Chapter - VI

Summary and Conclusions
6. SUMMARY AND CONCLUSIONS

The present histochemical studies on the developing anthers of *P. richardsonii* and *E. crassipes* are an attempt to fill the lacuna created by the inadequate literature on hydrophilous plants. Present histochemical studies are also an attempt to identify any peculiar feature(s) associated with microsporogenesis and histochemistry of anthers of *P. richardsonii* and *E. crassipes*.

By and large histochemical studies on the developing anthers of *P. richardsonii* and *E. crassipes* fall in line with those of terrestrial plants. The common features include occurrence of starch and ascorbic acid storage in connective and wall layers and their utilization during meiosis and later in the process of starch-filling of pollen grains and differentiation of endothelial thickenings. Periplasmodium and reproductive cells are rich in RNA and proteins.

The unique features of *P. richardsonii* and *E. crassipes* include absence of callosic wall around meiocytes and formation of reduced and simple exine. It is difficult to conclude that the absence of callosic wall is an adaption to aquatic ambience, though this feature
is found in most of the hydrophilous plants. Occurrence of normal meiosis, in the absence of callosic wall, defers the earlier contention that presence of callose is a prerequisite condition to trigger meiosis. Presence of thick PAS-positive walls around late sporogenous cells, prior to meiosis, suggests that callose can be substituted by alternative wall materials to effect isolation of meiocytes. Induction and progress of meiosis, after the dissolution of the primary walls of meiocytes suggests that isolation of meiocytes need not be a continuous requirement for the completion of meiosis.

The formation of simple reduced exine is presumably related to the absence of callose. This supports the role attributed to the callose in the development of exine. Callose acts as a template for exine formation and after its degradation becomes a major source of glucose required for the synthesis of exine precursors. The simple exine encountered in many hydrophilous plants seems to be an adaptive character for pollination. Because, the degree of elaboration of exine is found to be directly proportional to the degree of submergence of hydrophilous plants.