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Some observations on the pollinia of the three species of  
corticolous orchid of the  
genus *Aerides* Lour under SEM.

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#### ABSTRACT

Three species of the genus *Aerides* Lour namely *Aerides ringense* Fisher, *A. maculosum* Lindl. and *A. crispum* Lindl. were studied in relation to their pollinia under SEM. Viscous hairy structures were observed on the surface of pollinia of all the three species. It appears that the glandular hairs having elasto-viscin might be helping to bind the pollen-grains together and create moisture near the stigmatic surface for the purpose of pollination.

Orchids have attracted attention of the taxonomists, ecologists, evolutionary botanists, agriculturists and biotechnologists. Orchids also gained much commercial importance as a cutflower industry. Such fascinating group of flowering plants has been ignored for palynological study under Scanning Electron Microscopy. SEM as well as TEM has become a parameter for the inter-relationship in systematics, phylogeny and palynology. In relation to this, much of the work on pollinia of Orchids under SEM and TEM has been made in western Countries<sup>1,2,4,6</sup>. Keeping this view in mind it has been thought to undertake palynological work relating to the Pollinia of the three species of the corticolous orchid namely *Aerides* Lour (*A. ringense* Fisher, *A. Maculosum* Lindl. *A. crispum* Lindl). from the different localities of Western ghats lying in Maharashtra.

The material was collected from different localities of Western ghats (Panvel at Sea-

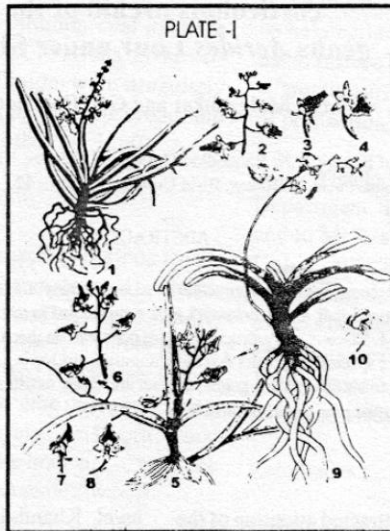
level, Khandala (ht. 667 mts alt) Mahabaleshwar (at alt 1350 mts) in Maharashtra. Pollinia were studied under LM for their colour, shape, size etc. The SEM study of Pollinia of orchids was conducted under Electron Microscope Jeol 1200 Ex of 1982 at the Laboratory of RSIC of Panjab University, Chandigarh.

Pollinia were collected and mounted on a double metallic stub. Pollinia were mounted on a gold sputter coater for five minutes for coating the material. Material was then processed for scanning under electron microscope.

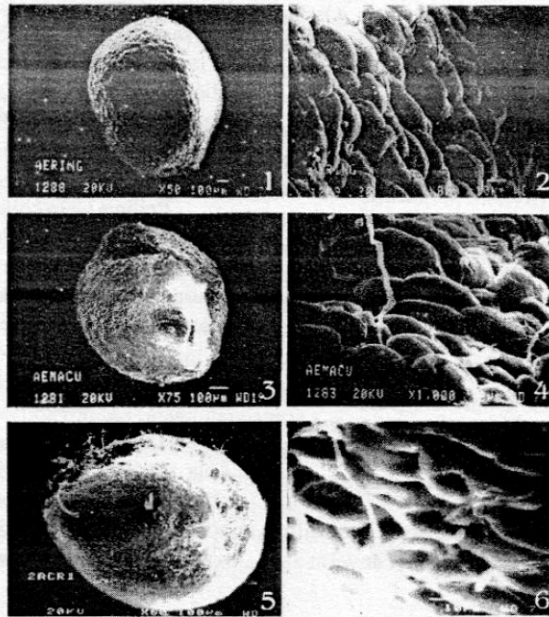
#### I. *Aerides ringense* Fisher.

