

## FOOD PREFERENCE FOR ALBINO RATS AND ALBINO MICE UNDER LABORATORY CONDITIONS

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### Abstract

This study was carried out at Agricultural Zoology and Nematology Department, Faculty of Agriculture, Al-Azhar University, Nasr City, Cairo in collaboration with Biochemistry Department of Faculty of Pharmacy, Egyptian Russian University, Badr Cairo under laboratory conditions. Present work was to evaluate the food preference and efficacy of some bait pellets on albino Norway rat, *Rattus norvegicus* Bekenhout and albino house mouse, *Mus museulus* Linnaeus.

Results obtained indicate that rice grains were the most preferred and consumed by both males and females of *Rattus norvegicus* Bekenhout followed by wheat, alfa alfa and maize grains. The total consumed grains by males and females of *Rattus norvegicus* Bekenhout was 149,119,72 and 24grams/5 rats of rice, wheat, alfa alfa and maize, respectively.

The same observation was found of, *Mus museulus* Linnaeus. Except wheat grains and maize replaced their arrangement. Generally, grains were more consumed and preferred than crushed grains, plant wastes and animal organs.

### INTRODUCTION

Domestic rodent species feed on wide range of food stuff of plant and animal origin, (Calhovn, 1941). Rats had been observed to select a nutritionally balanced diet when given a wide range of food to choose to satisfy energy requirements, (Schein and Orgain, 1953). Rats consume an amount of food equal to 1/10 of their body weight daily while mice consume 1/16 of their body weight daily. On the other hand, males consume an amount of food more than females, (Arafa *et al.*, 1975).

The odor of preferred food and male mouse urine increase mouse investigatory behavior (Pennycuik and Cowan, 1990), while consumption of high fat foods by mice was mediated by odor cues, (Asran, 1993) and Kinney and Antil (1996). Ansari *et al.* (2005) estimated the food preference of the house rat, *Rattus rattus*. He found that wheat grains were more preferred compared to maize and barley grains.

This work aims to study the most preferred food stuff of albino rats and mice under laboratory conditions.

## MATERIALS AND METHODS

Studies were carried out under laboratory condition at Agricultural Zoology and Nematology Department, Faculty of Agriculture, Al-Azhar University, Nasr City, Cairo, and Biochemistry Department of the Faculty of Pharmacy, Egyptian Russian University, Badr Cairo.

Males and females of two rodent species were used in this study, albino Norway rat, *Rattus norvegicus* Bekenhout and albino house mouse, *Mus museulus* Linnaeus. The average weight of albino rat males range between 88 to 188 gm/individuals, while it range from 89 to 165 gm/females. The average weight of albino rat males range between 19 to 39 gm/ individuals, while it range from 18 to 33 gm/females. Rats and mice were purchased from the Egyptian Organization for Biological and Vaccines production, Helwan Farm, Cairo and El-Nasr company farm Abo Zabal, Cairo.

Animals were housed in metal cages (42 x 24 x 17 cm.) with wire mesh bottom to minimize coprophagy as far as possible. These cages were placed under  $25\pm 3^{\circ}\text{C}$  temperature and  $65\pm 5\%$  relative humidity.

Animals were maintained on ad libitum normal pelleted diet for an acclimatization period of two weeks before conducting the experiments. Healthy males and females of approximately the same weight group were used throughout the experiments.

### Experimental procedures:-

Fourteen food items were divided into four groups according to their food constituents as follows:

- 1<sup>st</sup> Group: Grains (wheat, Rice, Maize and Alfa alfa).
- 2<sup>nd</sup> Group: Crushed grains (wheat, Rice, Maize and Alfa alfa).
- 3<sup>rd</sup> Group: Plant waste (wheat bran, Rice husk, Maize cob and Alfa alfa hay).
- 4<sup>th</sup> Group: Animal's organs (fried fish and raw chicken powders).

Every type of food of each group was introduced to estimate the daily consumption of food as g/kg body weight/day Ali (1991), EL-Deeb *et al.* (1991) and (Al-Gendy, 1999). The food preference was determined for males and females for each rodent species using one cup, double and three cups system.

