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Short Communication

Toxicity of Cholecalciferol Against *Mus musculus* (Blyth)

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Rodents are one of the major pests causing considerable damage to crops, stores, godowns and other articles of human values, apart from acting as vectors of several human diseases. On a world wide scale, anticoagulants have been the primary means of rodent control (Muktha Bai *et al.*, 1978). Acute rodenticides are very effective for achieving a quick knock down of initial population. However, in certain situations, it is not practicable to use the toxicants for a longer spell. Cholecalciferol (Vit. D_3) is both a single and multiple feeding toxicant effective on all the three species of commensal rodents (Marshall, 1984). It is closely related to calciferol (Vit. D_2), which proved effective against both warfarin resistant and non-resistant rats and mice (Renninson, 1974, Rowe *et al.*, 1974). In the present investigation, the toxicity of cholecalciferol has been tested against *Mus musculus* (Blyth).

Individually caged *Mus musculus* were sexed, weighed and acclimatized to laboratory conditions prior to the experiment. Mice feed (Hindustan Lever Ltd., Bombay) and water were provided *ad libitum*. The poison bait was prepared in most preferred food, broken pearl millet grain, mixed with 3% *tilkhali* (oil cake of sesame) as additive. Three concentrations, viz., 0.075, 0.050 and 0.025% of cholecalciferol (Quintox Liqued Tech. Con. 7.5%) were tested under no-choice condition for a period of 24 hours. Before poison baiting, the animals were starved for 24 hours. The poison bait was provided to individual animals in cage and leftover and spilled food was weighed the next day. After poison baiting, the mice were maintained on normal mice feed until death.

The results of the investigation are presented in Table 1. Since no significat sex difference in the mortality was observed, mortality data for both sexes was combined for analysis. The observations indicate that cholecalciferol gave 100% mortality in musculus after 24 hour exposure. It further indicated that the lower concentration of cholecalciferol (0.025%) yielded (100%) mortality within 3.0-5.5 days, whereas, the two higher concentrations (0.050 and 0.075%) resulted in 100% mortalit within 2.0-4.0 and 1.9-2.9 days, respectively. It is evident from the above results that both the higher concentrations were effective with no significant difference in average days to death. Poisoning symptoms like reduction in general activities, pulmonary distress, partial paralysis, polyurea and loss in body weight were noticed after 24 hours.

Field studies have also revealed that cholecalciferol gives 94.44% control success (Saxena *et al.*, 1988). Mathur and Jain (1987) have also reported 72.7% mortality in *Rattus rattus* and 41.6% in *Tatera indica* with cholecalciferol pellets.

It is evident from the above findings that cholecalciferol is effective for rodent control at higher concentrations only.

Table 1. Evaluation of cholecalciferol (Vitamin-D_3) no-choice feeding test

Concentrations of cholecalciferol (Vitamin-D_3)	Exposure period (Hours)	Mean body weight (g) ± S.E.	Mean poison bait intake (g kg^{-1} b. wt.) ± S.E.	Mean active ingredient (mg kg^{-1} b.wt.) ± S.E.	Days to death	
					Mean	Range
0.075%	24	25.0 ± 2.2	158.12 ± 7.99	108.51 ± 3.95	2.4	1.9-2.9
0.050%	24	25.0 ± 1.9	159.37[a] ± 3.98	79.50 ± 3.98	2.9	2.0-4.0
0.025%	24	25.0 ± 1.4	161.69[a] ± 2.90	40.41 ± 4.04.	4.2	3.0-5.5

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