This perennial member of genus *Aerides* Lour. was characterized by coriaceous, linear-oblong leaves with unequal rounded lobe at apex and very often mottled with deep purple colour spots. White flowers tinged with pale

(44)



PART-II



Explanation of Plates :

PLATE – I

*Aerides ringens* Fisher. (Text. Fig. 1-4)

1. Entire plant with roots, sheathed stem, coriaceous, channeled leaves bilobed at the apex and inflorescence.
2. Raceme inflorescence showing flowers with lip, anther and spur.
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 showing roots, thick stem. Leaves channeled, coriaceous, mottled with purple with two unequal rounded lobes at the apex, inflorescence simple raceme.
6. Raceme inflorescence showing flowers with lip, anther and spur.
7. Enlarged view of a flower. (lateral view)
8. Enlarged view of a flower. (Front view)

*Aerides crispum* Lindl. (Text. Fig. 9 - 10)

9. Entire plant with roots, stem, oblong leaves with two unequal rounded lobes at the apex and an inflorescence.
10. Enlarged view of a flower. (Front view).

PLATE – II

1. *Aerides ringens* Fischer, Showing ovate to obovate pollinium along with the hairy structures under SEM. (X 50)
2. *Aerides ringens* Fisher, Showing enlarged view of a wall of pollinium formed by overlapping sub-rectangular cells under SEM. (X 800)
3. *Aerides maculosum* Lindl. Showing oval shaped pollinium under SEM. (X-75)
4. *Aerides maculosum* Lindl. Showing enlarged view of wall of pollinium formed by irregularly rectangular cells overlapping each other under SEM. (X 1000)

5. *Aerides crispum* Lindl. Showing a pollinium under SEM. (X 60)

6. *Aerides crispum* Lindl. Showing an enlarged view of wall of pollinium formed by sub-rectangular cells overlapping each other and with a depression at the centre. (X 1300) mauve lilac colour and present in the form of raceme inflorescence. This corticolous orchid was growing on the bark of the branches of *Mangifera indica* Linn. and was collected from Panvel.

Palynological observations:

Under L.M. : Pollinia 2 in number, waxy in nature and circular.

Under SEM : Pollinium hairy, ovate to obovate in structure. With large slit. (X 50) Cells on its wall are smooth, overlapping with each other and sub-rectangular with scar as on potato tuber. (X 800).

2. *Aerides maculosum* Lindl.

Said taxon was characterized by having linear-oblong, channeled, coriaceous, green-mottled leaves with purple colour and ending into two unequal rounded lobes. Racemose inflorescence possesses flowers flushed with pink mauve. This corticolous orchid was growing on the bank of the branches of *Mangifera indica* Linn. at Panvel. Palynological observations.

Under L.M. : Pollinia 2, each 1 mm broad 1.5 mm long, waxy with long caudicle and with long glandular hairs.

Under SEM.: Pollinium oval in shape with slit like aperture. (X 75) Cells on the surface of the wall of pollinium were irregularly rectangular, 40  $\mu$  long, 15  $\mu$  broad and overlapped with each other. (X 1000).

3. *Aerides crispum* Lindl.

Plant is characterized by its long length

(20-25 cms), very short stem, covered by sheath of decayed leaves. It possess very long, slender, roots clasping the tree closely. Oblong leaves are 10-20 cm in length and coriaceous in texture. A long paniced receme possesses sweet fragrant pale-pink flowers. This corticolous orchid was collected from branches of tall trees from Khandala and Mahabaleshwar.

#### Palynological observations.

Under L.M. : Pollinia 2, circular, very small in size.

Under L.M. : Pollinia 2, circular, hairy with vertical slit as an aperture. (X 60). Cells on the wall of pollinium were sub-rectangular with a depression in the centre and overlaped each other. (X 1300)

Glandular hairs which are present on the surface of pollinia of all these three species under investigation play important role as a connecting threads for holding pollen-grains together. Connecting threads (Glandular hairs) are of elasto-viscin<sup>3</sup> in nature, irregular and uneven in thickness. They seem to hold the pollinia segments together. They seem to bind the pollen cells together with a pollinia, besides adding to a ornamentation of pollinium surface. There is another possibility for the presence of these glandular hair that they might be helping in swelling of pollinia on the stigmatic surface by conducting the moisture from stigmatic surface to pollinia for the purpose of pollination<sup>5</sup>

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