HYPOSTASE IN CYPERACEAE

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The family Cyperaceae has attracted the attention of botanists due to the unique mode of pollen development and also the embryogeny which conforms to Juncus variation of Onagrad type. While studying the embryological characters in the family, the presence of hypostase is noticed uniformly in the following taxa investigated by the author: Pycreus punilus Nees., Cyperus alternifolius Willd., Mariscus panicinus Vahl., Eleocharis acropurpurea Kunth., Thimbristylis cymosa R. Br., Scirpus supinus Linn., Eriophorum contosum Wall., Fimbristylis Linn., Lipocarpha sphaelata Kunth., L. argentea Br., Remirea maritima Abul. and Scleria lithosperma Roxb.

A group of nucellar cells at the chalazal end of the ovule became prominent and differed from the adjoining cells, having dense cytoplasm with distinct nucleus (Figs. 2, 4, 6, 7). This tissue was normally located at the chalazal end wherefrom the integuments originated. During seed development the cells in this region get enlarged and became somewhat thickened. After fertilization these cells get filled with tanniniferous granular deposits. Ultimately they were completely packed with tannin (Figs. 1-5, 7-12). In mature seeds, cells of this region were devoid of nucleus and cytoplasm.

The hypostase normally appeared bowl shaped, except in Eleocharis acropurpurea where it was saucer-shaped (Fig. 5). It persisted as such in mature seed. This was the only nucellar portion persisting in the mature seed (Figs. 1-12). The vascular supply of the ovule terminated at the base of hypostase (Fig. 17).

The presence of hypostase in the ovule of many angiosperms is well known. This structure has since been recorded in the family by different workers11,24. Various roles have been attributed to this structure. Van Tieghem12 considered that these cells are resistant to digestion and possibly prevent the destruction of the nucellus in this area. Johansen2 stated that the hypostase controls the entry of nutrients into the ovule. According to Goebel1 it is concerned with water economy of the embryo sac. Netolitzky4 designated it as 'chalazal oor. tissue' having mechanical function. Khanna3 stated that it provides mechanical

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strength to seed instead of being of any value in the
nutrition of the developing seed, but Shah believed
that hypostase served as the tannin diffusing centre
for the seed coat layers. The present author believes
that hypostase in Cyperaceae with tannin packed cells
had only a mechanical role. Further histochemical
studies would help to explain its significance.

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DEVELOPMENT OF FEMALE GAMETOPHYTE
IN OUGENIA OOEJINENSIS (ROXB.) HOCHREIT

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Ougenia ooejensis is a medium sized tree belonging
to the tribe Hedyreae of Papilionoideae and exhibits
cauliflory. The ovule is anatropous, trasmuculate
and bithegmic with the vascular supply ending near
the chalaza (Fig. 1). The archesporium in the ovule is
hypodermal, represented by a single cell or a plate
of three or four cells (Figs. 2, 3). The archesporium
cuts off a parietal cell; the fully developed megaspore
mother cell has dense contents and is very conicuous
(Figs. 4, 5). Meiosis I produces a dyad with the
upper cell being much smaller than the lower (Fig. 6).
The second meiotic division in the dyad cells is variable
and results in the development of both bisporic and
monosporic types of embryo sac.

Among the ovules showing the Polygonum type of
development, the upper dyad cell degenerates without

Figs. 1-15. Fig. 1. L.S. of the ovule at the
megaspore dyad stage. Fig. 2. L.S. portion of ovule
showing hypodermal archesporium. Fig. 3. Same
showing a group of developing megaspore mother
cells. Fig. 4. Megaspore mother cell in pachytena
stage. Fig. 5. Two juxtaposed megaspore mother
cells. Fig. 6. Megaspore dyad. Fig. 7. Mega-
spore dyad with the upper cell degenerating. Fig. 8.
Megaspore triad with the upper dyad generating.