

**ASSESSMENT OF THE EFFECTS OF REPEATED
APPLICATION OF FENTHION FOR
MOSQUITO CONTROL ON FISH FAUNA INHABITING
THE ATHTHIDIYA AREA.**

By

Viranga Kumudini Jayasundara [BVSc.]

Department of Zoology

University of Kelaniya

Kelaniya,

Sri Lanka.

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ABSTRACT

Occurrence of filariasis, dengue/dengue hemorrhagic fever is relatively high in Aththidiya area. Repeated spraying of organophosphate insecticide, fenthion as mosquito larvicide has been carried out by local authority of the area to control breeding of vector mosquitoes. In the present study, the resident fish species inhabiting in the selected canals in the Aththidiya area and the effects of repeated application of fenthion on fish were investigated.

Three study sites were selected from the three different tributaries of the main canal, Bolgoda (Site A, B and C were selected near the bridge, fire brigade and the maternity clinic of the Aththidiya respectively). The relative abundance of fish species in the canals were determined. The species of fish inhabiting the study sites were *Oreochromis niloticus*, *Anabas testudineus*, *Ophiocephalus punctatus*, and *Ophiocephalus striatus*. *Oreochromis niloticus* was selected as the test species as this fish species was highly abundant in the three study sites (relative abundance 99.9%). Three consecutive applications of fenthion at the concentration recommended for mosquito control (1000 mg for 100 m² surface area up to 10cm depth) were sprayed to the study sites at weekly intervals. The changes in the brain Acetylcholinesterase (AChE) activity and the condition factor and the pathological changes in the gills and liver tissues of exposed fish were determined. Repeated application of 500 mg l⁻¹ concentration of fenthion significantly inhibited the brain

AchE activity and decreased the condition factor of *Oreochromis niloticus* compared with the fish collected from the same sites prior to insecticide application. After first, second and third applications of fenthion, the condition factor decreased significantly by 19-21%, 27-31% and 40-53% respectively in the fish collected from the study sites. After first, second and third applications of fenthion the AchE activity of the brain inhibited by 45-50%, 64-75% and 88% in the fish collected from study sites. Exposure to fenthion induced hyperplasia of epithelium and club shaped deformities in the lamellae of gills and vacuolar degenerative changes in hepatocytes in the liver of *Oreochromis niloticus*. This study revealed that repeated application of fenthion to canals in the Aththidiya area to control mosquito breeding has detrimental effects on non target aquatic organisms especially *Oreochromis niloticus* inhabiting in these water bodies.