NORDIC JOURNAL OF
BOTANY

Research Article

Reinstatement of the name Anisochilus eriocephalus Benth. (Lamiaceae) supported by micromorphological and molecular data

Amaladoss Arthi Nisha and Sebastian Soosairaj

Department of Botany, St.Joseph's College (Autonomous) (Affiliated to Bharathidasan University, Tiruchirappalli), Tiruchirappalli, Tamil Nadu, India

Correspondence: Sebastian Soosairaj (soosairaj_bo1@mail.sjctni.edu)

Nordic Journal of Botany
2026: e04990
doi: 10.1002/njb.04990
Subject Editor: Harsh Singh
Editor-in-Chief: Torbjörn Tyler
Accepted 9 December 2025
Published 27 January 2026

In 2019, A. J. Paton et al. proposed a new taxonomic combination, transferring *Anisochilus carnosus* (L.f.) Wall. ex Benth. to *Coleus strobilifer* (Benth.) A.J.Paton, and including *Anisochilus eriocephalus* Benth. within this broader circumscription. However, a recent comprehensive study conducted in Tamil Nadu, India, re-evaluated species within *Anisochilus* using an integrative approach. This study deployed various kinds of data, including leaf epidermal morphology, seed structure, pollen characteristics observed through scanning electron microscopy (SEM), and molecular data derived from sequencing the *trn*L-*trn*F, *rbc*L, and *mat*K regions. The results revealed clear morphological and genetic distinctions between *A. eriocephalus* and *A. carnosus*. Specifically, *A. eriocephalus* is characterized by a terete, glabrescent stem (in contrast to the tetragonal, pubescent stem of *A. carnosus*), yellow gland-dotted leaves, calyx, and corolla (versus red gland-dotted in *A. carnosus*), and the presence of gland-tipped trichomes on the lower lip of the corolla (as opposed to simple trichomes). Additionally, the calyx tube in *A. eriocephalus* is villous, whereas it is pubescent in *A. carnosus.* Pollen morphology further differentiates the two species: *A. eriocephalus* exhibits finely reticulate grains with shallow colpi, while *A. carnosus* displays coarsely reticulate grains with deep colpi. Molecular phylogenetic analysis validated these findings, confirming significant genetic divergence between the two taxa. In light of these results, we propose a revised taxonomic treatment, reinstating *A. eriocephalus* under the genus *Coleus* as *Coleus eriocephalus* (Benth.) Soosairaj.

Keywords: *Coleus*, new combination, trnL-trnF, matK, rbcL, morphology, stem anatomy, trichomes

Introduction

Anisochilus (Lamiaceae) is a genus of herbs and shrubs native to Asia, described by Bentham in 1830. It is primarily distributed across India, Sri Lanka, the Himalayas,

© 2026 The Author(s). Nordic Journal of Botany published by John Wiley & Sons Ltd on behalf of Nordic Society Oikos.
This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

Myanmar, southern China, Thailand, and the Indo-Chinese region (POWO 2025). Traditionally placed in the subtribe Plectranthinae of the tribe Ocimeae, *Anisochilus* is distinguished by its spike-like inflorescences, decurved corolla tube, and unique calyx structure (Suddee and Paton 2009). Recent molecular studies by Paton et al. (2019) have led to a reclassification of several genera, including *Anisochilus*, *Pycnostachys*, *Leocus*, and Indian species of *Plectranthus*, merging them into the genus *Coleus*. As of 2025, the global number of accepted *Coleus* species ranges from 320 to 326 (POWO 2025, WFO 2025), with 31 species recorded in India (Paton et al. 2019).

During taxonomic fieldwork, the authors collected a *Coleus* plant from the rocky hillocks of Palapattu, near Gingee Fort in Villupuram, Tamil nadu, India. Initially, the specimen appeared similar to *Coleus strobilifer* (Roxb.) A.J.Paton, a species formerly classified as *Anisochilus carnosus* (L.f.) Wall. ex Benth. However, closer examination revealed distinct morphological differences that set it apart from typical *C. strobilifer*. Comparative analysis with previously published literature (Gamble 1957, Suddee et al. 2004, Paton et al. 2009, Paton et al. 2019, John Britto 2019) suggested that the specimen might correspond to *Anisochilus eriocephalus*, a taxon previously merged with *C. strobilifer* (Suddee and Paton 2009). To test this hypothesis, an integrative approach was employed, incorporating detailed investigations such as stem anatomy, seed and pollen morphology, and leaf epidermal features alongside molecular phylogenetic analysis. The results revealed consistent and significant morphological and genetic distinctions between the two taxa. These cumulative findings confirm that *Anisochilus eriocephalus* is not conspecific with *C. strobilifer*, and thus, it is hereby reinstated and recognized as a distinct and valid species, viz *Coleus eriocephalus* (Benth.) S.Soosairaj comb. nov.

Material and methods

Plant collection

Specimens of *Coleus strobilifer* (Roxb) A.J.Paton (col. no.10152) were collected from the Narthamalai in the Pudukkottai district of Tamil Nadu, India, while *Coleus eriocephalus* (col. no. 10114)) was gathered from the rocky hillocks of Palapattu in the Villupuram district of Tamil Nadu. The collected plant samples were preserved using standard herbarium techniques, with a few specimens stored in 5% formalin for further study.

Plant identification

Identification of the species was carried out by consulting key floristic literature, including Hooker (1885), Gamble (1957), Matthew (1983), and John Britto (2019), as well as taxonomic literature such as Paton (2004, 2009, 2013, 2019), Kiew and Kamin (2021), and Meerts and Paton (2024). Dried specimens were also matched with herbarium collections housed at MH and RHT. Additionally, digital resources such as Plants of the World Online (https://powo.science.kew.org), the Global Biodiversity Information Facility (www.worldfloraonline.org), Kew Herbarium Catalogue (https://records.data.kew.org), Herbarium Linnaeus (www.linnean-online.org), and Natural History Museum (www.nhm.ac.uk) were consulted for comparative analysis.

