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Effects of montmorillonite on Pb accumulation, oxidative stress, and DNA damage in tilapia (*Oreochromis niloticus*) exposed to dietary Pb.

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Abstract

In order to investigate the effects of montmorillonite (MMT) on reducing dietary lead (Pb) toxicity to tilapia (*Oreochromis niloticus*), 240 fish were randomly divided into four treatments denominated as follows: control treatment (fed with a basal diet), MMT treatment (fed with a basal diet added with 0.5% MMT), Pb treatment (fed with a basal diet added with 100 mg Pb per kilogram dry weight (dw)), and Pb + MMT treatment (fed with a basal diet added with 100 mg Pb per kilogram dw and 0.5% MMT). Changes in Pb accumulation, oxidative stress, and DNA damage in tilapia were measured after 60 days. DNA damage was assessed using comet assay. The results showed that MMT supplemented in diet significantly reduced Pb accumulation in kidney and blood of tilapia exposed to dietary Pb ($P < 0.05$). Malondialdehyde level decreased insignificantly while levels of total antioxidant capacity and glutathione (GSH), activities of glutathione peroxidase, and superoxide dismutase increased insignificantly in kidney of tilapia in Pb + MMT treatment as compared to Pb treatment ($P > 0.05$). Significant decreases in tail length, tail DNA, tail moment, and Olive tail moment of peripheral blood cells in Pb + MMT treatment were observed when compared with Pb treatment ($P < 0.05$). The results indicated that dietary MMT supplementation could alleviate dietary Pb toxicity to tilapia effectively.

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Publication Types, MeSH Terms, Substances

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