

Abstract

Plant cells are mostly immobile, therefore it is crucial for them to distinguish a direction of the signals coming into the cell and on the other hand they have to precisely target their own signals. To achieve this communication, plant cells use endomembrane system and secretory vesicles, which are recruited to the specific membrane domains. This ability is important for the plant defense against pathogenic microorganisms and it even forms a part of the innate plant immunity. Two complexes, the exocyst and SNARE, play a prominent role in the process of polarized secretion.

In this work, we focused on a possible interaction between these two complexes in preinvasive defense and particularly, we studied the exocyst subunit EXO70B2 and SNARE protein SYP121. We obtained double mutant plants of *EXO70B2* and *SYP121* by utilizing the reverse genetics approach. These mutant plants did not show any obvious phenotype under standard conditions in comparison with Wt plants. However, we observed marked defects of secretory pathway in double mutant *exo70B2/syp121* after infection by pathogenic fungi *Blumeria graminis* f. sp. *hordei*. Using histochemical staining, we described problems with the deposition of defensive papilla and secretion of haustorial encasement. We prove that these defects are not connected with changes in levels of stress phytohormones utilizing HPLC/MS analysis and semiquantitative RT-PCR. Based on our coimmunoprecipitation assay, we found that SYP121 interact with SEC3, SEC6 and EXO70A1.

Altogether our data clearly show that both studied complexes cooperate in the same pathway during preinvasive defense against pathogenic fungi.