r

Project Summary

To Evaluate the effect of curcumin in amelioration of cadmium induced toxicity in fishes

Contamination of aquatic ecosystems with heavy metals has been reported by researchers in different parts of India and globe as a whole. They are of major concern because of their toxicity, persistence and tendency to accumulate in organisms. All these chemicals threaten the existence of flora and fauna and adversely affect the ecological balance leading to unwanted mortality of aquatic biota including fishes. Cadmium is omnipresent heavy metal which enters the biological systems from different sources and is recognized to produce severe toxic effects in humans. Cadmium cause widespread damage in the aquatic biota including fish.

The project was under taken to study the amelioration effect of curcumin on cadmium induced toxicity in Tilapia *Oreochromis mosambicus.* Fish was treated with different concentrations of cadmium to determine the LC50 and sublethal concentration was selected for the study. Fishes were exposed to cadmium, curcmin and cadmium +curcumin. At the end of exposure period, fish from each group treatment were netted and samples were collected. RBC,WBC and Hemoglobin was estimated using standard protocols. The RBC count decreased in cadmium treated fishes. The results may be due to the oxidative stress caused by the toxicant. The WBC in fishes treated with curcumin was similar to the control. The increase in WBC in treated fish is due to the stress related leuocytosis. The hemoglobin of fishes treated with cadmium showed a decrease in hemoglobin. The observed depletion in hemoglobin could be attributed to lysing of erythrocyte cells hence reduction of RBC count. Protein level in Liver , muscle and gills in different groups of fish was estimated. Tissue protein content is known to indicate xenobiotic induced stress in aquatic organisms. The protein level decreased in experimental fish from that of control during the exposure period. Fish treated with curcumin had protein content similar to the control as curcumin is known to quench ROS and reduce oxidative stress.

AST, ALT and ACP showed increase in cadmium treated fishes as compared to the control. Fishes treated with both cadmium and curcumin showed enzymes activity less than fishes treated with cadmium alone.

Our study showed that curcumin a potent antioxidant could be used in fish diet to reduce cadmium induced toxicity in Tilapia.