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Henckelia pradeepiana, a new species of Gesneriaceae from the southern Western Ghats, India

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Abstract

A new species of Gesneriaceae, *Henckelia pradeepiana*, is described from the southern Western Ghats, India. The species is remarkable by the presence of flat tubers, from which shoots with a single or few basal leaves and large and lax inflorescences (pair-flowered cymes) emerge. The corolla is white or pale violet and obliquely campanulate. Also remarkable is the bright yellow stigma with strongly expanded and sometimes slightly emarginate lower lip. This "chiritoid" stigma form supports the recent inclusion of most species of *Chirita* sect. *Chirita* into the newly defined genus *Henckelia*. The closest relative of *H. pradeepiana* is probably *H. missionis*, known from the Western Ghats of Kanyakumari district, Tamil Nadu, some 400 km away from the former.

Keywords: Gesneriaceae, *Henckelia pradeepiana*, New Species, Western Ghats

Introduction

During the preparation of a botanical inventory on Vellarimala, a floristically rich hill tract of Western Ghats of Kerala, Dr. A.K. Pradeep first collected unidentified single-leaved gesneriad specimens in 1997. They were found in a small population comprising a few plants on a stream-side damp rock near a waterfall at Olichuchattam at an elevation of 1160 m. Subsequent attempts over the last decade failed to relocate this taxon. It was presumed that frequent landslides occurring in the upper hills during monsoons, and resultant changes in stream courses, might have wiped out this interesting gesneriad from this area. Incidentally, after a lapse of 13 years, one of the authors (KMM) relocated this species in July 2010 from Muthappanpuzha, a few kilometers down from the first collection spot at an elevation of 470 m. The species differs from all other south Indian species of *Henckelia* in having flat, discoid tuber and a thick ovoid, almost globose fruit. On critical examination, it turned out to be a new species which is described and illustrated here as *Henckelia pradeepiana*.

Henckelia was re-established by Weber & Burtt (1998) and redefined recently by Weber *et al*. (2011). It now comprises roughly the species traditionally placed in *Didymocarpus* and *Chirita* in the South Indian and Sri Lankan floras (Gamble, 1924; Theobald & Grupe, 1981; Nayar *et al.*, 2006).

Henckelia pradeepiana Nampy, Manudev *et* A. Weber, **sp. nov.** **Figs 1, 2**

Henckeliae missionis similis et probabiliter affinis, sed (inter alia) habitu subunifoliato et fructibus subglobosis facile distinguitur.

Typus: INDIA, **Kerala**, Kozhikode district, Muthappanpuzha, 11°26.699' N & 076°05.288' E, 470 m, 19.8.2010, *Nampy & Manudev* 3102 (Holotypus, CALI; isotypii, DEV, W).

Herbs, acaulescent, lithophytic or epiphytic. Tubers discoid, *c.* 2.5 cm in diam., *c*. 5 mm thick, fleshy, firmly attached to rocks or on bark of trees. Leaves usually 1, or rarely to 4, broadly ovate, oblong-ovate or elliptic, 5 – 17 × 3 – 10 cm, usually oblique, sometimes rounded or cordate at base, serrulate at margins, obtuse or acute at apex, membranous, glabrous above, sparsely glandular-hairy below; lateral veins 6 or 7 on each side of the midrib; petioles 0.6 – 5.5 cm long, sparsely glandular-hairy. Inflorescences a cyme, usually 1 from the tuberous base or sometimes to 4, 1 – 20-flowered; peduncles terete, 5 – 17 cm long, glandular-hairy; bracts free, lanceolate, 5.5 – 6 × 1.5 – 2 mm, persistent, distal half glandular-hairy; pedicels

