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Research Highlight

Oreochromis niloticus: AN IDEAL MODEL TO ASSESS THE EXTENT OF POLLUTION IN AQUATIC ENVIRONMENT

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Presence of heavy metals effectuate chemical pollution in water which deteriorates human health as well as animals and when they consume the contaminated water, it results in severe ailments. Harmful substances get accumulated and induce toxicity to aquatic the life which are playing a major role in aquatic ecosystems[1].

Therefore, the evaluation of biological impacts on aquatic vertebrate as well as invertebrate species is employed to determine water pollution as it provides significant information regarding bioavailability as well as effective concentration levels. In this regard, genotoxic agents that produce DNA changes at subtoxic exposure levels are of special concern. As, clastogenic (chromosome breaking) compounds leads towards modified reproductive results, genetic diseases as well as cancer[2].

Oreochromis niloticus is regarded as one of the most commercial and widespread freshwater fish species. A variety of species of tilapia have been recommended by several researchers as test models for both cytogenetic as well as molecular inveigations[3].

Accordingly, scientists carried out a novel research in order to explore the ability of copper sulfate ($CuSO_4$) as well as lead acetate $(CHCOO)_3$ Pb in inducing chromosomal aberrations in aquatic organisms. For this purpose, *Oreochromis niloticus* was selected as a test material[4].

During this experiment, the research team evaluated the LC_{50} of the two chemicals and the data indicated that LC_{50} of copper sulfate and lead acetate were 40.6 and 422.5 mg L^{-1}, respectively. Afterward, scientists studied the impact of both chemicals on fish chromosomes and mitotic indices[4].

This research showed that gill cells of the tested fish by copper sulfate and lead acetate exhibit lower mitotic activity as compared to the control group. However, both the chemicals were noted to be a positive inducer of macro-DNA damage and displayed different types of aberrations.

Conclusively, water pollution, particularly with heavy metals, possess a clastogenic effect on fishes and it can cause health risks among humans through chronic consumption of these

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fishes. This study also suggested that *O. niloticus* can be utilized in order to examine the degree of pollution in the aquatic environment.

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