RESEARCH NOTE

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Microsporogenesis in *Alysicarpus vaginalis* DC.: Further Evidence of a Criticism of Sareen and Wadhwa (1981)*

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The young anther is at first a homogenous mass of cells and is almost circular in transverse section. It generally becomes squarish and then four-lobed and each lobe contribute to a microsporangium. The archesporium which is multi-cellular and hypodermal in origin can be easily detected by its granular cytoplasm, larger nucleus and greater chromaticity. Archesporial cells appear in four groups and later by periclinal divisions gives rise to an inner primary sporogenous and an outer primary parietal layer. The letter by periclinal and anticlinal divisions forms 3-4 layers, of which the outermost is the endotecium and the innermost tapetum. Intervening between these two layers is a middle layer. It may again divide in some cases to form two middle layers. Cells of the endothecium which are brick-shaped in the beginning become broader when the microspore mother-cells are passing through the second meiotic division. They acquire fibrous thickenings when the microspores are formed. The cells of the middle layers are brick-shaped and narrow. They disintegrate when the microspore mother-cells have undergone meiosis I. The tapetum is of the secretary type and its cells remain uni-nucleate throughout. Its cells are rich in cytoplasm with prominent vacuoles. It supplies food to the developing microspores and is completely utilized at the mature pollen grain stage. At this stage only persistent layer of the parietal tissue is the endothecium which is responsible in dehiscence of the anther along with the epidermis of the wall.

The primary sporogenous cells undergoes mitotic divisions and produce microspore mother-cells. About 100-160 microspore mother-cells are produced per microsporangium. They at first closely packed together and are polygonal in outline. They are uni-nucleate. They posses densely staining cytoplasm. Later on they round off and separate from one another, and secrete a thick wall. They then undergo meiosis to produce four microspores. The process of meiosis is passed off rapidly and in the normal way. The mode of division is of the simultaneous type and the cytokinesis takes place by furrowing. The spindles in the second meiotic division are arranged either at right angles or parallel to each other and eventually tetrahedral and isobilateral tetrads of microspores are formed.

After cytokinesis, the young microspores which separate from tetrads are rich in cytoplasm and contain a single nucleus which is situated more or less in the center. As the microspores increases in size, vacuolation starts, the nucleus undergoes division at one side of the spore, and a small semilunar cell is cut off as a generative cell and a large vegetative cell. At the time of anthesis the pollen grains are two-celled.

Some pollen grains show the sign of germination before anthesis and had three-nuclei. However, Sareen and Wadhwa (1981) reported uni-cellular archesporium, Monocotyledonous type of anther wall development and decussate microspore tetrads. They also failed to report three-nucleate pollen and their germination in situ. This proves their superficial and misleading observations. This was also proved earlier by the author (2001).

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