

ABSTRACT

The presence of high level of fluoride (>2.5mg/L) in pond water causes a serious health problem to fresh water fishes under farming and algae in the pond too. WHO standards and BIS: 10500-1991 permits only 1.5mg/L as a safe limit of fluoride in drinking water for human consumption. Elevated fluoride concentration in water has been associated with dental and skeletal fluorosis, severe enamel fluorosis, osteosarcoma (bone cancer), osteoporosis, reduced IQ and neurological effects. The project work comprises fluoride toxicity studies in fish for 90 days and albino rat for 60 days. The study was again extended for 60 days in fish and 30 days in albino rat to analyze the recovery of adverse effects of fluoride by probiotic bacteria *L. rhamnosus*. The probiotic bacteria *L. rhamnosus* was mixed with feed for fish and administered orally for albino rat to recover the adverse effects of fluoride toxicity. Depuration group of fish and albino rat were also maintained to study the self reversal ability of the animal to the toxic effects of fluoride. Study results showed that fish grown in 75.6 mg F/L water was found to be the most affected fish group than fish grown in 37.8 mg F/L water. Fluoride exposure to albino rats caused alterations in all biochemical characters of the blood and body tissues such as liver, kidney and spleen. By comparison, 20.2mg F/kg body weight administered rats were more susceptible than 10.1mg F/kg body weight administered rats. Adverse effects of fluoride were recovered slowly in the depuration groups and of fish and rat and rapidly in the probiotic treated groups of fish and rat. The findings of the study indicate that the probiotic bacteria *L. rhamnosus* have marked capacity to cope with the toxicity of fluoride in fish and albino rat. In addition, the bacteria induce the body by depriving it from the adverse effects of fluoride. Thus the probiotic bacteria *L. rhamnosus* could be used as a therapeutic regimen to ameliorate fluoride toxicity in endemic areas with fluorosis.