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RESEARCH ARTICLE

***Spilanthes tetralobata* sp. nov. (Asteraceae): A new species from Kerala, India.**

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Kerala, India.**Manuscript Info****Manuscript History:**Received: 19 September 2014
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Abstract

Spilanthes tetralobata Reshmi et Rajalakshmi, a new species in Asteraceae from Kerala is described and illustrated. The species is named based on the characteristic of 4 lobed corolla. The species resembles *S. ciliata* H.B.K. in growing habit, but clearly differ in characters such as nature of ray florets, achene and pollen.

Introduction

Spilanthes Jacq. Comprises 30-40 species, mainly distributed along the New and Old world tropics (Jansen, 1981). In India *Spilanthes* is represented by eight species, *S. ciliata*, *S. uliginosa*, and *S. vazhachalensis* with rayed heads and *S. paniculata*, *S. calva*, *S. radicans*, *S. oleraceae* and *S. ghoshinis* with non-rayed heads (Sivarajan & Philip, 1984; Sivarajan & Ramesan, 1987; Sheela, 2007, 2010). During the course of taxonomic investigation of *Spilanthes* first author has collected plant from Koothattukulam of Ernakulam district. Later the same material was collected from different localities of Kerala, viz. Cheppad, Thiruvalla, Chenganoor, Chathamattom, Puliyoor, Wayanad and Pathanamthitta. Detailed taxonomic study of this plant and relevant literature proved that it is a new species belonging to the genus *Spilanthes* Jacq. It is described and illustrated here.

Spilanthes tetralobata Reshmi et Rajalakshmi sp. nov. (Fig: 1)

Type: India, Kerala, Ernakulam district, Koothattukulam, 28m, 11/09/2012, Reshmi G. R 7106 (Holotype TBGT; Isotype KUBH).

DESCRIPTION

Spilanthes tetralobata is similar to *S. ciliata* in flower colour and growth habit but dissimilar in many other distinguished characters such as heterogamous ray florets with 4 lobed corolla, very rarely 5 - lobed, size of leaf and flower, prominent receptacular disc, outer involucre with swollen base, achenes with fewer number of marginal cilia on one side or both, one bristle like pappus and nature of pollen and spine.

The new species is further distinguished by several other characters. Plants are mostly prostrate; stem terete, puberulous, reddish brown; leaves opposite decussate, pale green, reddish brown margin, 3.5-4.5 cm long and 3-4 cm wide, ovate- deltoid with acute apex and truncate base, serrate margins, glabrous; petioles 0.8-1.1 cm long, pubescent; heads rayed, axillary, solitary, rarely 2-3 in each axil, 5-7mm across, sub-globose, turning conical; florets yellowish orange; peduncle reddish green, 2.5-5 cm long; receptacle cup shaped, 3.5-4mm wide, puberulous; involucre bracts 2 seriate, pubescent, outer involucres 4.5-5×1.5-2.2mm, 5-6 in number, oblong, hairs along margins, subentire, obtuse at apex, base swollen, inner involucres 4-5 in number, 4-4.5×0.5-2mm, acute or subacute

at apex, hairs along margins, pubescent; paleaceous, palea 3-3.2 mm, oblong, boat-shaped, concave, apex acute-subacute, puberulous. Flowers pungent when chewed, outer rayed and inner tubular.

Ray florets 8-10, bisexual, 4-lobed, very rarely 5 - lobbed corolla-tube 1-1.5mm long, limb 1.5-1.9mm, hairy, yellowish orange; ovary 1.2-1.5mm long, trigonous, white; style 0.5-1 mm long, yellowish brown; stigma bifid, curved, glandular inside; stamens 5, exserted; filaments 0.25-0.4mm long; anthers brownish, connective prominent; achenes 1.75-2 × 1-1.5mm, brown- black, trigonous, truncate at the apex with a short beak, minutely ciliate along margin, cilia 0.25-0.3 mm, one pappus bristle present, 0.483- 0.5mm long.

Disk florets many, bisexual; corolla- tube 0.5-1 mm long, limb 0.3-0.5mm, dilated above, lobes 5, much shorter than tube, papillose; stamens 5, exserted; filaments 0.25-0.3 mm long; anthers brownish to yellow, connective prominent; achenes brown- black, 2.11- 2.5×1.1-1.5 mm, laterally compressed, obcordate with wide sinus at the top, margin has few cilia on one or both side, cilia 0.25-0.35mm long, one pappus bristle present, 0.45-0.5mm long.

