

Research article

## Biophysicochemical changes in Nile tilapia, *Oreochromis niloticus* exposed to $ZnSO_4 \cdot 7H_2O$ and $ZnCl_2$ metal toxicant

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### Abstract

During the present investigation, the LC<sub>50</sub> values and lethal concentrations of  $ZnCl_2$  and  $ZnSO_4 \cdot 7H_2O$  for *Oreochromis niloticus* were determined. The LC<sub>50</sub> and lethal concentrations for each metal salts were computed by using Probit analysis method at 95% confidence interval. The 24, 48, 72-hr LC<sub>50</sub> and lethal concentrations of Nile tilapia for zinc chloride were found to be 50.27 mg/L, 37.05 mg/L and 17.99 mg/L and for zinc sulphate were 68.73 mg/L, 51.71 mg/L and 44.62 mg/L in respective time intervals. The tolerance limits of fish for both zinc chloride and zinc sulphate varied significantly in terms of time and lethal concentrations. However, fish were significantly tolerant to zinc sulphate than that of zinc chloride. With the increase in metallic ion concentration of the water, the level conductivity and TDS (Total Dissolved Solids) increased, while that of dissolved oxygen decreased constantly. The reverse order of dissolved oxygen with concentration indicating that oxygen consumption by the fish decreases under metallic ion stress. The present study also assessed the proximate composition, including protein, lipid, moisture, dry ash, organic contents of *Oreochromis niloticus* exposed to  $ZnCl_2$  and  $ZnSO_4 \cdot 7H_2O$ . This showed a significant decrease in protein, lipid, dry ash content and increase in moisture and organic content.