



Evaluation of selected rat liver enzyme activities following consumption of diet contaminated with crude oil

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ABSTRACT

Objective: To study liver enzyme profiles of rats fed on catfish that were artificially exposed to crude oil contamination.

Methodology and results: Changes in selected liver enzymes of albino rats fed on diet formulated with catfish that were exposed to water polluted with crude oil for 30 days were studied. Catfish (*Clarias gariepinus*) (n = 120) were divided into 6 groups of 20 catfish each and held for 30 hours in 5 different treatments of water that was artificially polluted with crude oil at 0.1, 0.25, 0.5, 0.75 and 1% v/v. Catfish in the control group were kept in borehole water. At the expiration of 30 hours, the catfish were harvested and used to formulate diet. Albino rats (n = 60) in 6 groups of 10 rats each were fed on the formulated diet for a period of 30 days, each group being consistently fed on a diet of catfish exposed to one level of crude oil pollution. The control rats were fed on diet containing catfish cultured in

borehole water. In comparison with the control, the results revealed a significant reduction ($p < 0.05$) in the activities of aspartate transaminase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP) and gamma glutamyl transferase (GGT) in the liver of rats as the concentration of crude oil in the diet increased. Conversely, the activities of these enzymes in the serum of albino rats increased significantly ($p < 0.05$) when compared with the control.

Conclusion and application of findings: The data obtained indicate potential adverse effects of crude oil on albino rats which is manifested by changes in activity of enzymes in the liver. This study has shown that crude oil portends serious damaging effects on the hepatocytes as evidenced by reduced activities of GGT, AST, ALT and ALP in the liver of rat fed on crude oil contaminated catfish. Hence, hepatic functions may be impaired. Therefore, it is advisable that people should avoid consuming fish from water that is potentially contaminated with crude oil especially at concentrations above 0.25% v/v.

Key words: crude oil, enzymes, pollution, serum, liver, catfish