



## STUDY ON NODAL ANATOMY, LEAF ANATOMY AND EPIDERMAL FEATURES OF *ROTALA DENSIFLORA* (ROTH EX R & S) KOHENE BELONGS TO FAMILY LYTHRACEAE

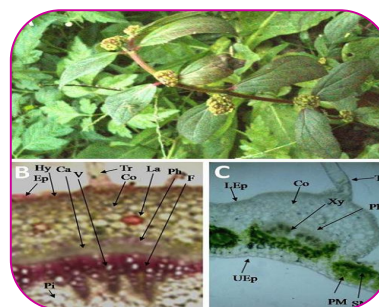
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### ABSTRACT

The present investigation deals with the study of leaf anatomy, nodal anatomy and stomatal features of *Rotala densiflora* (Roth ex R & S) kohene belongs to family Lythraceae. The species of *Rotala* found in moist, muddy and rocky places. The leaves are opposite decussate and sessile. The node is unilacunar one traced. The leaves are dorsiventral and amphistomatic Stomata are more on lower surface of leaf. The mucilage cells are common in occurrence. The vascular bundle is bicollateral, solitary and arc shaped parenchymatous cortex with large air spaces.

**KEY WORD:** Anatomy of node, Leaf, epidermal cells and stomata, *Rotala*.



### INTRODUCTION

The genus *Rotala* is consist of about 44 species distributed all over the world according to Mabberley (2005) some species reported from peninsular India (Yadav et.al. 2010, Gaikawad et.al. 2013, Anto et. al. 2014, Lemiya and Pradeep, 2015) The *Rotala densiflora* is belonging to family lythraceae considering anatomical features of node, leaf and epidermal characters are very important for the segregation of species. Anatomical studies of stem and leaves of the two herbaceous genera *Ammannia* and *Rotala* has been worked out by Panigrahi 1980, 1988. The *Rotala* shows diversity in region of tropical Asia Cook (1979) an anatomical character studied in the genus *Rotala* is very rare (Solereeder 1908, Metcalfe and chalk 1950, Panigrahi 1988). Therefore for the detail anatomical and epidermal studies of *Rotala densiflora* are taken into consideration.

### MATERIAL AND METHODS:

The plant material of *Rotala densiflora* (Roth ex R & S) kohene was collected from Panhala of Kolhapur (Maharashtra state). The serial free hand section of leaf and node was taken with fine razor for study of anatomical characters. The stomata are observed by simple peeling method or by using conc. Nitric Acid solution. The sections of leaf were mounting and stained with regular used methods.

### OBSERVATIONS:

**1) Nodal anatomy of *R. densiflora*:** The serial sections of nodal region was undertaken by free hand or with the help of rotary microtome machine and observed that the axial cylinder bears median trace which is an arc shaped later on it is extend into the leaf. As shown in figure 1, a, b c and d. Hence the node is unilacunar one traced are noted.

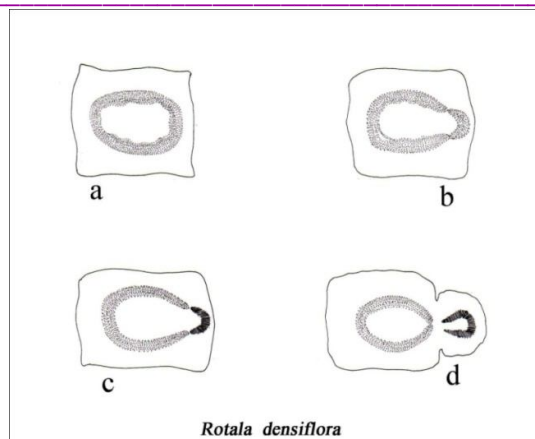


Figure 1: Anatomy of Node in *Rotala densiflora*.

**2) Leaf anatomy of *R. densiflora*:** It is observed that the leaves are sessile, ovate or elliptic oblong, apex acute to acuminate. It is leaf is dorsiventral and amphistomatic. The adaxial epidermis is of comparatively larger cells with thin outer wall. The cuticle is thin the stomata are more on the lower surface the mucilage was common.

The mesophyll is comprised of palisade and spongy tissue. The palisade is one to two layered of unequal sized cells. The spongy tissues are loosely arranged cells with air spaces. The vascular bundles are bicollateral they are extending through spongy tissues. ( Figure 2 a). The vascular bundle is capped with parenchymatous bundles sheath. In midrib region the epidermis is followed by parenchymatous cortex with many large air spaces. The midrib vascular bundles are solitary and slightly arc shaped.

