

**Evaluating the toxic potential of agrochemicals on the hypothalamic-pituitary-thyroid axis in tilapia (*Oreochromis mossambicus*)**

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**Abstract**

Agrochemicals are a major cause of concern for the aquatic environment because of their toxicity, persistence, and tendency to accumulate in the organisms. The impact of these chemicals on aquatic organisms is due to their movement from various diffuse or point sources, which poses a great threat to aquatic fauna especially fishes, which constitute one of the major sources of protein-rich food for mankind. The present study is a first of its kind, where the toxic potential of two sublethal concentration ( $LC_{1/10th}$  and  $LC_{1/25th}$ ) of four different classes of agrochemicals have been tested (Insecticide- Imidacloprid-0.074 ppm, 0.02 ppm, Fungicide- Curzate- 4.9 ppm, 1.96 ppm, Herbicide- Pyrazosulphuron ethyl-50 ppm, 20 ppm and Fertilizer- Micronutrient mixture 500 ppm, 200 ppm) on candidate markers of hypothalamus pituitary-thyroid axis (TSH,  $T_3$ ,  $T_4$ , TSH $\beta$ r) in *Oreochromis mossambicus* (tilapia) by validating hormonal level and mRNA expression. The results reveal that exposure to agrochemicals resulted in a broad range of alterations with maximum damage being caused by insecticide followed by herbicide and fungicide in that order on the thyroid axis. The results of the present study highlight the need for more detailed studies on the effects of agrochemicals that accumulate in organisms and propose that there should be a check on the rampant use of agrochemicals.