Study of pollinium of three beautiful Indian Orchids under electron microscopy

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Palynological observations of three corticolous Orchids, namely, Dendrobium transparens Wall ex Lindl. Vanda tessellata (Roxb) Hook. f. ex G. Don and Cottonia penduncularis (Lindl.) Reich. f. were made under SEM with reference to the pollinia. Observations indicate that these pollinia vary in their shape, size, diameter and cellular structure. Connecting threads of elasto-visin were observed in Cottonia peduncularis (Lindl.) Reich. f.

Key words: Muri; Elastovisin thread; SEM

INTRODUCTION

Orchidaceae is one of the most highly evolved as well as most successful families of the monocots. This large family covers 7-9 % population of flowering plants and 40% of the monocot. (Abraham, 1981). The various morpho-taxonomical, environmental, anatomical, physiological as well as genetical peculiarities displayed by this group have attracted the attention of the orchidologists all over the world. This strange fascinating group is also having interesting palynological peculiarities.

Much of the work on pollinia of orchids under SEM has been done in western countries, pinkish white flowers on leafless node. Lip narrow at the base. elliptic, pale pink with two purple blotches with tattered rim. Pedicel 3.5 cm. Sepals 3.5 cm in length but very.06 cm in breadth. Petals 3.5 cm in length and 1.5 cm little work has been done in India (Arora 1985, Kapil and in breadth. The said orchid is confined to western and eastern Himalaya and Meghalaya.

The corticolous ash-coloured Orchid possesses a slender, pendant stem. Leaves 7.5 cm in length, 2.5 cm in width, lanceolate in shape. Two - to three attractive, pinkish white flowers on leafless node. Lip narrow at the base. elliptic, pale pink with two purple blotches with tattered rim. Pedicel 3.5 cm. Sepals 3.5 cm in length but very.06 cm in breadth. Petals 3.5 cm in length and 1.5 cm little work has been done in India (Arora 1985, Kapil and in breadth. The said orchid is confined to western and eastern Himalaya and Meghalaya.

OBSERVATIONS

1. Dendrobium transparens Wall ex Lindl.

The cortex of the orchid is densely furnished with trichomes. The ovary is superior and loculicidal. The pollinia are attached to the column by connecting threads of elastos-visin. The pollinia are semilunar in shape and 1.5 mm in length, 6 mm in breadth. Surface cells smooth, varied in shape. (Irregularly rectangular to polygonal in shape) (x 1000). Cells 10-25 mm in length, 10-20 mm in breadth and overlap each other (x 3000).

MATERIAL AND METHODS:

The material was collected from various localities in India. Dendrobium transparens Wall ex Lindl. was collected from Sikkim, Vanda tessellata (Roxb.) Hook. f. ex G. Don from Castle rock (at altitude of 900 m) near Goa, and Cottonia peduncularis (Lindl.) Reich. f. from Yawoor of Thane (at altitude 333.3 m) in Maharashtra. SEM study of pollinia of the three orchids plants and 40 % of the monocot. (Abraham, 1981). The was conducted under ESEM at RSIC of IIT Mumbai. The model used was QUANTA 2000 FFI.
2. **Vanda tessellata** (Roxb.) Hook. f. ex G. Don.  

**DISCUSSION**

Observations under SEM of the three species of **DISCUSSION**

<table>
<thead>
<tr>
<th>Species</th>
<th>Pollinia Shape</th>
<th>Pollinia Size</th>
<th>Surface Cells</th>
<th>Depressions</th>
<th>Connecting Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dendrobium transparens</strong></td>
<td>Semilunar</td>
<td>1.5 mm x 0.6 mm</td>
<td>Rectangular to polygonal</td>
<td>Distinct</td>
<td>None</td>
</tr>
<tr>
<td><strong>Vanda tessellata</strong></td>
<td>Circular</td>
<td>1.1 mm</td>
<td>Rectangular to polygonal</td>
<td>Distinct</td>
<td>None</td>
</tr>
<tr>
<td><strong>Cottonia penduncularis</strong></td>
<td>Subpandurate</td>
<td>900 mm x 600 mm</td>
<td>Rectangular to polygonal</td>
<td>Distinct</td>
<td>Present</td>
</tr>
</tbody>
</table>

There is a great range of variation in the shape and size of pollinia. Pollinium in **Dendrobium transparens** is semilunar, 1.5 mm in length and 0.6 mm in breadth. In **Vanda tessellata** with violet inside. Midlobe lilac, blue. Anther 4 x 2 mm(Roxb.) Hook f. ex. G. Don. pollinium is circular in oblong-obovate, truncate base, apex mucronate, white,shape., 1.1 mm in diameter, but pollinia in **Cottonia penduncularis** 2, waxy, globular. The said orchid taxon is ispenduncularis (Lindl.) Rich f. are quite different. They are confined to Madhya Pradesh, Gujarat, Konkan andsubpendurate, retuse at apex, 900 mm in length and North Canara.

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