

Abstract

Root endodermis and exodermis form apoplastic barriers for the movement of water and solutes into and out of the plant root system. Both layers have modified cell walls with Casparian strips. They often develop suberin lamella as a secondary development stage and thickened cellulose, sometimes lignified, wall as a tertiary development stage. Endodermis, as the innermost layer of cortex, is generally present in all vascular plant roots except *Lycopodium*. It is very phylogenetically and developmentally stable and in most cases single-layered. Exodermis can be often multi-layered or dimorphic and is formed on the periphery of the root. This layer can be found in a large number of angiosperms but according to the data gathered so far it seems that most of the seedless plants and gymnosperms lack it. Its presence correlates with the environmental conditions in which plants grow and its high structural and developmental plasticity helps roots to resist stress conditions such as drought, salinity, anoxic conditions and the presence of toxic substances. This paper aims to summarize the current knowledge of interspecies variability and developmental plasticity of endodermis and exodermis in roots of vascular plants.