



Plant Archives

Journal homepage: <http://www.plantarchives.org>

DOI Url : <https://doi.org/10.51470/PLANTARCHIVES.2025.v25.supplement-2.322>

CESTRUM PANDANII SP. NOV., A NEW SPECIES (SOLANACEAE: BROWALLIOIDEAE: CESTREAE) IN EASTERN GHATS, INDIA – REVEALED BY HERBARIUM REVISION

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(Date of Receiving : 20-04-2025; Date of Acceptance : 27-06-2025)

ABSTRACT

Cestrum pandanii, a new species collected from Yercaud taluk in Salem district, Tamil Nadu, is herein illustrated and described. This species is allied to *Cestrum diurnum* L. but differs notably in several morphological characteristics: petiole length approximately 0.7mm; leaf blade lanceolate, measuring 6-15 × 2-4.5 cm, with entire margins and an acuminate apex. Inflorescences are axillary, drooping and many-flowered, measuring 7-10 cm in length. Pedicels are about 0.1 mm long. The calyx is campanulate, 2 mm long. The corolla, which may be green, white or yellowish-green, is 2 cm in length, 5-6 lobed, and slightly contracted at the throat.

Keywords: *Cestrum*, Solanaceae.

Introduction

The genus *Cestrum* was established by Linnaeus in 1753 to include two species; *Cestrum nocturnum* L. and *Cestrum diurnum* L. A comprehensive revision of the genus was later undertaken by Dunal (1852) and Francey (1935,1936). Since then, numerous new species have been reported. Members of the tribe Cestreae are characterized by nearly actinomorphic flowers, small persistent calyces, long and narrowly tubular corollas, small anthers that dehisce longitudinally and are positioned near the corolla mouth, and superior ovaries (Benitez and D'Arcy 1998). The genus *Cestrum* (Solanaceae) comprises approximately 150 species (Nee 1986, 2001), including small trees, shrubs, vines and robust herbs native to the tropical and subtropical region of the New World. Its distribution ranges from northern Mexico and southern Florida to southern Chile (Benitez and D'Arcy 1998). This paper, based on herbarium studies, presents a revision of *Cestrum* species from the Eastern Ghats. It includes a comparative summary of morphological

characters distinguishing the new species from its allies. Representative photographs (Figs. 1, 2) and detailed line drawings of both species are provided.

Materials and Methods

The authors identified an intriguing collection of an undescribed *Cestrum* species housed at the Central National Herbarium (CAL) and Sri Krishnadevaraya University, gathered from Yercaud Taluk in Salem District, Tamil Nadu and Lambasingi, Visakhapatnam, respectively. Upon further examination, they located ten herbarium sheets of *Cestrum diurnum*, in CAL and S.K University, which were notably restricted in distribution to the Eastern Ghats of India. Although these specimens bear some resemblance to *Cestrum diurnum* (Retz.) Nees ex Steud., they differ distinctly in the morphological traits listed in tables 1.

This species is allied to *Cestrum diurnum* but it differs from it as shown in Table 1.

Table 1 : Differentiation of *Cestrum diurnum* to *Cestrum pandanii* sp. nov.

Characters	<i>Cestrum diurnum</i>	<i>Cestrum pandanii</i>
Leaf shape	Ovate	Lanceolate
Inflorescence	Terminal axillary Cymose	Axillary cymose
Corolla	less than 1.5cm	More than 1.5cm
Leaf Apex	Acute	Acuminate
Leaf Size	7-12cm ×3-5cm, length width ratio 4-8.2cms of mature leaf.	6-15 cm×2-4.5 cm, length width ratio 2.6–8.4cms of mature leaf.
Calyx length	3mm	2mm
Internodes length	less than 1cm	1.5cm.
Pedicle length	5mm	7mm

Cestrum diurnum was originally introduced and naturalized in tropical regions such as South America, Brazil. It has since been reported from India, particularly in the Eastern Ghats region. Specimen collected by A. Mohan in 1978 (CAL) and B.R MAK and PA in 2017 (S. K University) were examined in detail for the characterisation of *Cestrum pandanii*. A comparative analysis of narrative descriptions and available herbarium material confirmed that the specimen represents a species new to science, which is formally described herein.

Additionally, mature dried leaves of both *Cestrum* species (members of Gamopetalae) were studied using Scanning Electron Microscopy (SEM). Leaf samples were mounted on glass slides using double-sided adhesive carbon tape. The adaxial surfaces were examined at various magnifications using a Quanta 250 SEM at Institute of Physics, Bhubaneswar. Leaf surfaces morphology was documented at different magnification levels.

