ABSTRACT

Aluminium toxicity is the main factor limiting plant growth on acid soils. Aluminium inhibits root growth within few minutes after aluminium treatment. The mechanism and primary target of his action is still unknown.

In this diploma thesis the effect of aluminium toxicity on dynamics of cortical microtubules WT and *pldα1* plants was studied using the EB1a-GFP marker. Polymerization rate in both the transition and the elongation zone increased immediately after the aplication of aluminium. Nevertheless, microtubules in the transition zone are much more sensitive to aluminium, because the aluminium-induced increase in the polymerization rate was higher than in the elongation zone.

Plants lacking PLDα1 showed higher dynamics on plus ends of cortical microtubules compared to WT during aluminium stress, which enabled them to react faster to stress stimuli. Mutants showed lower sensitivity to aluminium and 100 μM concentration of aluminium ions has beneficial effect on root growth in *pldα1*.

These results suggest that PLDα1 influences microtubule dynamics. Microtubules in *pldα1* plants were more dynamic and they polymerized faster in the response to aluminium, which was accompanied by decreased sensitivity to aluminium stress compared to WT. Changes in microtubule dynamics may play a role in aluminium stress response in plants.

Key words:

Aluminium toxicity, microtubule dynamics, polymerization rate, EB1a-GFP, PLDα1.