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POLLEN MORPHOLOGY OF FEW GENERA OF BRASSICACEAE (*CHEIRANTHUS, ERUCA, CORONOPUS, IBERIS*) FROM PAKISTAN

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ABSTRACT

Pollen morphology of 4 species belonging to 4 genera of the family Brassicaceae from Pakistan has been examined by the light microscope. Pollen grains are 3-colpate, isopolar, prolate, prolate spheriodal, speriodal, subprolate, tectum reticulate. However, there is variation in thickness of exine.

Key Words: Pollen morphology, Brassicaceae, Pakistan.

INTRODUCTION

Pollen morphology can be useful in supporting taxonomic suggestion (Clark *et al*., 1980). Application of palynology is very diverse and multidisciplinary. However, the role of pollen morphology is significant in taxonomic data for classification. The pollen characters have proved useful for systematic purposes in various plant families. Tomsovic (1997) utilized pollen character as additional information for systematic studies. Huang (1972) also used pollen characters for systematic purpose.

The Brassicaceae is one of largest family among the angiosperms with the world wide distribution having 3000 species (Meberley, 1987). Of these only 90 genera and 250 species are reported from Pakistan, including 5 genera and 14 species which are cultivated (Jafri, 1973).

Pollen morphology of the family Brassicaceae has been examined by Erdtman (1966). Sharma and Nair (1973), Carter (1975), Moore and Webb (1978), Appel and Al-Shehbez (2002) and Khan (2003, 2004) examined pollen morphology of the genus *Arabidopsis, Allyssum* and *Thlaspi*. In the present paper pollen morphology of 4 species representing 4 genera of the family Brassicaceae viz., *Cheiranthus, Eruca, Coronopus, Iberis* has been examined by light microscope.

MATERIALS AND METHODS

The palynological investigation were based on Herbarium material obtained from Karachi University Herbarium (KUH) and National Herbarium Rawalpindi (RAW). The pollen slides were prepared by the method of acetolysis as suggested by Erdtman (1952). All the slides have been deposited in the Pollen Herbarium, Department of Botany, University of Sindh. Measurement of about 10 grains of each species were taken and photomicrographs made on Kodak Panatomix, 16 DIN roll under oil immersion.

The measurement, are based on 15-20 readings from each specimen. Pollen diameter, polar axis (P), and equatorial diameter (E), aperture size apocolpium, mesocolpium and exine thickness were measured. The terminology used for pollen description has been borrowed from Erdtman (1952), Faegri and Iverson (1964).

General pollen characters of the genera, observations

1. *Coronopus* J.G. Zinn. Fig. 1 (A-B)

Pollen grain, circular, inter sub angular prolate, spheriodal to spheriodal, small size, polar axis 20 (22) 23 µm, equatorial diameter 18 (20) 22 µm, mesocolpia 14.3 µm in diameter, apocolpia 5.5µm in diameter. 3-colpate colpi 13.2 x 2.2 µm long, exine 1.1-4.4 thick, semitectate, hetrobrochate, tectum reticulate.

Species included: *Coronopus didymus* (L.) Smith

2. *Cheiranthus* Linn. Fig. 1 (C-D)

Pollen grains isopolar, spheroidal, small size, polar axis 18 (23) µm equatorial diameter 16 (21) 23 µm, mesocolpia 13.2 µm in diameter, apocolpia 5.5 µm in diameter. 3-colpate, colpi 13.52 x 2.2 µm long, exine 1.65-3.3 µm thick, hetrobrochate, tectum reticulate sexine as thick as nexine.

Species included: *Cheiranthus cheiri* Linn.

