

Palynological observations of some corticolous orchids from Maharashtra under SEM

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Palynological study of three different taxa, viz., *Eria dalzellii* Lindl., *Rhynchosstylis retusa* (L) Bl. and *Oberonia brunoniana* Wight using SEM has been made. All these three taxa have monoaperturate condition with ring-like annulus along with uneven disrupted projections. They also exhibit variation in density of excrescence. Dense rugulate excrescence is noted in *R. retusa* (L) Blume and sparse rugulae in *E. dalzellii* Lindl. But intermediate type of density of rugulate excrescence is observed in *O. brunoniana* Wight.

Key words : Monoporate ; Excrescence; Annulus

INTRODUCTION

Orchidaceae, a highly evolved family of monocots, covers 7-9% of the population of flowering plants and 40% of monocots (Abraham 1981). This interesting group has gained considerable importance in cut flower industry. This fascinating group of flowering plants has been ignored for palynological study under Scanning Electron Microscope. Results of studies on this group. Under SEM and TEM can be made use of for ascertaining inter-relationship in the diversity of orchids. Keeping this in mind, it was considered worthwhile to carry out palynological work on the three corticolous taxa of orchids, viz., *Eria dalzellii* Lindl. *Rhynchosstylis retusa* (L) Bl and *Oberonia brunoniana* Wight from different localities of Western Ghats in Maharashtra.

MATERIAL AND METHODS

The material was collected from different localities of Western Ghats (Khandala, ht 677 m. Panvel at sea level, Castle rock, ht 900 m. alt) from Maharashtra. Pollen grains were studied under LM for their colour,

shape, size etc. SEM study of pollen grains of the orchids was conducted under Electron Microscope Jeol 1200 Ex of 1982 at the Laboratory of RSIC of Punjab University, Chandigarh.

After teasing the pollinia, pollen grains were collected and mounted on a double metallic stub with gold sputter coater for 5 min for coating the material. The material was then processed for scanning under electron microscope.

Observations

Eria dalzellii Lindl. This very small corticolous orchid can be recognized by the presence of flattened button-like pseudobulb, oblanceolate to oblong leaves, green flowers with yellow tinge, pollinia pyriform, 8 in number. The said endemic taxon was collected from Khandala.

Palynological Observation

Under L. M.

Presence of eight ovate to pyriform pollinia, narrow at one end. Pollens very small, circular or oval.



Plate I : 1. *Eria delzellii* Lindl. Entire plant with disc-like flattened stem and inflorescence, 2. *Oberonia brunoniana* Wight, Entire plant showing coriaceous pendant leaves with inflorescence; 3. *Rhynchosstylis retusa* (L.) Bl. Entire plant with inflorescence; 4. *Rhynchosstylis retusa* (L.) Bl. Enlarged view of garland-like inflorescence.

Under SEM

Pollens are circular to oval, monoporate with rugulate excrescence and 2.5-3 μm in diameter. Ring-like annulus. Operculum if formed by dissected flat pad-like structure. Projections in it are of various sizes.

2) Rhynchosstylis retusa (L) Dl. (Foxtail orchid)

This corticolous orchid is characterized by having woody stem, covered with old leaf bases, 20-30 cm long. Leaves distichous, strongly keeled, leaf-apex blunt, unequally lobed. Flowers densely arranged like a garland, pink, white and deep magenta in colour; spur laterally compressed and saccate. It was collected from Panvel.

Plynological Observation

Under L.M.

Pollinium circular. Pollen is very small and circular.

Under SEM

Pollinium is yellow coloured and circular long with granulate surface. Pollen is monoporate circular or slightly ovate in shape. 22 x 3 μm . Sporoderm is densely rugulate. It possesses circular ring-like annulus 1 μm in diameter. Operculum is disciform.

