

ENDOTHELIUM – PROTECTION AND SUPPORT FOR EMBRYO SAC

Summary

Endothelium is localized in ovules of species that are mainly representatives of the Asteraceae family. It surrounds the growing female gametophyte (embryo sac), after fertilization – developing the embryo and endosperm, nourishing and separating them from the parenchyme cells of the integument. Endothelium usually develops from cells of the innermost layer of the integument (integumentary tapetum) but in some species, it is formed from the nucellus (pseudo tapetum). The onset of endothelium formation is differentiated and depends on the species and the specified phase of female gametophyte development. Mature tapetum as a single or multilayer may surround the embryo sac fully or in some species only partly (at poles or in interpolar regions). The ultrastructure of endothelium cells reveal their meristematic and secretory character, man-

ifested by a large central nucleus, dense cytoplasm, a high content of a rich endoplasmatic reticulum and diktiosomes. The cells of the tapetum which are in direct contact with the embryo sac may be covered with a thick layer of cuticle and in some species with callose. The meristematic nature of this structure, as displayed in some species, enables it to intensively proliferate after interspecific crosses, thus restraining the stretching of the embryo sac together with the growing hybrid embryos. In some cases after wide crosses, from the endothelial cells somatic embryos may develop.

This paper shows a high diversity of structure, functions and traits of endothelium – the tissue which nourishes and defends embryos and whole embryo sacs, but which can also contribute to their degeneration.