

RESEARCH ARTICLE

LM and SEM Studies on the pollen morphology of family Anacardiaceae from Chandrapur and Gadchiroli districts of Maharashtra State

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ABSTRACT

The present paper deals with LM & SEM studies on the pollen of Anacardiaceae collected from Chandrapur & Gadchiroli districts of Vidarbha region of Maharashtra state. The pollen morphological characters of Anacardiaceae indicate that the family is significantly eurypalynous. Pollen morphology of four (4) sp. of the family Anacardiaceae belonging to 3 genera viz. *Anacardium*, *Buchanania*, *Lannea* has been investigated using Light and Scanning Electron Microscope. Pollen grains are radially symmetrical, isopolar, subprolate to prolate spheroidal. Ornamentation of the exine is striate, striate-reticulate.

Key words : Pollen grains, morphology, aperture, ornamentation, LH, SEM.

INTRODUCTION

The family Anacardiaceae is a tropical family, represented by 55 genera and approx. 500 sp. The members of this family are mostly trees and shrubs, with a resinous bark and a milky sap. Leaves alternate, simple or compound, exstipulate. Flowers hermaphrodite or unisexual, actinomorphic. Stamens usually 5-10. Fruit a drupe. The chief genera of the family are *Rhus*, *Pistacia*, *Mangifera*, *Anacardium*. Pollen morphology of family Anacardiaceae has been studied by many workers viz. Anjum and Quaiser (2010); Erdtman (1952; 1971), Faegri and Iverson (1964); Moore *et al.* (1991).

MATERIALS AND METHODS

Polliniferous material (mature anthers) was mostly collected in small vials and fixed in 70% alcohol during field trips. Pollen grains taken from dried herbarium material was kept in 70% alcohol for one hour before processing. The pollen slides were prepared following the method of acetolysis of Erdtman (1952-1960). For scanning electron microscopy, acetolysed pollen grains were transferred to absolute alcohol, mounted on specimen stubs first vacuum sputtered and then coated with Gold-palladium (100Å thick).

The pollen grains were scanned on Cambridge sterioscan 250 MK. Pollen grains are also studied under the light microscope. The SEM observations on the plants selected for the study is given after LM observations. The size and shape of pollen grains and the dimensions of various features are all useful in identification. The measurement & ratios stated has been averaged from observations on at least 6 and more upto 10 grains. While describing pollen morphology a definite sequence is followed viz. polarity, symmetry, aperture condition, shape & size of pollen grain, exine stratification and sculpturing.

The place of collection is mentioned in the parenthesis, just below the name of the genus. The different terminologies used in the description are according to Erdtman (1952; 1971) and Faegri and Iversen (1964).

RESULTS AND DISCUSSION

Anacardium occidentale L. [Fig. 1]

(Bramhapuri, Laheri, Bedgaon, Bhamragarh)

Grains isopolar, radially symmetrical, 3-colporate, colpus length 19.9 μ [19.5 -21 μ], ora lalongate, 4.9 μ [4.5-6 μ], rather small, 31.5 μ x 23.4 μ , [30-33 μ x 22.5-25.5 μ], subprolate, exine thick, 3 μ , sexine is thicker than nexine, striate-reticulate, distinct LO pattern.

Buchanania axillaris (Desr.) Ramam. [Fig. 1 and 2]

(Bamni {Sironcha})

Grains isopolar. radially symmetrical, 3-colporate, colpus length 24.4 μ (24-25.5 μ), ora lalongate, 3.9 μ [3-4.5 μ], rather small, 30 x 24 μ [28.5-31.5 x 24 μ], subprolate, exine thick, 3 μ , sexine is thicker than nexine, rather finely reticulate, distinct LO pattern

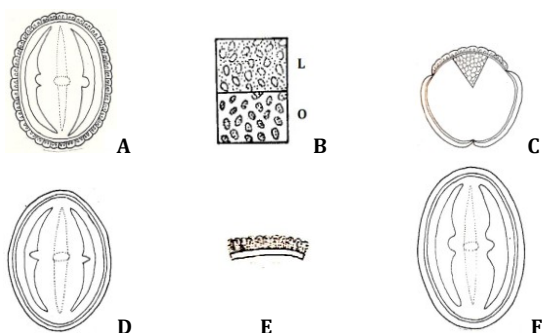


Fig. 1- A, B, C : *Anacardium occidentale* X 1000;
D, E, : *Buchanania axillaris* F: *Buchanania cochinchinensis*

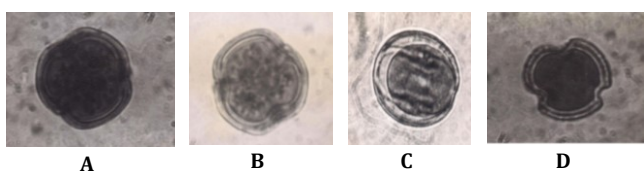


Fig. 2- A: *Buchanania axillaris*; B: *Buchanania cochinchinensis*; C & D: *Lannea coromandelica* X 800

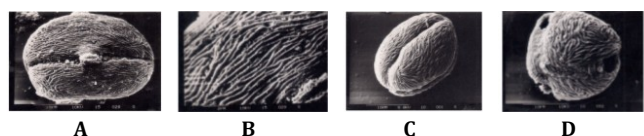


Fig. 3- A & B: *Buchanania cochinchinensis*;
C & D: *Lannea coromandelica* X 800

Buchanania cochinchinensis (Lour.) Almeida

(Bhamragarh).

Grains isopolar. radially symmetrical, 3-colporate, colpus length 24.9 μ (22.5-30 μ), ora lalongate, 4.5 μ , grains rather small, 30 x 24.9 μ [27-33 x 24-27

μ], subprolate, exine thick, 3 μ , sexine is thicker than nexine, finely reticulate, mesh size 1.5 μ distinct LO pattern [Fig. 1, 2, 3]

Lannea coromandelica (Houtt.) Merr.

(Pendhri, Jambhulkheda)

Grains isopolar. radially symmetrical, 3-colporate, colpus length 16.5 μ (15-18 μ), ora slightly lalongate, 3.7 μ [3-4.5 μ] grains small sized, 22.9 x 21.4 μ [22.5-24 x 21-22.5 μ], prolate-spheroidal, exine thick, 4.5 μ , sexine as thick as nexine, sexine 2.2 μ , nexine 2.2 μ , LO pattern not clear. (Fig. 3).

The pollen grain ornamentation for the pollen of *Buchanania cochinchinensis* & *Lannea coromandelica* were studied under Scanning Electron Microscope (SEM).

The pollen grains of *Buchanania cochinchinensis* under light microscope (LM) showed finely reticulate nature of the exine. However, under the SEM the pollen grains of *Buchanania cochinchinensis* (Lour.) Almeida and *Lannea coromandelica* (Houtt.) Merr. confirmed the striate-reticulate nature of the exine. The aperture condition is the same for all the taxa under present study. It is 3-colporate with a little variation in the length of the colpus. It ranged from 16.5 μ to 24.9 μ . Exine thickness also shows variation. In *Anacardium occidentale* L. and in *Buchanania sp.* the exine is thick. Sexine is thicker than nexine. In *Lannea coromandelica* (Houtt.) Merr. the exine is thick. In this taxon the sexine is as thick as nexine.

CONCLUSION

The pollen morphology of family Anacardiaceae shows that it is a eurypalynous family

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