***Cestrum pandanii* Kalidass & Mallia sp. nov.**

Holotype: *Cestrum pandani* Kalidas & Mallia, sp. nov. India, Tamil Nadu, Salem Dist, Yercaurd Taluk, Shevaroy, Ladies Seat Path, 11.05.1978. A Mohan, RHT: 13543. (**Fig. 1**)

Paratype: India, Andhra Pradesh, Visakhapatnam District, Lambasingi, 2017, B.R.Mak & P.A. SKU: 55583. (**Fig. 1**)

Shrub erect or small tree to 1–7 m. Leaf-bearing stems yellow–brown, pale brown to tan, the internodes 8–25(33) × 0.75–5.0 mm; young stems pubescence. Axillary buds 0.75–6.0 mm, very dark green, green–brown, orange–brown, sparsely pubescent not subtended by a minor leaf. Lamina 6–15cm×2–4.5 cm, length width ratio 2.6–8.4cm, narrowly lanceolate, lanceolate, narrowly ovate or narrowly oblong, membranous to sub chartaceous, occasionally

chartaceous, green, dull green, yellow–green; the upper surface highly pubescent, primary, primary and secondary veins clearly visible to the naked eye, primary and secondary raised; the lower surface glabrous; primary, primary to tertiary or primary to secondary veins clearly visible to the naked eye, primary, primary and secondary veins raised, the veinlets visible or not, secondary veins 7–20(27) pairs, 75–90° to the midrib, weakly curved; base obtuse;; apex acuminate;; petioles regular, 0.7 mm, dark green, brown or yellow–green, slightly pubescent. Inflorescences 5–9 per herbarium sheet, axillary on apical portion of the stem, terminal, pendant, 5.5–1.5 cm long, bearing 3–10 flowers in a compact panicle of 8–10 clusters of flowers, each cluster bearing 1, 2 or 4 flowers; peduncle 0.9–1 cm, straw coloured or orange–brown, narrowly pubescences; bracts 1.6–6 × 0.3–1.4 cm, leaf–like; bracteoles 0.4–0.75(1.4.0) cm, linear, narrowly linear, 1 or 2 per flower, with strigose hairs. Flowers pedicellate, where pedicellate the pedicels 0.1mm; calyx 0.2–0.25cm, the outer surface glabrous, inside hirustous, the lobes 5, 0.0125–0.0675 cm, erect; corolla green, white or yellow–green, 2.8–3.5 cm, the tube 2–2.8 cm long, 0.25–0.35 cm in diameter at the mouth, 0.075–0.1 cm at the base, slightly hirsutous, the lobes 5, 0.6–0.10 cm long; stamens 5, the filaments 2.1–2.5 cm long, equal, adnate for 1.7–2.1 cm, with a lobe–like appendage present at insertion point, pubescent at insertion point, the anthers 0.0675–0.1. × 0.05–0.075 cm; style 2.1–2.6 cm, the stigma 0.0375–0.0750 × 0.0674–0.2 cm. Infructescences 27–110 mm long, bearing 2–4 fruit; fruiting calyx 2.0–2.5 × 3.0–4.0 mm; fruit 7–14 × 7–12 mm, white when ripe. Seeds (2)6–10, 4.5–7.5 × 1.5–5.0 × 2.5–4.5 mm, the surface smooth.

Flowering and Fruiting: August to December

Distribution: In Eastern Ghats of India, Tamil Nadu, Andra Pradesh.