Molecular studies

The genomic regions *rbc*L, *mat*K, and *trn*L-*trn*F of various *Coleus* species were sequenced at the Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, Kerala, India. The resulting nucleotide sequences were submitted to the NCBI GenBank database (Accession numbers: PV648518, PV682940, PV682941) for public access and future reference. Phylogenetic analysis was conducted by aligning the sequences using Clustal W and constructing a tree using the maximum likelihood (ML) method in MEGA software. The analysis incorporated 1000 bootstrap replications and employed the Tamura 3-Parameter (T3P) substitution model with gamma-distributed rate variation among sites (G). The T3P model was selected as the best-fit model based on Akaike information criterion (AIC) and Bayesian Information Criterion (BIC) as identified by jModelTest (Arulanandam et al. 2023).

SEM analysis and micromorophological studies

Scanning electron microscope (SEM) images of seeds, anthers, and pollen grains were captured using a Carl Zeiss EVO-18 SEM at the ACIC, St. Joseph's College, Tiruchirappalli, Tamil Nadu, India. For histological studies, freehand sections of stem and leaf tissues were prepared and stained with Safranin to visualize stomatal and other anatomical features. These observations were carried out in the Department of Botany, St. Joseph's College, Tiruchirappalli, Tamil Nadu, India.

Taxonomic treatment

Coleus strobilifer (Roxb.) A.J.Paton (Paton 2019, p. 100)

Plectranthus strobilifer Roxb. (Roxburg 1814, p. 45)

Type: Illustration in Rheede (1690, tabula 90)

Description

Erect subshrub, up to 1 m high. Stem green as mature, angular, densely pubescent. Leaves petiolate, opposite; petiole to 45 mm long; lamina decussate, broadly ovate, with axillary young shoots, to 85 × 50 mm, acute at apex, cordate at base, crenate to serrate with 13 to 17 marginal teeth on the either side, adaxially hirsute, abaxially pubescent, at both surfaces golden yellow-dotted when fresh and red gland-dotted when dry specimen; lateral leaf veins in up to 5-pairs. Inflorescences terminal and axillary, spikes or heads to 6 cm long; peduncles to 14 cm, pubescent, angular, branched; pedicels to 20 cm, pubescent, angular. Bracts lanceolate, 4 × 2 mm, acute at apex, cordate at base, basally 3- to 5-nerved, pubescent at lower side, red gland-dotted. Calyx tubular, 3 mm long; tube 1 mm long, glabrous, gland dotted; upper lobe 2 mm long,

lanceolate, acute at apex; upper lobe pubescent inside; upper and lower lobe pubescent outside, prominently red gland-dotted. Corolla pale purple, 10 × 3 mm; tube pubescent; upper lobe deep pink, 3 mm long; lower lobe 4.5 mm long, red gland-dotted. Stamens 4, didynamous, glabrous, attached to lower lobe of corolla; longer filaments 4 mm long; shorter filaments 2.5 mm long; anther 0.2 mm long. Style 7 mm long, glabrous; stigma bifid. Nutlets black, shiny, rounded, depressed at both sides, 0.8 × 0.8 mm.

Phenology
Flowering and fruiting from November to March.

Habitat and distribution
Coleus strobilifer is an annual herb native to tropical regions of India, Myanmar, Nepal, and Sri Lanka. It typically grows in rock crevices at elevations ranging from 100 to 1000 m a.s.l., thriving in scrublands and deciduous forests.

Specimen examined
India, Tamil nadu, Kodaikanal, 13 Dec. 1898, Bourne (K004929177); Tamil nadu, Vellore, 28 Nov. 1825, Shuter (K004929179); Odisha, Ganjam district, 1 Dec. 1883, J.S. Gamble (K004929182); Tamil nadu, Salem district, 10 Dec. 1976, D.I.A. Swamy (RHT5326); Tamil nadu, Salem district, Chitteri hills, 9 Jan. 1980, K.M. Matthew (RHT25607); Tamil nadu, Salem district, Krishnakiri, 23 Feb. 1916, J.S. Gamble (MH00084276); Tamil nadu, South Arcot district, Gingee, 9 Jan. 1927, S.R. Rajathankam (MH00084223); Tamil nadu, Coimbatore district, Maruthamalai, 10 Dec. 1956, K. M. Sebastine (MH00084233); Tamil nadu, Ramnadu district, Sanjeevi malai, 27 Dec. 1971, E. Vajravelu (MH00084216); Tamil nadu, Pudukkottai district, 2 Feb. 1928, K. Ramamoorthy (MH00084242).Fig. 1

Coleus eriocephalus (Benth.) S.Soosairaj comb. nov. (Fig. 1)
Basionym: *Anisochilus eriocephalus* Benth. In A.P.de Candolle (de Candolle 1848, p. 81)

Lectotype: Deccan Peninsula, Bellary, Herb. Wight 2518 (K000674676)

Erect or ascending herb up to 300–500 mm high. Stem green, terete, glabrescent. Leaves petiolate, opposite-decussate; petiole to 75 mm long, glabrescent; lamina broadly ovate, lanceolate, 135 × 60 mm, acute to obtuse at apex, cordate at base, crenate to sinulate with 6 to 8 marginal teeth on either side, adaxially scabrid, abaxially pubescent, punctate from green (when fresh) to yellowish (when dried) sessile glands; lateral veins in 4–5 pairs. Inflorescence terminal and sometimes axillary; spike to 5 cm long; peduncle purplish, to 16 cm long; pedicel to 15–35 cm long, glabrous, branched; bract deltate, 2.5 × 2.0 mm, acute at apex, cordate at base, basally trinerved, glabrous at lower side, ciliate along margin, yellow gland-dotted. Calyx tubular, 3.5 mm long; tube 1.5 mm long, villose outside, yellow gland-dotted; upper lobe 2 mm long, broadly ovate, pubescent outside, acute at apex; lower lobe minute, pubescent. Corolla white to light purple, 13 × 5 mm; lower lobe 6 mm long; upper lobe 3 mm long; both lobes yellow dotted; tube and lower lobe gland-tipped pubescent. Stamens 4, didynamous, glabrous, attached to lower lobe of corolla; longer filament 4 mm long; shorter filament 2 mm long; anther 0.1 mm long. Style 8 mm long, glabrous; stigma bifid. Nutlets black, shiny, ovoid, depressed at both sides, 1.0 × 0.8 mm.

