

Hepatic enzyme markers and proteins in serum and some selected tissues in *Clarias gariepinus* from swamp around Kokori-Erhoike oil field, Nigeria

Authors:

Osioma E^{1*}, Akanji MA¹
and Arise RO¹.

Institution:

1. Department of
Biochemistry, Faculty of
Science, University of Ilorin,
Nigeria.

Corresponding author:

Osioma E.

ABSTRACT:

This study determines changes in some biochemical parameters in serum and tissues of *Clarias gariepinus* obtained from fish natural habitat in the oil exploration environs of Kokori-Erhoike in Delta State, Nigeria. Sampling sites include Ethiopie River (Eku axis, reference Site A); Erhoike swamp (Site B) and Erhoike fish pond (Site C). However, Sites B and C are located in the oil exploration region of Erhoike. *Clarias gariepinus* (n=8) were collected from each site and used for the study. Levels of total proteins, albumin, haemoglobin as well as the activities of alanine aminotransferase (ALT), aspartate aminotransferase (AST) and alkaline phosphatase were determined in serum, gill, liver, brain and muscle tissues. Results showed that total protein concentrations were comparable ($p>0.05$) in serum. Albumin concentrations of fish from Site B and C were lower ($p<0.05$) as compared with that of site A in gill, muscle and brain tissues. Haemoglobin concentration was significantly lower ($p<0.05$) in fish from Site A as compared with that of Sites B and C. Results also indicated that total protein and albumin concentrations were significantly ($p<0.05$) higher in gill, muscle and brain tissues of *Clarias gariepinus* from Site A as compared with fish tissues from Sites B and C. Hepatic enzymes (ALT and AST) and ALP activities were elevated ($p<0.05$) in serum, gill, brain and liver of fish from Sites B and C as compared with that of Site A. The observed biochemical changes in fish from Sites B and C could have resulted from contaminants arising from the oil exploration activities in Site B and the presence of organic/inorganic contaminants in Site C due to the presence of fish feeds. These biochemical alterations show that the fish were under stress in their natural habitat. These biomarkers could be employed in the environmental monitoring of crude oil pollution as well as early warning signs of the adverse effects of environmental pollution.

Keywords:

Fish, Kokori-Erhoike, *Clarias gariepinus*, Albumin, Alkaline phosphatase, Haemoglobin.