



# Impact on Oxygen Consumption of Freshwater fish *Oreochromis mossambicus* after lead nitrate intoxication

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## ABSTRACT

The present investigation was carried out on oxygen consumption of fresh water fish *Oreochromis mossambicus* after exposure to lead nitrate. The heavy metal pollutants released into the natural aquatic environment by human activities interact with the living organisms. In present study the amount of oxygen consumption decreased after exposure to lead nitrate as compared to control set. The observations and results discussed in detail.

**Keywords:** Lead Nitrate, Oxygen consumption, *Oreochromis mossambicus*.

## INTRODUCTION

The main source of water pollution are pesticides, domestic sewage and industrial effluents, fertilizers etc. which pollute major water resources. (Maruthanay and Sharmila 2004). In India *Oreochromis mossambicus* was found in the near mossy freshwater Rivers, ponds and lakes. Oxygen uptake in fishes is depends on extrinsic and intrinsic factors such as temperature, salinity, PH, level of dissolved oxygen and CO<sub>2</sub> in waters. (Fry 1957, Prossor 1972 and Dejuurns 975). The higher concentration of heavy metal leads to physical, chemical and biological properties of water and can cause hazardous effects of aquatic biota (Jagg deesan et al. 2001). The concentration of these heavy metals are entered in the tissue of fishenters into human being through food chain (Shehawi et al. 2007). The Water pollution is the major problem now a day due to civilization, industrialization and green revolution. The pollution affects the ecosystem and human health (Barde et.al 2015). The present investigation has been undertaken to find out the sub lethal concentration of lead nitrate on oxygen consumption of fresh water fish *Oreochromis mossambicus*.

## MATERIAL AND METHOD

The fish *Oreochromis mossambicus* were collected from the Godavari river Nanded region (MS) with the help of local fisherman.

The 50-60 gm fishes were used for the experimentation. The fishes were kept in glass aquarium and fed with slice of tubifex. They were acclimatized in laboratory conditions for 15 days. Then these fishes are divided into two groups. The group A for control set and group B for sub lethal concentration of lead nitrate 10 ppm. The fish prior to experiment were starved to avoid any variations in the respiratory metabolism. The respiratory metabolism was studied by winkler's method (Nagabhushanam et al 1981).

## RESULTS AND DISCUSSIONS

The fresh water fish *Oreochromis mossambicus* showed variations in total oxygen consumption after exposure to lead nitrate as shown in Figure -01. The oxygen consumption slightly increased in treated fish at 24 hr as compared to normal fish. An increase in metabolic activity the rate of oxygen uptake also increases (Bhattacharya et. al. 2006). Oxygen is the key element in the metabolic processes of fishes to provide energy for life processes (June 2007).

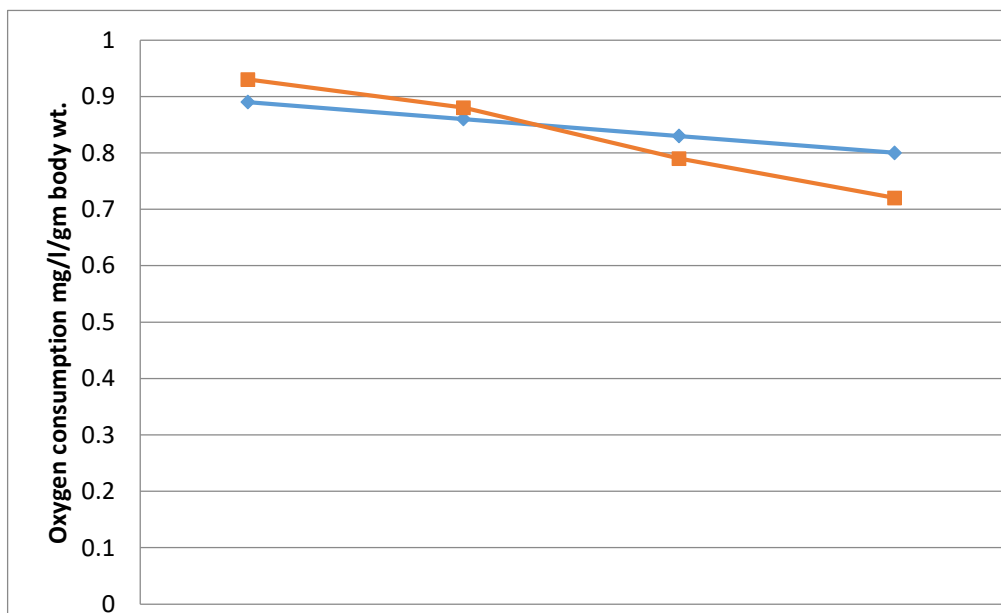


Figure 1: impact on oxygen consumption of fresh water fish *Oreochromis mossambicus* after lead nitrate

The rate of oxygen consumption in fish depends upon various abiotic and biotic factors (Imabayashi and Takhashi 1987). The animal in stress condition requires greater energy demand for performing enhanced metabolic activities. The exposed animals exhibited marked alterations in oxygen consumption. The treated animals showed increased oxygen consumption at 24 hour exposure than control animals but declined at 96 hour exposure. Similar results were observed in fresh water prawn *Macrobrachium dayanum* (Kunwarji Tiwari et. al 2009). Oxygen consumption rate is a very important indicator which can reflect the physiological state and stress conditions influenced by external factors (Jianyi et al 2011). Oxygen is necessary to provide energy for life and its availability imports limits on distribution and survival of animals.

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