



Gill and Liver histological alterations in juvenile *Oreochromis niloticus* exposed to contaminated sediment from a fisheries harbour

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Histo-pathological biomarkers are widely used to elucidate potential toxicological impact of contaminated sediments on organisms, including fish. A controlled laboratory experiment of sediment toxicity was carried out to qualitatively examine gill and liver histological alterations in juvenile *Oreochromis niloticus* exposed to contaminated sediment from a fisheries harbour. Four groups in duplicate, namely negative control (no sediment), reference group (pristine sediment), and two exposure groups with single (T1) and triple (T2) levels of HC-contaminated sediment from a fishery harbour were used. The study aimed at reporting the gill and liver histology in randomly selected fish (n=6 per group in duplicate) from the four experimental groups at the end of 16-week period. Gill histology was found to be altered in all the examined fish in T1 and T2 groups when compared to the gill histology found in the negative control and the reference groups. Pathological alterations of the gills include epithelial hyperplasia and hypertrophy, dilation of marginal canals, and hyperplasia in the inter-lamellar space, and lamellar fusion apparently blocking the water flow between lamellae. Major liver histo-pathological indications were observed in all examined fish in T1 and T2 groups, including vacuolization of liver cells and focal necrosis. The results reveal that long term exposure to persistently contaminated sediment causes histological alterations in gill and liver of fish, and highlight the bioavailability of sediment-associated pollutants to the fish.

Keywords: biomarker responses, harbour sediment, histopathology, toxicity assays

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