RESEARCH **P**APER

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Bioassay evaluation of acute toxicity levels of lead chloride to *Channa punctatus* Bloch

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The present study deals with the acute toxicity of lead chloride on the behaviour and mortality of *Channa punctatus*. The LC $_{50}$ values for 24, 48, 72 and 96h have been determined. The results indicate that the fish exposed to different concentrations of lead chloride exhibited slow abnormal behaviour, skin depigmentation and a dose and dose-time dependent mortality rate.

Key words : Channa punctatus, Lead chloride, Acute toxicity, Behavioural changes, Mortality

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INTRODUCTION

The contamination of fresh waters with a wide range of pollutants has become a matter of concern over the last few decades (Vutukuru, 2005). The natural aquatic systems may extensively be contaminated with heavy metals released from domestic, industrial and other man-made activities. Heavy metal contamination may have devastating effects on the ecological balance of the recipient environment and a diversity of aquatic organisms (Farombi et al., 2007; Vosylinene and Jankaite, 2006). Heavy metals play an important role among numerous factors contributing to pollution into a fish body from the environment either through direct uptake form water or with food. In consequence, they become substantially accumulated in fish tissues, their concentration increases greatly than that of water. These heavy metals affect their behaviour, growth and reproductive capacity. These metals include mercury, nickel, lead, arsenic, cadmium, aluminium, platinum and copper (metallic and ionic form). Most of the heavy metals are highly toxic. Lead is biologically non essential metal and can be toxic to biota even at very low levels. Studies have shown that lead is accumulating in the fish at alarming levels (Senarathne and Pathiratne, 2007). Lead is known to cause the disease called plubism. It accumulates in aquatic biomass, gets concentrated and passed up the food chain to human consumers. Lead is also known to damage the brain, the central nervous system, kidneys, liver and the reproductive system (Ademoroti, 1966). In the present research *Channa punctatus* Bloch was selected due to its adoption in polluted aquatic environment. The purpose of this research is to quantify the LC $_{50}$ for different time interval and its effect on the mortality and behaviour of the test fish.

Research Methodology

The study was carried out at department of Zoology, R.B.S. College, Agra, Uttar Pradesh. Test fish *C. punctatus* (Bloch) (14-16 cm length and 60-70 g) were collected from the local ponds and pools. Test fishes were acclimated to the laboratory condition for one month in large plastic tubs containing 50 litres of tap water (having dissolved oxygen 8 mg/l, hardness 23.25mg/l and temperature $22\pm2^{\circ}$ C) prior to the commencement of the experiment. During their confinement the fish were regularly fed on every alternate day with minced goat liver. Water was renewed every 24 hours along with the removal of unconsumed food and fecal matters.

Determination of LC ₅₀:

Acute toxicity assays:

Laboratory bio assays were conducted to determine the 24 hrs, 48 hrs, 72 hrs and 96 hrs LC_{50} values for *C. punctatus* exposed to lead chloride. The experimental design and