To carry out the test, individual animal was housed in each cage and one cup of 30 grams of each food item was provided. The positions of cups were changed daily to avoid any bias of position preference. At each tests, five males and five females (housed individually in cages) were used. The duration of feeding test was five days.

The food consumption as well as animal body weight was recorded daily to the nearest gram for each rat or mouse and for each food type. Daily food intake was determined by subtracting the

spilled and the remaining food in each cup from the original quantity given to each rat or mouse (Al-Gendy,1999).

From previous results data, the rice and wheat bran more preferred than other grains and grains by- products respectively as well as the fried fish powder and raw chicken powder were favored to white Norway rats and white house mice. Therefore was mixing the white rice with wheat bran, fried fish powder and raw chicken powder at ratio 5:1 w: w and then water was added to the feeding mixture for moistening and homogenized in preparation for restructuring of the feeding mixture by compressing the moistening feeding mixture in compressing machine in laboratory of food science and technology department of Faculty of Agriculture, Al-Azhar University, Nasr City, Cairo, to produced feed pellet form as rabbit feed Pellet. After restructuring of the feeding mixture as feeding pellet was dried in air drier at 60 – 70 °C for 24 hr. Rice mixed with (a-Wheat barn, b-Fish powder and c-Chicken powder.) to gain different formulations and were introduced to the tested rodent to determine the most attractive food by using one cup system.

Data were analyzed according standard procedures for analysis of variance Duncan's (1955) and (Steel and Torrie,1980).

## RESULTS AND DISCUSSION

This research includes two stages' the first one aims to determine the most preferred bait for each of *Rattus norvegicus* Bekenhout and *Mus musculus* Linnaeus. The second stage is restricted to test different pellets which made of the best preferred and consumed food by the experimental species.

### 1-The preferred bait:-

The tabulated results in Tables (1&2) proved that the consumed amounts of the whole rice grains were (72.12 g/5 individuals of males and 76.7g/5 individuals of females) and (32g/5 individuals of males and 53g/5 individuals of females) by 5 males and 5 females of *R.norvegicus* Bekenhout and *Mus musculus* Linnaeus, respectively.

The figures in Tables (1&2) showed that the most preferred bait for the tested four groups for both experimental animals could be arranged in ascending order as follows , the whole rice grain (72.12g/5 individuals of males and 76g/5 individuals of females ) crushed rice (70.1g/5 individuals of males and 71g/5 individuals of females). Wheat barn (43.5g/5 individuals of males and 44.7g/5 individuals of females). Chicken powder (24.5g/5 individuals of males and 24.4g/5 individuals of females) for 1<sup>st</sup> , 2<sup>nd</sup> , 3<sup>rd</sup> and 4<sup>th</sup> groups, respectively for *R.norvegicus* Bekenhout.

The consumption by male and female of *M.musculus* Linnaeus took the same trend approximately for the former tested groups, (Table, 2).

These recorded figures (1,2,3,4,5,6 and 7) proved that the most preferred food was the whole rice grains and the lowest one was fish powder for males (15.1 g/5

individuals and 19.9 g/5 individuals) and females (18.8 g/5 individuals and 23.5 g/5 individuals) for *R.norvegicus* Bekenhout and *M.musculus* Linnaeus, respectively. Also, the data proved that females consumed more quantities of the introduced baits than males for *R.norvegicus* Bekenhout, meanwhile for *M.musculus* Linnaeus it was the opposite.

In addition the data in Tables (1&2) cleared that the body weight of the target animals has appositive correlation with the consumed amount of the tested food stuff. The daily consumption from the whole tested food stuff (in 4 group) by tested species was fluctuating slightly.

Rats first preferred to take small samples from the food offered, and then they began to choose the material that had the most powerful taste, odors and sweet, Barnett and Spencer (1951). Rodents in general prefer grains of low protein, high carbohydrate and moderate fat or seed of low carbohydrate, high protein and high fats, Smythe (1976).

The consumption rate of food was not influenced by the texture but the taste (oily and non-oily) and energy richness may influence the consumption rate in both single and multi-food choice experiments, (Soni and Rana, 1982). Sugar and vegetable oils and animal fats are the most universally effective additives for cereal baits to improve acceptance and palatability. Malting the grain can increase carbohydrate content, which greatly increases the bait acceptance, (Marsh, 1988).

