

Observations on bait the Western Ghats squirrel, *Funambulus tristriatus* Waterhouse

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AMONG single dose poisons, zinc phosphide is widely used for rodent control in India. The disadvantage with this poison is the development of bait shyness among rodents when sub-lethal quantities of this poison are consumed. Development and persistence of bait shyness among several murids, viz., *Tatera indica indica* Hardwicke and *Meriones hurrianae* Jerdon (Prakash and Jain 1971), *Gerbillus gleadowi* Murray (Rana *et al.*, 1975), *Rattus rattus rufescens* Gray, *R. melstada pallidior* Ryley and *R. cutchicus cutchicus* Wroughton (Prakash *et al.*, 1975) and *Bandicota bengalensis* Gray (Cowan *et al.*, 1979) is already reported. Information on the phenomenon of bait shyness among Indian squirrels of economic importance is not available. Considering this aspect, an experiment was conducted to study this behaviour in the Western Ghats squirrel, *Funambulus tristriatus* Waterhouse.

MATERIALS AND METHODS

Nine squirrels (400 and 500) of known body weights were housed individually in laboratory cages. Each animal was then provided with weighed quantities of plain rice (*Oryza sativa* L.) and wheat (*Triticum* sp.) simultaneously in different containers. Water was always made available. The entire experiment was divided into pre-poisoning, poisoning and post-poisoning periods. During the pre-poisoning period the consumption of plain rice and wheat was recorded daily for three consecutive days. The mean consumption per day was then calculated. After this, during the poisoning period, 0.025% zinc phosphide was thoroughly mixed with rice (the preferred food) and each squirrel was then supplied with weighed quantities of this poisoned rice and plain wheat for a further period of four days. The positions of the foods were interchanged daily in order to prevent the position effect. During this period also the consumption of each food was recorded daily. To evaluate the persistence of bait shyness, weighed quantities of plain rice and wheat were again supplied to these squirrels for one day at intervals of 3, 7, 12 and 18 days (post-poison period) after the end of initial experiment. Consumption of each food was recorded. On all other days the

test animals were provided with the food items other than rice and wheat.

RESULTS AND DISCUSSION

During the pre-poisoning period the mean daily consumption of rice was significantly more ($p=0.01$) than that of wheat. On the first day of exposure to poisoned rice its consumption of exposure to poisoned rice its consumption declined from 4.55 to 2.45 g whereas at the same time the consumption of plain wheat increased from 1.14 to 3.11g (Table 1). On subsequent three days the mean consumption of poisoned rice was still reduced to 0.1g but in the same time the consumption of wheat was increased to 4.11g. The difference in mean daily consumption between poisoned rice and plain wheat during these days was significant ($p=0.001$). Like this the difference in mean daily consumption between the same food items during pre-poisoning and poisoning periods was also significant.

It was general practice to continue the poison baiting with zinc phosphide for 2 to 3 days (Kishna kumari and Majumder, 1966; Srivastava, 1966). During this study the Western Ghats squirrel developed bait shyness immediately after the first day of exposure to poisoned food and the quantity of the poisoned rice they consumed during 2nd, 3rd and 4th day of poison baiting was too less to carry a lethal dose. Such rapid aversion towards zinc phosphide mixed bait was also noticed in several other rodents (Prakash and Jain, 1971; Prakash *et al.*, 1975). But unlike in most other rodents where the bait shyness persisted from 15 to 105 days (Rana *et al.*, 1975; Prakash *et al.*, 1975) it was less than a work in the Western Ghats squirrel. Hence it is recommended to carry out control operation, with zinc phosphide, against the Western Ghats squirrel only for one day after three days pre-baiting and to allow 7 to 10 days between two control operations. In case the residual population is to be controlled immediately either the poison or the poison carrier should be changed. Bharadvaj and Khan (1978) avoided bait shyness in wild rats, *Rattus rattus* L. by merely changing the texture of the bait material.

TABLE I — MEAN DAILY CONSUMPTION OF RICE AND WHEAT BY *F. TRISTRIATUS* DURING DIFFERENT PERIODS

Food	Mean daily consumption (g)/100g body weight during different periods						
	Pre-poisoning period (Mean of three days)	Poisoning period			Post-poisoning period		
		1st day	three days (Mean)	3rd day	7th day	12th day	18th day
Rice	4.55** ± 0.60	2.45 † ± 0.42	0.10 ††† ± 0.04	2.86 † ± 1.15	3.44 ± 1.02	2.93 ± 0.87	3.17 ± 0.85
Wheat	1.14 ± 0.75	3.11 † ± 0.59	4.11 *** ± 0.59	2.78 ± 1.06	1.96 ± 0.80	2.34 ± 1.00	2.03 ± 0.75

** P = 0.01; *** P = 0.001 (Between treatments)

† P = 0.05; †† P = 0.01; ††† P = 0.001 (Compared with the consumption of the same food during pre-poisoning period).

SUMMARY

Studies were conducted to evaluate the behaviour of poison bait shyness and its persistence in the Western Ghats squirrel, *Funambulus tristriatus* Waterhouse in captivity. During this study squirrels developed complete aversion towards zinc phosphide mixed bait immediately after the first day of its exposure. Bait shyness in this squirrel lasted for less than a week.

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