PALYNOLOGICAL OBSERVATIONS OF SOME CORTICOLOUS ORCHIDS FROM
MAHARASHTRA UNDER SEM

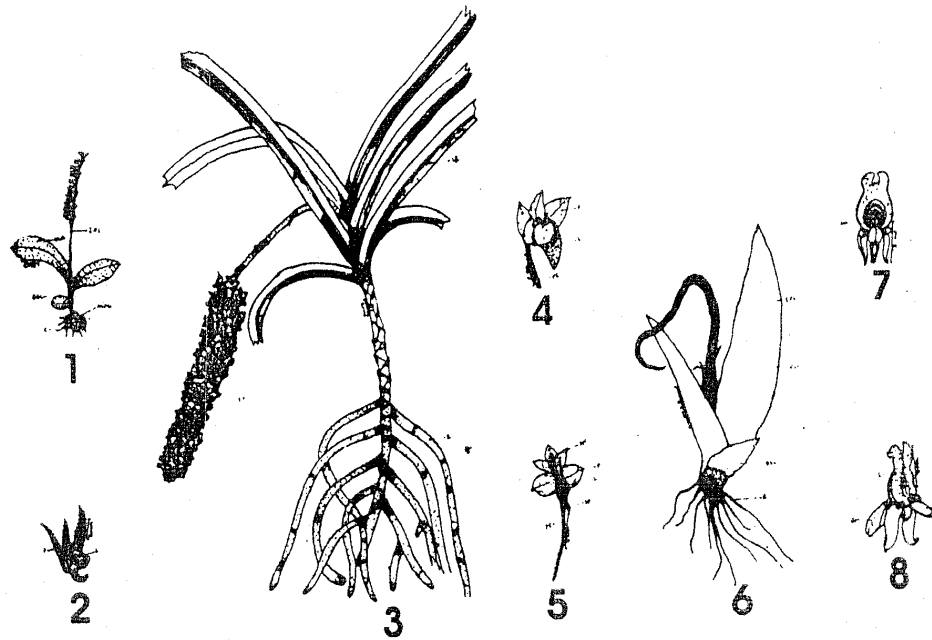


Plate 2 : 1. *Eria dalzellii* Lindl. (Text Figs 1-2). 1) Entire plant showing disc-like stem and raceme inflorescence; 2. Enlarged view of entire flower; 3) Text figure of *Rynchosstylis retusa* (L.) Bl. (Text Figs 3-5) showing entire plant with pendant garland inflorescence; 4) Flower (enlarged view); 5) Flower (L.S.); 6. Text figure *Oberonia brunoniana* Wight, (Text Figs. 6-8). Entire plant with rat-tail like inflorescence; 7. Entire flower; 8. Flower (lateral view).

3) *Oberonia brunoniana* Wight (Rat's tail orchid)

This robust species of *Oberonia* differs from other orchids in having olive brown succulent and coriaceous pen dulous leaves. Inflorescence with dull orange coloured flowers in the raceme.

Under L.M.

Pollinium is elongated. Pollens are very small and circular.

Under SEM

Pollinium is long and linear. Pollens monoporate, circular to oval in shape and with rugulate excrescence. Annulus is ring-like, 1.2 μ m in diameter. Operculum disciform with uneven projections.

Results

Palynological aspect, viz. aperture, number of aperture, pollen size and architecture of sporoderm, provides important parameters for establishing inter-relationship among taxa. The aperture of pollens in all the three species of different genera are

monoporate, with ring-like annulus along with uneven disrupted projections. The sporoderm pattern also varies. Rugulate excrescence is distinct in all the three investigated taxa. The dense type of *Rhynchostylis retusa* (L) Bl. whereas sparse rugulae are present in *Eria dalzellii* Lindl. The density of rugulae in *Oberonia brunoniana* Wight is more or less intermediate.