## **2-The preferred formulation (pellet):-**

Data in Tables (3&4) showed that albino Norway rat, *Rattus norvigecus* Bekenhout individuals and albino house mouse, *Mus musculus* Linnaeus individuals (male and female) consumed and preferred rice mixed with wheat barn (65.36g/5 individuals of males and 65.43 g/5 individuals of females) and (28.28g/5 individuals of males and 27.88g/5 individuals of females) compared to rice mixed with chicken powder (41.3g/5 individuals of males and 40.32g/5 individuals of females) and (25.34g/5 individuals of males and 25.32g/5 individuals of females) followed by rice mixed with fish powder (38.84g/5 individuals of males and 37.94g/5 individuals of males) and (23.68g/5 individuals of males and 23.9g/5 individuals of females) and rabbit feed pellet as control (33.8g/5 individuals of males and 34.5g/5 individuals of females) and 4.58g/5 individuals of females), Figures(9&10).

Results showed that the body weight of albino Norway rat, *Rattus norvigecus* Bekenhout individuals and albino house mouse, *Mus musculus* Linnaeus were increased with daily consumed.

Rodents gnaw on anything, but foods with hardness between that of soft wheat and water-soaked corn appeared to be optimum, (Smythe, 1976). Increasing hardness of diet reduced food wastage by mice and rats that less wastage occurred when they were fed pellets made form finely ground materials, and that apparent

food consumption increased with the softness of the diet,(Ford, 1977) and (Robards and saunders, 1998). Mice preferred soft wheat varieties. Also, Rats and mice are almost color blind, yellow and green are more attractive as they are seen as a very light grey, (Meehan, 1984). In the choice test in coloration of baits, there was a difference between red-colored and uncolored seeds in the intake of the roof rat, (Yasutada, 2001).

Table 1. Daily consumption of some food stuff(non- Choice test) by albino Norway rat, *Rattus norvegicus* Bekenhout individuals under laboratory conditions (24±3 °C and 73 ± 5 RH).

