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Kalanchoe dineshii (Crassulaceae), an addition to the flora of Andhra Pradesh, India

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Abstract

Kalanchoe dineshii Syam Radh & Nampy (Crassulaceae J.St.-Hil.) collected from Amadaguru, Sri Satya Sai District, is communicated in this paper as an addition to the flora of Andhra Pradesh. Taxonomic description, colour photographs, short notes on habitat, phenology and distribution are presented in the paper.

Keywords

Tummala Hills; Andhra Pradesh; New Record; *Kalanchoe dineshii*

Introduction

The genus *Kalanchoe* Adans. comprises of approximately 169 species (1) and is distributed in Madagascar, Continental Africa, Arabia to Southeast Asia (2). Singh *et al.* (3) reported nine species from India (*Kalanchoe adelae* Raym.-Hamet, *K. bhidei* T.Cooke, *K. cherukondensis* Subba Rao & Kumari, *K. delagoensis* Eckl. & Zeyh., *K. grandiflora* Wight & Arn., *K. laciniata* (L.) DC., *K. lanceolata* (Forssk.) Pers., *K. olivacea* Dalzell and *K. pinnata* (Lam.) Pers.) (4) among which, *K. bhidei*, *K. cherukondensis*, *K. grandiflora* and *K. olavacea* are endemic to India (5), and recently Sasi and Nampy (6) described *K. dineshii* Syam Radh & Nampy from Idukki district of Kerala. In Andhra Pradesh, five species viz. *K. cheruondensis*, *K. laciniata*, *K. lanceolata* and *K. pinnata* have been reported to date (7-8). The notable taxonomic characters used in this group to differentiate species are leaf shape and size, type of inflorescence, nature of calyx and corolla tube and their colours (9).

In different countries, the genus *Kalanchoe* is well known for its ornamental value (10), and few other taxa of the genus are also used as traditional drug (11-12). Due to their simple cultivation, vibrant flowers, resistance to drought, robust clone development, and lengthy flowering period, they are frequently used in gardening and also by florists (13). The species *K. fedtschenkoi* Raym.-Hamet & H.Perrier and *K. serrata* Mannoni & Boiteau are naturalized in many tourism places in Andhra Pradesh.

While exploring flora of Andhra Pradesh, we found a few interesting specimens of *Kalanchoe* from the Hills of Amadaguru, Sri Satya Sai District. Unlike other members of the genus, the specimens exhibited characters such as, stem terete with annular scars of fallen leaves, middle leaves larger, broadly spathulate to obovate, lower and upper leaves are smaller and elliptic, lamina covered with minute red spots, calyx glabrous, corolla gla-

brous, nectar scale linear-subulate. Extensive literature search (6, 14-15), detailed examination revealed the identity of the specimens as *Kalanchoe dineshii*.

For the current study, collection was made from the Sri Satya Sai District in Andhra Pradesh, which is rather far from the type locality, the Mahikettan Shola National Park in the Idukki district of Kerala. This confirms its extended distribution in the Andhra Pradesh (Fig. 1). A detailed description and photo plate (Fig. 2) are provided to facilitate its easy identification. The voucher specimen was deposited in Department of Botany, Sri Venkateswara University, Tirupati, Andhra Pradesh, India. Furthermore, the morphological comparison of *K. dineshii* with morphologically allied *K. bhidei*, *K. cherukondensis* and *K. olivacea* is given in Table 1.