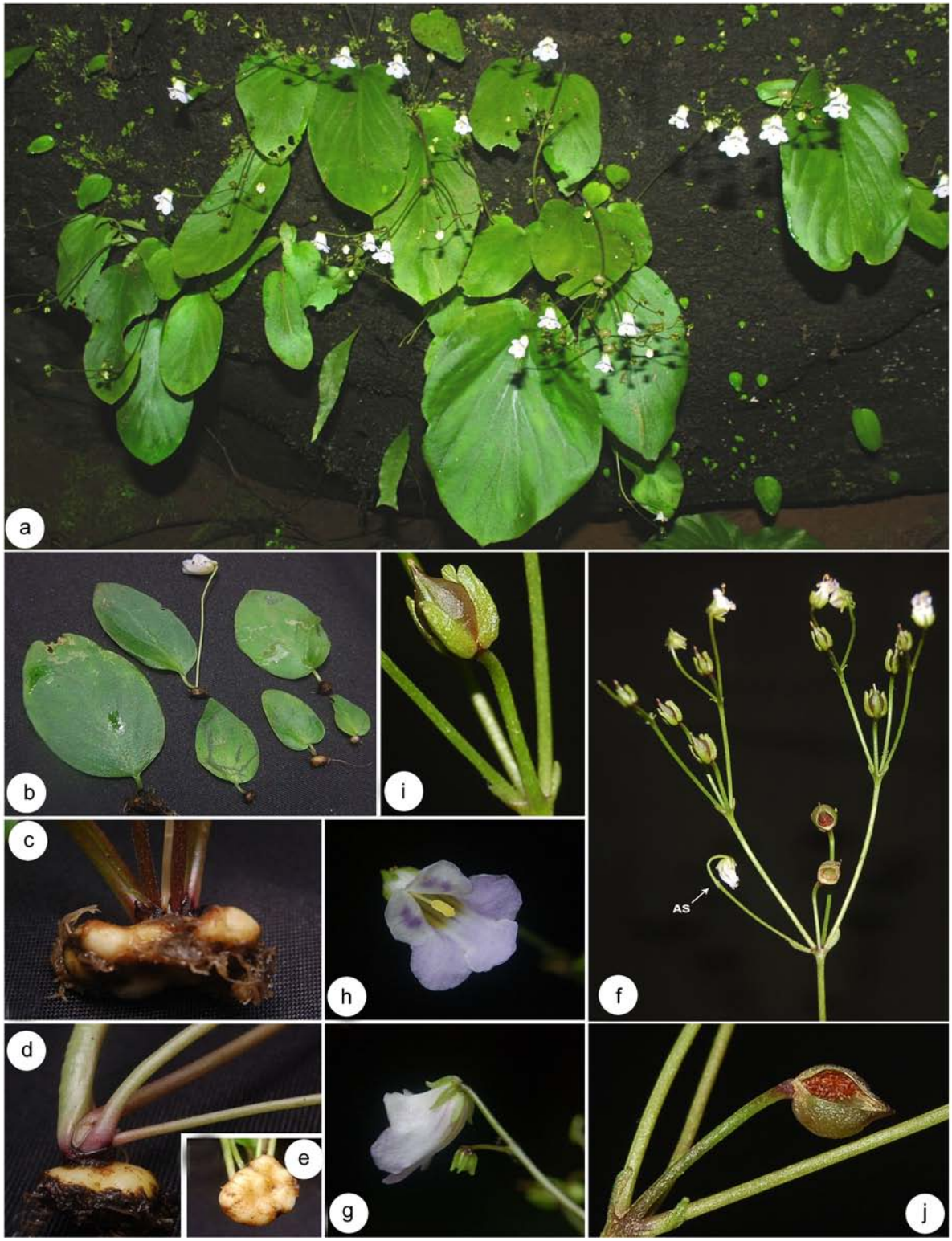

Fig. 1. *Henckelia pradeepiana* Nampy, Manudev *et* A. Weber, sp. nov.: a. Plants growing in their natural habitat, note that most plants bear a single leaf and an associated inflorescence only; b. Various growth stages, note the shape of leaves; c – e. Tuber, note the origin of leaves and inflorescence; f. Portion of cyme in fruiting stage, note pairs of fruits in the dichasial branching with pedicels of terminal and front flowers of different length, also note accessory shoot (AS, bearing a single flower) emerging from a bracteole; g. Flower, side view; h. Flower, note campanulate corolla shape and yellow stigma with much enlarged lower lobe; i. Fruit; j. Dehiscing capsule. (Photos by Manudev)

