Light Microscope Studies on the Effects of Zinc-treated Water Media on the Kidney of *Oreochromis niloticus* Fingerlings

Ermelinda Goc-ong Tobias [1] and Virginia S. Cariño[2]

Abstract

Light microscope studies of the effects of sublethal concentrations of zinc as ZnSO4.7H2O on the tail kidney of* Oreochromis niloticus *fingerlings were done. Hyperemia and damage to interstitial tissues were consistently observed in both sampling periods of both concentration groups. Dense bodies and vacuolations were prevalent in the early stage of the experiment. In addition, tubular necrosis, dilation of the tubules and the Bowman's capsule, compact glomeruli, thinning of the tubular epithelia and hyperplastic Bowman's capsule were also observed in varying degrees and incidences.

Key Words : *Oreochromis niloticus* , kidney, zinc sulfate, light microscopy

Introduction

The aquatic ecosystems are considered as sinks for a conglomeration of pollutants like residues of inorganic fertilizers and pesticides, detergents, petrochemicals and heavy metals.

Heavy metals are widely distributed in the environment through anthropogenic activities, industrial discharges, mining operations, weathering and leaching (Schreck and Lorz, 1978) where they proved toxic to its flora and fauna (Kay et al., 1986; Bagatto and Alikhan, 1987).

A heavy metal like zinc , in trace concentrations, is a normal constituent of many organisms. It is recognized as essential nutrient for growth and development of plants and animals. Zinc is also present in DNA and RNA and is necessary for the synthesis of nucleic acids and proteins (Cousins, 1985). Excess zinc in aquatic medium comes from electroplating, smelting and ore processing and drainage from both active and inactive mining operations (Narain and Nath, 1986) affecting ichthyofauna directly or indirectly. Studies have shown that zinc accumulates through time (Bradley and Sprague, 1985a) in different organs like gills, liver, kidney, gut, gonads, brain and bone; hence, affecting primarily the functions of respiration,

This study was funded by a grant from the National Research Council of the Philippines (NRCP)

[1] Department of Biological Sciences, College of Science and Mathematics, MSU-Iligan Institute of Technology, Iligan City

[2] Institute of Biology, College of Science, University of the Philippines, Diliman, Quezon City