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Elimination of Essential (Cu, Zn) and Non-Essential (Cd, Pb) Metals from Tissues of a Freshwater Fish *Tilapia zilli*

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**Abstract:** *Tilapia zilli* were exposed to the same concentration (1 mg/L) of essential (Cu, Zn) and non-essential (Cd, Pb) metals for 10 days so that these metals would accumulate in the liver, gill, brain and muscle tissues. Subsequently, the animals were transferred to uncontaminated water for a period of elimination, during which samples were taken at days 1, 7, 15 and 30. Cadmium and lead accumulated in all the tissues and the tissue concentrations increased many times compared to the levels of these metals in the control fish (<0.05 mg/g d.w.). The brain also accumulated lead to a high level. Copper also accumulated significantly ( $P<0.01$ ) in all the tissues studied except for muscle tissue. The accumulation of zinc was not significant ( $P>0.05$ ) in any tissue. The accumulation of the metals was found to be considerably different when the tissues and the metals were compared with each other. After a 30-day elimination period, the levels of cadmium, lead and copper in the gills decreased 21.5 ( $P<0.001$ ), 3.02 ( $P<0.05$ ) and 7.37 ( $P<0.05$ ) times, respectively. Cadmium and copper were not eliminated from the liver. On the contrary, the levels increased during the elimination period. Lead was the only metal that was eliminated to a significant extent from the liver. Elimination of the metals also showed considerable differences in terms of both the tissues and the metals. The elimination levels of cadmium and copper from the gills were higher than the elimination level of lead, while the opposite was true for the liver.

**Key Words:** RCu, Zn, Cd, Pb, Accumulation, Elimination, *Tilapia zilli*

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