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Kleinia subrahmanianii (Asteraceae: Senecioneae), a new species from Southern Western Ghats, Kerala, India

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Abstract

Kleinia subrahmanianii, a new species of Asteraceae from southern Western Ghats is described and illustrated. *Kleinia subrahmanianii* is allied to *Kleinia grandiflora* but differs in having green, terete branchlets, elliptic–oblong to linear–lanceolate non-glaucous leaves, 30–95 cm long dark–purplish scape, 7–22 drooping capitula per scape, 16–20 mm long dark–purple phyllaries, 1.3–1.7 cm long corolla tube, 2.3–3 mm long corolla lobes, 2.5–3 mm long anthers and short pappus.

Introduction

The genus *Kleinia* Mill. belongs to the tribe Senecioneae of the family Asteraceae with about 50 species distributed in south tropical and North Africa, the Canary Islands, Madagascar, the Arabian Peninsula, Sri Lanka and peninsular India (Vanijajiva et al. 2014). The Gynuroid group of subtribe Senecioninae including *Kleinia* is characterized by the presence of prominent drusciform crystals in the ovary wall, always discoid capitula and a mostly succulent habit (Jeffrey 1979). The genus *Kleinia* can be distinguished from the other members of the group by its succulent habit and appendaged style-arms. *Kleinia* is represented by four species (Mathur 1995) in India and 2 species in Kerala (Sasidharan 2013).

During the floristic exploration in the Ernakulam District of Kerala, the authors collected specimens of *Kleinia* from high range grasslands. Critical comparison with the available literature and herbarium specimens showed that this species is distinct from currently known species of *Kleinia*, and it is described and illustrated here as a new species.

Taxonomic Treatment

Kleinia subrahmanianii Sunil & Naveen Kumar, **sp. nov.**

Diagnosis: *Kleinia subrahmanianii* resembles *K. grandiflora* (Wall. ex DC.) N.Rani in having sub-sessile or shortly petiolate fleshy and glabrous leaves, size of capitulum, number and colour of florets, but differs

in having green, terete branchlets, 1.8–3 cm wide, narrowly elliptic-oblong to linear-lanceolate leaf lamina with acute apex, 0–1 cm long petiole, 30–95 cm long dark purple scape bearing 7–22 drooping capitula, 16–20 mm long dark purple phyllaries, pappus 1–1.4 cm long, corolla tube 1.3–1.7 cm long with 2.3–3 mm long lobes and 2.5–3 mm long anthers.

Type: INDIA. Kerala: Ernakulam District, Edamalayar Forest Range, Variyam, alt. 792 m, 10° 12.59'N, 76° 52.440'E, C.N. Sunil & V.V. Naveen Kumar 6787, 14 Nov. 2014 (holo: MH, iso: CALI).

Erect, sparsely branched, deciduous, perennial shrub, 1–2.5 m high. Stem terete, 1–5 cm wide, woody at base with grayish bark, succulent and greenish with prominent leaf scars towards apex. *Leaves* alternately spiral, usually congested at tips of new shoots; blade sub-succulent, glabrous, 8–14 cm long, 1.8–3 cm wide, narrowly elliptic-oblong to linear-lanceolate, base cuneate, apex acute to apiculate, upper surface green, lower surface pale green (yellowish on drying); mid-vein prominent, impressed above and raised below, lateral nerves obscure, greenish to purple; margins entire, recurved, green to purple; petiole 0–1 cm long. *Inflorescence* scapose on terminal shoots born on mature stems; scape stout, 30–95 cm long, dark purplish, sometimes glaucous, terminating in a laxly branched panicle, bearing 7–22 drooping capitula. *Bracts* 3–7 beneath the capitulum, 1–1.5 cm long, 0.1–0.3 cm wide, linear or linear-lanceolate, acute at apex, 1-nerved. Capitula homogamous, 3–3.5 cm long, 2–2.5 cm wide. Involucre cylindrical, slightly constricted at top; phyllaries 8–10, 1-seriate, fleshy, dark purple, 1.6–2 cm long, lanceolate, acute at apex. *Florets* 34–42, bisexual, 1.9–2.3 cm long. *Corolla* greenish-yellow, 1.6–2 cm long; tube 1.3–1.7 cm long, 2–2.2 mm wide at throat; lobes 5, 2.3–3 mm long, 1–1.2 mm wide, triangular-ovate, sub-acute and thickened at apex, 3-nerved, glabrous outside; margins papillose inside. *Stamens* 5; filaments 6–8 mm long, coiled; collar 1.2–1.4 mm long, white, broad; anthers yellow, 2.5–3 mm long, linear, base truncate; apical appendage c. 1 mm long, linear, obtuse. *Ovary* c. 3 mm long, 1 mm wide, linear-cylindric, ribbed; style 1.1–1.5 cm long, glabrous, yellowish-green; arms 3.5–4.5 mm long with triangular-acute, papillose appendage. *Achenes* c. 4 mm long, cylindrical, ribbed, black, glabrous. *Pappus* many seriate, 1–1.4 cm long, filiform, subequal, white, barbellate. **Figs 1, 2.**