Phenology
Flowering and fruiting from December to January.

Habitat and distribution
Coleus eriocephalus is an annual herb found growing adjacent to rock cervices from 100 to 300 m a.s.l. among the rocky hillocks of the Eastern ghats of Andhra Pradesh and Tamil nadu. Since 1830, this species has not been reported other than from its type locality, hence it is considered as endemic to the Indian Peninsula.

Specimen examined
India, R. Wight (K000674677); A. Dalzell (K000674679); Tamil nadu, South Arcot district, Gingee, 23 Mar. 1961, M. Sebastine (MH00084328); Tamil nadu, North Arcot, Parvathamalai, 21 Nov. 1986, B. Viswanathan (MH00084332); Tamil nadu, Chengalpattu district, Thirukazhukandram, 12 Aug. 1984, Narasimhan (MH00084326); Andhra Pradesh, Chittoor district, Gyanayagundlu, 28 Dec. 1975, V. Subba Ram (MH00084322); Andhra Pradesh, Chittoor district, Malleruvanka, 2 Jan. 1976, V. Subba Ram (MH00084324); Andhra Pradesh, Anantapur district, 24 Oct. 1982, Yesoda (MH00084321).

Comparison between Coleus eriocephalus and C. strobilifer
Coleus eriocephalus has a terete stem, whereas *C. strobilifer* has an angular stem. The leaves of *C. eriocephalus* are adaxially scabrid with yellow gland dots, in contrast to the pubescent leaves of *C. strobilifer* which bear red gland dots. The petiole in *C. eriocephalus* is entirely glabrescent, while in *C. strobilifer* it is densely pubescent and hirsute on the adaxial surface. Leaf margins in *C. eriocephalus* range from crenate to sinuate with 6–8 teeth per side, compared to the crenate to serrate margins of *C. strobilifer*, which have 13–17 teeth per side. The bracts of *C. eriocephalus* are cordate, glabrous at the abaxial surface, and marked with yellow gland dots; in contrast, *C. strobilifer* has lanceolate bracts that are pubescent and bear red gland dots (Table 1). Lastly, the lower lip of the corolla in *C. eriocephalus* has gland-tipped trichomes, while in *C. strobilifer* it bears simple (non-glandular) trichomes.

Leaf epidermal features
Both the studied species exhibit diacytic stomata on the lower epidermis, as noted by Venkateshappa et al. (2013). However, the outlines of their epidermal cells differ: *C. eriocephalus* features undulate cell margins, whereas *C. strobilifer* displays sinuate outlines. The trichomes on the leaf surface in both *C. eriocephalus* and *C. strobilifer* are non-glandular, uniseriate, and multicellular, yet they differ significantly in

