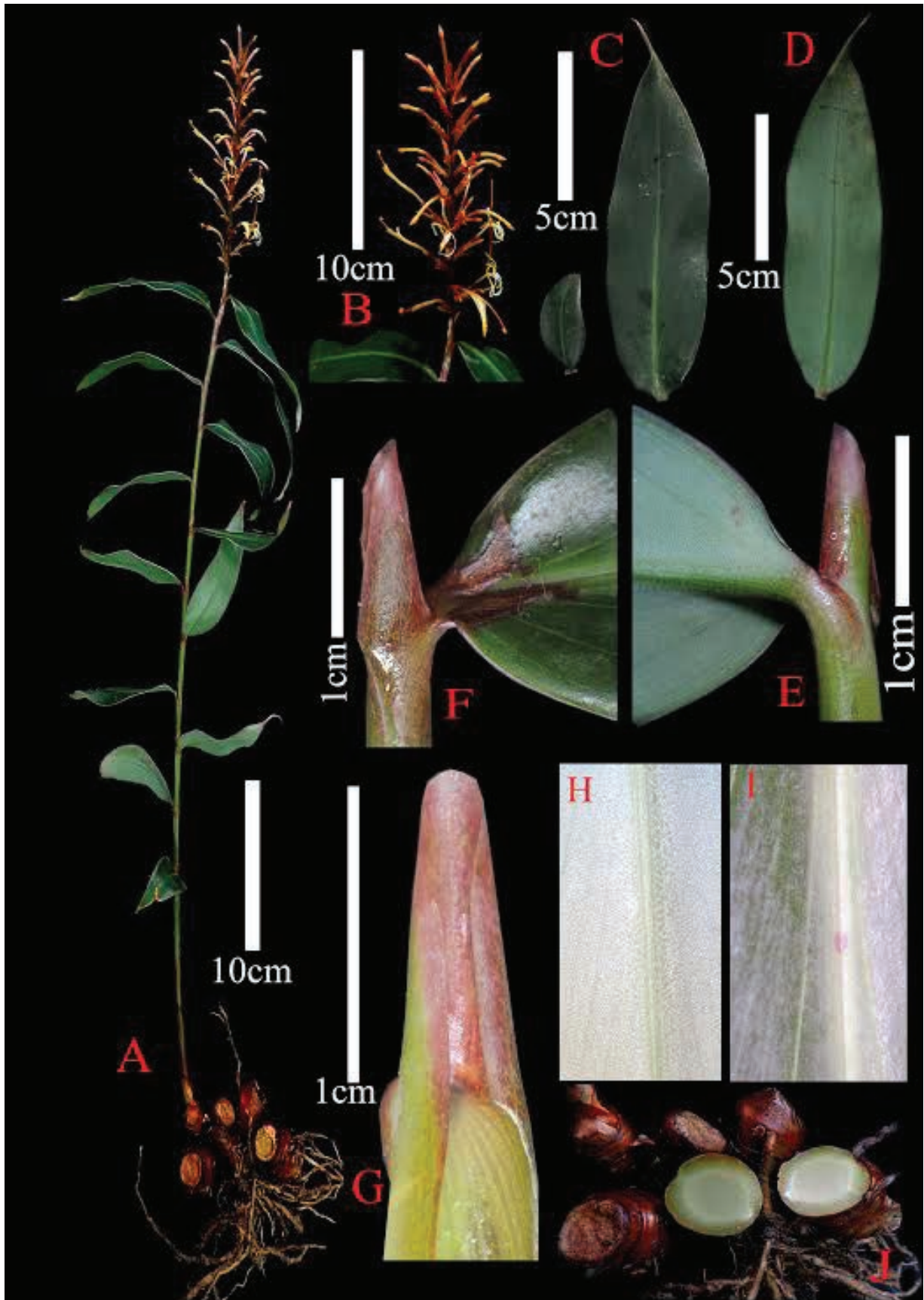


Fig. 1. *Hedychium chingmeianum* N.Odyuo & D.K.Roy: **A.** habit; **B.** inflorescence with portions of leaf; **C.** leaf (dorsal view); **D.** leaf (ventral view); **E.** ligule with portion of leaf (side view-ventral); **F.** ligule with portion of leaf (side view - dorsal); **G.** ligule (frontal view); **H.** leaf blade surface (ventral); **I.** leaf blade surface (dorsal view); **J.** rhizome.

