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Regulation of *MOR* by Different Abiotic Stresses in *Arabidopsis thaliana*

Luke Stepan, Rucha Karve, and Anjali Iyer-Pascuzzi
Department of Botany and Plant Pathology, Purdue University

ABSTRACT

The climate is changing and as a consequence the environment is becoming hotter and drier. How different plants will react to these changes is unknown. Identification of genes involved in stress tolerance can help predict plant-environment interactions and lead to stress tolerant plants. The *MOR* gene (Modulator Of Root ROS, ROS = Reactive Oxygen Species) in the model plant *Arabidopsis thaliana* encodes a transcription factor that may regulate stress responses, as *mor* mutants are drought tolerant. We hypothesized that *MOR* expression changes in response to different abiotic stress stimuli. We tested *MOR* expression in response to salt (NaCl), abscisic acid (ABA), osmotic stress (Mannitol), drought, and heat. For the first three stresses wild type seedlings were grown under our standard conditions and then transferred to a treatment for 24 hours. For drought stress plants were grown in soil and watering was withheld from mature plants for 10 days. With all samples a quantitative reverse transcriptase Polymerase Chain Reaction (qRT-PCR) was run to find changes in gene expression. For heat stress, mutants and wild types plants were transferred in a 30°C environment and root growth was monitored daily. *MOR* gene expression did not change in the presence of salt or ABA but was slightly repressed by osmotic stress. However, drought stress strongly induced *MOR*. *mor* mutants showed less sensitivity to heat stress. Our data show that *MOR* is involved in drought and heat pathways, suggesting this gene is specific to certain types of stresses.

KEYWORDS

Arabidopsis thaliana, environmental stress, root development

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