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# Manganese induced haematological and histopathological changes in *Oreochromis Mossambicus* (Peters, 1852)

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## Abstract

The effects of sub-lethal concentrations of manganese on hematological and histological parameters in *Oreochromis mossambicus* were investigated. The $LC_{50}$ value of manganese for *O. mossambicus* was estimated using the Probit method and was found to be 4121ppm. The erythrocyte count (RBC), leucocyte count (WBC), hematocrit (Ht), and mean corpuscular hemoglobin concentration (MCHC) were reduced ($p > 0.0001$) in fish exposed to the toxicant concentrations compared to the control groups. However, Haemoglobin values (Hb), showed an initial increase after 20 days and then decreased after 30 days at a high sublethal concentration.Mean Corpuscular Haemoglobin content showed decreasing trend at lower sublethal concentration and in other two higher sublethal concentrations MCH increased than control fishes ($p < 0.0001$). The mean corpuscular volume (MCV) increased in all concentrations after 10 days and decreased after 20 and 30 days. Observations of the tissues showed that manganese had profound destructive effects on the gills, liver and kidney of the fish. The gills showed proliferation of the lamellar epithelium and lamellar fusion, the liver showed necrosis and the kidneys showed constriction of the tubular lumen. The study shows that manganese is harmful to *O. mossambicus* at sub-lethal concentrations and that the applications of this trace metal close to water bodies is a dangerous threat to aquatic life.

## Biography

S. Bijoy Nandan, Associate Professor in Dept. of Marine Biology, Microbiology & Biochemistry, School of Marine Sciences, Cochin University of Science & Technology, India. Earlier worked as Technical Officer & Head, Central Inland Fisheries Research Institute Centre, Kerala and as Senior Instructor (Fishery Biology) in Central Institute of Fisheries, Nautical & Engineering Training (CIFNET), Govt. of India, Cochin. He has received the Jawaharlal Nehru Award, Indian Council of Agricultural Research (1993), Best Paper Presentation Award, Indian Environment Congress (2008), Recognition Award, Zoological Society of India. He is the Technical Member, Kerala State Pollution Control Board and was Member, Indian Arctic Expedition in 2011, He received the U.S Fulbright – Nehru Visiting Fellowship for 2013-14 period. He is implementing several research projects funded by national and state agencies and has 135 publications in refereed national and international journals.