

**ULTRASTRUCTURE OF ENDODERMIS AND STELE CELLS
OF DEHYDRATED *POLYPODIUM VULGARE* L. RHIZOMES**

AGNIESZKA BAGNIEWSKA-ZADWORNA* AND ELŻBIETA ZENKTELER

*Department of General Botany, Institute of Experimental Biology,
Adam Mickiewicz University, ul. Umultowska 89, 61-614 Poznan, Poland*

*e-mail: agabag@amu.edu.pl

Received April 30, 2006; revision accepted July 20, 2006

Polypodium vulgare L. rhizome cells tolerate water deficit stress to different degrees. This study examined the extent of ultrastructural changes in the endodermis and stelar elements in response to mannitol dehydration treatment. Cytological observations showed that the rhizomes possess structural adaptations to withstand drying by maintaining water inside the stele or activating mechanisms that mitigate stress. There are Casparian strips on the walls of the endodermis, and thicker cell walls of cortex parenchyma cells bordered with endodermal cells. Numerous electron-dense vesicles accumulate in dehydrated endodermal cells, making the organelles not visible. In parenchymatous cells of pericycle and vascular parenchyma cells, only nuclei with slightly condensed chromatin, smaller starch grains and vesicle formation were observed in the cytoplasm after dehydration. Changes in cell membrane ultrastructure were not identified. Incubation of the rhizome in abscisic acid prior to dehydration did not produce ultrastructural changes.

Key words: *Polypodium vulgare*, common polypody, dehydration tolerance, TEM analysis, abscisic acid.