Flowering and fruiting: November–January.

Additional specimen examined: INDIA: KERALA: Idukki District, Vaalara 621m, 10° 18' 24' N, 76° 29' 16" E, C.N. Sunil & V.V. Naveen Kumar 6800, 30 Nov 2014 (SNMH)

Etymology: To honour Professor K.P. Subrahmanian, Former Head of the Department of Botany, Sree Narayana Mangalam College, Maliankara, whose devotion and commitment as a teacher was inspirational to many of his students, including the first, third and fifth authors of this paper.

Distribution and Habitat: *Kleinia subrahmanianii* is endemic to Kerala and is known only from Ernakulam and Idukki districts of the state. The species grows at elevations ranging from 600–1100 m in the rocky hill slopes along with *Garnotia elata* (Arn. ex Miq.) Janowsky, *Ischaemum timorense* Kunth., *Chrysopogon hackleii* (Hook.f.) Fischer, *Tripogon sivarajanii* Sunil, *Arundina graminifolia* (Don) Hochr., *Canscora perfoliata* Lam., *Pseudanthistiria umbellata* (Hack.) Hook.f., *Osbeckia aspera* (L.) Bl. and *Zenkeria elegans* Trin.

Recognition: *Kleinia subrahmanianii* can be easily differentiated from other *Kleinia* species in India, even in the field. Our new species is most similar to *K. grandiflora* (Wallich ex DC.) N. Rani, and diagnostic differences are given in Table 1. The new species can be distinguished from *K. shevaroyensis* (Fyson) Uniyal by its elliptic-oblong to linear-lanceolate leaves with lower surface always pale green and capitula are greenish yellow; versus the obovate leaves with lower surface always purplish and deep yellow capitula of *K. shevaroyensis*. *Kleinia subrahmanianii* differs from *K. walkeri* (Wight) Uniyal in its sessile or sub-sessile leaves with acute to apiculate apex and greenish-yellow flowers and glabrous achenes; versus the long petioled leaves with acuminate apex and white or creamy flowers and achenes puberulous between the ribs in *K. walkeri*. The new species is also differs from *K. balsamica* (Dalz. & Gibs.) Halliday, by its long dark purplish scape and filiform pappus; versus the short greenish scape and stiff and flattened pappus of *K. balsamica*.

