

Molecular Cloning and Characterization of a Peroxiredoxin Gene from the Mole Cricket, *Gryllotalpa orientalis*

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We report the cloning, expression and characterization of a cDNA encoding the antioxidant enzyme peroxiredoxin (Prx) from the mole cricket, *Gryllotalpa orientalis*. The *G. orientalis* Prx (GoPrx) cDNA contains an open reading frame of 660 bp encoding 220 amino acid residues and possesses one cysteine residue that is characteristic of 1-Cys subgroup of peroxiredoxin family. The deduced amino acid sequence of the GoPrx cDNA showed 69% identity to *Drosophila melanogaster* (DPx-2540), 50% to *D. melanogaster* (DPx-6005), and 47% to *G. m* (GmPrx). Phylogenetic analysis further confirmed a closer relationship of the deduced amino acid sequences of the GoPrx gene to the DPx-2540 within the 1-Cys Prx cluster. The cDNA encoding GoPrx was expressed as a 27-kDa polypeptide in baculovirus-infected insect Sf9 cells. The purified recombinant GoPrx was shown to reduce H₂O₂ in the presence of electrons donated by dithiothreitol, but did not shown the activity in the presence of thioredoxin as electron donor. Northern blot analysis revealed the presence of GoPrx transcripts in all tissues examined. When H₂O₂ was injected into body cavity of *G. orientalis* adult, GoPrx mRNA expression was up-regulated in the fat body tissues from 3 hr post-inoculation. In addition, the expression levels of GoPrx enzyme in the fat body were particularly high when *G. orientalis* adult was exposed at low (4 °C) and high (37 °C) temperatures, suggesting that the GoPrx seems to play a protective role against oxidative stress caused by temperature stimuli.