

Molecular characterization and expression of mud loach metallothionein gene

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A metallothionein (MT) gene and its promoter sequence were isolated from mud loach, and the stimulated expression during experimental exposures to various heavy metals were characterized. The full-length open reading frame (ORF) of mud loach MT cDNA encoded 60 amino acids with a high content of cysteine (33%). The genomic ORF sequence of mud MT isolated by PCR comprised of three exons intervened by two introns. Deduced MT amino acid sequence showing the high identity with other MTs from fish species and the evolutionary relationships based on molecular phylogenetic analysis represent the general agreement with known taxonomic positions. Expression of mud loach MT was significantly elevated during the heavy metal-exposures. The amount of stimulation was dependent upon the dose levels of metal ions and duration of exposures in general, as assessed by semi-quantitative RT-PCR and real-time PCR analyses.

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