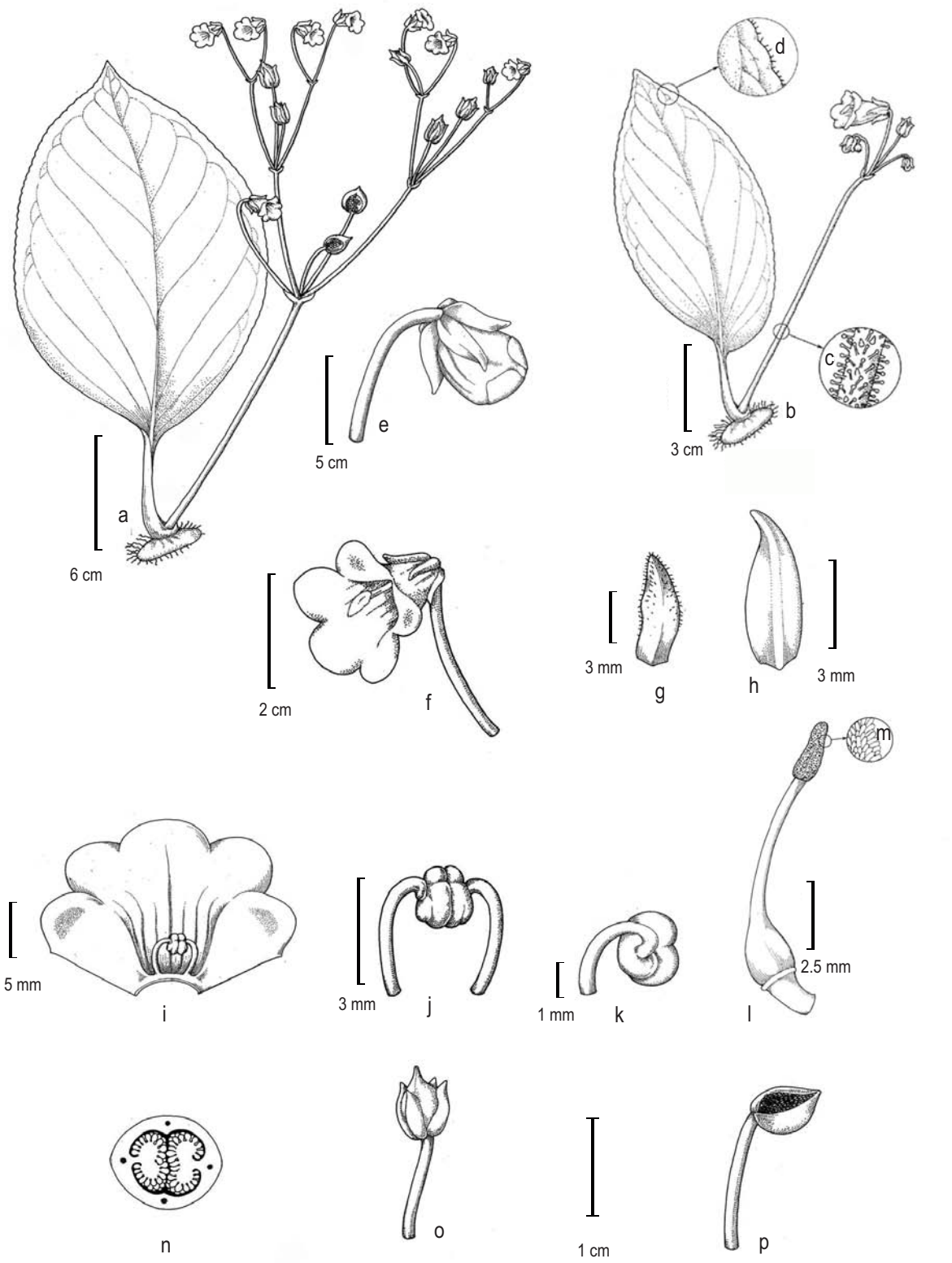

Fig. 2. *Henckelia pradeepiana* Nampy, Manudev *et* A. Weber, **sp. nov.**: **a** & **b.** Habit; **c.** Portion of peduncle enlarged; **d.** Portion of lamina margin enlarged; **e.** Flower bud; **f.** Single flower; **g.** Bract; **h.** Sepal; **i.** Corolla split-open; **j.** Androecium; **k.** Stamen; **l.** Gynoecium; **m.** Portion of stigma enlarged; **n.** Ovary C.S.; **o.** Fruit; **p.** Dehisced fruit (from *Nampy & Manudev* 3102; drawn by Manudev).

1.2 – 3.5 cm long. Flowers in pairs, *c*. 1 cm across, zygomorphic, 5-merous. Calyx 5-partite; lobes equal, basally connate, ovate-lanceolate, *c*. 5.5 × 1.75 mm, entire at margins, blunt at apex, keeled, green, persistent. Corolla campanulate; tube cylindric, 4 – 5 mm long, glabrous, white, yellow with purplish streaks at throat, 5-lobed; lobes subequal, rounded; upper lobes with purplish blotches. Stamens 2, adnate to base of corolla tube, included; filaments to 4 mm long, curved, glabrous; anthers reniform, coherent by adaxial surfaces, 1.75 – 2 × 1 – 1.25 mm. Ovary ovoid, *c*. 2 × 1.75 mm, glabrous, 2-loculed; placentae 2, parietal; style terete, 4 – 6 mm long, slender; stigma subpeltate, 2 – 2.5 × 0.75 – 1 mm, lower lip strongly expanded and slightly emarginate at apex, papillate, bright yellow. Fruits ovoid to subglobose, 6 – 8 × 4 – 5 mm, dehiscing by a longitudinal slit on the upper side only; pericarp fleshy; seeds many, long-funicled, ellipsoid, 0.5 – 0.75 × 0.2 – 0.3 mm, reticulate, brown.

Flowering & Fruiting: July – October.