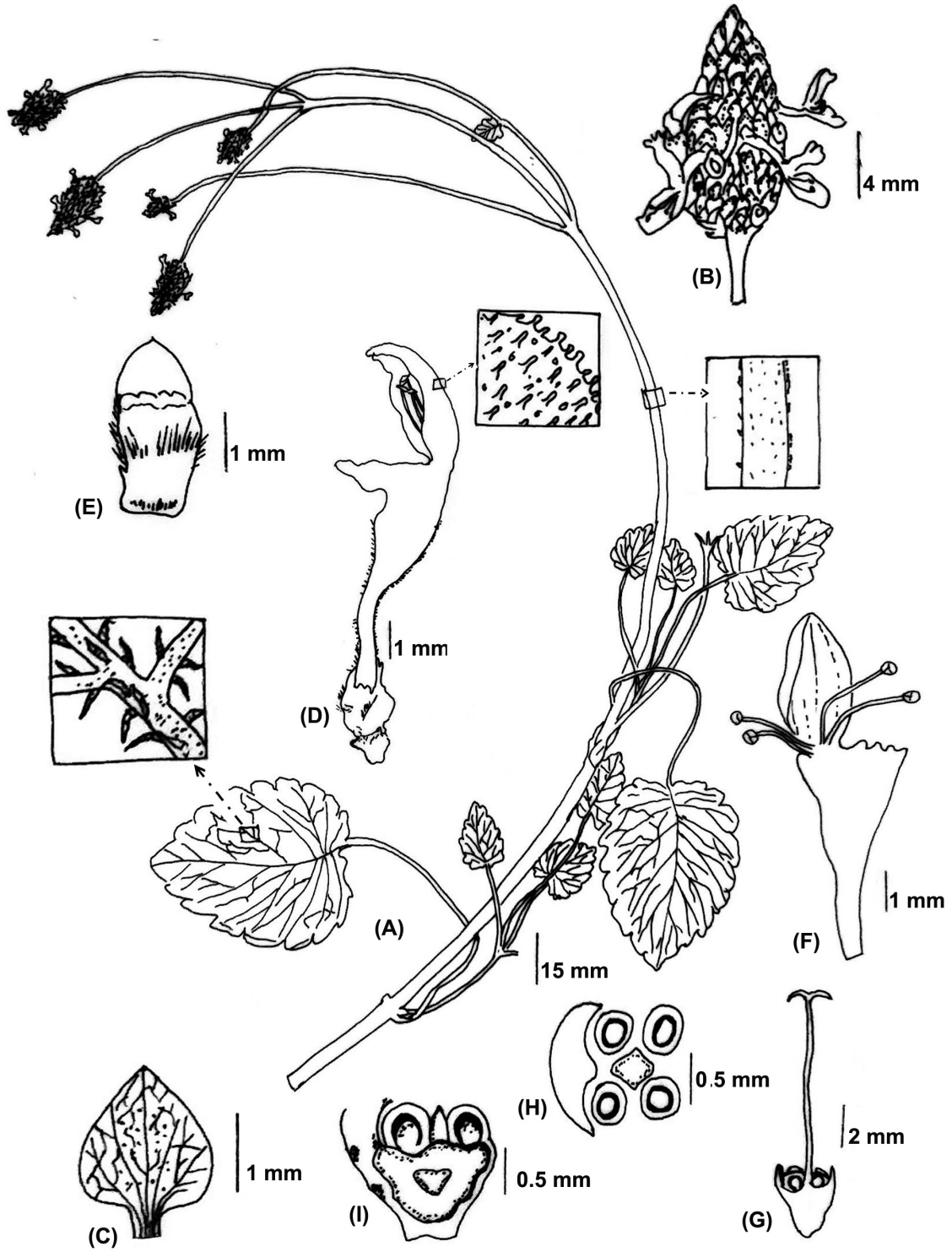


Figure 1. Illustration of *Coleus eriocephalus* (Benth.) S.Soosairaj. Habit (A), inflorescence (B), bract (C), flower (D), calyx (E), corolla split open (F), pitil (G), t.s. and l.s. of ovary (H, I).

Table 1. Distinct features to differentiate *Coleus eriocephalus* from *Coleus strobilifer*.

Serial no.	Character	*Coleus eriocephalus*	*Coleus strobilifer*
1	Stem	terete, glabrescent	angular, pubescent
2	Petiole	glabrescent throughout	densly pubescent, adaxialy hirsute
3	Leaves	adaxialy scabrid, abaxialy puberulent, margins crenate to sinuate, 6 to 8 teeth on either side; glands colourless when fresh later turn to be yellow in dry specimen	both adaxially and abaxially dense pubescent, margins crenate to serrate, 13 to 17 teeth on either side, glands yellow in fresh later turn to be red in dry specimen
4	Bract	deltate, 2.5 × 2 mm, basally trinerved, yellow sessile gland, lower side glabrous	lanceolate, 4 × 2 mm, basally 3–5 nerved, red sessile gland, lower side pubescent
5	Calyx	length 3.5 mm long, tube 1.5 mm long, villose outside, upper lobe broadly ovate, outside pubescent, lower lobe villose towards apex of lower lobe, yellow gland dotted	length 3 mm long, tube 1 mm long, glabrous, gland dotted, upper lobe lanceloate, inside pubescent, upper and lower lobe outside pubescent, red gland dotted
6	Corolla	length 13 mm, width 5 mm, lower lobe 6 mm long, upper lobe 4 mm long, tube gland tipped pubescent, both the lobes yellow dotted	length 10 mm, width 3 mm, ower lobe 4.5 mm long, upper lobe 2 mm long, tube pubescent, lobes red gland dotted
7	Stomata size	38.4 ± 2.0 × 25.8 ± 1.6 µm	33.6 ± 1.0 × 26.4 ± 2.5 µm
8	Leaf epidermal wall	undulate	sinuate
9	Pollen PE ratio and ornamentation	0.88, exine finely reticulate	0.78, exine coarsely reticulate
10	Seed surface texture	reticulation is deeply grooved with polygonal to irregular cell outlines	reticulation is shallowly grooved with pentagonal to **hexagonal outline**

length and density. *Coleus strobilifer*, bears longer, more slender trichomes, approximately 270 ± 12 µm long, composed of elongated cells. These are densely packed and occur in large numbers (Richard Lobo et al. 2012). In contrast, *C. eriocephalus* possesses shorter trichomes, about 210 ± 9 µm long, made up of tapering cells with a distinctly pointed apex. In this species, trichomes are more concentrated along the leaf veins and sparsely scattered on the lamina.

Stem anatomy of Coleus

The epidermis, cuticle, cortex, and stele features are common to both *C. strobilifer* and . *eriocephalus*, but the cortical tissue vary between the species. In *C. strobilifer*, the outer cortex is two cells thick, composed of elongated, compactly arranged cells. The inner cortex consists of two to three layers of loosely arranged, oval or circular cells, followed by a single layer of gelatinous cells. The xylem tracheids are thickest and broadest at the four corners, becoming thinner in between. The diameter of the pith is approximately 15 cells. In contrast, *C. eriocephalus* has an outer cortex comprising four to five layers of compactly arranged rectangular parenchyma cells. The inner cortex includes four layers of loosely arranged, elongated parenchyma cells, followed by a gelatinous tissue. The xylem tracheids are evenly distributed around the pith, which is thicker, with about 20 cells thickness.

Glands in Coleus

While observing and examining *C. strobilifer* and *C. eriocephalus*, both species exhibit glands on the bracts, calyx, and corolla, but they differ in coloration. In *C. strobilifer*, the glands on fresh leaf surfaces appear golden yellow and turn red upon drying. In contrast, *C. eriocephalus* displays pale green glands on fresh leaf surfaces, which become yellowish when dried (Fig. 2).