| Groups          | Food items | Sex | Mean body weight/g. |       | Mean daily consumption grams/5individuals |                 |                 |                 |                 |       |                |
|-----------------|------------|-----|---------------------|-------|---|-----------------|-----------------|-----------------|-----------------|-------|----------------|
|                 |            |     | Before              | After | 1 <sup>st</sup>                           | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | Total | Total both sex |
| Grains          | Wheat      | ♂   | 126                 | 141   | 14.28                                     | 12.5            | 11.4            | 11.2            | 13.1            | 62.48 | 119            |
|                 |            | ♀   | 114                 | 127   | 12.3                                      | 11              | 10.1            | 10.3            | 12.6            | 56.3  |                |
|                 | Rice       | ♂   | 142                 | 152   | 16.2                                      | 14.5            | 13.3            | 12.92           | 15.2            | 72.12 | 149            |
|                 |            | ♀   | 126                 | 138   | 15.94                                     | 15              | 14.9            | 15.1            | 15.7            | 76.7  |                |
|                 | Maize      | ♂   | 108                 | 110   | 2.12                                      | 1.52            | 3.1             | 2.78            | 2.22            | 11.74 | 24             |
|                 |            | ♀   | 107                 | 110   | 2.76                                      | 2.72            | 2.36            | 2.52            | 2.28            | 12.64 |                |
|                 | Alfa alfa  | ♂   | 124                 | 126   | 8.16                                      | 7.36            | 7.96            | 7.58            | 6.44            | 37.5  | 72             |
|                 |            | ♀   | 118                 | 120   | 7.02                                      | 6.76            | 6.38            | 7.68            | 6.24            | 34.08 |                |
| Crushed grains  | Wheat      | ♂   | 98                  | 113   | 9   | 9.94            | 9.94            | 10.3            | 12.58           | 51.76 | 111            |
|                 |            | ♀   | 138                 | 154   | 13  | 11.5            | 11.8            | 10.6            | 12.66           | 59.56 |                |
|                 | Rice       | ♂   | 129                 | 140   | 16  | 15              | 14.9            | 15.1            | 15.7            | 70.1  | 141            |
|                 |            | ♀   | 171                 | 181   | 16  | 13.1            | 13.3            | 14.1            | 13.6            | 71    |                |
|                 | Maize      | ♂   | 88                  | 91    | 2.42                                      | 2.34            | 3.74            | 2.86            | 2.88            | 14.24 | 28             |
|                 |            | ♀   | 89                  | 91    | 2.74                                      | 2.94            | 2.46            | 3.16            | 2.6             | 13.9  |                |
|                 | Alfa alfa  | ♂   | 115                 | 118   | 6.64                                      | 5.86            | 6.38            | 6.88            | 5.52            | 31.28 | 65             |
|                 |            | ♀   | 137                 | 137   | 5.94                                      | 7.24            | 7.08            | 7.1             | 6.52            | 33.88 |                |
| Plant waste     | barn       | ♂   | 141                 | 134   | 9.3                                       | 9.16            | 8.26            | 9.22            | 7.56            | 43.5  | 88             |
|                 |            | ♀   | 127                 | 121   | 8.5                                       | 8.64            | 9.1             | 9.44            | 9               | 44.68 |                |
|                 | Rice husk  | ♂   | 152                 | 139   | 0.78                                      | 0.52            | 0.84            | 0.52            | 1.08            | 3.74  | 7              |
|                 |            | ♀   | 138                 | 124   | 0.42                                      | 0.7             | 0.72            | 0.66            | 0.38            | 2.88  |                |
|                 | cob        | ♂   | 111                 | 110   | 0.36                                      | 0.48            | 0.44            | 0.34            | 0.5             | 2.12  | 4              |
|                 |            | ♀   | 110                 | 110   | 0.38                                      | 0.28            | 0.46            | 0.34            | 0.48            | 1.94  |                |
|                 | Hay        | ♂   | 127                 | 116   | 0.4                                       | 0.4             | 0.36            | 0.24            | 0.28            | 1.68  | 3              |
|                 |            | ♀   | 120                 | 107   | 0.36                                      | 0.36            | 0.34            | 0.18            | 0.3             | 1.54  |                |
| Animals origins | Fish       | ♂   | 135                 | 140   | 2.3                                       | 3.5             | 2.98            | 3.52            | 2.84            | 15.14 | 34             |
|                 |            | ♀   | 160                 | 164   | 3.54                                      | 2.5             | 3.44            | 3.84            | 3.5             | 18.84 |                |
|                 | Chicken    | ♂   | 122                 | 130   | 6.64                                      | 4.2             | 4.02            | 4.9             | 5.06            | 24.5  | 49             |
|                 |            | ♀   | 144                 | 153   | 4.72                                      | 5.38            | 5.38            | 4.42            | 4.38            | 24.36 |                |

Daily consumption grams/5individuals from 1<sup>st</sup> day to 5<sup>th</sup> day.

Table 2. Daily consumption of some food stuff(non- Choice test) by albino house mouse, *Mus museulus* Linnaeus individuals under laboratory conditions ( $24\pm 3^{\circ}\text{C}$  and  $73 \pm 5$  RH).