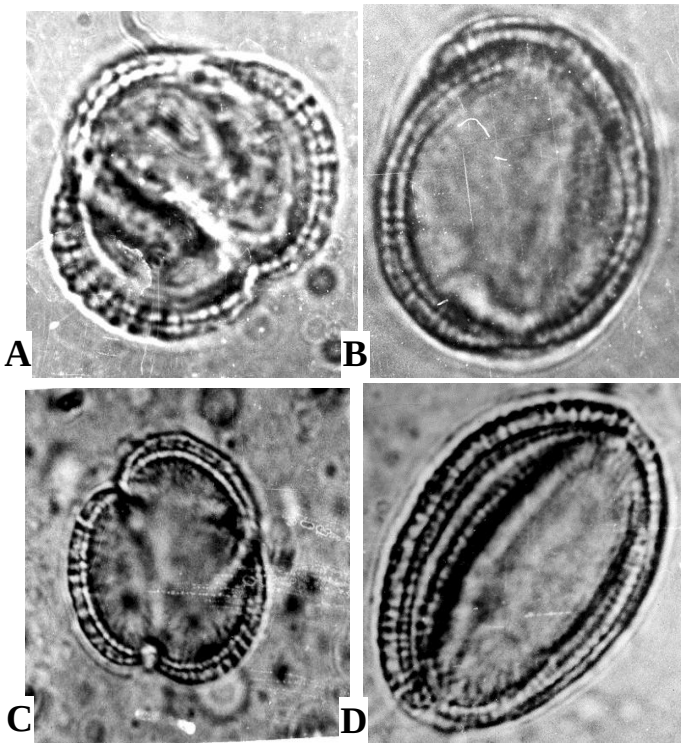

Fig. 1A-D. Light micrograph of pollen grains *Coronopus didymus*: A. Polar, B. Equatorial view. *Cheiranthus cheiri*: C. Polar view, D. Equatorial view.

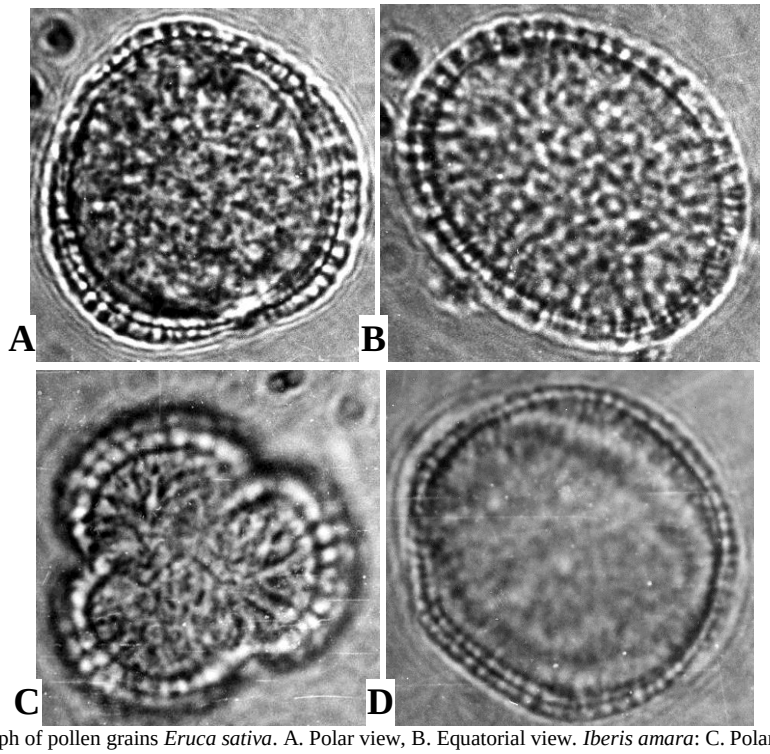

Fig. 2A-D. Light micrograph of pollen grains *Eruca sativa*. A. Polar view, B. Equatorial view. *Iberis amara*: C. Polar view, D. Equatorial view.

3. *Eruca* Mill. Fig. 2 (A-B)

Pollen grains, isopolar, prolate, rather small size, polar axis 21(28) 30 µm, equatorial diameter 16 (22) 26 µm mesocolpia 16 µm in diameter, apocolpia absent. 3-colpate, colpi 17 x 1.1 µm long, exine 1.1-3.3 µm thick tectum reticulate, sexine much thicker than nexine.

Species included: *Eruca sativa* Mill.

4. *Iberis* Linn. Fig. 2 (C-D)

Pollen grains isopolar, prolate spheriodal, subprolate, rather small size, polar size polar axis 22 (26) 28 µm equatorial diameter 17 (22) 27 µm mesocolpia 22 µm in diameter, apocolpia absent due to the long colpi. 3-colpate, colpi 19.8 x 2.2 µm exine 1.55-3.3 µm thick, semitected, tectum, reticulate, sexine are less as thick as nexine.

Species included: *Iberis amera* Linn.

Comment

Brassicaceae is stenopalynous family. Pollen grains are prolate, prolate spheroidal, subprolate, 3-colpate often 3-4 colpate and reticulate tectum. Apple and Al-Shehbez (2002) also reported tricolpate reticulate pollen in the family Brassicaceae, Erdtman *et al.* (1963) divided the species of Brassicacease into two pollen types on the basis of exine thickness. Moore and Webb (1978) classified the family tricolpate with reticulate pollen Khalik (2002) divided the family into three pollen type. However, on the basis of shape of pollen two distinct pollen types are recognized. Two genera are included in this type each representing a single species *Cheiranthus cheiri, Coronopus didymus*, which have prolate spheroid to spheroidal pollen shape, whereas the remaining two genera also include a single species, *Eruca sativa, Iberis amara*, which have prolate, prolate spheriodal, subprolate shape pollen types. These species are further divided as calpi length and exine thickness.

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