

Effect of Chronic Exposure of Heavy Metals on Glutathione S-transferase Activity of Freshwater Snails

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Anthropogenic activities lead to the release and accumulation of heavy metals in aquatic bodies. A report on the Bulawayo Lower Mguza dam which receives domestic and industrial effluent from Bulawayo city, revealed high levels of the heavy metals cadmium, copper, lead and mercury in the water. The current study therefore was aimed at investigating the effect of chronic exposure of these metals on one of the antioxidant enzymes, glutathione S-transferase (GST), of *Lymnaea natalensis* snails. The GST enzyme plays a crucial role in the defence against oxidative injury in cells. Groups of snails were exposed to heavy metals at concentrations reportedly found in the Lower Mguza dam, for 28 days. Water and feed were changed daily, and samples were collected at 1, 7, 14, 21 and 28 day intervals before analysing for inhibition of GST activity. All heavy metals caused inhibition. Exposure to cadmium caused up to 60% inhibition from day 1- day 21, with a significant decrease on day 28 (30%). Inhibition increased for both copper and mercury exposures between days 1 and 21 with high inhibitions on day 21 of 70% and 80% respectively. Day 28 showed a decrease in inhibition, albeit, insignificantly with copper as compared to the mercury exposures which showed 25% inhibition. Variation in inhibition was observed with the lead exposures. The results suggest that chronic exposures may inhibit GST activity for a certain period, after which, inhibition subsides, possibly due to adaptation