Abstract

This study was carried out to evaluate the effect of sublethal Zn concentrations on the growth performance, biochemical variables, and whole-body chemical composition of Nile tilapia. Three experiments were conducted to determine the 96-h LC_{50} of Zn for Nile Tilapia and the chronic Zn effect on fish growth, biochemical variables, and Zn uptake and bioaccumulation in fish body. It is noticed that the Zn 96-h LC_{50} concentration for Nile tilapia fingerlings was 70.0 mg/L. The unionized ammonia was significantly affected by Zn concentration, exposure period, and/or dietary protein level. Fish performance and feed utilization were significantly affected by Zn concentration, exposure time, and dietary protein level. All biochemical parameters were significantly affected by Zn concentration, exposure time, and/or dietary protein level. Serum glucose, AST, ALT, creatinine, and cortisol increased significantly but serum total protein and total lipids decreased significantly by increasing Zn concentrations. Crude protein and total lipid contents in fish body decreased significantly by increasing Zn toxicity. Ash content increased significantly by increasing water-born Zn concentration. The Zn concentrations after 1 week was found to follow the order of gills > liver > kidney > muscle, meanwhile after 6 weeks it followed the order of liver > kidney > gill > muscle. The Zn residue increased significantly with increasing Zn concentration, but the interaction of Zn dose and dietary protein level was insignificant.