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## RESEARCH ARTICLE

### A NEW SPECIES OF *OXALIS* L. (OXALIDACEAE) FROM WESTERN GHATS OF KERALA, INDIA

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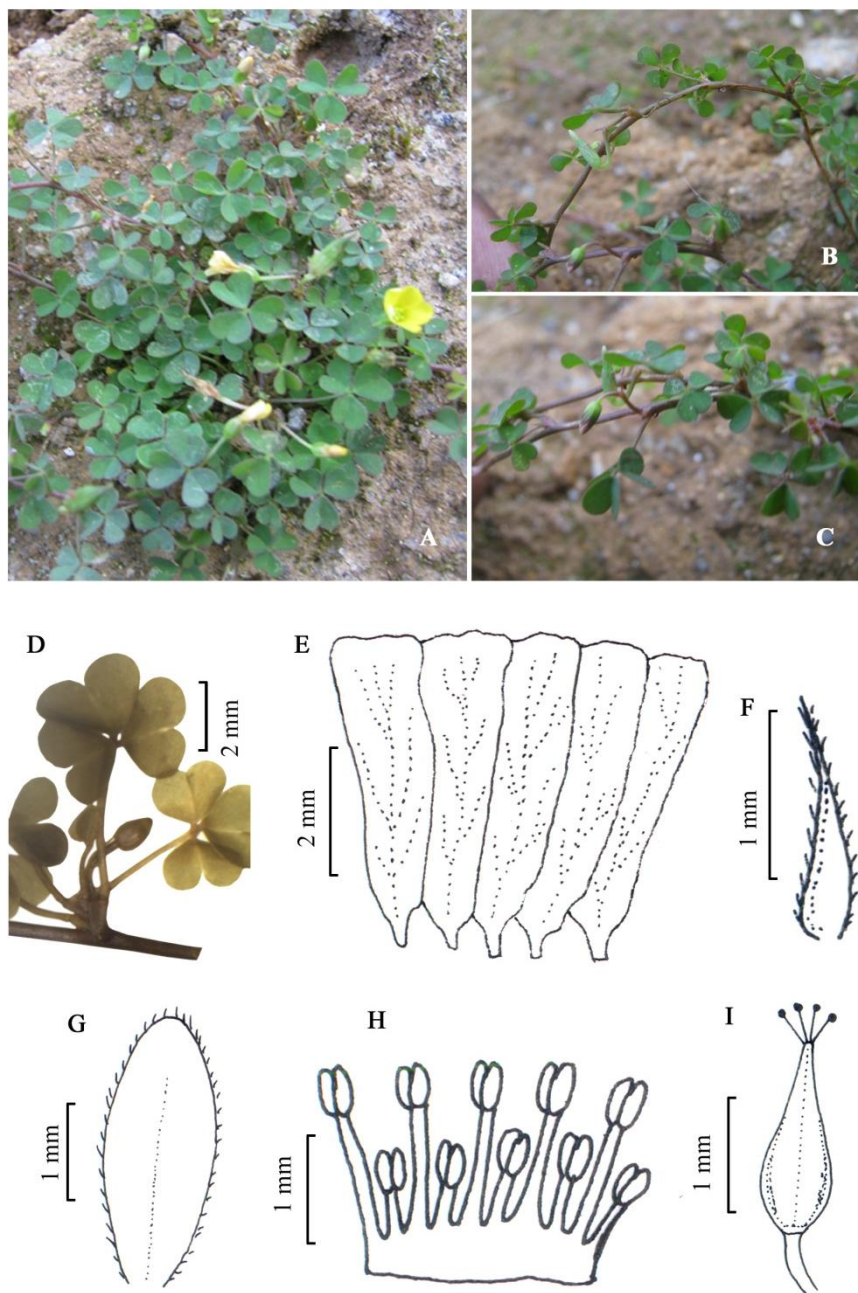
#### Abstract

*Oxalis varadimalayana* Anilkumar & Udayan sp. nov., a new species in section Corniculatae is described from the Western Ghats of Palakkad district, Kerala State. Morphological characteristics with illustrations, habitat, description and conservation status of the new species are provided, in addition to a diagnostic comparison with one phenotypically similar species.

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#### Introduction

The genus *Oxalis* L. consists of 700 species cosmopolitan especially South America and Cape (Mabberley, 2005). In India, it is represented by 10 species, of which 8 species are known to occur in Peninsular India (Manna *et al.*, 1997). Among them, 4 species were recorded from Kerala (Sasidharan 2004, Nayar *et al.* 2006). During intensive botanical studies along the Western Ghats of Kerala state in India, the authors collected an unknown species of *Oxalis* from Varadimala, Attapady forests of Palakkad district. Critical studies perusal of relevant literatures (Jacquin 1794, Hooker 1874, Gamble 1923, Vajravelu 1990, Oliver 1993, Dreyer 1996, Dreyer & Makgakga 2003, Sasidharan 2004 & 2012, Karthikayan *et al.* 2009, Oberlander *et al.* 2011, Jan Suda *et al.* 2013) and herbarium deposited in various herbaria is revealed that it to be a new species and is described here.

