

The influence of diet on body weight and behaviour of mice

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1. Introduction

Domestic mouse, *Mus musculus* belongs to the rodent's order, the most numerous group of mammals, with approximately 2270 species. One specific, common characteristic of all rodents is the constitution of their permanent denture, a set of 16-20 teeth. Rodents are mostly herbivores, whose leading diet represent seeds, wheat, parts of plants, berries, roots. Mice are widely-spread on different types of habitats, starting with meadows, fields, forests, deserts etc. The body length varies between 5,7 to 9,5 cm, with body weight from 20-40 grams. Colouring includes brown to dark grey, but white is also possible with albino individuals. Breeding is possible throughout the year, if the conditions are accommodating. Females are able to stay in gravity 24 hours after bringing the litter, due to their position at the bottom of the food chain. Gravity lasts 19-21 days, with a litter up to 12 youngs. Even though mice predominantly live in groups, some species might be seen living alone.

2. The purpose of investigation

We decided to investigate the behaviour of our pets, house mice. This idea motivated us even more when we discovered there has never before been an investigation about mice in Croatia. We purchased mice in a local pet store and worked only with females, as we know they are well adapted to life in a group.

3. Material and method of the investigation

During five months we observed two groups of mice, each group consisted of four females. We distinguished animals by the colour of their fur and marks on their tails. We marked the individuals by numbers and groups by letters A (healthy food) and B (supplements). At the beginning of the investigation both groups were placed in separate enclosures. Every enclosure contained sawdust, a food and water container, a "sleeping" box, turning wheel and playing objects. Both groups have been fed with different types of food. Group A received healthier food, while group B received a range of supplements to normal diet (eggs, sweet biscuit etc.). The groups were fed twice a day. We changed the types of food in order to respect the variety of the diet. We have observed and recorded their behaviour before and after each meal and followed their body weight every week and classified the information about their behaviour to quality and quantity behaviour. We represented quantity results statistically and tabularly.

4. Results

In both groups we noticed that mice mostly preferred rodent pet food. For this purpose, we recorded the primary and final body weight of both groups (Table 1.) in comparison with the final amount of consumed food and the final amount of consumed pet food. For single individuals we could observe movements depending on primary and final body weight. Quantity analysis of behaviour included spinning in the wheel, moving around the enclosure and self-grooming. Quality analysis represents the activity of the mice. We marked the activity with "+" or "-", whether the activity exists or not (Table 2).

Table 1. Comparison of body weights between groups A and B (1 – 8 marks of individuals, PW – primary weight, FW – final weight)

Individuals	1	2	3	4	5	6	7	8
PW (g)	35	19	27	16	22	23	22	13
FW (g)	33	33	16	29	31	31	35	31

Table 2. Presence of quality categories of behaviour for groups A and B, within five months (SC – social contact, A – aggression, P – play, D – digging, S – sleeping, BF – before feeding, AF- after feeding)

Behaviour Category		SC	A	P	D	S
Group A	BF	+	-	+	+	+
	AF	+	+	+	+	-
Group B	BF	-	-	-	+	+
	AF	-	-	-	-	+

5. Conclusion

During our five-month behaviour investigation, we concluded that group A consumed less food than group B, but developed normally. Mice from group B gained body weight faster and were less active. The behaviour was more excessive by group A, especially when there was no food in the enclosure. All individuals spent half the day sleeping, therefore, the movements began in the evening. During the investigation there was no change in behaviour categories within the groups. The type of food had more effect on the frequency of movements, but not on the body weight, which showed our hypothesis was partly right.