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Chitinase genes are affected by heavy metal distributions in the burrowing mud crab *Macrophthalmus japonicus*

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Chitinases are crucial enzymes in chitin degradation of crustaceans. Chitinase genes have an important function in numerous physiological processes, such as nutrition, morphogenesis, and immune-system. The burrowing mud crab, *Macrophthalmus japonicus* (Ocypodoidea) is a major bioturbator of tidal flats and plays a crucial role in purifying sediment. We compared heavy metal concentrations and analyzed the mRNA expression of *M. japonicus* chitinases, which play the important role in the formation of chitin exoskeleton. The heavy metal distributions investigated in crab body and coastal sediments. High concentrations of heavy metals were observed in crab body inhabiting Hampyeong among coastal sites. The toxic heavy metals, such as Cd, Pb, and Hg, were observed in Myodo sediments. Transcriptional response of chitinase genes showed differently in *M. japonicus* gill and hepatopancreas tissues from Myodo and Yeoja bay of South coast in Korea. The results suggested that chitinase gene expressions were affected by the total bioconcentration of heavy metals in crabs.