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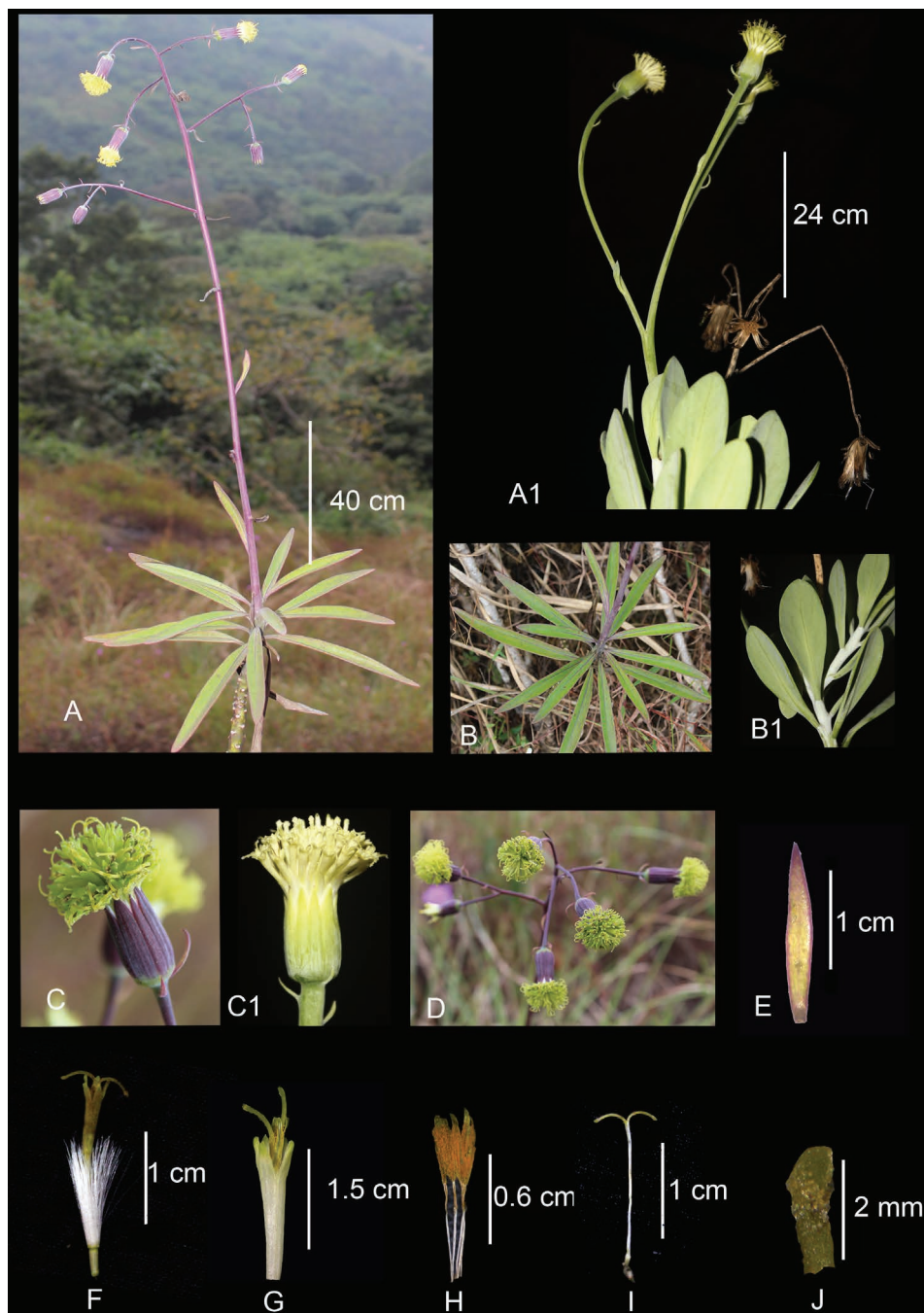


Fig.1. *Kleinia subrahmanianii* Sunil & Naveen Kumar: A, Habit; B, portion of old stem and leaves; C, capitulum; D, inflorescence; E, bract; F, flower; G, corolla; H, stamen; I, pistil; J, style-arm; A1, B1 and C1, habit, leaves and capitulum respectively of *K. grandiflora* (Wall. ex DC) N. Rani.

