EFFECT OF BUTACHLOR ON ANTIOXIDANT ENZYME STATUS AND LIPID PEROXIDATION IN FRESH WATER AFRICAN CAT FISH, (CLARIAS GARIEPINUS)

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Abstract: The widespread use of chemicals to control pest weeds has been recognized in agricultural practices. Indiscriminate use of these chemicals to improve agricultural production and yield may result in aquatic pollution due to rain and surface runoff. Butachlor 2-chloro-N-(2,6-diethylphenyl) acetamide is an herbicide that is widely used to control perennial grasses and some broad leaf weeds in Asia, South America and Africa. Butachlor is used in large amounts >100,000,000 lbs/ year for economic weed control in certain parts of Asia and has been found to flow out with effluents causing contamination of rivers. There is paucity of toxicological information available on it and the exact mechanism of its toxicity is poorly understood. The present study was therefore undertaken to evaluate the influence of Butachlor, on antioxidant enzyme system and lipid peroxidation formation in African cat fish (Clarias gariepinus). Fishes were exposed to sub-lethal concentrations of Butachlor (1, 2, 2.5 ppm) and sacrificed 24hrs after treatment. A significant increase in malondialdehyde formation, a marker of lipid peroxidation, was observed in the liver, kidney, gills and heart of the fish following exposure to different concentrations of Butachlor. Superoxide dismutase, Glutathione peroxidase and Catalase activities increased in the liver and kidney but decreased in the gills and heart of the fish following exposure to different concentrations of Butachlor. Glutathione level and Glutathione-S-transferase activities increased (P<0.05) in the liver but decreased in the kidneys, gills and heart when fishes were exposed to the three concentrations of Butachlor. The results suggest that Butachlor induced oxidative stress in the various tissues of the fish particularly in the kidney and as such the organ may be subjected to severe oxidative toxicity due to depressed glutathione detoxification system.

Keywords: Butachlor, African catfish, antioxidant enzymes, oxidative stress, environmental pollution, pesticides.