Acknowledgments

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Reference

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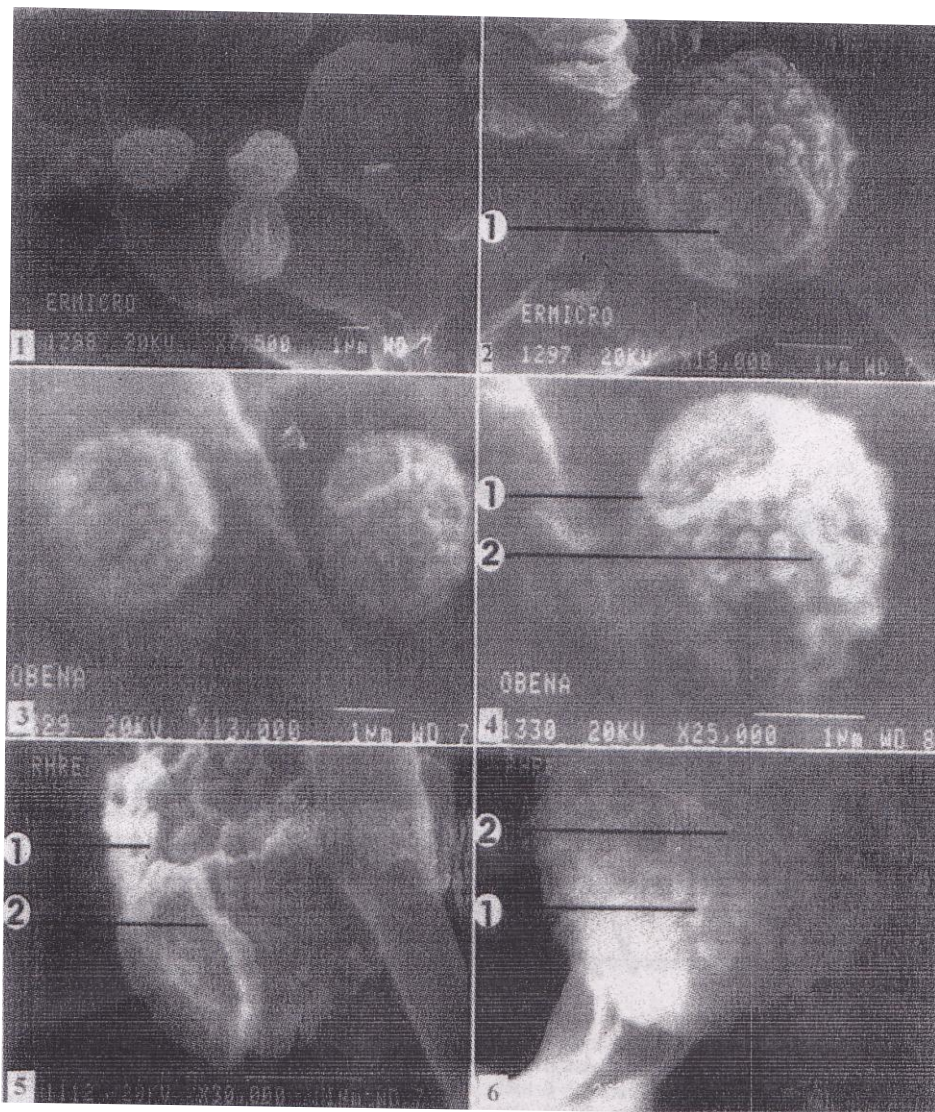


Plate 3 : 1. *Eria dalzellii* Lindl. (showing photomicrographs of pollen) (photomicrographs 1-2) showing group of pollen grains (x 7500); 2. Enlarged view of pollen showing rugulate excrescence and (1) annulus ring (x 19,000); 3&4. *Oberonia brunoniana* Wight, photomicrographs showing group of pollen. (x 13000) 5. Enlarged view of pollen showing (1) annulus ring (x 25000), (2) rugulate excrescence; 6; *Rhynchostylis retusa* (L) Bl. (photomicrographs 5-6). (1) Rugulate excrescence. (2) Annulus ring.