Abstract

The exchange of gases between the plant and the environment is mediated by guard cells, which, by changing their volume, regulate the size of the stomatal pore where the exchange takes place. Unique properties of stomata are given by a specifically designed cell wall, allowing asymmetric cell expansion. During the opening of stomata, there is a large increase in turgor pressure, accompanied by the uptake of considerable amount of water. For this reason, it is necessary to quickly change the inner surface of the guard cell. This process is ensured by the dynamic movement of the membranes inside the cell. During these processes, the vesicles are removed from the plasma membrane and reintegrated back during stomatal closure. One of the important regulators of the polarized transport of vesicles within the cell is a multiprotein complex exocyst. Due to the multiplication of exocyst subunits, the exocyst complex functions in plants are extensively diversified and involved in many cellular processes. In this thesis the effect of mutation in subunits exo70B1, exo70B2 and its combination exo70B1/exo70B2, on stomatal dynamics is studied. Both of these mutations affect the opening of the stomata during increased light intensity. The mutation of exo70B1 is in this case affected in greater manner. These defects, however, may be caused by other processes, since the *exo70B2* mutant exhibits a smaller size of the entire stomata and aperture in the open state, unlike *exo70B1* mutant. The double mutation *exo70B1*/*exo70B2* partially suppresses the occurrence of hypersensitivity lesions caused by the *exo70B1* mutation and is likely to partially rescues the phenotype of the *exo70B1* in the light induced stomatal opening.

Key words: Stomata, complex exocyst, stomatal dynamics, stomatal conduktance, *Arabidopsis thaliana*