Uttar Pradesh J. Zool. 16(1) :67-68, 1996 ISSN 0256-971X

ACUTE ORAL TOXICITY STUDIES WITH K-OTHRINE (A SYNTHETIC PYRETHROID INSECTICIDE) IN SWISS ALBINO MICE

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Toxicity of K-othrine against Swiss albino mice was evaluated by oral force feeding. The test species revealed high susceptibility to the toxicant as indicated by steep nature of the dosage mortality regression line duly substantiated by Finneys Probit analysis of data to give regression equation (-7.704 ± 5.97X). Median lethal dose of LD_{50} and LD_{90} for combined sexes was found to be LD_{50} = 13.43/(10.64 - 16.90) mg/kg b. wt and LD_{90} = 21.93/(17.38 - 27.67) mg/kg b. wt. Gross clinical symptoms observed were paralysis, extensive tremors, salivation, vomiting, ataxia and a hunch on the back was developed within 1 hour or 2 hours of pesticide intoxication in some of the mice.

The toxicity of the organophosphorus insecticides has received a tremendous amount of attention during past 25 years. The value and widespread use of these compounds as agricultural insecticides has been already established but their biocidal properties present appreciable toxicological problems from the stand point of manufacture and use. The toxic symptoms produced in animals by these compounds are manifestion of the inhibition of certain enzyme system and it is a potent inhibitor of ChE of mammals (Adrian *et al.*, 1956; Webb, 1956). In present investigation it is intended to evaluate the LD_{50} and LD_{90} value of test the toxic effects of K-othrine on swiss albio mice. Effect of toxicant will help in giving the idea of hazardous nature of toxicant to mammals and thus to help human beings.

Susceptibility test of adult swiss albino mice were carried out with T. G. (2.5% W.P.) K - othrine in liquid form prepared in ground nut oil. Immature animals, pregnant females, animals that do not appear in good health or that bear recently healed wounds were discarded (WHO, 1971). Total of 8 males and 8 females were kept in separate cages represented at each selected dosage level. K-othrine was administered orally according to the body weight of the mice. The animals were kept under observation. The hours to death of each animal was recorded for 7 hours (Shell, 1987). Dose range of 12 mg/kg body weight to 22 mg/kg body weight was selected. Median lethal dose LD_{50} and LD_{90} value was determined by Finney's method (1972) of probit analysis.

Result of toxicological evaluation have been tabulated in Table I. The log dosage probit mortality response of the target species (Swiss albino mice) have been depieted in Fig. I. No significant difference in mortality between two sexes recorded so the dosage lines have been computed for combined sex. Results of the studies revealed markedly high susceptibility of test species to compound. Median lethal dose of LD_{50} and LD_{90} recorded were 13.43/ (10.64 - 16.90) mg/kg b. wt. and 21.93 / (17.38 - 27.67) mg/kg b. wt. respectively.

Table 1: Toxicity of K - othrine against swiss albino mice in relation to its rodenticial efficacy.

Toxicant	Regression	Variance	X^2 (df)	LD_{50} mg/kg of b. wt. Fiducial Limits	LD_{90} mg/kg of b. wt. Fiducial Limits
K - othrine	-7.704 + 5.97X	0.002655	2.71 (3)	13.43 (10.64 - 16.90)	21.93 (17.38 - 27.67)

The inherent toxicity of K-othrine is high the intravenous LD_{50} in rats was reported as 2 - 2.5 mg/kg (Barner & Verschoyle, 1974) and 2.6 mg/kg (Ray & Cremer, 1979). It is mainly rapid metabolism rather than poor absorption that accounts for the much lower toxicity by the oral route, oral LD_{50} values have been reported as 52 mg/kg in adult male rate (Kavlock *et al.*, 1979). Thaker *et al.* (1985)

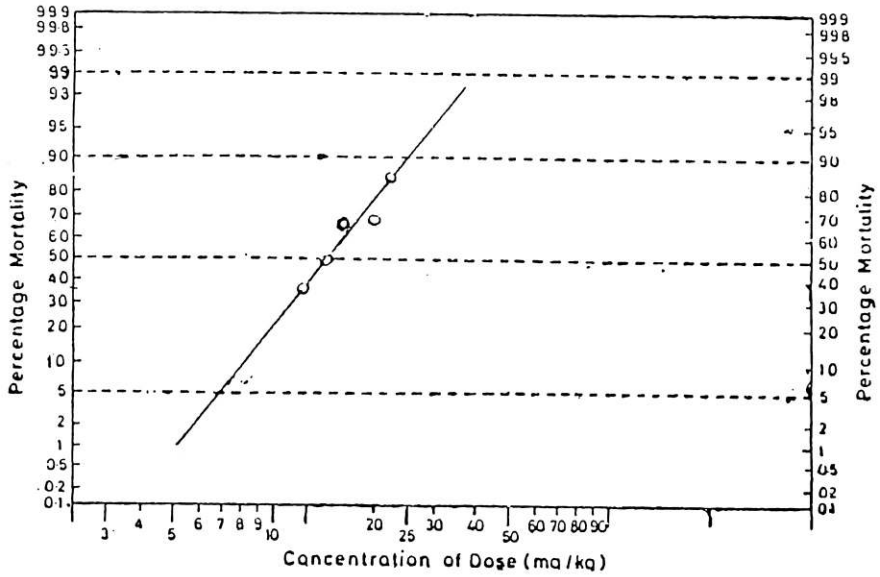

Fig. 1. Showing the dosage mortality response of swiss albino mice to k - othrine.

worked out LD_{50} 5.6 mg/kg of endosulfan in mice and 9.2 mg/kg in rats. Uppal *et al.* (1984) reported LD_{50} 280 mg/kg of fenitrothion in wistar rats and 700 mg/kg in swiss mice.

Clinical signs consistent with K-othrine toxicity (paralysis, extensive, tremors, salivation, ataxia, vomiting and a hunch on the back was developed) were seen in some animals 2 hours after ingestion of the toxicant.

ACKNOWLEDGEMENTS

Thanks are due to the Prof & Head, Deptt. of Zoology, University of Rajasthan, Jaipur for facilities to work and encouragement.

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