

Embryo Sac Development in *Euphorbia*

Four patterns of development have been so far reported for embryo sacs of *Euphorbia*: Normal, Scilla-type, Fritillaria-type, and Penaea-type (Fig.2). Of these the normal type, which is the commonest, has already been described in 25 of the species studied. The author, in a series of investigations started to elucidate the embryological behaviour of Indian species, found that the normal 8-nucleate type of embryo sacs is also present in *E. rothiana* Spreng.¹, *E. hirta* L., *E. granulata* Forsk., *E. thymifolia* L., and *E. antiquorum* L.² These species showed slight variation in megaspore arrangement. In the four species, *rothiana*, *hirta*, *granulata*, and *antiquorum*, the megaspore tetrad was linear but in *E. thymifolia* it was T-shaped. Only in *E. antiquorum*, the polar nuclei fused some time before fertilization. This species also showed slight antipody.

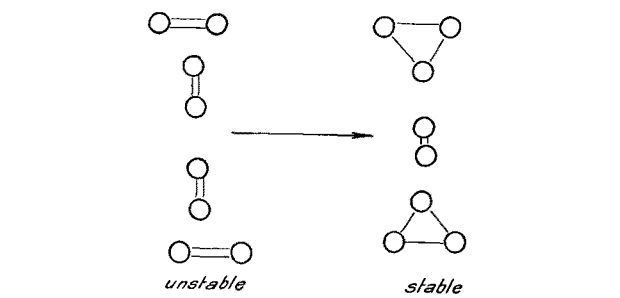


Fig. 1. Tautomeric rearrangement.

¹ R. K. SRIVASTAVA, Ann. Bot., 1952 (in press).
² R. K. SRIVASTAVA (in press).

Comparison of the four types of embryo sac development appears to confirm the view that "Initiation of wall formation is determined by the nuclear condition in the micropylar region"¹, where there must normally be four nuclei. It can be added that the 8-nucleate pattern is conditioned by certain electric charges resting on the free nuclei, i.e. if each nucleus is a charged particle with at least two valencies, the typical arrangement will be like Figure 1.

The "tautomeric" change probably involves an energy release which initiates a physiological mechanism leading to wall formation and oomorphogenesis.

Figure 2 also shows that developmental patterns in *Euphorbia* diverge either after the first division of Sporogenesis or the corresponding stage of somatogenesis. Probably these stages are electrically most labile.

Further work on the topic is in progress.

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Zusammenfassung

Vier Anlagemuster der Entwicklung sind für den Embryosack von *Euphorbia* festgestellt worden. Der gewöhnliche, normale Typus wurde bisher in 25 Arten aufgefunden. Fünf weitere Arten konnten vom Autor dieser Liste beigelegt werden. Die typische achtkernige Anordnung wird aufgefasst als Resultat der Wechselwirkung elektrischer Ladungen, welche an den acht freien Kernen stehen. Das Anlagemuster scheint während der labilen Phase (1. Teilung) der Sporogenie und Somatogenie auseinanderzuweichen.

¹ E. BATTAGLIA, Phytomorphology 1, 87 (1951).

Sporogenesis					Somatogenesis							Gameto-	Type
Mother cell	1st Div.	Dyad	2nd Div.	Tetrad	Vac.	1st Div.	Polar.	2nd Div.	Rest. stage	3rd Div.	Wall form.	Oomorpho-	
													Normal
													Scilla
													Fritillaria
													Penaea

Fig. 2.—Illustration of the mechanism of embryo sac development in *Euphorbia*.