

Comparative Efficacy of Zinc Phosphide and Bromadiolone Against Rats in Houses

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KEYWORDS Pre-treatment. Rat Population. Capture. Mark. Release. Percent Control

ABSTRACT Field trials with zinc phosphide and bromadiolone were carried out in houses of Jawahar nagar and Jhalana region of Jaipur respectively. Pre-treatment rodent population was counted by capture, mark, release and recapture method. Zinc phosphide was used in 1% and 2% concentrations for one day exposure while bromadiolone was used in 0.005% concentration for one and two days exposure. Percent control recorded with 1% and 2% zinc phosphide was 79.72 and 86.91 respectively. With bromadiolone 96.77 % control was achieved during one day exposure while control observed with two day exposure of 0.005% bromadiolone was 98.83 %.

INTRODUCTION

There are two main reasons why rodent population should be controlled. One reason is the economic loss caused by destruction of crop and other properties. The second is due to their role in disease transmission to human and other animals. Various rodenticides have been used throughout the world for their effective control. Zinc phosphide is commonly used because of its relative safety record, low cost and reasonably high efficacy against a range of target rodent species (Sugihara et al. 1995).

Bromadiolone, the second generation anti-coagulant rodenticide is broad spectrum in activity and effective at low doses. Several studies have been done on control of rodents in different fields by different workers (Patel 1991; Mathur and Bhadauria 1999; Dubey et al. 2000; Endepols and Klemann 2004). Present study has been carried out to compare the efficacy of zinc phosphide and bromadiolone to control rats in houses.

MATERIALS AND METHODS

The study was carried out in houses of Jawahar Nagar and Jhalana region of Jaipur city. Twenty houses were selected in each area. Pre-treatment rodent population was counted by

capture, mark, release and recapture method. Zinc phosphide bait was prepared in 1% and 2% concentrations mixing with bajra flour and 2% sugar and 2% soyabean oil as additives. Bromadiolone loose bait was used in 0.005% concentration. Ten gms bait material of each concentration was kept in loose paper packet at the sites which were frequently visited by rodents. Population of rats was counted again after treatment and percent control was evaluated.

RESULTS AND DISCUSSION

Results revealed that 2% zinc phosphide was more effective than 1% concentration. Percent control of rodent species recorded with 2% and 1% zinc phosphide was 86.91 and 79.72 respectively (Table 1). Jacob et al. (2009) also reported the 2.1% zinc phosphide to be most appropriate for the management of common vole population.

Table 1: Control of rats in houses with zinc phosphide

S. No.	Concentration used	Population of rats in houses (per day)		% control
		Before treatment	After treatment	
1	1%	4.93	1	79.72
2	2%	4.20	0.55	86.91

In case of bromadiolone, number of dead rats were recorded up to nine days, from the beginning of baiting. In one day exposure maximum mortality was observed between 2nd to 9th day of baiting. During two days exposure maximum mortality was recorded between 3rd to 8th day of

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the exposure to the poison bait. In one day exposure 96.77% mortality was observed, while 98.83% mortality was found after two days exposure of the poison bait (Table 2).

Table 2: Control of rats in houses with 0.005% bromadiolone

S. No.	Exposure period (days)	Population of rats in houses (per day)		% control	Days to death
		Before treatment	After treatment		
1	1	4.90	0.15	96.77	2-9
2	2	5.30	0.06	98.83	3-8

Comparing the efficacy of both the rodenticides results indicate that bromadiolone requires low lethal dose for complete kill. These results also get support from the observations made by Saxena and Panwar (1992) with bromadiolone (0.005%) against *Meriones hurrianae* in laboratory. Khan et. al. (2000) also reported 92% mortality of rats in rice field with 0.005% bromadiolone.

ACKNOWLEDGEMENTS

Authors are grateful to the UGC, New Delhi for financial assistance. Authors also wish to

express their thanks to the principal and management committee of college for encouragement and providing facilities.

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