DERMAL ANATOMY OF SOME SPECIES OF GENUS AERIDES LOUR. FROM MAHARASHTRA

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Key words : Paracytic, Amphistomatic, Hypostomatic.

Present paper deals with study on dermal anatomy of three species of Aerides Lour. viz. Aerides ringense Fisher., Aerides maculosum Lindl; and Aerides crispa Lindl. from Maharashtra. In present study it has been observed that stomata in all the there species are of paracytic type. Stomata are mostly flushed with the epidermis as is true in majority of Orchids.

INTRODUCTION

The orchids are the most beautiful flowering plants. They are well studied and represented in India. Kaushik (1983) has considered the taxonomic significance of stomatal features and identified the orchids into four sub-families, anomocyticeae, acyticeae, Cyclocyticeae and Paracyticeae. Taxonomic importance of stomata was indicated by Mohana Rao and Khasim (1987). Mehra (1989) highlighted phylogenetic significance of stomatal character in Orchids. Dermal anatomy of Western Himalayan orchids is studied by Vij and Kaur. (1991). In this attempt stomatal characters and related features of leaf epidermis is studied in three species of *Aerides* Lour. viz *Aerides ringense* Fisher; *Aerides maculosum* Lindl., and *Aerides crispa* Lindl.

MATERIAL AND METHODS

Material related to the study of stomata was studied by peeling method of leaves. Mature leaves were used to study the dermal characters. The method suggested for grasses by Metacalfe (1960) and for Orchids by Williams (1975) was adopted in present investigation. The leaves were scrapped until only the epidermis remained. The epidermis was mounted in mounting medium (glycerine and alcohol, 1:1). The measurements were made with the help of a standardized micrometer. Scale was calculated with the help of ocular and stage micrometer. Drawings were made with the help of a camera lucida. Stomatal Index was calculated by adopting standard formula.

OBSERVATIONS

1. *Aerides ringense* Fisher. A beautiful corticolous species of foxtail orchids, distributed along the western ghats at an altitude of 300 m. This perennial epiphyte has thick stem, with long reacemes, often branched, with mauve-lilac coloured flowers with several deeper coloured longitudinal streaks along the middle lobe of lip. **Leaves :** Many, fleshy, 5-21 x .3.7 cms, coriaceous, channeled linear or linearoblong, with unequal rounded lobes at apex, purplish green, very often mottled with deeper-purple coloured spots amphistomatic **Epidermis :** Cells polygonal, with thick non-sinuous walls, (41.2-86 x 28.7 - 49.2 μ), trichomes absent, stomata flushed, paracytic, elliptic, 36.9 - 65.6 x 8.2 - 16.4 μ, guard cells kidney shaped and longitudinally placed, stomatal opening 20.5 - 36.9 x 8.2 - 16.4 m. **Stomatal frequency** : 5.33 / mm^2 on adaxial side 42.66/mm^2 on abaxial side, **Stomatal index :** .009 on adaxial side. .0654 on abaxial side.

2. *Aerides maculosum* Lindl. A common

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mottled with purple dots., flowers deep rose-pink coloured, flushed with mauve. **Leaves :** 4-6, channeled coriaceous, 3-23 x 2-3 cms, green mottled with purple, Linear-oblong or ablong, broadest about the middle, with two unequal rounded lobes at the apex, amphistomatic. **Epidermis :** Cells polygonal with thick and non-sinuous walls, (28.7 - 57.4 x 20.05 - 28 m) trichomes absent; stomata flushed, paracytic, elliptic, 32.8 - 36.9 x 8.2 μ, guard cells kidney - shaped and longitudinally placed, stomatal opening 16.4 - 24.6 x 8.2 μ. **Stomatal frequency :** 21.33 / mm2 on adaxial side. 69.33 / mm^2 on abaxial side, **Stomatal index :** .022 on adaxial side. .1192 on abaxial side.

3. *Aerides crispa* Lindl. A common corticolous species of foxtail orchids, distributed along the western ghats at an altitude of 700 - 1300 m. It has long roots which are clasping the bark of trees and presence of sweet fragrant flowers. **Leaves :** 6-9, sessile, fleshy, oblong, 10-20 x 35 - 4.5 cm, cariaceous, Unequally bilobed at apex, channeled, hypostomatic. Epidermis : Cells polygonal with thick and non-sinuous walls, (24.6 - 65.6 x 12.3 - 20.5 μ), trichomes absent; stomata flushed, paracytic elliptic, 38.95 x 16.4 m, guard cells kidney shaped and longitudinally placed, stomatal opening 18.45 x 8.2 μ. **Stomatal frequency :** 74.6 / mm^2. **Stomatal Index :** .0660.

DISCUSSION

Stomatal frequency was very high in *Aerides crispa* Lindl. (74.6 / mm^2) low in *Aerides ringense* Fisher. (42.66 / mm^2) and intermediate in Aerides maculosum Lindl (69.33 / mm^2). Stomata in all the three species were of paracytic type. Amphistomatic condition was observed in *Aerides ringense* Fischer and *Aerides moculosum* Lindl. having hygrophytic leaves wehreas hypostomatic condition was observed in *Aeides crispum* Lindl. which was mesophytic. The association of amphistomy with more or less vertically oriented leaves like *Aerides ringense* Fisher and *Aerides maculosum* Lindl. confirms similar findings in several orchid species (Rasmussen, 1987). Stomata were mostly flushed with the epidermis as in true in majority of orchids. (Rasmussen, 1987).

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PLATE – I

Aerides ringens Fischer. (Text. Fig. 104)

1. Entire plant, 2. Raceme inflorescence. 3) Enlarged view of flower (Lateral view). 4. Enlarged view of a flower. (Front View)

Aerides maculosum (Lindl). (Text. Fig. 5-8)

5. Entire plant. 6. Receme inflorescence. 7. Enlarged view of a flower. (Laternal view), 8. Enlarged view of a flower. (Front view)

Aerides crispa Lindl (Text. Fig. 9 -10)

9. Entire plant, 10. Enlarged view of a flower, (Front view)

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1. Adaxial side of leaf of Aerides ringens Fischer (x 400)
2. Abaxial side of leaf of Aerides ringens Fischer (x 400)
3. Adaxial side of leaf of Aerides maculosum Lindl. (x 400)
4. Adaxial side of leaf of Aerides maculosum Lindl. (x 450)