

Identification and expression analysis of abiotic stress responsive genes from *Leymus* plants

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The dune grass *Leymus mollis* (Triticeae; Poaceae, genus *Leymus*) is a wild relative of wheat and grows mainly along sea coasts and in inland dry areas (Kishii et al. 2003). The tolerance of the dune grass *Leymus mollis* (Triticeae; Poaceae) to various biotic and abiotic stresses makes it very useful genetic resource for wheat breeding. Wide-hybridization between *L. mollis* and wheat allowed the introduction of *Leymus* chromosomes into wheat genetic background and facilitated the integration of useful traits into wheat. However, the genetic bases controlling *L. mollis* physiological tolerance to multiple environmental stresses remain largely unexplored. Using suppression subtractive hybridization, we identified 116 drought stress responsive genes from *L. mollis* and confirmed their differentially expression by drought. These gene were categorized into 13 functional category including cell defense and stress response, transcriptional regulation, signal transduction, biosynthesis of compatible solutes and metabolism of cell walls in response to drought stress. Analyses of the expression patterns in response to drought stress and abscisic acid treatment by northern blot and RT-PCR were validated for selected genes. Furthermore, some selected genes were shown to be up-regulated under salt stress. The genes identified in this study represents valuable source as expressed sequence tags (ESTs) for analysis and identification of alien chromosomes introduced into wheat. Furthermore, being highly conserved, genetically associated with drought tolerance and transferable to wheat, these ESTs provide significant tools for the development of EST-derived markers and for assaying variations in the transcribed parts of the complex and highly redundant wheat genome.

Biography

Mohamed E. Eltayeb Habora has completed his M.Sc. at the age of 31 years from Tottori University (Plant Biotechnology Laboratory, Faculty of Agriculture), Japan, and then started his doctoral studies in the same university in April 2009. He is a regular member of the Japanese Society for Plant Physiologist and presented several proceedings on its annual meetings and on other international conferences.