Seeds of Coleus

The seeds of *C. strobilifer* are broadly ovoid, approximately 920 × 785 µm in size, black, shiny, and depressed on both sides. Their surface exhibits a shallowly grooved reticulation pattern with pentagonal to hexagonal outlines (Fig. 3). In contrast, the seeds of *C. eriocephalus* are narrowly ovoid, about 930 × 700 µm, also black and shiny with bilateral depressions, but their surface features a deeply grooved reticulation with polygonal to irregular cell outlines. Similarly, *C. kanyakumariensis* has been reported to possess an undulate, reticulate, and polygonal seed surface (Shinoj and Sunojk 2018).

Pollen morphology

Coleus strobilifer pollen grains are subprolate in shape (PE = 0.78) and tricolpate, with a coarsely reticulate exine characterized by broad lumina and deep muri, suggesting a robust wall structure. The exine is moderate to thick, and in polar view, the grains appear circular with distinct colpi and prominently textured pores (Fig. 3). In contrast, *C. eriocephalus* also produces subprolate (PE = 0.88), tricolpate pollen grains, but with a finely reticulate, uniform exine and shallow muri. The exine is thin to moderately thick, and the grains appear rounded-triangular in polar view, with shallow colpi. Pollen grains of *P. tenuiflorus* are prolate in shape, with hexacolpate apertures and narrow, slit-like colpi widest at the equator.

Plectranthus pseudomarrubioides has the smallest pollen grains, subprolate in shape, and hexacolpate with narrow, slit-like colpi (Abdel Khalik 2016).

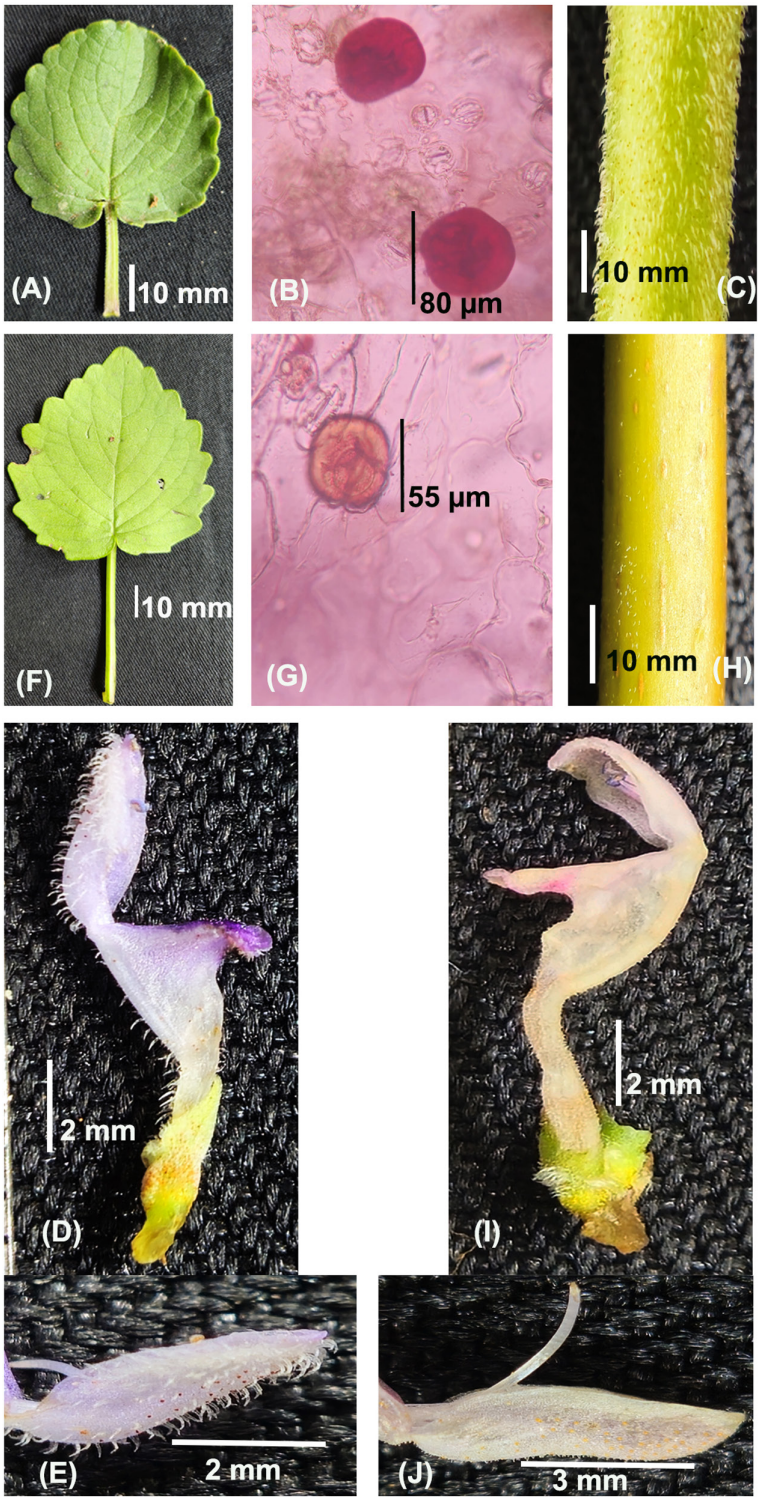


Figure 2. SEM images. Seed (A), seed surface enlarged (B), pollen grains (C, D) of *Coleus strobilifer* (Benth.) A.J.Paton; Seed (E), seed surface enlarged (F), pollen grains (G, H) of *Coleus eriocephalus* (Benth.) S.Soosairaj.

