

(5)

in Delosterna Cooperi 14% polygonum type, 18% Endimion type and 68% tetrasporic types, of which 47% Drusa, 35% penaea and 18% Adoxa type.

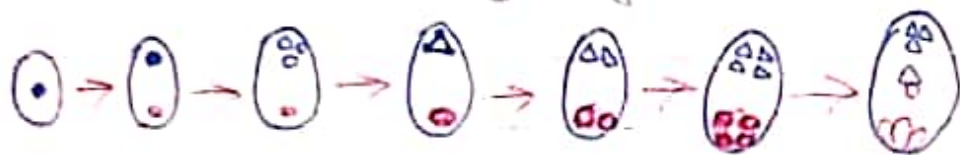
Temperature effects:

Hjelmquist and Grazi (1965) reported temp. effects in the formation of embryosacs and observed different types of embryosacs formed in variation of temp. in Ulmus glabra. He opined that low temp. delayed nuclear division but activate cell growth, but at high temp. just opposite shown.

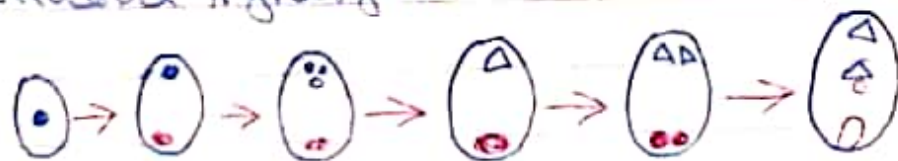
CONCLUSION:

From the above going discussion it can be formulated that polygonum type of embryosac is the prime type and found about 81% of the total angiosperms as observed by Davis (1966), which is 8 nucleate monosporic type. It is not universal that a single type of embryosac is found in one species. Even a single species having more than two types of embryosacs as reported by Kapil and Prakash (1966). It is also fact that temperature affects the rate and types of embryosac formation within a species as observed by Hjelmquist and Grazi (1965) as in Ulmus glabra.

- (J) Fritillaria type: → In this case nucleus divides normally upto four nucleate stage. One nucleus from micropylar end goes to chalazal end to produce 4/3 stage. In further division micropylar nucleus divides normally upto four nucleate stage, whereas chalazal three nuclei fuse to form triploid nucleus. This complex nucleus again divides to form four chalazal complex nuclei, in which one nucleus comes to centre to form four nucleate polar nuclei, three antipodal cells and one egg cell with two normal synergids.



- (K) Plumbagella type: → In this case megaspore mother cell divides like fritillaria type up to two haploid ~~nuclei~~ micropylar nuclei & two chalazal triploid nuclei. But after that stage nuclear division stops and one nucleus from each pole comes to centre and forms one triploid chalazal nucleus, four polar nuclei and one egg nucleus without synergids.



SPECIAL TYPE OF Embryosac: →

In Chrysanthemum cinerariifolium, special

and formed four polar nuclei, eg. Sargassum:



8) Plumbago type: → Here megaspore mother cell starts their nuclear division and formed 8 nucleate stage, two nuclei in each corner. In which one nucleus from each corner reaches in centre to form four polar nuclei & rest four nuclei develop their size to form one egg and three nuclei degenerates. Here synergids are absent eg. Plumbago capensis.



9) Peperomia type: → Here megaspore mother cell start division and gets 16 nucleate stage, four in each corner. Two nuclei from each corner comes into centre to form 8 nucleate polar nuclei. In the three corners formed two nucleate antipodal cells and in micropylar end one egg cell with single synergid. This was reported by ... (1900) in Peperomia

Describe the different types of embryo sacs.

The megaspore mother cell undergoes meiotic division to produce four megaspores and that megaspore by gradual successive meiotic division. produces megagametophyte is called embryo sac. Generally, out of four megaspores only one megaspore become functional & produces embryo sac and it is found about 71% of the angiosperm (Maheshwari-1950).

On the basis of the embryo sac development Maheshwari (1950) classified three categories in view of number of megaspores, number of nuclear division and the number & arrangement of chromosomes.

1. Monosporic: → When out of four megaspores only one develop to produce embryo sac.
 2. Bisporic: → Out of two dyad cells one cell develop to produce embryo sac.
 3. Tetrasporic: → All four megaspores participate in the formation of embryo sac.
1. Monosporic: → It is of two types: -
- (a) Polygonum type: → In this case megaspore mother cell divides meiotically to produce four megaspores, in which only one lowermost megaspore, in which only one megaspore become fun-

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pollar nucleus. There is no any chalazal nucleus.



This type of embryo sac were first of all reported by Greuter (1909) in Oenothera lamarckiana.

2. Bisporic embryo sac: → It is also of two types: -

(i) Allium type: → In this case lower dyad cell activates to start nuclear division and reaches 8 nucleate stage by successive division. Out of 8 nuclei one from each pole comes to centre to form pollar nuclei. Chalazal nuclei formed three antipodal cells and one egg cell with two synergids in micropylar end. Strasburger (1879) observed first of all in Allium cepa.

