Abstract from Master thesis

In

(Cytology, Histology and Genetics)

Zoology Department

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Title: "CYTOGENETIC STUDIES ON THE EFFECT OF SOME INSECTICIDES IN OREOCHROMIS NILOTICUS"

In this work the effect of Lambda_cyhalothrin as a synthetic pyrethroid and Chlorpyrifos ethyl as an organophosphorous insecticides have been investigated in *Oreochromisniloticus.* The half lethal concentration (LC_{50}) of Lambda_cyhalothrin was recorded in *Oreochromisniloticus* as 4.6 µg/l. However, the half lethal concentration (LC_{50}) of Chlorpyrifos ethyl in *Oreochromisniloticus* was 287.5 µg/l.

In order to investigate the effects accompanied the exposure of*Oreochromisniloticus* to sublethal concentrations (tenth and fifth half lethal concentrations) of Lambda_cyhalothrin and Chlorpyrifos ethyl for different periods (96 hrs and 30 days) and possible recovery after transferring fish to dechlorinated tap water for 10 days.

Histopathological alterations were recorded in the studied vital organs of Oreochromisniloticus exposed to the different studied sub lethal concentrations for the different studied periods in both insecticides.

Induction of both structural and numerical aberrations occurred in fish treated with each of the two studied insecticides. The main types of structural aberrations found in kidney cells were chromatid gap, chromatid break, deletion, fragment, centric fusion, centromeric attenuation and pulverization. Polyploidy which is a numerical chromosomal aberration was also recorded.

Significant inhibitions in the mitotic indices were revealed after exposure to each of the two insecticides, mitotic index was time dependent in lambda_cyahlothrin exposed groups, and was time and dose dependent in chlorpyrifos ethyl exposed groups.

Significant increases in micronuclei were found in red blood cells of Oreochromisniloticus exposed to 0.46 and 0.92 µg/l in case of lambda_cyhalothrin and 28.75 and 57.5 µg/l in case of Chlorpyrifos ethyl for 96 hrs and 30 days, increases in micronuclei were time and dose dependent in lambda_cyhalothrin and chlorpyrifos ethyl exposed groups.

Transferring the exposed fish to clean dechlorinated water for 10 days did not contribute in the complete recovery.

The results of this given work indicated the deleterious effects of the studied insecticides on the health status of Oreochromisniloticus even in low concentrations especially when the time of exposure is long. So, it is a matter of significance to make strict precautions to avoid the elimination of insecticides into the environment. As well as, we have to make periodical investigations for detection of insecticides in fish in part to avoid ceasing one of the most important sources of protein and to avoid the public health hazards from the consumption of contaminated fish.