

Palynology in Relation to Taxonomy:

Palynology is the study of Pollen grains. Fossil spores are found in peat and other sediments, in lignite, coal and shales. They are evident since Pre-Cambrian times hundreds of millions of years ago.

Pollen grains morphology plays an important role in taxonomic classification. Pollen grains may be vesiculate (with air sacs); saccate or non saccate, fenestrate or non-fenestrate, colpate (furrows or colpi present) or porate (apertures present at the poles).

According to number, position and character of apertures (NPC) pollen are of different types

Number: 1-many

Position: proximal, distal, zonal or global

Character: Colpate (furrow), porate (circular) and inaperturate

Pollen characters considered for taxonomic analysis are:

- (i) Pollen unit type,
- (ii) Pollen grain polarity,
- (iii) Pollen grain shape,
- (iv) Pollen grain symmetry,
- (v) Pollen grains nuclear state,
- (vi) Pollen wall architecture,
- (vii) Exine stratification,
- (viii) Exine structure,
- (ix) Exine sculpture,
- (x) Aperture type,
- (xi) Aperture number,
- (xii) Aperture position,
- (xiii) Aperture shape, and
- (xiv) Aperture structure.

Pollen are generally associated in tetrads in Angiosperms. Among examples of the role of pollen grains in systematics is *Nelumbo* whose separation from Nymphaeaceae into a distinct family Nelumbonaceae is largely supported by the tricolpate pollen of *Nelumbo* as against the monosulcate condition in Nymphaeaceae. In family Salicaceae *Salix* has long narrowed 3-furrowed pollen, *Populus* has spherical pollen without apertures.

Depending upon palynological studies two distinct phylogenetic stocks in the dicots have been suggested. One represented by Magnoliaceae with monocolpate type and the other represented by Ranunculaceae with tricolpate type of pollen grains.

Monocots are considered to be closely related to magnolian stock on the basis of Monocolpate element. The Magnolian dicots are considered to be ancient palynologically as compared to Ranalian dicots where new apertural forms are present

(monocotylate totally absent).

Reference

- Text book of Botany. Bhattacharya, Hait & Ghosh
- <http://www.biologydiscussion.com/angiosperm/taxonomy-angiosperm/taxonomy-evidences-in-relation-to-plants-angiosperms>