

**Alteration in Physiological and Histological Features of *Clarias gariepinus*  
Parenchyma Cell upon Exposure to Zinc Sulphate**

**ABSTRACT**

African catfish, *Clarias gariepinus*, specimens were subjected to separately expose to different concentration of zinc sulphate (25, 50, 75, 100, 150, 200 and 250 mg/L) for 96 h. By comparing to the unexposed specimens through physiological observation as the zinc sulphate concentration increases, the exposed specimens showed decreased food intake, lack of startle response, increased abnormalities in terms of swimming activity and pattern, surfacing activity, mucus secretion consequence to the increasing number of mortalities. Histological and ultrastructural alteration on exposed *C. gariepinus* gills was observed such as aneurysm, necrosis, rupture of capillaries, erythrocyte release and lamella fusion. Neurotic, hepatic, splenic and muscle cells demonstrated an increasing number of irregular polygonal shape, sinusoidal dilatation, vacuolation and parenchymatous degeneration associated with the toxic effect of zinc sulphate. In situ observation of *C. gariepinus* blood by scanning electron microscopy displayed huge differences in number of cells in exposed specimen compared to unexposed. The present study revealed that exposure to a toxic concentration of zinc sulphate significantly caused abnormalities in activity of the fish associated with histology changes of the parenchymal cell. Moreover, the baseline data is a useful reference for designing biomarker tool to assess the contamination level in the environment especially water bodies.