Biochemical studies of some insecticidal effects on enviromental pollution

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SUJ~MARYThe present investigation was carried out to study the, physiochemical behaviour of the insecticide profenofos in differentegyptian soils (clay ,sandy clay and calcerious soils) for reducing theirpollution to asoil and ground water.The following points are considered the course of the presenetinvestiogation :1- The effect of soil type and tnsecrticide concentration on down-wardmovement flnd leaching behaviour of prof enofos.The results showed that the majority of insecicides were located inthe .upper layer of different soils under investigation (0-5 em). Theinsecticide amount recoverd were 47.0%, 46.1% and 39.9 % for clay,sandy clay and calcerious soil, respectively.By increasing the concentration of profenofos (500-] 000 ug) itsamount adsorbed on soil surface increased while their residue in thelechate were decreased. The present results revealed that their was aninverse relationship between the rate of profenofos leachability andethe tested concentration. The higher leachability occurred with thelowest concentration.2- The persistence and degradatifn of prof enofos in soils:The results showed that soil type was an influencial facto indetermining profenofos persistence. According to the mean values ofthe amounts recovered from the three soils under investigatuion, as an._-- -------- --- ..__... - -- ._-- -- - -.._---- - ..-105-average of exposure time, the rate of profenofos degradation washigher in sandy clay than clay or calccrious soils. Although highpersistence of profenofos was noticed at high application rate (54mg/50 gm soil) which.mean soil and environmental pollution.3- The microbiological degradation of profenofos:The degradation rate of profenofos in sterilized and non-sterilizedsoils was stuidied, The percentage amount of recovered profenofosafter 60 days were (l5.67-zero), 11.1- zero_ and 2004 -17.3) insterilized and non sterilized clay , sandy clay and calcerious soils.respectively. Therefore, sterilizing the soil was more pronouncingeffect on the degradation of profenofos. It could be concluded thatdegradation of profenofos in soils under invesrtigation is aphysiochemical and microbial pr0gesses. On the other hand, a otoxicological and biochemical study was carried on the insecticideprofenofos and the biological contol Biofly.4. Toxicological and biological effects of insecticides.The acute toxicity of Biofly which were carried on mice showedthat their minimum lethal dose (MLD) were 33333.3 mg/kg b.wt.while its LD50 were 58333.3 mglkg.b.wt. The symptoms oftoxicity were cbaraotrizef by shallow and rapid respiratio~$bdominal cramps and di$clty in movements. The high dose ofLD50 of Biofly which is equal to 58.33 mg/kg.b.wt. give animprove for the safty ofBiot1y comparing with any other chemicalinsecticides.- 106-On the other hand. oral administration of Biofly andprofenofos in dose equal; to 1/10 LD50 or 1/100 LD50 of Biofly orprofcnolos was used to study their cytogeuic, teratology, fertilityand some biochemical paramters in rats after 90 days.The cytogenic results showed an increase in the percentageof micronucleated polychroatic erythrocytes (MPCE). Also anincrease in the ratios of polychromatic erythrocytes to normalchromatic erythrocytes PCEINCE at different doses of Biofly orProfenofos. The PCEINCE ratio used as a measure for red bloodcell proliferation which gave a sign of toxicity or damage of someorgans of the body.The teratogenic effect of different doses (1/10 or 1/100 ofICo LD50) of Biofly or Profenofos on fertal rats showed that low doseof Biofly (1/100 LDSO) have a slight effect on the number ofcorpus leuteum while its high dose (1110 LDSO) affected both thenumber of corpus leuteum and number of implantation sites. Onthe other side, both low or high dose of profenofos showed lesspinding in both doses than the control. The effect ofBiofly andProfenofos in

different doses on the fertility of male rats wasstudied. Oral administration of 1110 or 1110 LD50 ofBioflyorProfenofos to male rats cvaused significant decrease in weight oftestes than the control except at high dose of Profenofos (3.60mg.kg) which cause as increase in tests weight. Although accessoryglands (seminal vesicles, prostate and epididymis showedvariation in weights than the control. The spenoconcentration and percentage of motility were decreased, althoughsperm abnormalities was increased which were characterized bycoild tail and headless.Oral administration of Biofly and Profenofos in doses 1/10and 1/100 LDSO,respectivelyto rats for 90 days. The blood serum eshowed significant decrease in AS T, total protein, creatinine,bilirubin, cholesterol in Biofly, while significantly increasedAL T,AP in profenofos in both doses.S.Residues in some organs:The residues of profenofos were detected in liver and kidneyat low and high doses bat undetected in spleen and tests in biothdoses. It is clear that the liver contained the highest amount ofresidues of the tested insecticide followed by kidney.6. Histopathological examination:The treated rates with Biofly and Profenofos showed congestion,haemorrhage focal area of necrosis and lymphocytic mononuclear cellinfiltration in liver and kidney. The spleen was hyperplastis withdegeneration of the wall of some blood vessels. Conegtion and focalmycoracdiac in heart. Sever degeneration and necrosis of thespermatogenic cells of the seminipherous tubules in testis.Histopathological changes in different organs appeared to be dosedependant,with damage increase in the high doses.