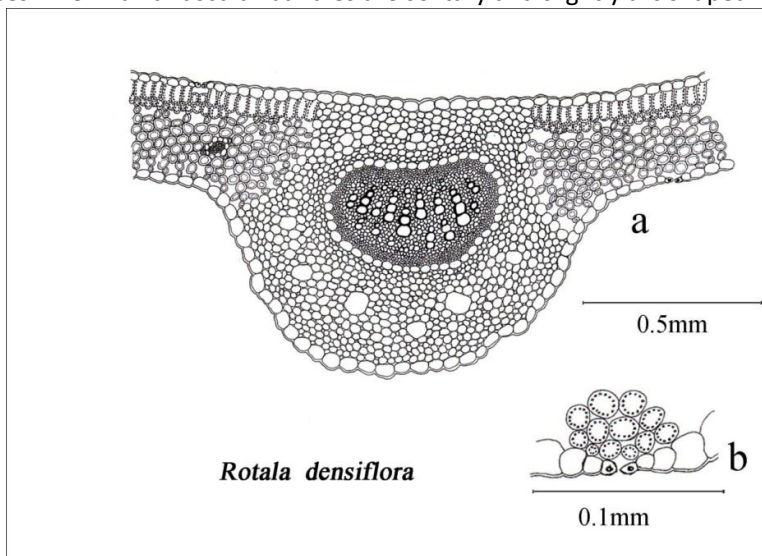


Figure 2: Anatomy of leaf in *Rotala densiflora*.

**3) Epidermal features (Stomata):** Epidermal cells are more or less large, thin and cuticularised. Stomata are observed on both surfaces of leaf hence leaf is amphistomatic and type of stomata is Anomocytic (Figure 3 leaf adaxial and Figure 4 leaf abaxial)

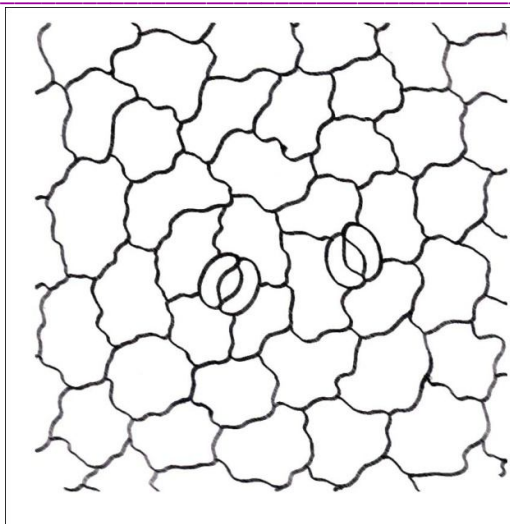


Figure 3: Leaf adaxial surface stomata.

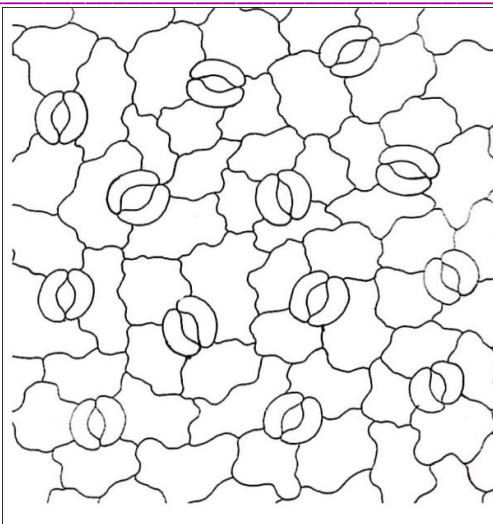


Figure 4: Leaf abaxial surface stomata.

### DISCUSSION:

The anatomical studies play an important role in segregation of taxa. The present investigation brings out some interesting features. The node is single unilacunar one traced. The nodal anatomy in some species of *Rotala* was studied by Kshirsagar (2017) the leaf is dorsiventral and amphistomatic with presence of spongy and mesophyll tissues. Leaf anatomy of *Rotala serpyllifolia* was studied by Kshirsagar (2018). Stomata are Anomocytic. The foliar epidermal features and their taxonomic significance of *Rotala* noted by Kshirsagar and Vaikos (2013).

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