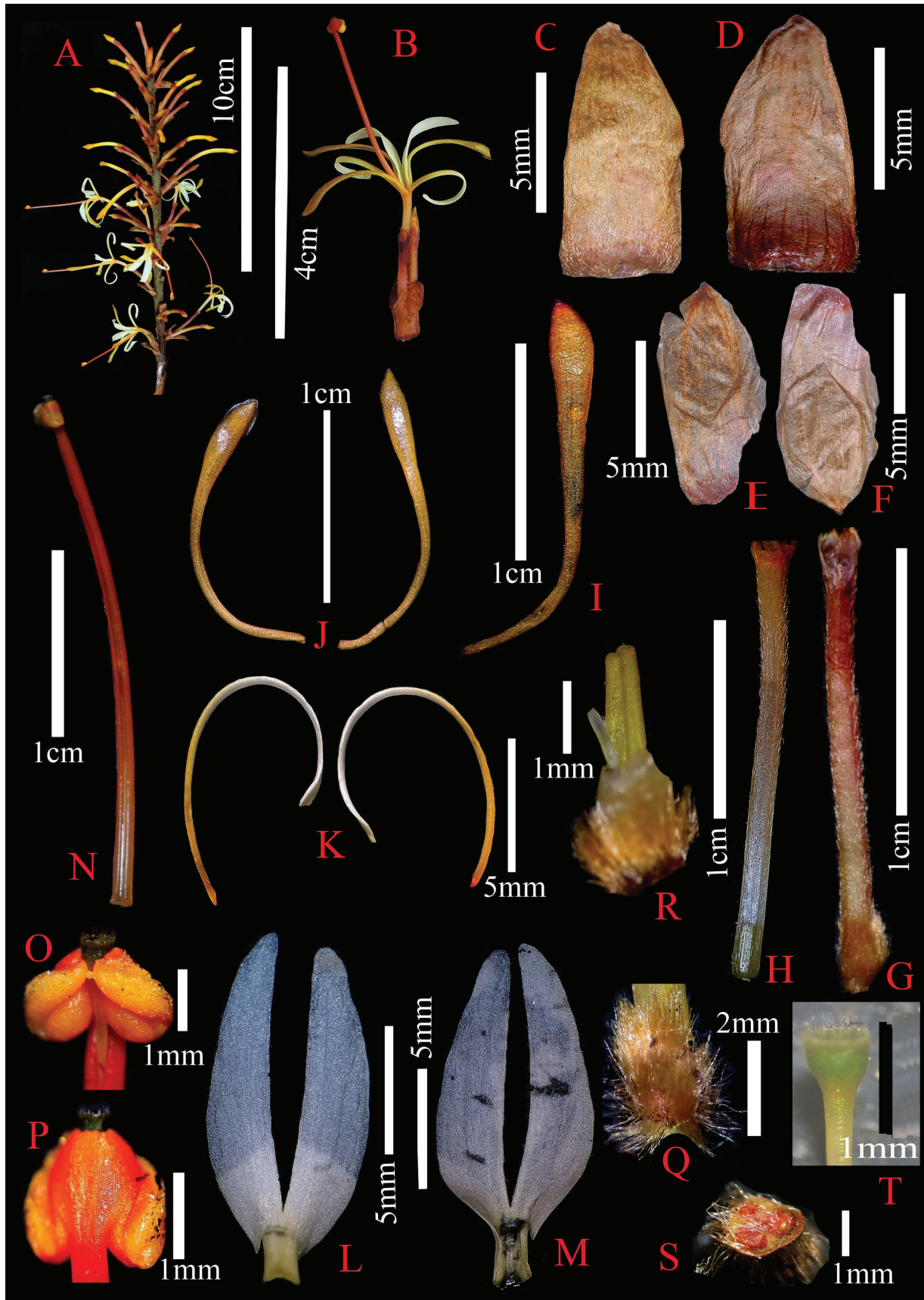


Fig. 2. *Hedychium chingmeianum* N.Odyuo & D.K.Roy: A. inflorescence; B. flowers with bract; C. bract (dorsal view); D. bract (ventral view); E. bracteole (dorsal view); F. bracteole (ventral view); G. calyx tube with ovary; H. corolla tube; I. dorsal corolla lobe; J. lateral corolla lobes; K. lateral staminodes; L. labellum (front view); M. labellum (back view); N. filament with anther; O. anther (ventral view); P. anther (dorsal view); Q. ovary; R. epigynous glands with ovary; S. T.S. of ovary; T. stigma.

