J. Hyg., Camb. (1974), **73**, 49
Printed in Great Britain

Field trials of the rodenticide 5-*p*-chlorophenyl silatrane against wild house mice (*Mus musculus* L.)*

By F. P. ROWE, T. SWINNEY and A. BRADFIELD
Pest Infestation Control Laboratory,
Ministry of Agriculture, Fisheries and Food,
Hook Rise South, Tolworth, Surbiton, Surrey

(*Received* 15 *November* 1973)

SUMMARY

The performance of the rodenticide 5-*p*-chlorophenyl silatrane at 0·5 % in a wholemeal flour/pinhead oatmeal/corn oil bait was compared with that of zinc phosphide at 3 % in the same base in poison treatments carried out against urban infestations of the house mouse (*Mus musculus* L.). Each poison treatment was conducted for 1 day and after 3 days' pre-baiting. The success of the treatments was assessed from census baitings conducted before and after treatment. Treatment success varied considerably with both poisons used but in general 5-*p*-chlorophenyl silatrane proved to be at least as effective as zinc phosphide, a commonly used acute rodenticide for the control of mice.

INTRODUCTION

In the laboratory, 5-*p*-chlorophenyl silatrane performed well in oral dosing experiments using *Mus musculus* of the LAC Grey strain and also in feeding tests on LAC Grey and wild mice when it was included in bait at a concentration of 0·5 % (Greaves, Redfern & Tinworth, 1974). The results of field trials carried out in urban areas against free-living mice using the poison at the same concentration are presented below and compared with the results of similar treatments done with 3·0 % zinc phosphide.

METHODS

In each treatment poison bait was applied for 1 day after 3 days of pre-baiting. In all, six treatments were conducted with each poison in a miscellany of premises including kitchens, offices and shop-stores chosen at random from those available. The pre-bait and carrier used for the poison was the same as that employed in the laboratory tests (i.e. wholemeal flour (5 %), corn oil (5 %) and pinhead oatmeal (to 100 %)) except for the addition of 0·05 % of the dye chlorazol sky blue.

The percentage success of each poison treatment was calculated from the total amount of plain bait (canary seed, *Phalaris canariensis*) eaten during the last 3 days of 4 day pre- and post-treatment censuses. The census baits were laid on small wooden trays distributed at close intervals throughout the infested area. The trays were laid at the same sites in the two censuses, but the pre-bait, placed

Table 1. *Results of pre-baiting and 1-day poison treatments against mice using 5-p-chlorophenyl silatrane and zinc phosphide*

Treatment		Pre-treatment census: Consumption of canary seed (g) on day				Poison treatment: Consumption of pre-bait (g) on day			Poison treatment: No. of visits to poison baits on day 1	Post-treatment census: Consumption of canary seed (g) on day				Estimated success (%)
Type	Trial no.	1	2	3	4	1	2	3		1	2	3	4	
0·5 % 5-*p*-chlorophenyl silatrane	1	7	15	16	11	9	7	6	1	0	0	0	0	100·0
	2	11	24	36	50	34	37	37	6	0	3	3	3	91·8
	3	—	21	25	20	8	5	13	*	—	2	5	9	75·8
	4	72	107	145	151	85	120	141	8	30	31	38	37	73·7
	5	17	34	37	49	31	37	33	*	0	0	0	0	100·0
	6	6	8	13	13	16	20	16	2	6	13	10	7	11·8
3·0 % zinc-phosphide	7	0	6	14	15	5	14	17	2	7	11	18	20	0·0
	8	11	13	15	15	23	16	15	4	2	1	0	4	88·4
	9	0	2	4	3	3	8	15	3	0	0	0	2	77·8
	10	5	14	9	10	15	12	15	2	6	6	8	9	30·3
	11	2	14	24	25	4	8	11	2	12	15	13	13	34·9
	12	11	17	14	14	11	9	9	1	2	2	3	6	75·6
Totals		142	275	352	376	244	293	328		65	84	98	110	

* Undetectable.

https://doi.org/10.1017/S0022172400023834 Published online by Cambridge University Press

Table 2. *Analysis of the data in Table* 1 *using the pre-treatment census takes for days* 2–4 *as the independent co-variates of initial infestation size to adjust the dependent post-treatment takes*

Source of variation	Degrees of freedom	Mean square	Variance ratio (F)	Significance (P)
Residual error in post-treatment census	10	1005·4	—	—
Regression of post- on pre-treatment census takes in the error term	1	6809·9	—	—
Deviations from the regression	9	360·4	—	—
Between (adjusted) poison means	1	882·0	2·4	> 0·05

in the same number of trays, was put down at different sites. Pre-baiting was begun 7 days after the end of the pre-treatment census and the post-treatment census was carried out 7 days after the end of the poison treatment.

RESULTS AND DISCUSSION

The results of the comparative pre-baiting and 1-day poisoning treatments with 5-*p*-chlorophenyl silatrane and zinc phosphide are shown in Table 1. The daily amounts of canary seed and of pre-bait eaten at the censuses and during the pre-baiting period are also given – together with the numbers of poison baits visited by mice and the estimated percentage kills.

Table 1 shows that variable control resulted from both the 5-*p*-chlorophenyl silatrane and zinc phosphide treatments and that complete control was achieved in only two of the twelve treatments (nos. 1 and 5) – each time with 5-*p*-chlorophenyl silatrane. The total control obtained, calculated from the total amount of pre-treatment and post-treatment census bait eaten in days 2, 3 and 4, was 79·2 % in the case of the six 5-*p*-chlorophenyl silatrane treatments and 42·5 % for the zinc phosphide treatments. When however an analysis of co-variance was applied to the data in order to eliminate any effect attributable to infestation size, no significant difference between the efficacy of the two poisons could be demonstrated (Table 2). Thus it may be concluded only that 5-*p*-chlorophenyl silatrane would be a reasonable alternative acute poison to zinc phosphide for use against mice.

Although no treatments were conducted in which 5-*p*-chlorophenyl silatrane bait was laid directly, Table 1 shows that the consumption of pre-treatment census bait increased considerably between days 1 and 2 and that a less pronounced upward trend in the consumption of pre-bait also occurred during the pre-baiting period. The data tend therefore to support the conclusion of Southern (1954) that a short period of pre-baiting is advisable when acute poisons are used against mice that are well supplied with other food.

In a wider context the results of the trials emphasize the difficulty of drawing to poison baits entire populations of mice existing in diverse environments and often living on a variety of foods, and of then ensuring, even if they are so drawn, that each individual consumes a lethal dose of the poison.

REFERENCES

Greaves, J. H., Redfern, R. & Tinworth, H. (1974). Laboratory tests of 5-*p*-chlorophenyl silatrane as a rodenticide. *Journal of Hygiene* **73**, 39–43.

Southern, H. N. (1954). *Control of rats and mice*, vol. 3. Oxford: Clarendon Press

https://doi.org/10.1017/S0022172400023834 Published online by Cambridge University Press