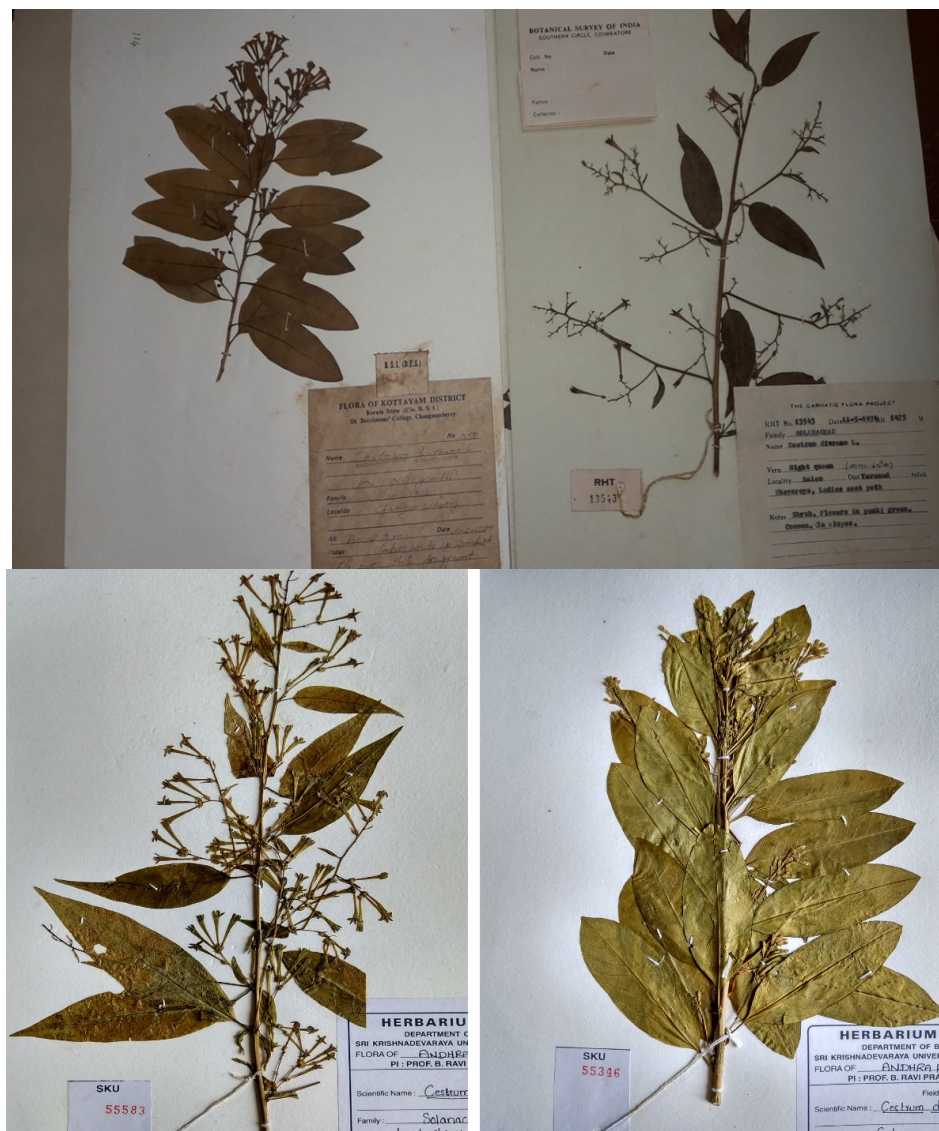
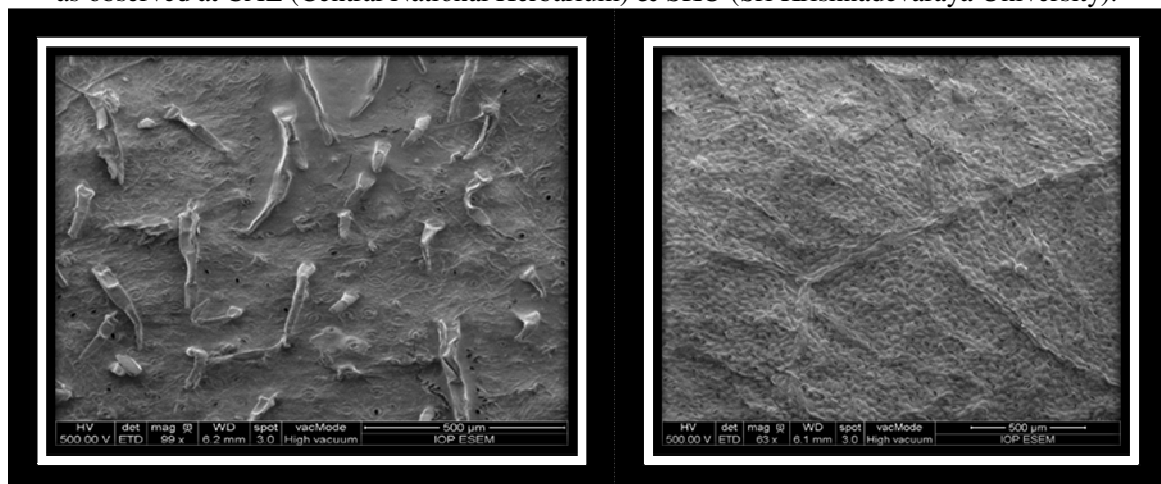


Fig.1: Herbarium specimens of *Cestrum pandanii*. Kalidass & Mallia sp. nov. and *Cestrum diurnum* L. as observed at CAL (Central National Herbarium) & SKU (Sri Krishnadevaraya University).



Adaxial side *Cestrum pandanii*.

Adaxial side of *Cestrum diurnum*

Fig.2: Leaf surfaces morphology of *Cestrum pandanii*. Kalidass & Mallia sp. nov. and *Cestrum diurnum* L. as observed under Scanning Electron Microscopy.

Morphological characters of SEM

The hairs present in *Cestrum pandanii* are typically sharp, straight and upright. They include appressed, stiff hairs that are often slightly swollen at the base. Glandular hairs are also present, characterized by a central notch and the presence of certain secondary metabolites (Fig. 2).

Acknowledgements

The specific epithet honours Dr. P.C. Panda, Retired Principal Scientist at RPRC, Bhubaneswar, for his significant contributions to botany, particularly in the field of taxonomy and conservation. The authors express their gratitude to Shri Sudhansu Sekar Khora, IFS, Chief Executive of the Regional Plant Resource Centre, Forest, Environment & Climate Change Department, Government of Odisha, for his support and for providing necessary facilities. We also thank the Botanical Survey of India, Kolkata and S.K University, Andhra Pradesh for access to their

herbarium collection, from which the new species was identified.

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