

Anatomical analysis of *lrt1* maize mutant

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Lateral roots form the major part of the root system, which interact with plants rhizosphere. One of very limited number of maize lateral roots mutants is *lrt1* (lateral rootless 1). Gene, which is related to its phenotype, was mapped to the short arm of the second chromosome, but it hasn't been still characterized (Hochholdinger & Feix, 1998). The mutant is deficient in early postembryonic lateral roots formation beside other. Exogenous application of auxin does not, while phosphate addition and/or mycorrhiza symbiosis and other environmental factors caused partial revert to original phenotype (Hochholdinger & Feix, 1998; Hochholdinger et al., 2004; Paszkowski & Boller, 2002).

The work is aimed to detailed anatomical analysis of *lrt1* mutant. Exodermis development and cell wall modification during differentiation was shown to be affected and related to cultivation mode. This fact seems to be related with changes in synthesis of extracellular phenolic substances detected in *lrt1* mutant proteome (Hochholdinger et al., 2004). Structural changes and modifications of exodermal cell walls were correlated with permeability of the root surface and its boundary properties. Aerenchyma formation in the middle cortex of the maize root depends upon the environmental factors. Extent of its formation differs between mutant and wild type. Spatial relationship between exodermis and aerenchyma formation is discussed.

Keywords: lateral root, maize, *lrt1*, exodermis, permeability, aerenchyma