

Abstract

Sporophytic incompatibility (SI) represents one of the systems by which angiosperms prevent pollination by their own pollen or by the pollen from a genetically related plant. It is mostly studied in the *Brassicaceae* family, mainly due to its agricultural importance. Another reason is that the model plant *Arabidopsis thaliana* belongs to this family. In the last three decades, advances in molecular biological methods enabled the characterization of a large part of the signalling cascade that leads to the rejection of incompatible pollen. Then, the functions of various cellular components (e.g. cytoskeleton, exocyst or proteasome) involved in the incompatible response to pollination are studied mainly by live cell microscopy. Last but not least, the function of SI under various abiotic stresses was described to reveal their influence on SI mechanisms. The aim of this bachelor thesis is to summarize the new discoveries characterizing the molecular mechanisms of SI in the *Brassicaceae* family, to describe the processes leading to the germination of compatible pollen grain and to characterize the newly described proteins involved in cellular signalling leading to the rejection of incompatible pollen.