

عنوان مقاله:

Some responses of dry farming wheat to osmotic stresses in hydroponics culture

محل انتشار:

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خلاصه مقاله:

Osmotic stress is one of the major factors that significantly reduce yields in dry areas. Plants respond to this abiotic stress at physiological and molecular levels. Many genes are induced under stress conditions by transcription factors. Dehydration responsive element binding (DREB) protein is a subfamily of AP2/ERF transcription factors which control expression of many osmotic stress-inducible genes. In this study, 21 days old seedlings of Sardari cultivar, dry farming bread wheat transferred into hydroponics culture using Hoagland solution. Osmotic stress treatments performed with adding 100, 200 and 400 g/l poly-ethylene glycol 6000 to hydroponics culture to obtain -0.15 , -0.49 , and -1.76 MPa water potential, respectively. After the seedlings were withered and colorless, relative water content, dry weight, and photosynthesis measured. In addition, RTPCR, and cDNA sequencing carried out. Molecular analysis of DREB translated protein sequence performed by DNAMAN, BLASTN, Pfam and PROSITE software. Results showed that osmotic stress decreased relative water content, root and shoot dry weight and net photosynthesis rate in comparison to control, significantly ($P < 0.05$). Sequence alignment indicated 98% homology with other *Triticum aestivum* DREB protein mRNA. There was an AP2 domain in the translated protein with three α -sheets and one α -helix and contains the Val14 and Glu19 amino acids. An EST Sequence deposited in NCBI GenBank database with the accession number of ES466900.

کلمات کلیدی:

AP2 domain, DREB, osmotic stress, physiological responses, wheat

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