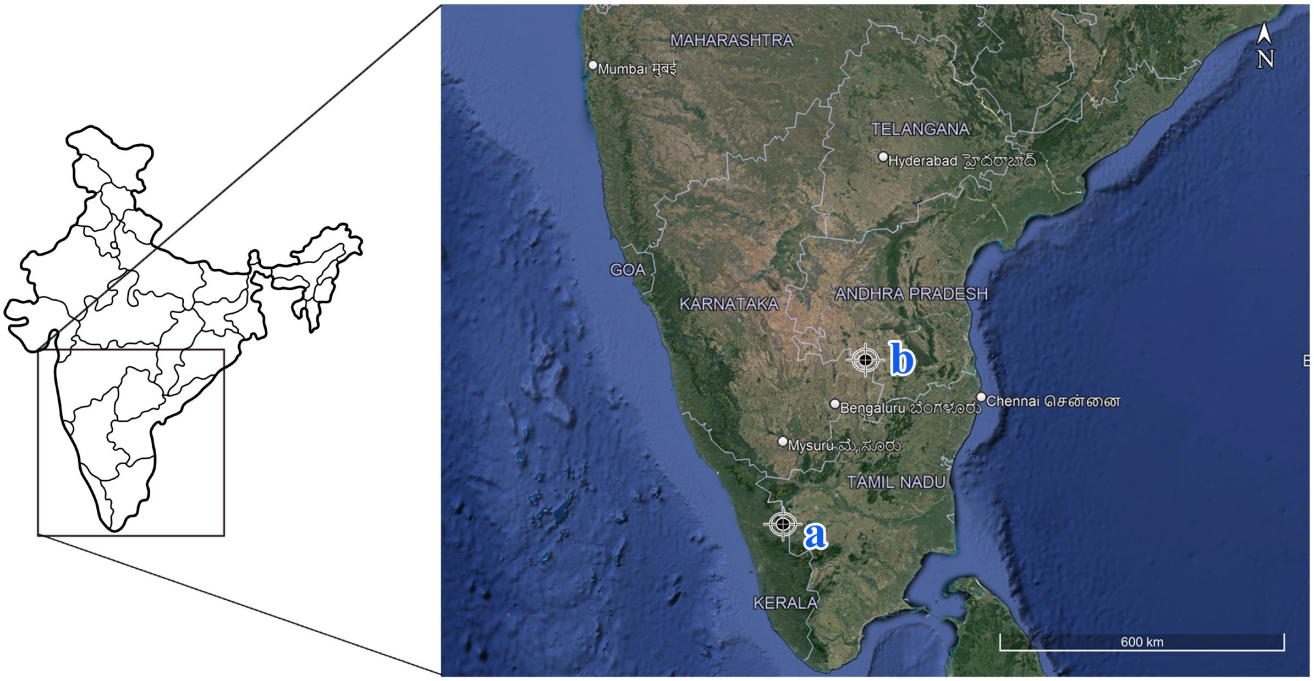

Fig. 1. Location map showing the type locality of *Kalanchoe dineshii* in Kerala (**a**), and the place of present collection of the species from Andhra Pradesh (**b**).

Taxonomic treatment

Kalanchoe dineshii Syam Radh & Nampy, Anales Jard. Bot. Madrid 79(2)-e127: 2 (2023).

Perennial fleshy erect unbranched herbs, 20-58 cm high, stem woody at basal part and gradually becomes narrow at the top, young stems reddish brown, glabrous, terete with annular scars of fallen leaves. Leaves sessile to petiolate, if petiolate, then less than 1 cm long, fleshy, opposite, 6-9 pairs per plant, young leaves green, mature olive green, middle leaves larger, broadly spathulate to obovate, lower and upper leaves smaller and elliptic, obovate-obtrullate, 3.8-5.5 × 2-3.5 cm, apex emarginate or obtuse to rounded, lamina covered with minute red spots, veins pinnate-netted, lateral veins obscure. Inflorescence terminal, trichotomous corymbs like false umbrella, peduncles 5-7 cm long, with leaves gradually decreasing upwards, glabrous, peduncle leaves 1-1.8 × 0.4-0.8 cm, with 2-3 pairs of secondary veins, cream colour, pedicels 5-7 mm long, glabrous, bracts lanceolate, 3.8-4 × 0.62-0.83 mm, glabrous. Flowers 1.4-1.6 cm long, calyx lobes 4, basally fused, cream coloured, 3-5 × 1-1.5 mm, glabrous; corolla tube 4-angular, 1-1.3 cm long, bulged at base, lobes 5-7 × 3.1-3.7 mm, lanceolate, caudate at apex, pinkish-white, glabrous. The stamens arranged in two whorls, outer 4 stamens arising from the base of corolla tube and 4 stamens adnate at the middle of corolla lobes. Filament free portion with 1.1-1.4 mm length, anthers 0.59 × 0.76 mm, Nectar scales 4, attached at the base of each carpel, linear-subulate, 3.3 - 3.6 × 0.4-0.5 mm, Carpels 4, lanceolate, 8 mm long, styles 4.5 mm long, Carpels 4-5 mm long, seeds numerous, ellipsoid- ovoid, 0.81-1 × 0.47-0.52 mm.

