

Vivekanand College, Kolhapur (Autonomous)

DEPARTMENT OF BOTANY

B.Sc.II

TOPIC: ENDOSPERM

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what is Endosperm ?

- **Endosperm is a nutritive tissue found in the seeds of nearly all the flowering plants after fertilization .**
- **The endosperm is normally formed in the process of double fertilization .**

Types of Endosperm

1 . Nuclear type :-

- In this type the first division and usually several of the following divisions are unaccompanied by wall formation .
- The nuclei may either remain free or in later stages , they may become separated by walls .

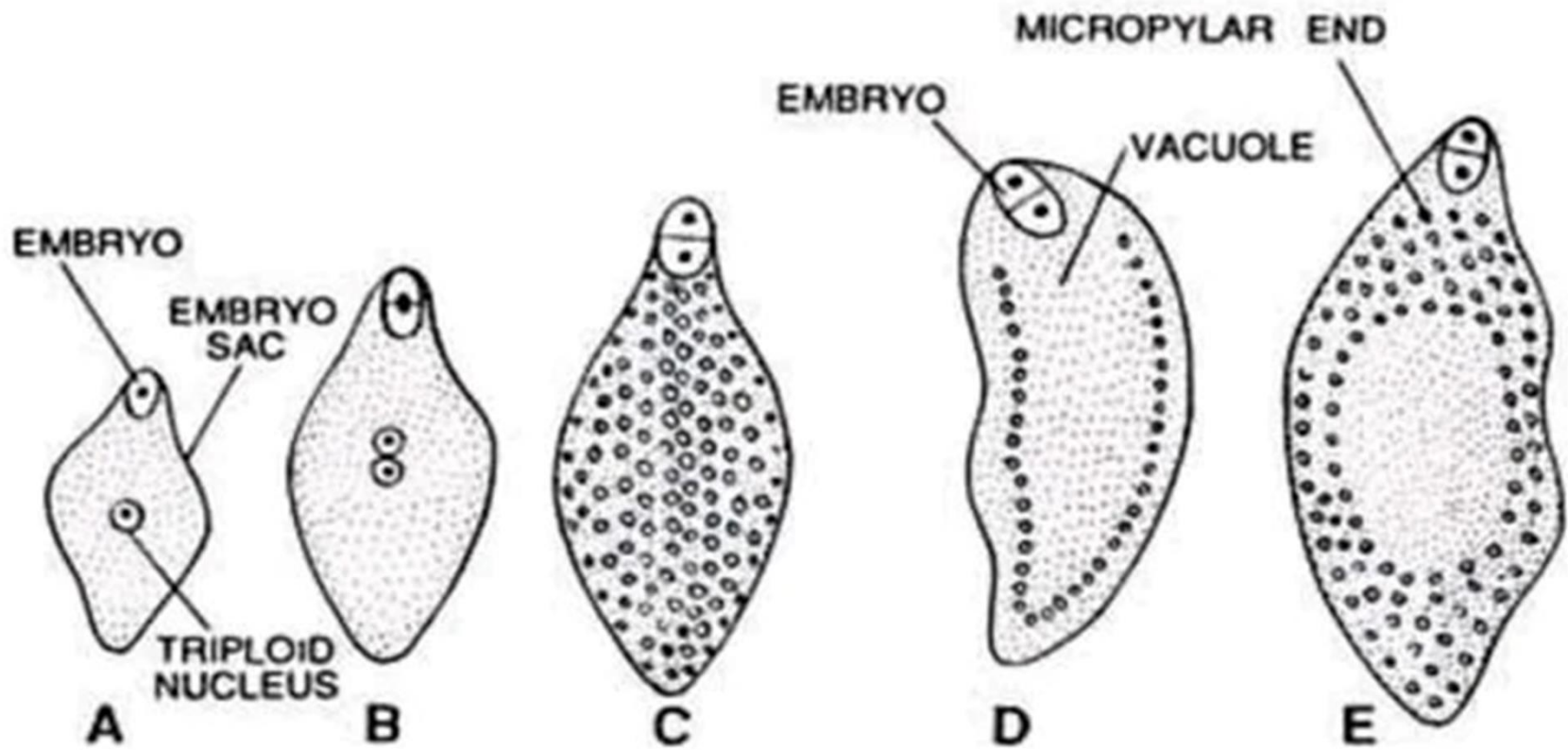


Fig. 46.40. A-E, stages in the development of nuclear type of endosperm.

