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Short Scientific Reports

Relative Acceptance of Different Baits by *Rattus rattus wroughtoni* Hinton*

The black rat, *Rattus rattus* L. is world wide in distribution. *R. r. wroughtoni* Hinton, confined to south India (Ellerman, 1961) is considered to be the predominant rodent species in the coconut-cocoa mixed cropping systems (Bhat and Sujatha, 1986a). Information on its biology (Advani, 1984; Bhat, Sujatha, Advani and Sukumaran, 1987) and control (Bhat and Sujatha, 1986b) are available. However, knowledge on the bait preference of this pest is very scanty. The present study was aimed with this objective.

The experimental rats (adults) were trapped from the coconut and cocoa plantations around Kasaragod (12°30'N; 75°E), Kerala, India by using the common wooden traps. The rats were maintained individually in metal cages of 45 × 35 × 35 cm, and provided with the laboratory diet for one week before the experiment. The commonly available baits (Table I) were screened during this study. The relative acceptance of each bait was evaluated by exposing two baits at a time in separate containers. The positions of the baits were interchanged daily in order to avoid the position effect on feeding. The consumption of each bait was recorded daily for six days. Feeding trials were conducted with the whole, split and powdered forms of grains in order to assess the effect of texture on the rate of consumption. The preferences for rice bran, cassava tuber and dry fish and additive effects of oils, sugar and salt on the consumption were also evaluated. Water was provided *ad libitum* during the entire period of study. Each experiment was conducted on ten test animals and the groups of animals were changed for successive tests. After each experiment, the average daily intake (ADI) of each bait per animal was recorded. For comparison the ADI per animal was converted to g/100g body weight. The data were then subjected to Student's 't' test.

The data (Table I) revealed that the finger millet *(Eleusine coracana)* was consumed more than wheat *(Triticum aestivum)*, green gram *(Phaseolus aureus)* and par-boiled rice *(Oryza sativa)*. But in the presence of polished rice, the consumption of finger millet was significantly reduced ($P<0.05$). The consumption of polished rice was again significantly more ($P<0.01$) than the consumption of bengal gram *(Cicer arietinum)*, cow pea *(Vigna sinensis)*, rice bran, cassava tuber *(Manihot esculenta)* and dry fish. The rats in the study area might have developed a preference to rice even in their very

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Table I. *Consumption of different baits by* R. r. wroughtoni

Expt. No.	Choice	ADI (g/100g) ± SE	Per cent eaten	't' value	Total consumption
1	F. millet	4.88 ± 1.07	55.1	0.63	8.86
	Wheat	3.98 ± 0.96	44.9		
2	F. millet	5.28 ± 0.53	68.0	4.27**	7.77
	Green gram	2.49 ± 0.39	32.0		
3	F. millet	4.81 ± 1.06	54.4	0.51	8.84
	Par boiled rice	4.03 ± 1.12	45.6		
4	F. millet	3.12 ± 0.65	38.6	2.19*	8.09
	Polished rice	4.97 ± 0.62	61.4		
5	Polished rice	5.44 ± 0.42	72.1	6.18**	7.55
	Bengal gram	2.11 ± 0.34	27.9		
6	Polished rice	5.50 ± 0.63	77.4	5.00**	7.11
	Cowpea	1.61 ± 0.46	22.6		
7	Polished rice	6.75 ± 0.85	95.1	7.43**	7.10
	Rice bran	0.35 ± 0.13	4.9		
8	Polished rice	6.23 ± 0.60	82.2	6.24**	7.58
	Cassava tuber	1.25 ± 0.51	17.8		
9	Polished rice	5.69 ± 0.31	88.6	11.32**	6.42
	Dry fish	0.73 ± 0.30	11.4		
10	Whole rice	4.40 ± 1.01	64.9	1.72	7.24
	Split rice	2.84 ± 0.74	35.1		
11	Whole rice	4.15 ± 0.50	65.8	2.19*	6.31
	Powdered rice	2.16 ± 0.75	34.2		

* $P < 0.05$

** $P < 0.01$

young age as the paddy was commonly cultivated and readily available in the field. Sridhara (1983) has already established that in certain rodents the preference for a particular food item depend on their earlier feeding experience. Similarly, in the paddy growing areas of Himachal Pradesh the *R. rattus* was known to prefer rice to other grains (Katoch, 1981).