Scanning electron micrographs of achenes showed surface hairs and rectangular striations. Pollen surface granulate, having ridges and furrows, less number of spines, spine tips acuminate, spine length ranges from 0.0025-0.0035 mm; column short, inconspicuous basal cushion, sparsely punctate.

Etymology: The specific epithet ‘ tetralobata’ is based on the nature of 4-lobed ray florets.

Phenology: April- December

Ecology: Mainly in wetland.

Distribution: Not common.

Note: It can be recognized by yellowish orange rayed head having 4-lobed bisexual ray florets. Closely allied to *Spilanthes ciliata* (Figure: 2) but can be easily distinguished by the following characters give in Table.

Comparison of *Spilanthes tetralobata* with its allied species *S. ciliata*

No :	Characters taken for the study	Taxonomic characters	
		<i>S. tetralobata</i>	<i>S. ciliata</i>
1.	Habit	Small prostrate herb upto 15– 45cm.	Small prostrate herb with 15-60 cm.
2.	Stem	Reddish brown and puberulous	Greenish red and glabrous
3.	Leaf	Pale green with reddish brown margin, 3.5 - 4.5 × 3- 4 cm in size	Dark green without reddish brown margin, 5.5-7.5 × 4.5-6cm
4.	Leaf margin	Prominently serrate	Slightly serrate
5.	Petiole	Petiole attachment region ‘V’ shaped, petiole in cross section appeared as crescent shape with a gap of 200µm width	Petiole attachment region ‘U’ shaped, petiole in cross section appeared as circular with a narrow gap of 30- 50 µm width
6.	Head	Sub globose turning conical and 5.3 - 6.5 mm diameter	Sub globose and 6.5-8.0 mm diameter

7.	Receptacle	Prominent receptacle with 3.5-4 mm in size	No prominent receptacle, size attained only 0.5-1mm
8.	Involucre bracts	Narrow elliptic with pointed tip, pubescent	Broad oblong with acute tip, pubescent
9.	Ray floret	8 - 12 bisexual florets	10- 12 ligulate female florets
10.	Corolla	4-lobed, rarely 5-lobed	2-3 slightly lobed
11.	Nature of pollen under SEM	Surface of pollen granulate, irregular with ridges and furrows; short spine column, inconspicuous basal cushion, spine floor sparsely punctuate; distantly arranged few spines with 0.0025-0.0035mm length, spine tip pointed.	Surface of pollen granulate, sparsely punctuate, basal cushion prominent and profusely punctuate, column prominent, acute, slightly granulate, number of spines more, inter spinal distance less, pollen spine tip not pointed, spine length 0.0035-0.0055 mm.
12.	Nature of achene under SEM	2.11- 2.5×1.1-1.5mm, margin minutely ciliate having cilia with 0.025-0.35mm length, cilia facing upwards.	2-2.5 mm, glandular, marginal cilia facing laterally, cilia not closely arranged along the margin, 0.2-0.3mm.

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REFERENES

1. Jansen, R.K. (1981): Systematics of *Spilanthes* (Compositae- Heliantheae). Syst. Bot., 6: 231-257.
2. Sheela, D. (2007): *Spilanthes vazhachalensis*: a new species from Kerala, India. J. Econ. Taxon. Bot., 31 (2): 474-477.
3. Sheela, D. (2010): *Spilanthes ghoshinis*: a new species from Kerala, India. J. Econ. Taxon. Bot., 34 (4):798-800.
4. Sivarajan, V.V. and Philip, M. (1984): Notes on three new immigrant species of *Spilanthes* Jacq. (Asteraceae) in India and the identity of the common "Toothache - plant". J. Ancient Sci. of Life., 3 (3): 169-173.
5. Sivarajan, V.V. and Remesan, C. (1987): The genus *Spilanthes* Jacq. (Compositae-Heliantheae) in India. J. Econ. Taxon. Bot., 10 (1): 141-147.

