Abstract

The effects of Nickel and Zinc intoxication have been studied in freshwater farmed fish, *Cirrhinus mrigala* on the serum enzymes, histology of liver, spleen and kidney and their selective absorption by these organs.

The LC_{50} of Nickel Chloride and Zinc Chloride were determined by Reed-Muench Method, to be 90.01ppm and 17.68ppm, respectively. In acute exposure, the fish were exposed to 3 sub-lethal concentrations of nickel chloride (60, 70 and 80ppm) and zinc chloride (8, 10 and 12ppm) for 48 and 96 hours. In chronic exposure, a sub-lethal concentration of $NiCl_2$ 20ppm and $ZnCl_2$ 5ppm was used for 4, 8, 16 and 32 days in each group.

The serological studies included Alanine Aminotransferase, Aspartate Aminotransferase, Alkaline Phosphatase, Bilirubin, Creatinine and Glucose. These showed varying trends in acute and chronic exposures.

Different histopathological changes were observed. The liver showed nuclear pyknosis, necrosis along with cirrhosis, fatty degeneration, vacuolar degeneration and atrophy. The spleen showed necrosis, expansion in melanomacrophage centers, atrophy, haemosiderosis, fatty degeneration, dilation in ellipsoids and congestion. The kidney showed inflammation of renal tissue, cloudy swelling, nuclear pyknosis, necrosis, infiltration of blood cells in renal and haemopoietic tissues.

The variable observations were made during selective absorption by liver, spleen and kidney; with liver and kidney showing higher bioaccumulation of nickel and zinc.