2 . Cellular type

- In this case , there is cytokinesis after each nuclear division of endosperm nucleus .
- The endosperm thus has a cellular form , from the very beginning because first and subsequent division are all accompanied by wall formation .

e.g. Petunia , Datura , adoxa , etc.

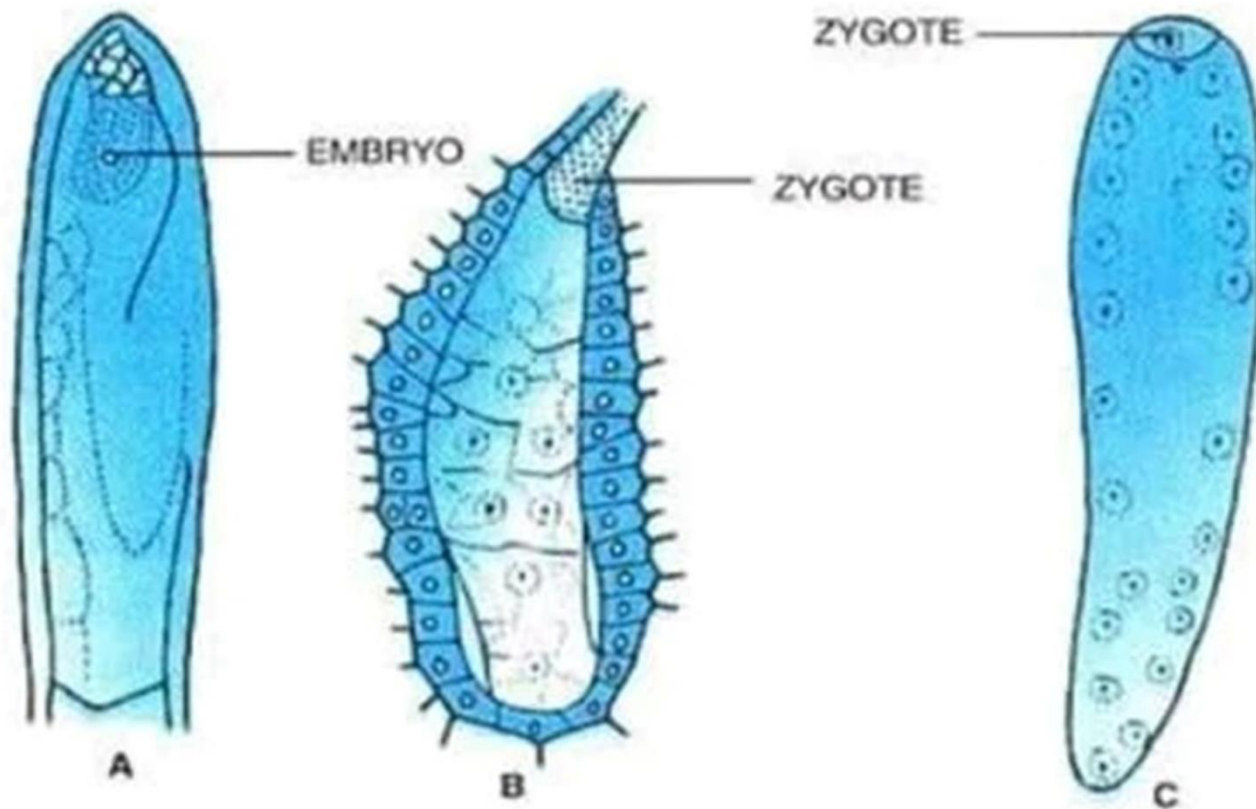


Fig. 2.29. Types of endosperm development. A. Nuclear, B. Helobial and C. Cellular.

3. Helobial type

- It is an intermediate type between the nuclear and cellular types .
- The first division is accompanied by cytokinesis but the subsequent ones are free nuclear .
- The chamber towards micropylar end of embryo sac is usually much larger than the chamber towards chalazal end .

