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Soybean DnaJ-like Protein Enhance Tolerance in *E. coli* during Heat Shock

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We isolated wound-inducible genes using suppression subtractive hybridization (SSH) method and were able to obtain to clone *w123* gene encoding dnaJ like protein. The full-length cDNA of *w123* is 689 bp with an open reading frame (ORF) consisting of 163 amino acid (aa). Genomic southern blot confirmed that soybean genome has two copies of *w123* gene. Northern blot analysis was also carried out for the gene expression during heat, NaCl, drought, wounding stresses. The expression of *w123* gene specifically induced by heat, NaCl, wounding and drought stress. Using GFP fusion vector, w123-smGFP was targeted both to nucleus. For the functional analysis of w123, His-tagged w123 recombinant protein was heterologously expressed in *E. coli*. The w123 recombinant cells showed enhanced heat tolerance compared to that of vector control cells. We suggest that dnaJ-like w123 protein function as molecular chaperone in the nucleus of the plant cell during various stresses.

Key words: Soybean, heat shock, DnaJ, His-tagged fusion protein

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Molecular Characterization of *SLTI98* Encoding Ribosomal Protein Genes S6 from Soybean (*Glycine max*)

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In an attempt to better understand translational control during abiotic stresses, we isolated and characterized a stress inducible gene designated as *SLTI98* encoding ribosomal protein S6 in soybean. The derived amino acid sequence of SLTI98 showed the highest identity of 93% with ribosomal protein S6 from *Medicago truncatula* (ABD32373). The size of the full-length genomic clone of *SLTI98* is 2,701 bp containing 6 exons and 5 introns, of which structure is similar to that of *Arabidopsis* ribosomal protein S6. Genomic southern blot analysis confirmed that soybean genome has two copies of *SLTI98* gene. RNA expression of *SLTI98* was mildly induced by salt stress, ABA and wounding stress, but not by dehydration stress. According to localization study using GFP fusion expression system, we were able to confirm that SLTI98-smGFP was restricted mostly to nucleus and partly to cytoplasm. The present study implies that the nuclear *SLTI98*, ribosomal protein S6 play an important role in translational control during abiotic stresses.

Key words: Ribosomal protein, stress, soybean, northern blot, GFP