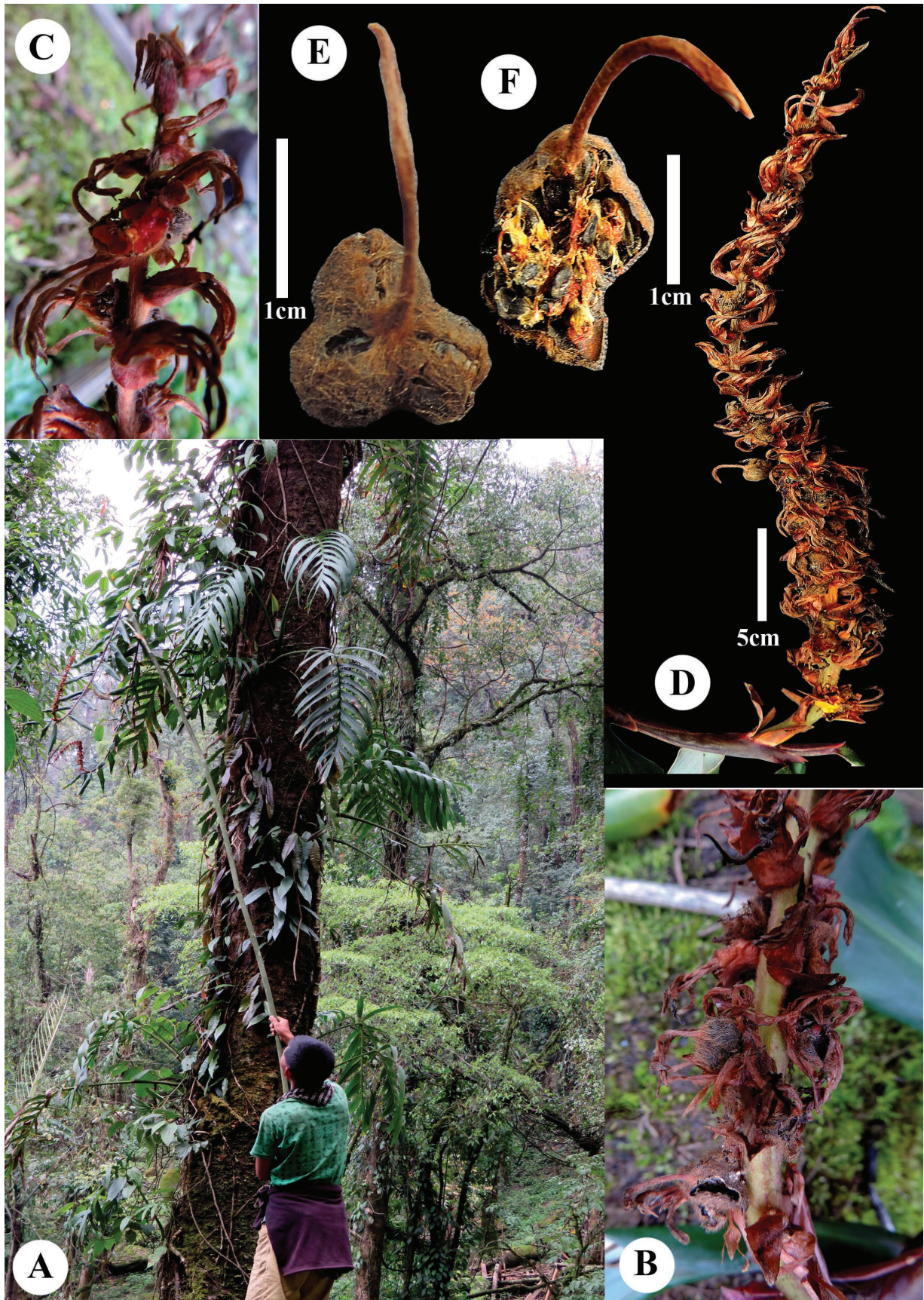


Fig. 3. *Hedychium chingmeianum* N.Odyuo & D.K.Roy: A. habitat; B. inflorescence (basal portion); C. inflorescence (apical portion); D. inflorescence; E. fruit (frontal view showing the persistent calyx); F. fruit (split – exposing seeds).

Affinities: Based on morphological characters *H. chingmeianum* N.Odyuo & D.K.Roy is included in the short anther and deep cleft labellum group of the genus *Hedychium*. It is similar to *H. collinum* Ridl., *H. villosum* Wall. var. *villosum*, and *H. villosum* Wall. var. *tenuiflorum* (Wall. ex Voigt) Wall. ex Baker in having hairy inflorescence, visible rachis, non-imbricating bracts, more than one flower per bract, deeply bilobed labellum and short dorsifixed anther. It differs from the closely related species *H. villosum* in having glabrous, ovate ligule with obtuse-rounded apex, glabrous leaf blade and midrib on both surfaces with purplish leaf margin throughout, spatulate, entirely glabrous dorsal corolla lobe with purplish tinge at apex, ovate labellum, linear-oblongate lateral staminodes with yellow basal half and white apical half and truncate tip. The major differences between these four taxa are presented in Table 1.