Phylogenetic study in Coleus

The combined dataset of *rbc*L, *mat*K, and *trn*L–*trn*F markers consisted of 3885 characters (1380 from *rbc*L, 1488 from *mat*K, and 1017 from *trn*L–*trn*F), of which 299 were variable. Molecular evidence indicates that *C. strobilifer* is genetically distinct from *C. eriocephalus*, with a level of divergence comparable to that observed among other recognized species in the genus. The *rbc*L and *mat*K sequences

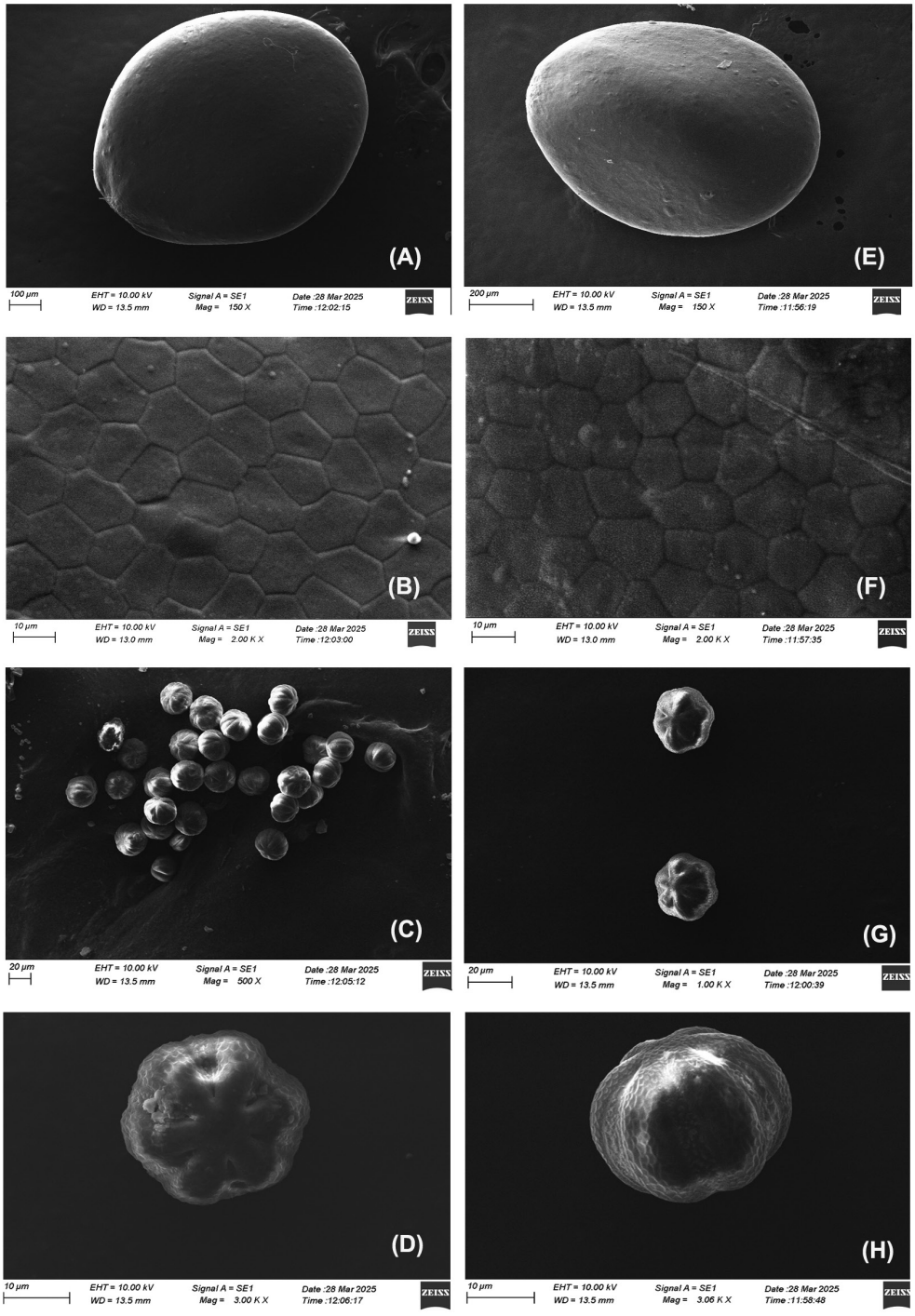


Figure 3. Leaf (A), gland on lamina (B), a portion of stem (C), flower (D), lower lip of corolla (E) of *Coleus strobilifer* (Benth.) A.J.Paton; Leaf (F), gland on lamina (G), a portion of stem (H), flower (I), lower lip of corolla (J) of *Coleus eriocephalus* (Benth.) S.Soosairaj.

show minimal variation between *C. strobilifer* and . *eriocephalus* when aligned (Fig. 4A, B). In contrast, the *trn*L–*trn*F region reveals marked differences: *C. strobilifer* clusters with *C. carnosifolius*, while *C. eriocephalus* aligns with *C. cremnus* (Fig. 4C). Previous studies (Paton et al. 2018) have successfully used plastid markers such as *rps*16, *trn*L–F, and *trn*S–G to distinguish species within *Coleus*.

Key to *Coleus* species (formerly known as *Anisochillus*) of India

1. Fruiting calyx with upper lip deflexed, concealing the mouth……2
– Fruiting calyx with upper lip short, not concealing the mouth……..……..10
2. Inflorescence mostly unbranched……3

