

Analysis of *OsBBX13* Gene Responses to Salinity Stress Tolerance in *Oryza sativa* (Rice)

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The B-box (BBX) proteins are a subgroup of zinc finger transcription factors that contain one or two B-box domains. The B-box domain is a conserved motif. Genes that encode for BBX proteins are highly conserved across all multicellular species. BBX proteins were first identified in *Arabidopsis thaliana* that play a significant role in light and abiotic stress signalling. In *Oryza sativa* (rice) only a few BBX genes have been identified which are involved in flowering. Our previous study on ortholog search identified *OsBBX13* as a functional ortholog of the *Arabidopsis AtBBX21* gene that is involved in light and abiotic stress regulation. This study aimed to conduct an *in silico* analysis of the *OsBBX13* gene promoter to identify the presence of abiotic stress-responsive elements and to study the expression of the *OsBBX13* gene under salinity stress. Promoter sequence (1.0 kb upstream of translation start site) of the *OsBBX13* gene was retrieved from the Rice Annotation Project Database (RAP-DB). The tools of PlantCARE and New PLACE were used for scanning of abiotic stress-responsive cis-elements present on the promoter region of *OsBBX13*. The salinity stress-responsive elements, MYBCORE and GT1GMSCAM4, and Absciscic acid-responsive element (ABRE) which regulates the dehydration and salinity responses were identified in *OsBBX13* promoter region. Quantitative Real Time PCR analysis of 7 days old rice seedlings exposed to 200 mM NaCl stress showed significant up-regulation of the *OsBBX13* gene compared to the control. All these findings together suggested that the *OsBBX13* gene is involved in salinity stress responses in rice.

Keywords: BBX proteins, *OsBBX13*, Salinity stress, Abiotic stress