Table 1. Morphological differences between *H. chingmeianum*, *H. collinum*, *H. villosum* var. *villosum* and *H. villosum* var. *tenuiflorum*.

Characters	<i>H. chingmeianum</i>	<i>H. collinum</i>	<i>H. villosum</i> var. <i>villosum</i>	<i>H. villosum</i> var. <i>tenuiflorum</i>
Ligule	Ovate, 0.8–1.0 × 0.5–0.8 cm, glabrous, apex obtuse-rounded	Oblong, 1.9–2.5 × 1.3–2.0 cm, apex rounded or bilobed	Oblong, 1.8–2.1 × 0.7–0.8 cm, puberulent externally, apex acute	Oblong, 2.9–3.4 × 1.3–1.6 cm, densely pubescent externally, apex acute
Leaf blade	Lanceolate, 3.5–13.5 × 1.3–2.8 cm, glabrous on both surfaces	Narrowly elliptic to broad lanceolate-oblong, 19–29 × 6.0–7.6 cm, upper surface glabrous, lower surface glaucous	Elliptic-lanceolate, 14–20 × 3.7–4.5 cm, glabrous above, puberulent below, midrib pubescent below	Elliptic-lanceolate, 34–40 × 8–9 cm, glabrous, midrib pubescent below
Bract	Ovate, 0.7–1.1 × ca. 0.4 cm, densely hairy externally; cincinnus strictly 2-flowered	Oblong truncate, 2.9–3.8 × 1.4–1.7 cm, pubescent; cincinnus 3–4 flowered	Elliptic, boat-shaped, 1.2–1.4 × 0.4–0.5 cm, densely hairy externally; cincinnus 2–3-flowered	Lanceolate, boat-shaped, 2.7–2.9 × 1.1–1.2 cm, densely hairy or villose externally; cincinnus 3–4-flowered
Bracteoles	0.6–0.8 × 0.4–0.5 cm	1.8–3.0 × 0.8–1.5 cm	1–1.3 × 0.25 cm	2.1–2.2 × 0.7–0.75 cm
Calyx	1.3–1.5 × 0.12–0.15 cm, densely pubescent externally, apex clearly 3-dentate	3.4–4.4 × 0.3–0.4 cm, hairy, apex acute	1.6–1.8 × 0.15 cm, densely pubescent externally, apex obscurely 3-lobed	3.3–3.7 × 0.2–0.3 cm, densely pubescent externally, apex obscurely 2 or 3-lobed
Corolla tube	2 cm long, densely pubescent externally	5.2–8.1 cm long	1.9–2.1 cm long, densely pubescent externally	5–5.2 cm long, glabrous externally
Corolla lobes	Spatulate, yellow, glabrous throughout; dorsal lobe ca. 1.8 × 0.15–0.2 cm, yellow, apex acute with purplish tinge, lateral lobes 1.4–1.6 × ca. 0.15 cm	Linear, yellowish, 3.4–3.8 × 0.2–0.3 cm, apex hooded	Oblong, pale yellow, lower half pubescent externally, glabrous on upper half; dorsal lobe 1.6–1.7 × 0.15–0.2 cm long; lateral lobes 1.5–1.6 × 0.15 cm long	Oblong, greenish white, glabrous; dorsal lobe 4.3–4.4 cm long; lateral lobes 4–4.1 cm long
Lateral staminodes	Linear-oblongate, ca. 1.8 × ca. 0.1 cm; tip truncate	Broader linear, 3.3–3.9 × 0.3–0.5 cm	Linear, 1.3–1.5 × 0.15 cm; tip acute	Linear, 3.3–3.5 × 0.1–0.15 cm; tip acute, rarely forked
Labellum	Ovate, 1.3–1.5 × 0.4–0.5 cm, sinus 1.1–1.2 cm deep, lobes ensiform, unequal; claw 1.4 mm wide	Obovate, 2.6–3.1 × 2.3–2.9 cm, apex deeply cleft; claw 4 mm wide	Elliptic, 1.3–1.4 × 0.5 cm, sinus 0.8–0.9 cm deep; claw 1 mm wide	Oblanceolate, boat-shaped, 3.1–3.5 × 1.2–1.5 cm, sinus 1.9–2.2 cm deep, lobes ensiform, unequal; claw 4–4.5 mm wide
Filament	2.8–3.0 cm long	5.0–6.1 cm long	2.4–2.6 cm long	5.3–6.3 cm long
Anther	1.5 × 2.0 mm	3–5 × 3–4 mm	1.5 × 1.5 mm	3.5 × 2.5–3 mm

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