Habitat: Shady areas along streams on dripping rocks and epiphytic on tree trunks at altitude ranging from 470 to 1160 m.

Specimens examined: INDIA, **Kerala**, Kozhikode district, Way to Vellarimala, Olichuchattam, 11°25.784' N & 076°05.173' E, 1160 m, 19.9.1997, *A.K. Pradeep* 56009 (CALI); Muthappanpuzha, 11°26.699' N & 076°05.288' E, 470 m, 18.7.2010, *K.M. Manudev* 3022 (DEV); Muthappanpuzha, 19.8.2010, *A.K. Pradeep* 90089 (CALI); 19.8.2010, *K.M. Manudev & Santhosh Nampy* 3105; 17.9.2011, *Santhosh Nampy & K.M. Manudev* 4547 (DEV).

Etymology: The species is named in honour of Dr. A.K. Pradeep, Curator, Calicut University Herbarium, Kerala, who first collected specimens of this species and also for his contribution to Indian plant taxonomy.

Notes: The new species is remarkable by the presence of a distinct tuber (**Fig. 1b – e; 2a, b**), a unique feature among the South Indian/Sri Lankan species of *Henckelia* (however, it has to be noted that the subterranean organs are not adequately known in all species). The tuber apparently originates from thickening of the hypocotyl. The first leaf is solitary and represents the enlarged cotyledon ("macrocotyledon"). As can be concluded from observations and photographs taken in the field, the tubers produce seasonal shoots, consisting of a single leaf in the first year. The inflorescence associated with that leaf is single or few-flowered at first (**Fig. 1b**). In the later years both the tuber and the shoots become stronger and more vigorous, the leaves become larger and occasionally up to four leaves are produced per shoot.