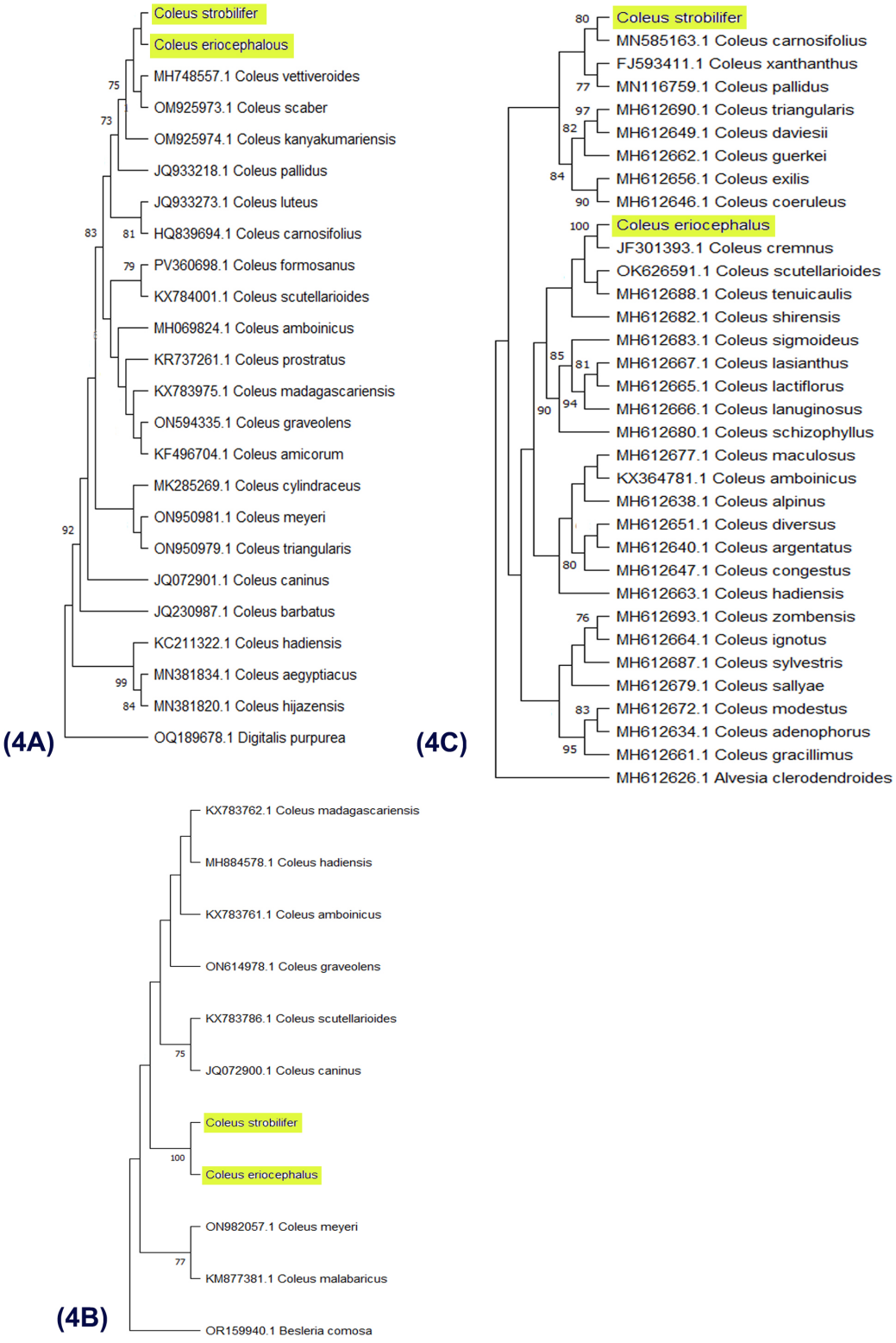


Figure 4. Maximum likelihood phylogenetic tree of rbcL (A), matK (B), trnL – trnF (C) sequences with bootstrap support values at branch and followed by species name at branch tips.

– Inflorescence branched……4
3. Corolla < 6 mm long, with orange sessile glands……
……..……...*C. shoolamudianus*
– Corolla > 10 mm long, with red sessile glands……
……*C. scaber*
4. Calyx pubescent……5
– Calyx villous or tomentose……7
5. Lamina ovate – elliptic, membranous, base cuneate…
……..……*C. mitis*
– Lamina broadly ovate – orbicular, fleshy, base cordate or rounded…….....6
6. Nutlets dark brown to black, orbicular, 0.8–1.0 mm long……...……*C. carnosus*
– Nutlets brown, ovoid to ellipsoid, 0.6 – 0.8 mm long…
……*C. divaricatus*
7. Lamina apex obtuse – rounded……..……..…8
– Lamina apex acute – acuminate…….……..…9
8. Corolla purple, 7–10 mm long, pubescent……*C. ater*
– Corolla white with purple tinge, 4–5 mm long, villous…
……*C. kanyakumariensis*
9. Corolla > 10 mm long with gland-tipped trichomes…
……...…*C. eriocephalus*
– Corolla < 6 mm long, villous……*C. pallidus*
10. Calyx posterior 1-lobed, anterior 4-lobed……...11
– Calyx posterior 3-lobed, anterior 2-lobed……12
11. Inflorescence branched; leaves lanceolate; lateral veins in 7–12 pairs……*C. paniculatus*
– Inflorescence unbranched; leaves ovate to broadly ovate; lateral veins in 3 pairs……*C. achankoviliensis*
12. Leaves sessile to subsessile……13
– Leaves petiolate……16
13. Corolla > 8 mm long; lamina villous at both surfaces…
……*C. adenanthus*
– Corolla < 6 mm long; lamina pubescent – tomentose……14
14. Leaf apex acuminate; lateral veins invisible…*C. argenteus*
– Leaf apex acute or obtuse; lateral veins in 4–6 pairs...…15
15. Bracts lanceolate, villous; lamina soft tomentose at both surfaces……*C. dysophylloides*
– Bracts ovate – caudate, pubescent; lamina scabrid above, pubescent below……*C. plantagineus*
16. Inflorescence mostly terminal; corolla yellow
……*C. robustus*
– Inflorescence both terminal and axillary; corolla white – purple ……*C. suffruticosus*

Acknowledgements – The authors acknowledge the financial assistant provided by the Management of St.Joseph's College for execution of this study. We also acknowledge the facilities established by the DIST-FIST, New Delhi, India. The authors are thankful to the Head of Office, Souther Circle, Botanical survey of India for granting permission to study the herbarium material.
Funding – The authors acknowledge the financial aid provided by the Management of St.Joseph's College to carry out this research. We also acknowledge the DST-FIST for funding the lab facilities to St.Joseph's College.
Conflict of interest – The authors declare no conflict of interest.

