histolgical and histochemical studies on the effect of some chemical polluents on fish oreochromis niloticus

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The present work aims to investigate the response ofsome tissues of Oreochromis -niloticus to the effect of thecarbamate insecticide ”Sevin’’·Sevin (1-naphthyl N methyl carbamate) was used at apredtermined sublethal concentrations of 0.5 and 1.0 mg/L.Healthy Oreochromis niloticus of nearly the same age witha body weight ranging from 100 to 150 grams were examined.72 fishes were alloted among three groups. Two groupswere treated with 0.5 and 1.0 mg/L Sevin and the third wasconsidered as control. Eight fishes from each group weresacrificed after 5 days another eight after 10 days andthe last eight were sacrificed after 15 days of incubationin the insecticide samples of ovaries, liver and muscleswere used for histochemical cytophotometric studies.Histological examination of the ovary revealed thefollowing changes in treated fish as compared to control- A reduction in the number of oocyts was generallyassociation with increased incidence of atresia.- The insectiside (Sevin)depend on de DQYQ RNAfollicular cells.affects the early stages thatand protein synthesis of- Keratin, ss. and amino group rich proteins, show aninitial decreased in their values after five days oftreatment followed by a gradual increased after 10 days.- Protein content of the ovarian components of the treatedfish was considerably less than that of control, thismay be due to the increased population of atraticfollicles in ovaries of treated fish.The insecticide resulted in reduction in RNA content.Increased in DNA content and increased in glycogen contentHistological examination of the liver revealed the followingchanges in treated fish as compared to control- Vacuolation and breaking down of cell boundaries ofhepatocytes.- Decreased in the amount of glycogen in treated animalhepatocytes.- Degeneration of nuclei of the treated fish hepatocytes.- The mean amount of DNA per hepatocyte shows an increasedThe increase could be due to enhancement of DNA synthesisor accumulation of DNA due to inhibition of divisionin these nuclei.- Decreased in RNA synthesis.This effect was more dramaticwhen expressed as proportion of nuclear DNA content.- Decreased protein synthesis.However,quantitative measurementof different types of protein indicated a definitincrease in ss. containing proteins.Such proteins couldbe mostly enzymes essential for carbamate metabolism.- Many nuclei were pyknotic and shrinked histologicalexamination of muscle revealed the following changes inthe treated fish as compared to control :- Splitting of muscle fibres and partial filoculation wasnoticed, dystrophy was represented and the nuclei appearcentral. Dystrophied

fibres with small diameter werealso present adjacent to fibres showing signs ofcoagulative degeneration.All the above pathological changes were expected tobe due to neuropathy in the nerve supplying these musclefibres because of inhibition of acetylcholinesterase. Thehistochemical results indicate :- Increased in glycogen content in treated fish muscle.- Increased cytoplasmic RNA content.-Increased in keratin and amino group rich protein contentand decreased in other type.In conclusion, although Oreoohromis nilotious wascapable to metabolize the insecticide carbamate, enzymesnecessary to perform these metabolic activities weresynthesized after a lag period of 10-15. days. This lagperiod was enough to effect the growth and number ofhealthy oocytes leading to decrease fertility.It also results in neuropathy leading to partialdestruction of muscles as well as change in its proteincontent. This leads to retardation of growth and change inthe quality of the edible parts of the fish.