Effects of Dietary Manganese Supplementation on Antioxidant Enzyme Activity in the Shrimp (*Neocaridina heteropoda*)

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Abstract

The effects of the manganese (Mn) supplemented diets on the level of superoxide anions (O$_2^-$) in the hemolymph, and the activity of superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPX) in the muscle of *Neocaridina heteropoda* were investigated. Manganese sulfate (MnSO$_4$) was added to a basal diet at 0, 20, 40, 60, 80, or 100 µg/g. Diets were fed to triplicate groups of shrimp (0.30±0.11 g, 1.4±0.1 cm) in a recirculating freshwater rearing system for 30 days. The Mn concentration in the rearing water, monitored during feeding, was 1.00±0.02 µg/l. O$_2^-$ was lower and antioxidant enzyme activity was higher ($p<0.05$) in shrimps fed Mn-supplemented diets than in shrimps fed the control. Antioxidant enzyme activity reached a maximum when the Mn concentration was 60 µg/g diet.

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