



Alteration of *Phascolosoma esculenta* heat shock protein 90 expression under heavy metal exposure and thermal stress

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ABSTRACT. The full-length complementary DNA (cDNA) of heat shock protein 90 was cloned from *Phascolosoma esculenta* (PeHSP90) using expressed sequence tag and rapid amplification of cDNA end approaches. The cDNA of PeHSP90 was 2521 bp including a 5'-untranslated region of 110 bp, a 3'-untranslated region of 230 bp, and an open reading frame of 2181 bp. All of the characteristic motifs of the HSP90 family were completely conserved in the deduced amino acid of PeHSP90. The expression of PeHSP90 was induced by 3 heavy metals or elevated temperature, under which Zn²⁺ displayed effects were more toxic than those of Cd²⁺ and Cu²⁺. The polyclonal antibodies generated from the recombinant product of PeHSP90 were specifically identified not only in the recombinant product but also in the native protein from hemocytes. These results strongly suggested that PeHSP90 was involved in heavy metal challenge and thermal stress regulation in *P. esculenta*.

Key words: *Phascolosoma esculenta*; Heat shock protein 90; Heavy metal; Gene expression; Western blot