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The embryogeny of *Paeonia tenuifolia (Paeoniaceae)*

Abstract

Dane, F. & Olgun, G.: The embryogeny of *Paeonia tenuifolia (Paeoniaceae).* – Bocconea 5: 557-562. 1997. – ISSN 1120-4060.

The embryogeny of *Paeonia tenuifolia* is described. It is essentially similar to that found in other species of the genus. Following division of the zygotic nucleus, a massive coenocytic proembryo is produced. The endosperm is of the nuclear type in its early stage. The new data do not support the contention that in *P. albiflora, P. delavayi,* and *P. suffruticosa* the coenocyte is a suspensor.

Introduction

Jakovlev & Ioffe (1957, 1959, 1965) investigated the embryogeny of *P. anomala* L., *P. moutan* Sims, and *P. wittmanniana* Lindl.; Murgai (1959) that of *P. albiflora* Pall., *P. delavayi* Franch., and *P. suffruticosa* Andrews; Cave & al. (1961) studied *P. californica* Nutt. and *P. brownii* Douglas, Bianco (1969) *P. mascula* (L.) Mill., Wang (1985) *P. lactiflora* Pall., and Öztürk (mss.) the cytoembryology of *P. peregrina* Mill. According to these authors the study of embryogenesis in *Paeonia* may shed new light on the phylogeny and origin of angiosperms. So far, the embryogeny of *P. tenuifolia,* a species recently recorded as new for the flora of Turkey (Dane & Olgun 1992), had not been investigated in greater detail. We have therefore studied it cytologically and cytoembryologically, in a thesis completed in 1992 (Dane, unpubl.).

The present paper concentrates on embryogeny, which we have also studied on material of *Paeonia peregrina* collected near Edirne (Dane & Olgun 1994). Other work relates to the ultrastructure of the integument and hypodermis of *P. tenuifolia* (Olgun & Dane 1993, 1994).

Materials and methods

The material for this study was collected near Edirne in Turkish Thrace. The ovules were fixed in Carnoy fluid (3 : 1). Preparations were made according to the usual cytological techniques, and stained with Regaud's haematoxylin.

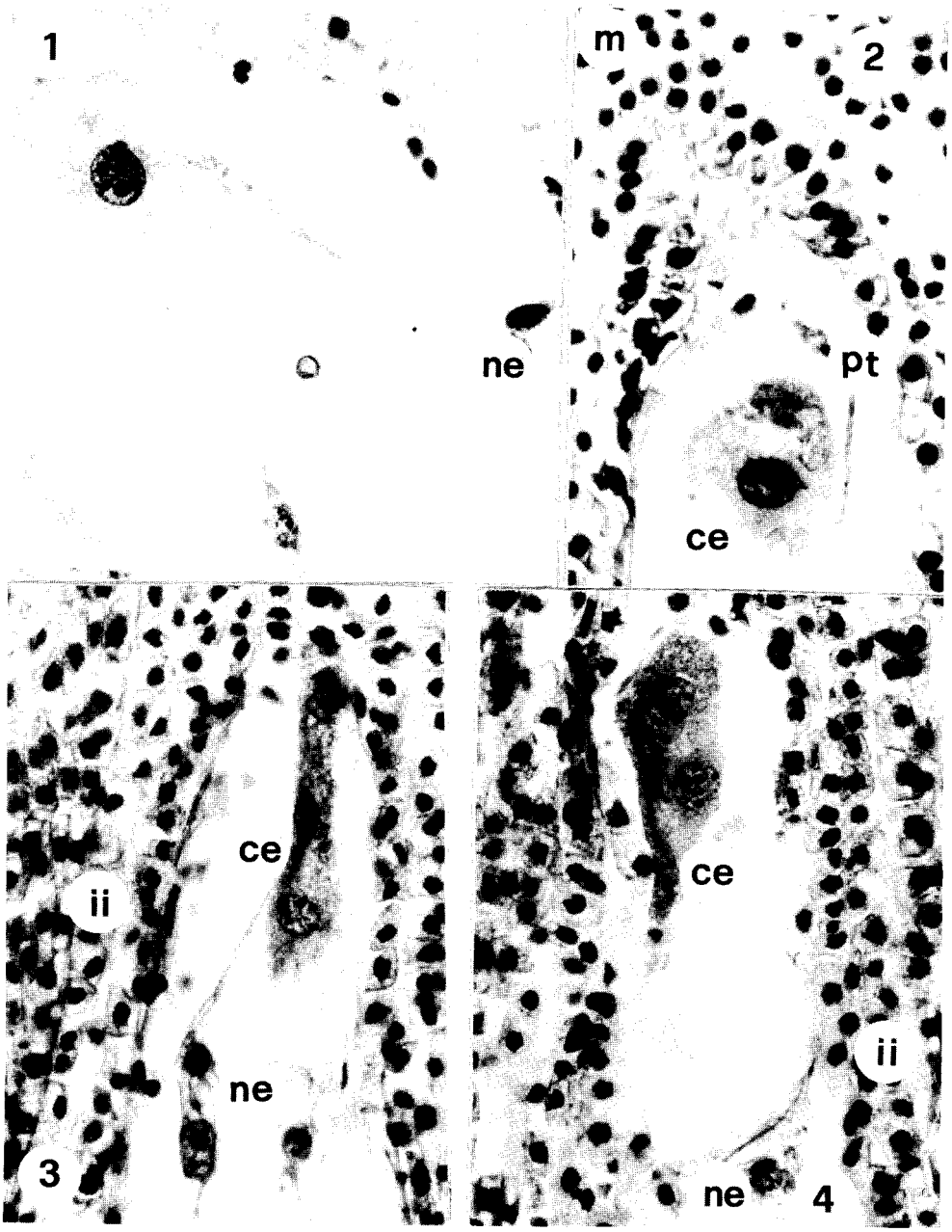

Fig. 1-4. Embryogeny of *Paeonia tenuifolia*. – **1**, Pre-division zygote nucleus and endosperm nuclei; **2**, binucleate proembryo (one nucleus in focus, the other out of focus) and remnants of pollen tube; **3**, 4-nucleate proembryo (one nucleus in focus, one out of focus, two in adjacent section) and endosperm nuclei; **4**, 4-nucleate proembryo (wall absent) and endosperm nuclei. – ce, coenocytic embryo; ii, inner integument; m, micropyle; ne, nuclear endosperm; pt, pollen tube.

Fig. 5-8. Embryogeny of *Paeonia tenuifolia*. – **5**, 16-nucleate proembryo (5 nuclei in focus, 4 nuclei out of focus, the others in adjacent section); **6**, multinucleate proembryo with a small vacuole and endosperm nuclei; **7**, multinucleate proembryo with two small vacuoles (wall absent); **8**, multinucleate proembryo with two large vacuole. – ce, coenocytic embryo; ii, inner integument; m, micropyle; ne, nuclear endosperm.

Fig. 9-10. Embryogeny of *Paeonia tenuifolia*. – **9**, multinucleate proembryo with large vacuole (wall absent); **10**, multinucleate proembryo with large vacuole and endosperm nuclei. – ce, coenocytic embryo; ii, inner integument; m, micropyle; ne, nuclear endosperm; oi, outer integument; v, vacuole. Scale bar = 50 µm.

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