Abstract

This thesis is focused on the ARP2/3 complex, which is a *de novo* actin cytoskeleton nucleator. This highly conserved complex is composed of seven subunits and regulates branching of actin filaments at a constant angle of 70 degrees. In plant and animal cells ARP2/3 is involved in various processes, which are connected with the initiation of actin polymerization; for example it participates in determining the direction and speed of cell growth and the movement of vesicles and organelles within the cell. The mutation of individual subunits is lethal for animal cells, but in plants, these mutants have only mild symptoms such as distorted trichomes or changes in epidermal cells. The aim of the presented work was to study the function of the ARP2/3 complex by the method of partial silencing of subunits using RNA interference. Specifically, it was the ARPC1 subunit of *Arabidopsis thaliana* and the ARPC2 subunit studied on the cellular model, the tobacco BY-2 cell line. Experimental work involved the creation of DNA constructs for induction of silencing, transformation of plant material, silencing rate analysis, and phenotype tracking in selected lines. Although lines with reduced transcript levels of the given ARP2/3 complex subunit were found, no phenotypic changes were observed in these lines.

Key words - actin, ARP2/3 complex, induced silencing