Figure1: *Spilanthes tetralobata* Reshmi, et Rajalakshmi sp. nov. **a.** Growing habit, **b.** Inflorescence, **c.** Head, **d.** Outer involucre, **e.** Inner involucre, **f.** Ray floret having 4 lobed corolla, **g.** Bisexual disk floret, **h.** Boat shaped palea, **i.** Ray flower with both anther and stigma, **j.** Disk floret with both anther and stigma, **k.** Achene, **l.** SEM image of achene, **m.** SEM image of pollen **n.** C.S of petiole

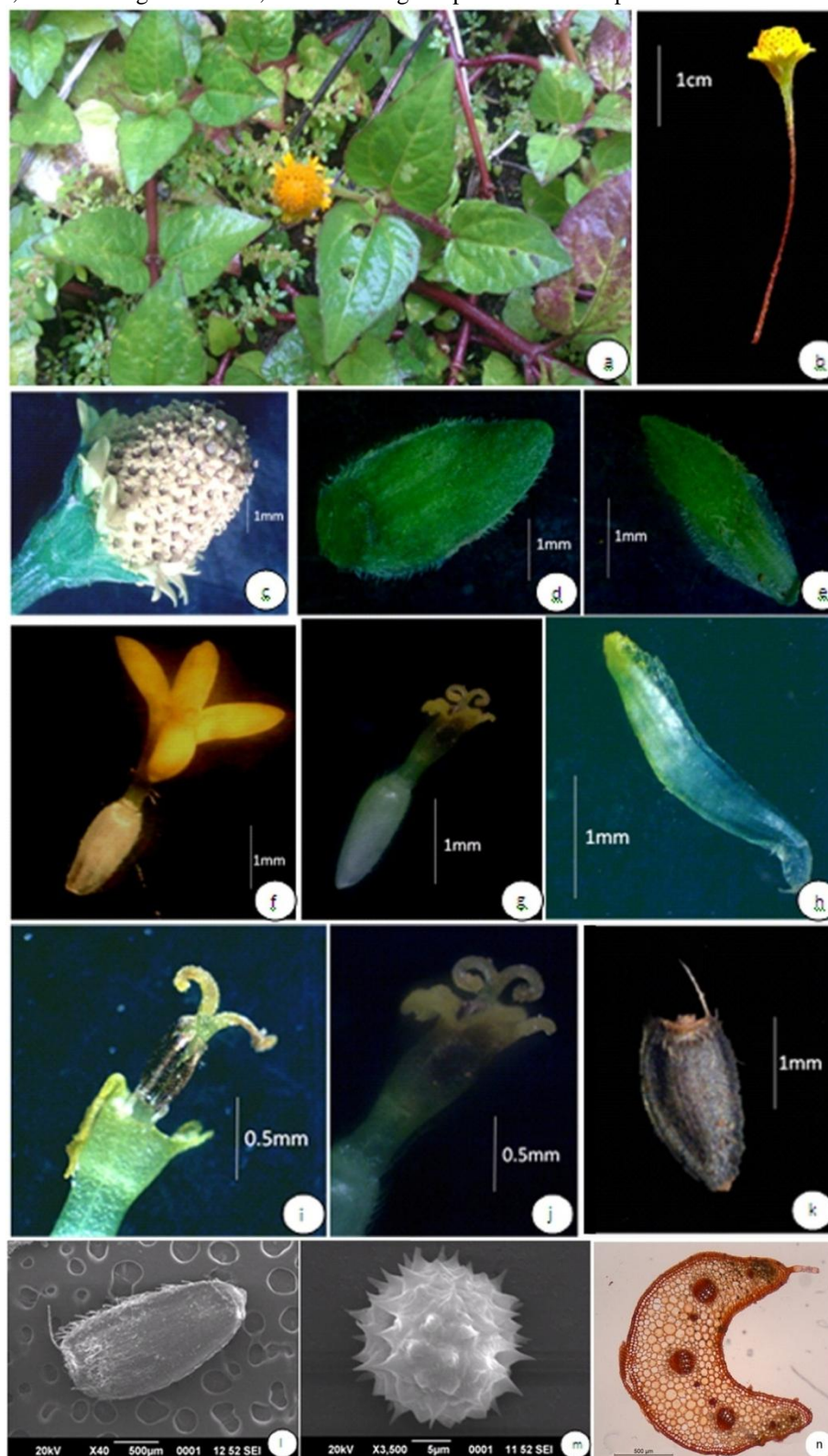


Figure 2: *Spilanthes ciliata* H.B.K. **a.** Growing habit, **b.** Inflorescence, **c.** Head, **d.** Outer involucre, **e.** Inner involucre, **f.** Ray floret having 4 lobed corolla, **g.** Bisexual disk floret, **h.** Boat shaped palea, **i.** Ray flower with both anther and stigma, **j.** Disk floret with both anther and stigma, **k.** Achene, **l.** SEM image of achene, **m.** SEM image of pollen **n.** C.S of petiole