Author contributions

Arthi Nisha Amaladoss: Data curation (equal); Investigation (equal). **Sebastian Soosairaj**: Conceptualization (equal); Investigation (equal); Supervision (equal); Writing – review and editing (equal).

Data availability statement

Sequences are available from the National Library of Medicine, National Centre for Biotechnology Information (Arthi Nish and Soosairaj 2025).

References

Abdel Khalik, K. N. 2016. A systematic revision of the genus Plectranthus L. (Lamiaceae) in Saudi Arabia based on morphological, palynological, and micromorphological characters of trichomes. – Am. J. Plant Sci. 7: 1429–1444.

Arthi Nish, A. and Soosairaj, S. 2025. Data from: Reinstangment of the name *Anisochilus eriocephalus* Benth. (Lamiaceae) supported by micromorphological and molecular data. – National Library of Medicine, National Centre for Biotechnology Information, accession numbers: PV648518.1; PV682940.1.

Arulanandam, L. J. P., Soosairaj, S., Raja, P. and Balaguru, B. 2023. *Theriophonum blumei* (Araceae), a new species from Tamil Nadu, India. – Nord. J. Bot. 2023: e3612.

De Candolle, A. P. 1848. Prodromus systematis naturalis regni vegetabilis. – Sumptibus Victoris Masson, Parisiis 12: 81.

Gamble, J. S. 1957. Flora of the presidency of madras, Reprinted edition. – Botanical Survey of India.

Hooker, J. D. 1885. The flora of British India, Vol. 4. – Reeve, L. and Co, pp. 624–627.

John Britto, S. 2019. The flora of Central and North Tamil Nadu. – Rapinat Herbarium.

Kiew, R. and Kamin, I. 2021. *Coleus* (Lamiaceae) in Peninsular Malaysia including two new species. – PhytoKeys 186: 93–110.

Lobo, R., Bhagat, J., Ballal, M. and Gupta, N. 2012. Histo-anatomical study of Anisochilus carnosus Wall, L. F., an Indian habitant. – Res. J. Med. Plants 6: 456–460.

Matthew, K. M. 1983. The flora of Tamil Nadu Carnatic. – Rapinat Herbarium.

Meerts, P. J. and Paton, A. J. 2024. The genus *Coleus* (Lamiaceae) in Central Africa (Democratic Republic of the Congo, Rwanda, Burundi), with the description of 15 new species. – PhytoKeys 246: 71–178.

Paton, A. J., Springate, D., Suddee, S., Otieno, D., Grayer, R. J., Harley, M. M., Willis, F., Simmonds, M. S. J., Powell, M. P. and Savolainen, V. 2004. Phylogeny and evolution of basils and allies (Ocimeae, Labiatae) based on three plastid DNA regions. – Mol. Phylogenet. Evol. 31: 277–299.

Paton, A. J., Bramley, G., Ryding, O., Polhill, R. M., Harvey, Y. B., Iwarsson, M., Willis, F., Phillipson, P. B., Balkwill, K., Lukhoba, C. W., Otieno, D. and Harley, R. M. 2009. Lamiaceae (Labiatae). – In: Beentje, H. J., Ghazanfar, S. A. and Polhill, R. M. (eds), Flora of tropical East Africa. Royal Botanic Gardens. Kew, pp. 1–430.

Paton, A. J., Bramley, G., Ryding, O., Polhill, R. M., Harvey, Y. B., Iwarsson, M., Willis, F., Phillipson, P. B., Balkwill, K., Oteino, D. and Harley, R. M. 2013. Lamiaceae. – In: Timberlake, J. (ed.), Flora Zambesiaca, Vol. 8. Royal Botanic Gardens, Kew.

Paton, A. J., Mwanyambo, M. and Culham, A. 2018. Phylogenetic study of *Plectranthus*, *Coleus* and allies (Lamiaceae): taxonomy, distribution and medicinal use. – Bot. J. Linn. Soc. 20: 1–22.

Paton, A. J., Mwanyambo, M., Govaerts, R. H. A., Smitha, K., Suddee, S., Phillipson, P. B., Wilson, T. C., Forster, P. I. and Culham, A. 2019. Nomenclatural changes in *Coleus* and *Plectranthus* (Lamiaceae): a tale of more than two genera. – PhytoKeys 129: 1–158.

POWO 2025. Plants of the world online. – Facilitated by the Royal Botanic Gardens, http://powo.science.kew.org.

Roxburgh, W. 1814. Hortus Bengalensis or a catalogue of the plants growing in the honorable East India Company's Botanical garden at Culcutta. – The Mission Press.

Shinoj, K. and Sunojkumar, P. 2018. *Anisochilus kanyakumariensis* (Lamiaceae): a new species from the Western Ghats, India. – Phytotaxa 333: 99–107.

Suddee, S., Paton, A. J. and Parnell, J. 2004. A taxonomic revision of tribe Ocimeae Dumort. (Lamiaceae) in Continental South East Asia II. – Kew Bull. 59: 379–414.

Suddee, S. and Paton, A. J. 2009. A revision of Anisochilus Wall. ex Benth. (Lamiaceae). – Kew Bull. 64: 235–257.

Venkateshappa, S. M. and Sreenath, K. P. 2013. Some species of Lamiaceae- comparative anatomical studies. – Indo Am. J. Pharm. Res. 2013: 3.

WFO 2025. World Flora Online. – http://www.worldfloraonline.org.