The inflorescences of vigorous plants are large and richly branched (**Fig. 1a, f; 2a**). They represent, as usual in the Gesneriaceae, pair-flowered cymes (with a flower pair – instead of a single flower – appearing at the branching nodes of the cyme). Remarkably, the pedicels of the two flowers of a pair are of different length (**Fig. 1f; 2a**), a phenomenon also observed in other species of South Indian/Sri Lankan Henckelias, but unknown outside this group.

The flower form and colour (obliquely campanulate, faint blue; **Fig. 1h, g**) is typical of the South Indian/Sri Lankan Henckelias. Specially remarkable is the bright yellow stigma with strongly expanded and sometimes slightly emarginate lower lip (**Fig. 1h; 2i**). This form falls well into the range of a "chiritoid" stigma, the key character of the former genus *Chirita*, in which the upper lip is reduced, but the lower lip is enlarged and more or less deeply divided (Brown, 1839; Wood, 1974; Wang, 1985). The stigma form of *Henckelia pradeepiana* thus well supports the recent inclusion of *Chirita* p.p. into *Henckelia* (Weber *et al*., 2011). Moreover, it supports the assumption of a close relationship with *H. missionis*, the stigma of which is described as "unilateral, oblong" by Clarke (1883). As to its dehiscence, the fruit is typical of the South Indian/Sri Lankan Henckelias. However, it is unique in its almost globose form (**Fig. 1i, j; 2o, p**).

The genus *Henckelia* Spreng. was fairly recently re-established by Weber & Burtt (1998), when an attempt was made to split the genus *Didymocarpus*, used for a long time in an unwarrantably wide sense, into more natural taxonomic units. Its type section was *Henckelia* sect. *Henckelia* with *c*. 15 species in southern India and Sri Lanka – which corresponds to *Didymocarpus* sect. *Orthoboea* established by Bentham (1876), and this is the group into which the new species belongs. However, the circumscription of the genus *Henckelia* has changed dramatically very recently (Weber *et al*., 2011). By exclusion of the Malesian (Sumatran to New Guinean) and southern Thai species (now mostly attributed to the re-established genus *Codonoboea*) and inclusion of many species of *Chirita* (*Chirita* sect. *Chirita* excl. half a dozen species referred to the revived genus *Damrongia*) the redefined *Henckelia* has emerged as a genus of *c*. 56 species with its distribution in Sri Lanka, southern and northeastern India, Nepal, Bhutan, southern China, Northern Vietnam, Northern Laos and Northern Thailand. A

sectional classification is not yet available. *Henckelia pradeepiana* is similar (and probably closely allied) to *H. missionis* (R. Br.) A. Weber & B.L. Burtt, a little known species from southern India, originally recognised by Wallich (Numer. List No. 6396) and formally described as *Didymocarpus missionis* by Robert Brown (1839). The most conspicuous morphological differences of the two species are: tuberous (vs. shortly-rhizomatous) habit, leaves solitary or in a few-leaved tuft (vs. many-leaved tuft or rosette), and (ripe) fruit an almost globose capsule, 6 – 8 mm (vs. elongated, curved, horn-like, *c*. 25 mm long). An illustration of *H. missionis* can be found in Beddome (Icon. Pl. Ind. Or.: t. 176. 1868, as *Didymocarpus membranacea*).

We have no information on the ecology of *H. missionis*, but it is probable – and this likely applies to the whole group – that it is similar to that of *H. pradeepiana*: shady, rather cool, humid, and moist rock crevices, and growing along with mosses and ferns.

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