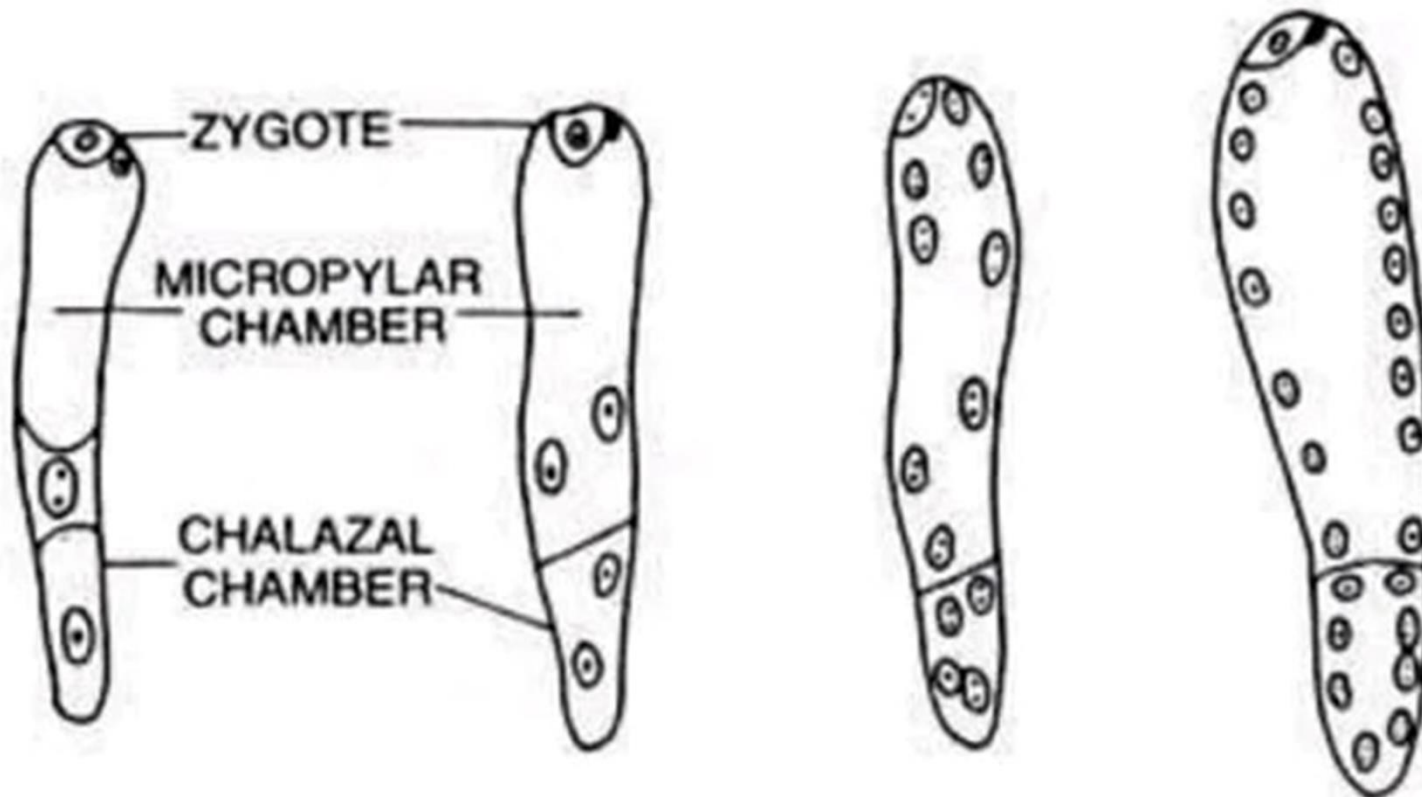


Fig. 46.41. Development of helobial type of endosperm in *Eremurus*.

The role of endosperm in seed development

- In some groups the endosperm persists to the mature seed stage as a storage tissue .
- In which case the seeds are called albuminous or endosperm and in others it is absorbed during embryo development .

- The storage function is distributed between both endosperm and the embryo .
- Some mature endosperm tissue stores fats (e.g. castor bean , *Ricinus communis*) and others (including grains , such as wheat and corn) store mainly starches .
- In which case the seeds are called exalbuminous or cotyledons and the function of storage tissue is performed by enlarged cotyledons .

Histology of the endosperm

- The cells of the endosperm are generally isodiametric and store food materials in them .
- In the grasses and some other plants , the peripheral layer of the endosperm acts like a cambium and produces on its inside a series of thin walled cells which become filled up with starch .

- **On the maturation of the seed the outermost layer ceases to divide and its cells become filled with aleurone grains and the walls become somewhat thickened .**
 - **According to Haberlandt (1914) the chief functions of this aleurone layer is the secretion of diastase and other enzymes .**
 - **The wall of the cells are thin and devoid of pits .**
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Reference

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**THANK
YOU**