

## Abstract

Nascent polypeptide-associated complex (NAC) represents a heterodimeric complex composed of an  $\alpha$ - and a  $\beta$ -subunit. It is conserved in eukaryotic organisms and has also been found in archaea. This complex binds to newly synthesized proteins emerging from the ribosome and participates in their targeting to the endoplasmic reticulum. In plants, the NAC complex has been studied in the context of tolerance to various abiotic stresses. In our laboratory, we have previously characterized a T-DNA insertion mutant of *Arabidopsis thaliana* in both NAC $\beta$ -encoding genes that exhibited a number of phenotypic defects. These included for instance the appearance of more floral organs, reduced pollen grain germination, and the production of shorter siliques with less seeds inside.

The aim of this diploma thesis was to characterize the role of the NAC $\beta$  subunit in *Arabidopsis thaliana* during seed germination under osmotic and salt stress. We have shown that the absence of NAC $\beta$  leads to a reduced seed germination and a prolonged germination time, as does overexpression of this subunit. We further studied whether stress conditions affect the transcript levels of individual genes encoding for both NAC subunits by RT-qPCR. In order to investigate the molecular mechanisms by which the studied complex could influence the plant response to stress conditions, we decided to verify its chaperone activity by a holdase assay.

**Key words:** *Arabidopsis thaliana*, nascent polypeptide-associated complex, NAC, osmotic stress, salt stress, chaperone