

## POLLEN FLORA OF PAKISTAN -XXXV. CORNACEAE

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### Abstract

Pollen morphology of the family Cornaceae has been examined from Pakistan by light and scanning electron microscope. Pollen grains are generally tricolporate, triangular, prolate-spheroidal with densely fossulate to foveolate tectum.

### Introduction

Cornaceae is a family comprising of 14 genera and about 90 species, distributed mostly in tropical and temperate regions, especially in N. America and Asia, rare in Africa and S. America (Willis, 1978; Mabberley, 1987). In Pakistan it is represented by *Cornus macrophylla* (Ghanzafar, 1975).

Pollen morphology of the family has been studied by Erdtman (1952), Chao (1954), Moore & Webb (1978), Ferguson (1966, 1977), Ferguson & Hideux (1976) and Eramijan (1971). In the present paper, the pollen morphology of the family Cornaceae from Pakistan has been examined by light and scanning electron microscope.

### Materials and Methods

Pollen samples were obtained from Karachi University Herbarium (KUH) or collected from the field. The pollen grains were prepared for light (LM) and scanning electron microscopy (SEM) by the standard methods described by Erdtman (1952). For light microscopy, the pollen grains were mounted in unstained glycerine jelly and observations made with a Nikon Type-2 microscope, under (E40,0.65) and oil immersion (E100,1.25) using 10x eye piece. For SEM studies, pollen grains suspended in a drop of water were directly transferred with a fine pipette to a metallic stub using double sided cellotape and coated with gold in a sputtering chamber (Ion-sputter JFC-1100). Coating was restricted to 150A. The S.E.M examination was carried out on a Jeol microscope JSM-T200. The measurements were based on 15-20 readings from each specimen. Polar axis (P) and equatorial diameter (E), aperture size, apocolpium, mesocolpium and exine thickness were measured.

The terminology used is in accordance with Erdtman (1952), Kremp (1965), Faegri & Iversen (1964) and Walker & Doyle (1976).

### General pollen characters of the family Cornaceae

Pollen grains generally radially symmetrical, isopolar, prolate - spheroidal, equatorial view elliptic, polar view triangular, colpi long with distinct ora. Tectum densely fossulate to foveolate,  $\pm$  subsilate towards colpus.

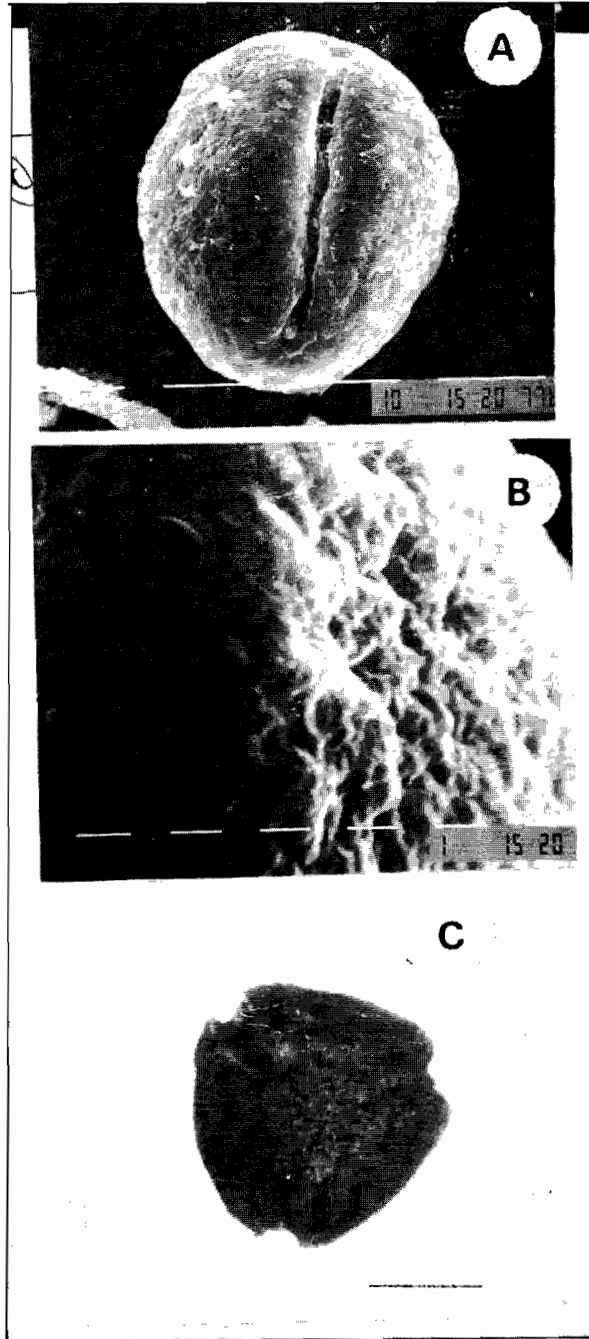


Fig. 1. Pollen of *Cornus macrophylla*: A & B = Scanning Electron micrographs: A, Equatorial view; B, Exine pattern. C & D = Light micrographs (LM): C, Polar view.  
Scale bar = A = 10  $\mu$ m; B = 1  $\mu$ m, C = 20  $\mu$ m.

**Descriptions of pollen type****Pollen class:** Tricolporate, zonoaperturate.**P/E ratio:** Suberect.**Shape:** Prolate-spheroidal.**Apertures:** Ectoaperture - colpus long, narrow, not sunken, colpi with vestibuli. Endoaperture - Ora circular distinct. Colpal membrane granulated.**Exine:** Sexine thinner than nexine.**Outline:** ± triangular in polar view and elliptic in equatorial view.**Ornamentation:** Tectum densely fossulate to foveolate, ± sub- psilate towards colpus.**Measurements:** Polar axis P(33.7-) 41.75±1.42 (-47.5)µm. Equatorial diameter E(32.5-) 38.60±1.36 (-42.5)µm. P/E: 1.08, colpi (32.5-) 37.5±1.58 (-42.5)µm long, colpal membrane subsilate. Mesocolpium (32.5-) 33.75±1.24 (-35)µm. Apocolpium (5-) 6.25±1.24 (-7.5)µm. Exine c. 2.5 µm thick, sexine thinner than nexine. Tectum scabrate-subpsilate. P.A.I: 1.14**Species included:** *Cornus macrophylla* Wall.**Discussion:** Pollen grains of *Cornus macrophylla* type is characterized by tri-zonocolporate pollen with densely fossulate to foveolate tectum. Similar type of pollen grains in the genus *Cornus* have also been reported by Ferguson (1977). The pollen grains of closely related family i.e., Nyssaceae are more or less similar to Cornaceae as both the families have colporate pollen (Erdtman, 1952).

The placement of Cornaceae within the order Cornales by Takhtajan (1969, 1980), Cronquist (1981, 1988) and Dahlgren (1983) therefore seems to be justified.

**Specimens examined:** *Cornus macrophylla*: c. 20 km from Baloytan on way to Hoshab, Tahir Ali 828 (KUH); behind Khuzdar, Abdul Ghafoor & Steve M. Goodman 4988 (KUH).**References**

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