SEM STUDIES ON THE OBSERVATIONS OF POLLINIA OF TWO TERRICOLOUS ORCHIDS FROM MAHARASHTRA

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Key words : Pollinia, Orchid, diversity, SEM.

Present paper deals with the study of Pollinia of two terricolous Orchids viz. Habenaria grandifloriformis and McCann and Habenaria gibsonii Hook. f. under_SEM. Observations indicate that there is a resemblance in the shape, size and structure of the Pollinia of these two Orchids despite of much divers their morpho structure.

INTRODUCTION

Variation in the structure of floral parts in Orchid facilitate the pollination. Importance of information relating to the specialized structure such as Pollinia in Orchid and its role in pollen organization is being increasingly realized (Arora. 1985, Kapil and Arora 1990, Gupta 2001, Mulgaonkar, 2003, 2003, 2005). Present paper deals with observation of SEM based ultrastructural details of pollinia surface in two terricolous orchids - *Habenaria grandifloriforms* Blatt. & *McCann.* & *Habenaria gibsonii* Hook. f. with a particular emphasis on the sporoderm pattern.

MATERIAL AND METHODS :

The material was collected from Khandala (Ht. 667 mts. Alt.) in Maharashtra. The SEM study of the surface of Pollinium of the Orchids was conducted under Electron Microscope Jeol 1200 Ex of 1982 at the Laboratory of RSIC of Punjab University, Chandigarh. The pollinia were collected and mounted on a double metallic stub. Pollinia were mounted on a gold sputter cotter for five minutes for coating and material. Material was then processed for scanning under electron microscope.

OBSERVATIONS

1. *Habenaria grandifloriformis* Blatt. and *McCann.* This terricolous monsoon, ephimarage was characterized by having underground ellipsoidal whitish tuber, suborbicular single leaf and whitish flowers arranged in raceme.

Under SEM :- Glands of pollinia were large and orbicular. Pollinia were sac like, oval, broad at one end and narrow at the other end. Pollinia sac like more or less oval, narrow at one end and broad at the other end with 133mm breadth and 285 mm length. (x 2200)

2. *Habenaria gibsonii* Hook. F. - Said terricolous, endemic taxon was characterized by having underground tuber with 1-2 feet all leafy shoot. Lower smaller leaves were closely appressed to stem. Upper leaves were somewhat larger (5-10 cm x 1.7 - 3.1 cm) ovate-oblong, acute acuminate with sheathing leaf-bases. Leaves were whitish on the back side. Greenish white flowers were arranged in lax raceme.

Under L.M. - Pollinia were small clustered and sac like with narrow-end.

Under SEM - Pollinia were observed in a cluster, sac-like narrow at one end,

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280 mm in length and 120 mm in breadth, (x 150). Cells on the surface on Pollinium were sub-rectangular to polygonal or reticulate in shape with depression in the cen in the centre of each cell (X 450). Retipilate thickening was present on the cells. Retipilate thickening was having muri with distinct columella and were fused with each other and formed bridge like connections in between them. Muri were uneven (x 8000).

DISCUSSION

This polynological observation under SEM has helped to identify the interrelationship and resemblance in taxa at various lvel with few exceptions. The taxon viz *H. grandifloriformis* Blatt and *McCann.* possess tuber and a single orbicular leaf closely attached to the ground, terminating into while raceme, whereas *H. gibsonii* Hook. F. possess small tuber ending into erect shoot with distichous alternate leaves terminating into white flowered raceme. Lower leaves smaller than upper ones. All leaves were whitish at the back. Despite of these diversity in morpho-structure of these two taxa, present observation under SEM reveals close resemblance in pollinia in relation to their shape, size, as well as similarity in the ultra structure of the cells.

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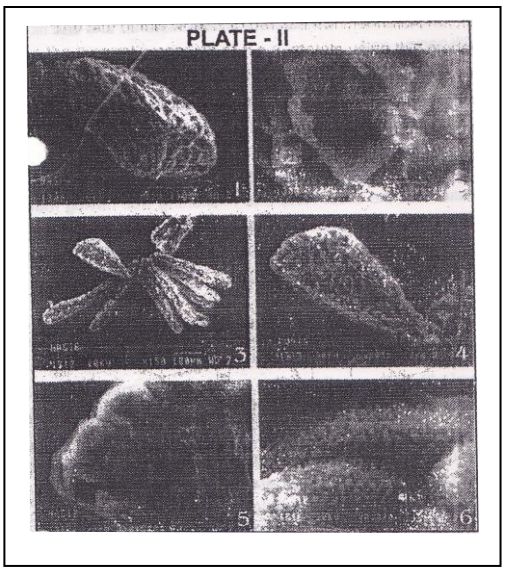

PLATE - I

1. *Habenaria grandifloriforms Blatt and McCann. (Text fig. 1 to 3)*
1. *Entire plant with ellipsoidal tuber, suborbicular leaf and inflorescence.*
2. *Enlarged view of a flower (Lateral view)*
3. *Enlarged View of flower (Front view)*
2. *Habenaria gibsonii Hook f.*
   (Text fig 4 to 6)
4. *Entire plant with cylindrical tuber, adventitious roots, small basal leaf, upper leaves and inflorescence.*
5. *Enlarged view of a flower (Lateral view)*
6. *Enlarged view of a flower (Front view)*

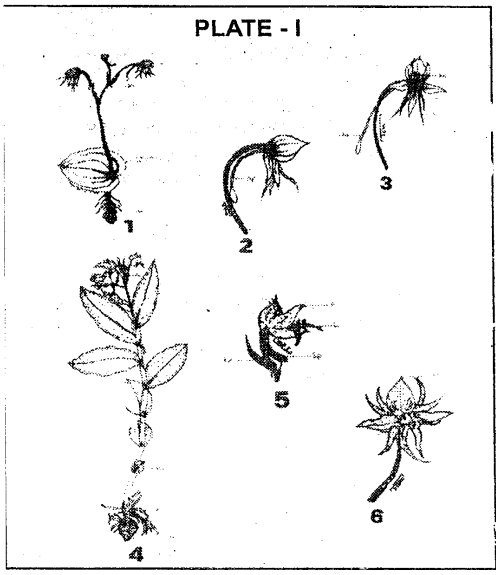

PLATE - II

1. *Habenaria grandifloriforms Blatt and McCann*
   (Text fig. 1 to 2)
1. *Sac like pollinium with rectangular to polygon*
   ells under SEM. (x 350)
2. *Enlarged view of pollinium under SEM. (x 220*
3. *Habenaria gibsonii Hook. f.*
   (Text fig 3 to 6)
3. *A group of Sac like pollinia under SEM. (x 150*
4. *Enlarged view of a Pollinium formed by subrectangular to polygonal or reticulate cells under SEM. (x 450)*
5. *Enlarged view of a Pollinium (x 1600)*
6. *Much enlarged view of the surface wall of pollinium showing retipilate thickening. (x - 8*