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6-SUMMARY

The aim of this study was to report the gross and histologic lesions associated with the experimental toxicity of deltamethrin and diazinon in male albino rats. Seventy five adult male albino rats were used in this study. The study was divided into 2 experiments (Exps. A and B). Exp. A (30 rats divided randomly into gps. 1, 2, 3) was used to study the pathologic changes associated with the acute toxicosis with deltamethrin and diazinon. However, exp. II (45 rats divided randomly into gps. 4, 5, and 6) was used to study the chronic toxicosis of the same two pesticides. Rats of GP.1 were intubated with a single oral dose equal to 50 % of predetermined LD50 of butox (3 mg/kg B.w. in 0.5 ml distilled water). Rats of GP.2 were intubated with a single oral dose equal to 50 % of LD50 of diazinon (64 mg/kg B.w. in 0.5 ml distilled water). Rats of GP.3 were kept as a control group. Rats of GP.4 were intubated with a daily oral dose equal to 5 % of LD50 of butox for 90 days (0.3 mg/kg B.w. in 0.5 ml distilled water). Rats of GP.5 were intubated with a daily oral dose equal to 5 % of LD50 of diazinon for 90 days (6.4 mg/kg B.w. in 0.5 ml distilled water). Rats of GP.6 were kept as a control group. Five rats from each group were sacrificed every month for 3 months.

Clinical signs of the acutely intoxicated rats of gps. 1 and 2 included moderate ataxia, tremors, transient convulsions, and rolling. These signs appeared 10-15 minutes post-intubation and disappeared gradually over the first 2 days pos-intubation. The most common clinical signs all over the chronic experiment included depression and lethargy, shortness of breath, occasional nose bleeds or gum bleeds, bruising and anorexia. Ataxia, convulsions and tremors appeared 10-15 minutes post-intubation in few rats and were generally mild and transient. No mortalities were recorded either in the treated or control groups of both experiments.

The pathologic studies revealed that the target organs of the acute and chronic intoxication with the DLT or diazinon were liver, kidneys, and testes. On the other hand, other examined organs (sciatic nerve, heart, spleen, and intestines) were less affected and did not show significant lesions. Mild pulmonary edema and mild inflammation of the cardiac stomach were noticed in the rats acutely intoxicated with DLT (Gp.1). The brain lesions in all treated groups were mild and appeared in form of congestion, sporadic neuronal necrosis, and mild gliosis affecting mainly the cerebral cortices.

The characteristic hepatic lesions of the acute and chronic intoxication included centrilobular necrosis, hydropic degeneration, and occasional fatty change. In the meanwhile, the most common renal lesion included degeneration and necrosis of the proximal convoluted tubules with minimal glomerular lesions. While the aforementioned lesions were recorded in both diazinon and DLT-intoxicated groups, the severity scores of these lesions were significantly higher in the diazinon-intoxicated groups more than the DLT-intoxicated groups. For example, the severity score of the hepatic lesions of the rats of gps 1 and 2 euthanized 72 hrs post-intubation were 20 and 40 respectively and for the renal lesions of same groups were 8 and 24 respectively. To the best of knowledge, this is the first study to compare the severity of lesions induced by DLT versus diazinon. Why diazinon caused severer lesions than DLT is unknown. It was speculated that, diazinon likely causes oxidative cellular

damage more than the DLT does, however, no reported studies were done to compare between the levels of oxidative damage of both pesticides.

Testicular lesions of acutely intoxicated rats were mild however, the chronically intoxicated rats of gps. 4 and 5 had severe testicular lesions in form of degeneration and attenuation of the seminiferous tubules with marked necrosis of the spermatogenic cell layers.

In regard to serum analysis, the rats of gp.1 that was euthanized 72 hrs post-intubation had a significant increase in the serum levels of ALT, AST, and creatinine when compared to the control group. However, no significant difference was present in the serum level of BUN between the rats of both groups.

In conclusion, the current results showed that the diazinon in the doses used resulted in severe lesions in the kidneys, liver, and testes, however, the intoxication with the deltamethrin led to similar but significantly less severe lesions. Based on these results, the commercial use of DLT is expected to be more safer than the use of diazinon.