biological studies on blood of some fishe sun der berbicidal strss conditions

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The effect of herbicide • oxadiazon • as a one sortof pollution on the most available and ;;,daptable(Clarias lazera and Cyprinus carpio) tvere the s•1hject·of thls investigation. The -fishes were sorted intothree groups, the first group served as control, thesecond and the third groups were subjected to theconcentration of 2 ppm and 4 ppm oxadiazon respectively.The fishes were subjected to the herbicide for twosuccessive weeks and the samples were taken after 3, 7and 14 day, then they were transported to water freefrom any toxicant and the samples were taken after 3t:tnd 7 day. Tl1e r:8SlJU11~8 of the fishes to the oxadiazonin the present work were studied by examining theleucocyte enzyme cytochemistry, hormones, and biochemicalparameters. Thef 0 I 1 01-JS :obtained results are summarized asSigns of intoxication of Clarias lazera and Cyprinuscarpio were symptomised by excitability, rapidfollowed by disorientation andswimmingactivity, marke:l.reduction of feeding activity. These symptoms beGamepronounced post exposure lo lhe followiuy- dl.)SE.s. Thefishes exhibited reported muscular spasms especiallyafter 7 day of treatment where the skin of treatedfi;oh became pale in colour and covered with mucoussecretion.140In case of fishes vJhich had been transported tofresh water,noted after themost oftreatmentthe above symptoms which wereperiod, disappeared and thefishes started to behave normally.When the fishes werE: subjected to oxadiazon for longperiod, some granulocytes were hyper or· hypotrophiedwith cytoplasmic vacuoles and inclusions at the peripharyof the cell w1 th dens8ly staining nuclei, some cellswere hypergranulatedvarious stages ofobserved.01 degranulated,degeneration andand cells ofpyknusis wereThe I eucocyte of fishes were s tal ned for periodicacid schiff (PAS), peroxidase, sudan black - B, non -phosphatase and acidwere !dent if i ed viz;specific esterasephosphatase. Fouralkalinecell typeslymphocytes, thrombocytes, monocy tes and gr·anu I ocy tesneutrophil, eosinophi 1 aJ>d basophi 1) .All leuc;_,cytGs were positive PAS J:eaction. Afleroxadiazon exposure, the reaction increased accordingto thetreatmentduration of exposure. The reaction post 4 ppmwas higher than that of 2 ppm oxadiazon.The reaction of peroxidase in normal fishes I·Jasstrong in granulocyticlymphocyte, thrombocyteseries andand monocyte,negative inthe reactionbecame stronger and the cells were hypertrophied after14 day of exposure to oxadiazon.The sudan black B staining was observedon! y in the neu troph i I, the reaction increased in itsintensity with the lone duration of treatment and somecells were hy~ertrophied while others had disturbedcontour after transportation of fish to

fresh water.In both the contorl and treated fish a veryreaction was observed fo1· alkaline phosphataseweakinneutrophils and for non specific esterase inlymphocyte, thrombocyte, monocyte and granulocyte.Acid phosphatase reaction detected as weakreaction in lymphocyte and monocyte, moderate tostrong in neut1·ophi 1 and eosinophi 1. The activitydecrease post exposure to oxadiazon and the cranulocyteappear had moderate reaction.The plasma hormone level showed hich significantincrease in the fish group exposed to 2 ppm oxadi azonand further increase post 4 ppm treatment. When thefishes were transported to fresh water, the hormonelevel decreased significantly but the value still higherthan normal.!IL:rnsu I inThere was a significant decrease in the plasmainsulin level during exposure to oxadiazon. Therecovery ln hormone levelof fishes to fresh water.appeared after transportationThere Y-'a:~ a significant increase in the plasmag I ucagon I eve I which becomehigh concentration of·oxadiazon,level after 7 day in fresh water.highly significant withand restored the normalSignificant increase of cortisol level in plasmawas observed after treatment of fishes with both 2 and 4ppm oxadiazon. Post fresh water transportation, thelevels were returned to that of the control values.The significant increase of plasma ACTH hormonelevel was correlated to the concentration of oxadiazon.The highest value of this hormone was observed after7 day of 4 ppm exposure, wh i 1 e there was nosignificant change after the fishes we1·e transported tofresh water.(effect on the hiochemic:;al parametersThe plasm~ s0dlum level was highly significantafter o}:adiazon exJ;;osure, and the increase was directlycorrelated with the lime and concentration of oxadiazon,plasma sodium Je·Jel returned to about the control valueafter transportation of fishes to fresh water.The increa~s of potassium level in plasma of theoxadiazon exposed fishes was not significant. Aftertransportation there was a gradual decrease1 eve!.in potassiumHyperglycemia observed in the fishes subjected tooxadi azon and ~·each the maximum I eve! after 7 days, thendecreased gradually with time, and restored the normallevel when the fishes transported to fresh water.The plasma lactate level increased significantlypost oxadiazon exposure, but the level decreased afterthat till it reached the normal value.