

In vivo Inhibition and Restoration of Acetyl Cholinesterase Activities in Induced *Clarias Gariepinus*

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Abstract : This study was conducted to assess the effects of an organophosphate pesticide glyphosate formulation on neurological enzymes in the brain, liver and serum of juvenile *Clarias gariepinus*, and also to examine the antidotal prospect of *Garcinia kola* seeds extract. The fish divided into five groups were exposed to different treatments of glyphosate formulation and *Garcinia kola* seeds extract. Acetyl cholinesterase activities in the brain, liver and serum of the fish were estimated in the experimental and control fishes on day -7, 14, 21 and of 28 by spectrophotometrical methods. The enzyme was significantly ($p < 0.05$) inhibited in glyphosate formulation test. The inhibition percentages of AChE ranged for the brain, liver and serum between 40.7-59.4%, 50-57% and 27.5-51.3%, respectively. The aberrated parameters were recovered in *G. kola* seeds extract treated aquaria, and was dose and time dependent. The present study demonstrated that in vivo glyphosate formulation exposure caused AChE inhibition in the brain, liver and the serum. The brain tissue, however, might be suggested as a good indicator tissue for aquatic pollutants exposure in the fish and *G. kola* seeds extract has shown to be a good remedy for neurology restoration in a noxious circumstance. The findings has shown that xenobiotics could be eliminated from aquatic organisms, especially fish, and could be put into practice in areas at risk of pollutants. This approach can reduce the risks of biomagnification of poison in sea food. Hence, formulation of this plant extracts into capsule should be encouraged and supported.

Keywords : glyphosate, *Clarias gariepinus*, brain, *Garcinia kola*, acetyl cholinesterase, enzymes

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