Phenology

December to February.

Habitat and ecology

This species is found along the rocky cliffs and exposed rocky areas at an elevation of 1000 m, in association with *Boucerosia umbellata* (Haw.) Wight & Arn., *Cynanchum* sp. and *Jasminum cuspidatum* Rottler.

Distribution

INDIA: Kerala and Andhra Pradesh (reported here).

Specimen examined

INDIA, Andhra Pradesh, Sri Satya Sai District, Tummala Hills, 13°55’56.48” N, 78°05’40.01” E, 1006 m, Amadaguru, 27.01.2023. *V.Nagaraju & G. Penchala Pratap* SVUTY-03831 (Herbarium, Department of Botany, Sri Venkateswara University, Tirupati).

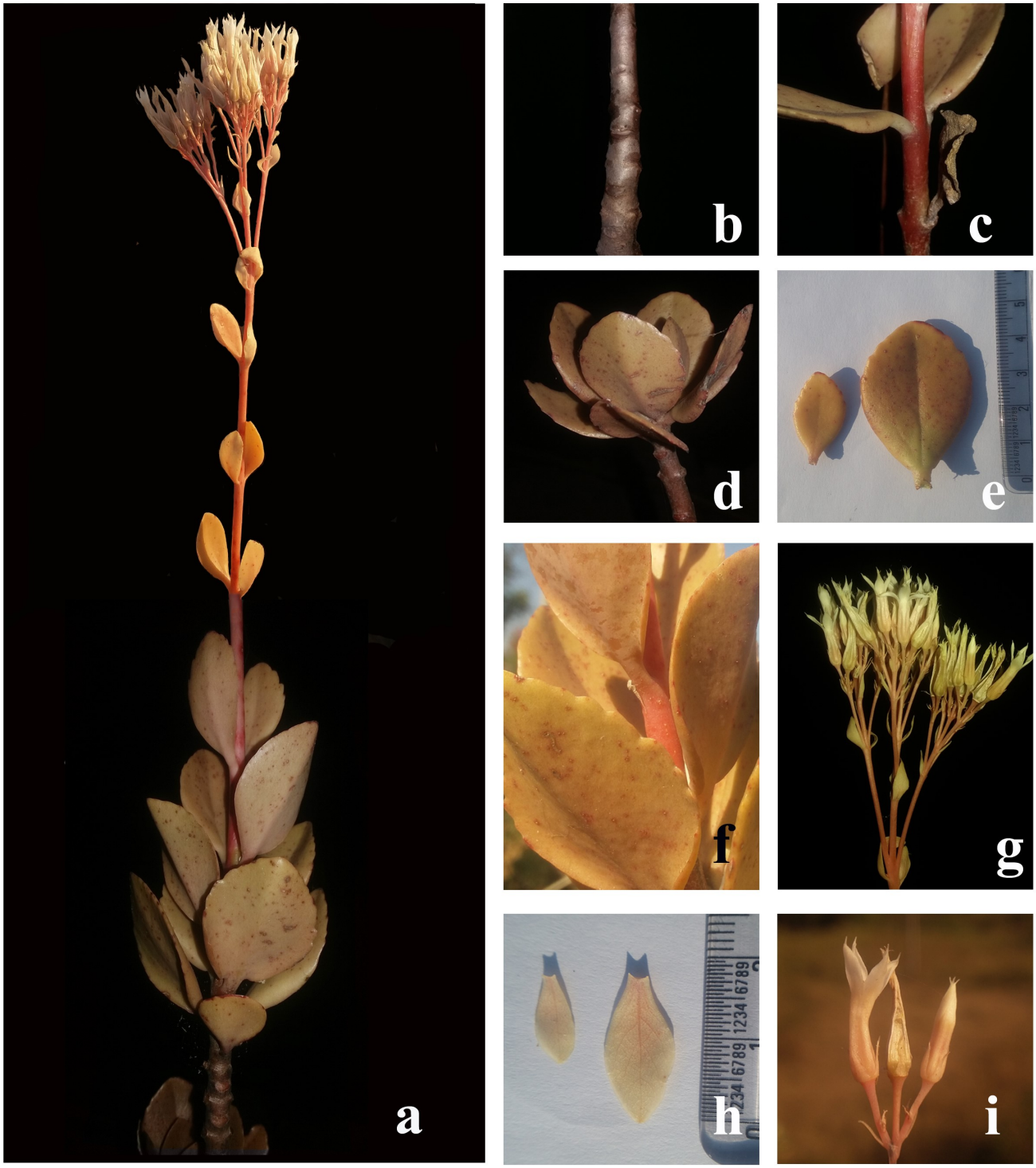

Fig. 2. *Kalanchoe dineshii* Syam Radh & Nampy: **a**. flowering branch, **b**. basal stem, **c**. upper part of the stem, **d**. young plant with crown of leaves, **e**. leaves, **f**. lamina with minute red spots, **g**. inflorescence, **h**. peduncle leaves, **i**. flower.

Table 1. Morphological comparison of *Kalanchoe dineshii* with morphologically allied *K. bhidei*, *K. cherukondensis* and *K. olivacea*.

Characters	***K. bhidei***	***K. cherukondensis***	***K. dineshii***	***K. olivacea***
Plant colour	Reddish colour	Reddish brown	Reddish white	Olive green
Height of the plant	30-100 cm	30-35 cm	20-58 cm	15-60 cm
Leaves	Elliptic, tinged red	Broadly spathulate to obovate or elliptic, dotted with blood red spots	Broadly spathulate to obovate, dotted with blood red spots	Ovate, elliptic or broadly lanceolate, dotted with blood red Spots
Petioles	Subsessile	Sessile	Sessile - petiolate	Subsessile
Inflorescence	Compound cyme	Paniculate cymes	Trichotomous corymbs like false umbrella	Compound cymes

Pedicel	Glabrous	Glabrous to densely clothed with glandular hairs	Glabrous	Densely clothed with glandular viscid hairs
Calyx lobes	Glabrous	Glabrous	Glabrous	Glandular hairy
Corolla lobes	White	White	White-cream	White
Corolla	Glabrous	Glandular pubescent outside up to 3/4 of lobe	Glabrous	Clothed outside with glandular hairs

Note

In *Kalanchoe dineshii,* the upper part of stem is red coloured, leaves are sessile to petiolate and 6-9 pairs per plant, lamina is covered with minute red spots and flowers are cream in colour. However, the Kerala specimens have sessile leaves, margins undulate to incised at distal half, entire at basal half. Each plant has more than 10 pairs of leaves and white coloured flowers. It might be a variation due to the edaphic and climatic factors.

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Authors contributions

VNR, PPG and MK collected the specimen, VNR participated in the herbarium preparation and writing the taxonomic characters, VNR, JB, MK and GS are involved in alignment and drafted the manuscript. All authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interests to declare.

Ethical issues: None.

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