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Class : 12th

Unit : 1 (Sexual Reproduction)

Chapter : Development of Seed and Fruit

Topic : Post-fertilization changes in Plants

Lecture No. - 08

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Post-Fertilization changes :

- Soon after pollination, the flower begins to fade. It is sometimes accompanied by sudden increase in respiration and ethylene production. The petals, stamens and style wither away.
- Other changes which take place are endosperm formation, embryo development, seed formation and fruit formation.

Endosperm Formation :

Endosperm is the food laden tissue which is meant for nourishment of embryo in seed plants or angiosperms.

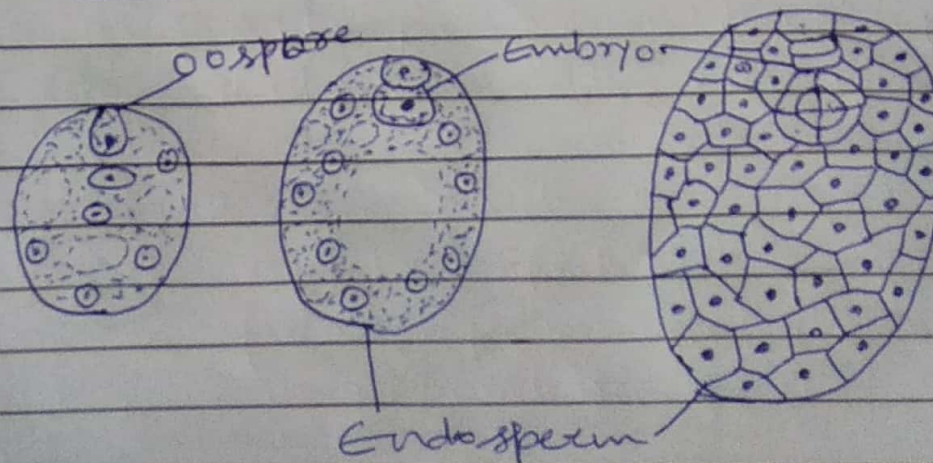
- In angiosperms, the endosperm is a special tissue, which is formed as a result of vegetative fertilization, triple fusion or fusion of a male gamete with diploid secondary nucleus of the central cell.

- Vegetative fertilization gives rise to a primary endosperm cell having a triploid endosperm nucleus.
- Depending upon the mode of its formation, angiospermic endosperm is of three types - nucleate, cellular and helobial.

(1) Nucleate Endosperm :

Nucleate endosperm is the most common type of endosperm. It is named so because it contains free nuclei in the beginning.

- Primary endosperm nucleus divides repeatedly without wall formation to produce a large number of free nuclei. A central vacuole appears in the central cell and pushes the cytoplasm containing the nuclei to the periphery.
- The cytoplasm thickens so that the vacuole decreases in size.
- It ultimately disappears. The multinucleate cytoplasm undergoes cleavage and gives rise to a multicellular tissue, e.g., Capsella bursa-pastoris.

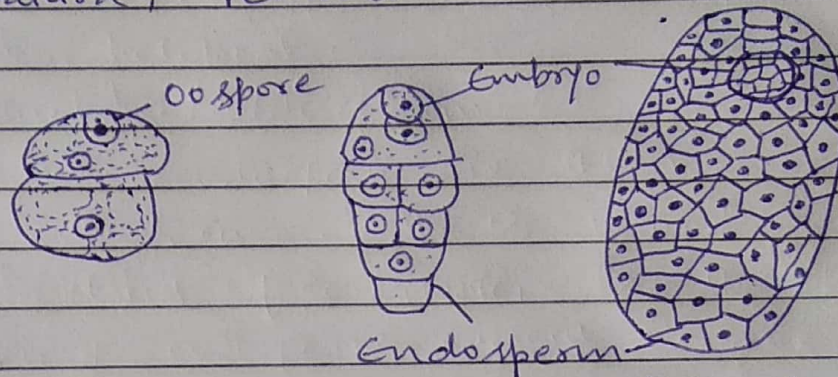


Maharaja (Fig: Formation of Nucleate Endosperm)

(2) Cellular Endosperm :

Every division of the primary endosperm nucleus is followed by cytokinesis.

Therefore, endosperm becomes cellular from the very beginning, e.g., *Datura*, *Petunia*.



(Fig: Development of cellular endosperm)

(3). Helobial Endosperm :

The first division of primary endosperm nucleus is followed by transverse cytokinesis to form two cells, micropylar and chalazal.

Further development in both the cells occurs like that of nucleate endosperm, i.e., multinucleate stage is followed by wall formation, e.g., *Asphodelus*.



(Fig: Helobial endosperm)