

Cloning and quantitative expression analysis of drought-induced genes in soybean

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Genet. Mol. Res. 9 (2): 858-867 (2010)

Received November 15, 2009

Accepted February 12, 2010

Published May 11, 2010

DOI 10.4238/vol9-2gmr701

ABSTRACT. We determined the expression levels of DREB transcription factor (*Gmdreb1*) and of the genes *Gmgols*, *Gmpip1b*, *Gmereg*, and *Gmdefensin* in drought-tolerant (MG/BR46-Conquista) and drought-sensitive (BR16) genotypes of soybean, during drought. The trial was carried out in a controlled-environment chamber, set up to provide drought conditions. Sequences of *Arabidopsis thaliana* DREB-family proteins were used to build a phylogenetic tree through the alignment of the conserved regions near the AP2 domain. We found that *Gmdreb1* is similar to *Atrap2.1*, which is located near the *AtDREB1* and *AtDREB2* families. The amplified fragment was cloned and sequenced; alignment with the sequence available at Genbank showed total similarity. Expression analysis showed that under drought: a) *Gmdreb1* expression increased in leaves and roots of both genotypes and expression level changes occurred that were correlated with the length of the water-deficit period; b) there

were increased expression levels of *Gmdefensin* in roots of MG/BR46; c) expression of *Gmgols* increased in leaves and roots of the two genotypes; d) *Gmpip1b* expression generally increased, except in roots of BR16, and e) the same was found for *Gmreb*, except in roots of MG/BR46.

Key words: Drought; *Glycine max*; Gene expression; Quantitative PCR; Dreb gene; Water deficit