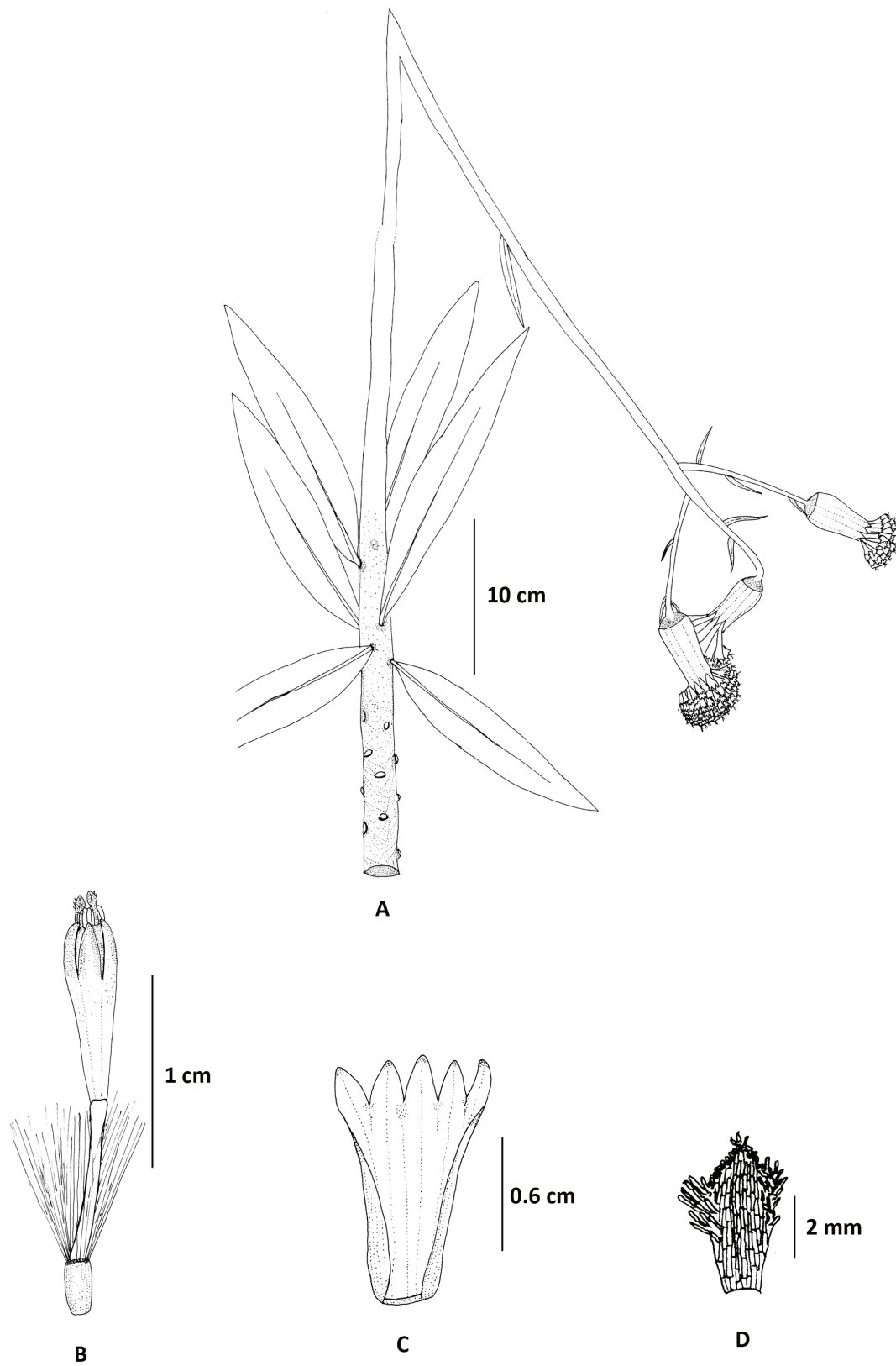


Fig. 2. *Kleinia subrahmanianii* Sunil & Naveen Kumar: **A**, Habit; **B**, single floret, **C**, corolla lobes with upper portion of corolla tube; **D**, style-arm. Drawn from Sunil & Naveen Kumar 6800.

Table 1. Comparison of morphological features of *Kleinia subrahmanianii* Sunil & Naveen Kumar, *Kleinia grandiflora* (Wall. ex DC.) N. Rani

Characters	<i>Kleinia grandiflora</i>	<i>Kleinia subrahmanianii</i>
Branchlets	angled, glaucous	terete, green
Leaf lamina	obovate or oblanceolate or spatulate or suborbicular, obtuse at apex, 2.5–15 cm wide, upper and lower surface glaucous green	narrowly elliptic-oblong to linear-lanceolate, acute at apex, 1.8–3 cm wide, upper surface greenish, lower surface pale green
Petioles	2–4 cm long	0–1 cm long
Scape	up to 15 cm long, greenish	30–95 cm long, dark purple
Capitula	3–7 per scape, erect on stout branches	7–22 per scape, drooping on slender branches
Phyllaries	10–13, green or green with purple tip, 15–16 mm long	8–10, dark purple, 16–20 mm long
Pappus	1.5–1.8 cm long	1–1.4 cm long
Corolla tube	2–2.2 cm long; lobes 1.8–2 mm long	1.3–1.7 cm long; lobes 2.3–3 mm long
Anthers	3.5–4 mm long	2.5–3 mm long