*Oxalis varadimalayana* Anilkumar & Udayan sp. nov. (Figure 1)

**Figure 1.** *Oxalis varadimalayana* Anilkumar & Udayan sp. nov. A.-C. Habit; D. Flowering twig; E. Petal; F. Bract; G. Sepal; H. Stamens; I. Carpels. (Drawn from 4561, Anilkumar by Ms. Nijila Raj).

Type: **INDIA**, Kerala, Palakkad District, Varadimala, evergreen forest,  $\pm 1400$  m, 21 ix 2012, *Anilkumar 4561* (holo MH<sup>1</sup>, iso SKC<sup>2</sup>, CMPR<sup>3</sup>, CALI<sup>4</sup>).

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Creeping herb with rigid root stock, no bulbs; stem rigid, coffee brown, ca. 0.5 mm in diam. with scattered shining hairs; nodes prominent, alternate sides of the stem with or without roots. Leaves fascicled in the nodes, estipulate, trifoliate, foliolates each  $2-3 \times 2-4$  mm, broadly elliptic or obovate, obcordate, bifid with unequal half, adaxial glabrous, abaxial slightly pubescent, margins entire; petiolule short, base pubescent; petiole ca. 3–6 mm long, glabrous, broadly winged at the base with ciliate margins. Flowers axillary and solitary, ca. 5 mm across; pedicel 4–8 mm long; bracts 2, equal, opposite, linear-lanceolate, 1–1.5 mm long with ciliate margins. Sepals 5, lanceolate, ca.  $2.5 \times 1$  mm, green, glabrous, sub equal, connate at base, margins ciliate. Petals 5, yellow, oblong, ca. 5 mm long, claws short, glabrous, obtuse at apex. Stamens 10, united at the base, alternately long and short, longer ones ca. 2 mm and shorter ones 1 mm long, filaments flattened, glabrous. Carpel glabrous, ca. 2 mm long, with short style, ca. 0.5 mm long, stigma small; ovary ellipsoid to cylindrical. Fruits linear-cylindric, ca.  $7 \times 2$  mm long, sepal and anther filaments persistent, dehiscence longitudinally. Seeds ovoid, rough, many, ca. 0.5 mm long.

### Diagnosis

*Oxalis varadimalayana* sp. nov. is most similar with *Oxalis corniculata* L. in some attributes but clearly distinguished from this by means of its broadly winged and glabrous petiole, prominent nodes, thick fleshy glabrous leaves with rigid stem and very short petiole, bracts, sepals, stamens and fruit. (Table 1.).

**Table 1. Morphological comparison of *O. varadimalayana* with allied species *O. corniculata***

Characters	<i>O. corniculata</i>	<i>O. varadimalayana</i>
Habit	Ascending or erect herb, succulent stem	Creeping herb, stem rigid
Nodes	Not prominent	Prominent, alternate sides of the stem
Leaves	Scattered or in small tufts, thin membranous, pubescent, leaflets $4-20 \times 5-18$ mm long	Only at nodes, thick, fleshy, glabrous, leaflets $2-3 \times 2-4$ mm
Petiole	Pubescent, 10–90 mm long, base not winged	Glabrous, 3–6 mm long, base broadly winged with ciliated margins
Flowers	2 or more in an inflorescence, rarely solitary	Flowers always solitary
Pedicel	5–10 mm long	4–8 mm long
Bracts	2–many, sub-opposite to whorl, 3–4 mm long	2, opposite, ca. 1mm long
Sepals	Ovate-lanceolate, $2-6 \times$ ca. 2 mm long	Lanceolate, ca. $2.5 \times 1$ mm long
Stamens	Didynamous, ca. 5 and ca. 4 mm long respectively	Didynamous, ca. 2 and ca. 1 mm long respectively
Fruit	$9-20 \times 2-4$ mm long	ca. $7 \times 2$ mm long

**Flowering & Fruiting:** August - October.

**Distribution and Habitat:** *Oxalis varadimalayana* is known only from Varadimala in the Attapady region of the Western Ghats of Kerala, where it occurs in evergreen forests  $\pm 1400$  m from MSL. This hills are the continuation of Muthikulam reserve forest at west, which in turn continues to Bolampatti Hills to the south-east and north along the edge of Attapady, It appears to be endemic and very sparsely distributed in the slopes.

**Biotic Association:** The new taxon is found growing along with other species such as *Biophytum intermedium* Wight (Oxalidaceae); *Dichrocephala integrifolia* (L. f.) O. Ktze. (Asteraceae); *Curculigo orchioides* Gaertn.

(Hypoxidaceae); *Cyanotis arachnoidea* Clarke, *Cyanotis arcotensis* Rao and *Murdannia esculenta* (Wall. ex Clarke) Rolla Rao & Kammathy (Commelinaceae) and *Coix lacryma-jobi* L. (Poaceae).

**Etymology:** The species is named after the type locality Varadimala, Attapady, Palakkad District, Kerala, India.

**Additional specimens examined:** INDIA, Kerala, Palakkad District, Attapady forests, Varadimala, ±1400 m, 24 ix 2012, Anilkumar 4625 (CMPR).

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