As far as the texture of the bait is concerned each species has got its own preference. Some rodents prefer whole grains (Bhat, 1979) whereas some others prefer split forms (Sridhara and Srihari, 1983) and pulverised grains (Sharma and Saxena, 1983). In the present study there was no significant difference in consumption between the whole grains and split grains, but the pulverised grains were significantly ($P<0.05$) less consumed than its whole grain forms.

Similarly taste is another factor which determines the food preference and its consumption in rodents (Barnett, 1975). In *R. r. wroughtoni* addition of sugar (Table II) enhanced the consumption of plain baits significantly ($P<0.05$). Sugar at 2% level was the most preferred

Table II. *Effects of additives on the consumption of baits by* R. r. wroughtoni

Expt. No.	Choice	ADI (g/100g) ± SE	Per cent eaten	't' value	Total consumption (g)
1	Plain rice	3.08 ± 0.55	38.6	2.13*	7.98
	Rice + Sugar 2%	4.90 ± 0.63	61.4		
2	Rice + Sugar 2%	3.26 ± 0.43	61.6	2.55*	5.29
	Rice + Sugar 5%	2.03 ± 0.21	38.4		
3	Rice + Sugar 2%	3.26 ± 0.43	72.0	3.76*	4.53
	Rice + Sugar 10%	1.27 ± 0.30	28.0		
4	Rice + Sugar 2%	3.77 ± 0.41	50.2	0.06	7.51
	Rice + Jaggery 2%	3.74 ± 0.46	49.8		
5	Rice + Sugar 2%	4.63 ± 0.84	61.2	2.18 *	7.57
	Rice + Salt 2%	2.94 ± 0.44	38.8		
6	Rice + GNO 2%	5.23 ± 0.71	76.2	4.01**	6.86
	Rice + SFO 2%	1.63 ± 0.55	23.8		
7	Rice + GNO 2%	4.37 ± 0.59	66.9	2.58*	6.53
	Rice + GO 2%	2.16 ± 0.63	33.1		
8	Rice + GNO 2%	4.28 ± 0.63	65.1	2.70*	6.57
	Rice + PO 2%	2.29 ± 0.39	34.9		
9	Rice + GNO 2%	2.89 ± 0.53	50.7	0.10	5.70
	Rice + CO 2%	2.81 ± 0.53	49.3		
10	Rice + GNO 2%	2.48 ± 0.60	45.8	0.58	5.41
	Plain rice	2.93 ± 0.49	51.2		
11	Rice + Sugar 2%	4.19 ± 0.53	66.3	2.85*	6.32
	Rice + Sugar 2% + GNO 2%	2.13 ± 0.50	33.7		
12	Rice + Salt 2%	4.21 ± 0.44	59.5	2.05	7.08
	Rice + Salt 2% + GNO 2%	2.87 ± 0.47	40.5		
13	Rice + Salt 2%	3.23 ± 0.38	44.1	1.56	7.33
	Rice + Salt 2% + Sugar 2%	4.10 ± 0.40	55.9		
14	Rice + Sugar 2%	3.40 ± 0.63	56.4	1.47	6.03
	Rice + Sugar 2% + Salt 2%	2.63 ± 0.50	43.6		

* $P < 0.05$ ** $P < 0.01$

GNO: Groundnut oil; SFO: Sunflower oil; GO: Gingelly oil; PO: Palm oil; CO: Coconut oil.

concentration. Sugar and jaggery mixed grains were preferred equally by the rats. Among the oily baits, the rats consumed more of the baits mixed with groundnut oil and coconut oil. But the addition of oil did not enhance the rate of consumption of plain bait. On the other hand the consumption of sweetened and saltish baits was slightly decreased when oils were added to them. However, *R. rattus* found in some parts of north India preferred sweetened and oily foods (Khan, 1974).

The present observations revealed that the taste, texture and the familiarity of

the food were some of the major factors responsible for its acceptance and rate of consumption by *R. r. wroughtoni.*

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