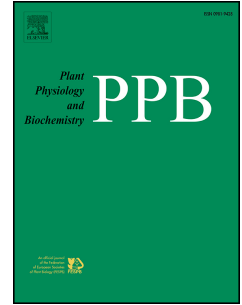


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ScDREB8*, a novel A-5 type of *DREB* gene in the desert moss *Syntrichia caninervis*, confers salt tolerance to *Arabidopsis

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Abstract

Salinity is a major limitation factor for crop productivity worldwide. DREB transcription factors broadly participate in plant stress response and have been extensively identified in a wide variety of plants. In this study, we characterized and analyzed the function of a novel A-5 type *DREB* gene *ScDREB8* from the desiccation tolerant moss *Syntrichia caninervis*. Yeast one-hybrid experiment showed that *ScDREB8* had no transactivation activity. Transient expression assay in onion epidermal cells revealed that *ScDREB8* is distributed throughout the cell with no apparent specificity. Overexpression of *ScDREB8* significantly increased the germination rate of *Arabidopsis* under salt stress and improved the salt tolerance of *Arabidopsis* at the seedling stage by up-regulating the expression of downstream stress-related genes and improving ROS scavenging ability. *ScDREB8* is a promising candidate gene for improving crop salt stress and will provide greater insight to the molecular mechanism of stress tolerance of A-5 type DREB proteins.

Keywords: *Syntrichia caninervis*, Desiccation Tolerance, DREB transcription factor, salt stress, ROS-scavenging ability

1. Introduction

Salinity is an important environmental stress factor that can severely impair plant growth and limit crop productivity worldwide (Boyer, 1982). High salinity impairs cellular osmotic and ionic homeostasis and also compromises photosynthesis, depletes cellular energy, and leads to redox imbalances (Parida and Das, 2005). To adapt this adverse condition, plants exhibit a variety of responses to salt stress

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