| Groups          | Food items | Sex | Mean body weight/g. |       | Mean daily consumption grams/5individuals |                 |                 |                 |                 |       |                |
|-----------------|------------|-----|---------------------|-------|---|-----------------|-----------------|-----------------|-----------------|-------|----------------|
|                 |            |     | Before              | After | 1 <sup>st</sup>                           | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | Total | Total both sex |
| Grains          | Wheat      | ♂   | 37                  | 39    | 5.14                                      | 3.82            | 4.12            | 4.28            | 3.58            | 20.94 | 34             |
|                 |            | ♀   | 32                  | 33    | 3.14                                      | 2.24            | 1.72            | 3.12            | 2.6             | 12.82 |                |
|                 | Rice       | ♂   | 39                  | 40    | 10  | 9               | 5               | 5               | 3               | 32    | 67             |
|                 |            | ♀   | 34                  | 35    | 12  | 9               | 5               | 5               | 4               | 35    |                |
|                 | Maize      | ♂   | 39                  | 39    | 4.76                                      | 5.06            | 6.12            | 5.42            | 3.54            | 24.9  | 47             |
|                 |            | ♀   | 33                  | 34    | 4.42                                      | 3.44            | 4.84            | 4.76            | 3.72            | 21.18 |                |
|                 | Alfa alfa  | ♂   | 31                  | 32    | 2.9                                       | 4.7             | 2.7             | 5.5             | 2.5             | 18.3  | 36             |
|                 |            | ♀   | 34                  | 34    | 4   | 3.9             | 3.3             | 4.3             | 1.86            | 17.36 |                |
| Crushed grains  | Wheat      | ♂   | 20                  | 32    | 4.84                                      | 3.14            | 4.34            | 4.54            | 4.4             | 21.26 | 41             |
|                 |            | ♀   | 21                  | 31    | 4.82                                      | 3.92            | 2.94            | 5.56            | 2.78            | 19.97 |                |
|                 | Rice       | ♂   | 36                  | 36    | 4   | 4               | 3               | 2               | 4               | 17    | 29             |
|                 |            | ♀   | 31                  | 31    | 3   | 2               | 3               | 2               | 2               | 12    |                |
|                 | Maize      | ♂   | 31                  | 31    | 7.86                                      | 7.1             | 6.34            | 5.84            | 4.78            | 31.92 | 62             |
|                 |            | ♀   | 33                  | 34    | 8.7                                       | 5.52            | 5.68            | 4.62            | 5.06            | 29.58 |                |
|                 | Alfa alfa  | ♂   | 27                  | 28    | 2.2                                       | 2.2             | 3.7             | 3.7             | 3.9             | 15.7  | 31             |
|                 |            | ♀   | 27                  | 25    | 2.7                                       | 2.5             | 2.4             | 5.1             | 2.1             | 14.8  |                |
| Plant waste     | barn       | ♂   | 33                  | 34    | 4.4                                       | 4.1             | 5.4             | 6.9             | 5.3             | 26.1  | 44             |
|                 |            | ♀   | 29                  | 29    | 6.3                                       | 4.6             | 3.8             | 3.5             | 3               | 18.2  |                |
|                 | Rice husk  | ♂   | 33                  | 34    | 5.48                                      | 3.9             | 2.82            | 2.82            | 3.66            | 18.68 | 33             |
|                 |            | ♀   | 29                  | 29    | 3.42                                      | 3.2             | 1.96            | 3.56            | 2.34            | 14.48 |                |
|                 | cob        | ♂   | 27                  | 21    | 0.8                                       | 0.32            | 0.36            | 0.34            | 0.28            | 2.1   | 4              |
|                 |            | ♀   | 26                  | 21    | 0.58                                      | 0.42            | 0.34            | 0.38            | 0.18            | 1.9   |                |
|                 | Hay        | ♂   | 25                  | 26    | 4   | 2               | 2               | 3               | 2               | 13    | 27             |
|                 |            | ♀   | 24                  | 25    | 3   | 3               | 3               | 3               | 2               | 14    |                |
| Animals origins | Fish       | ♂   | 33                  | 35    | 6   | 2               | 6               | 3               | 2.9             | 19.9  | 43             |
|                 |            | ♀   | 29                  | 29    | 5   | 5               | 6               | 4               | 3.5             | 23.5  |                |
|                 | Chicken    | ♂   | 35                  | 32    | 5   | 5               | 6               | 3               | 5.1             | 24.1  | 42             |
|                 |            | ♀   | 31                  | 32    | 5   | 3               | 3               | 3               | 3.4             | 17.4  |                |

Daily consumption grams/5individuals from 1<sup>st</sup> day to 5<sup>th</sup> day.

Table 3. Daily consumption of some food stuff(non- Choice test) by albino Norway rat, *Rattus norvegicus* Bekenhout individuals under laboratory conditions (24±3 °C and 73 ± 5 RH).

| Sex | Mean body weight/g. |        | Food items          | Mean daily consumption grams/5individuals |                 |                 |                 |                 |       |        |
|-----|---------------------|--------|---------------------|---|-----------------|-----------------|-----------------|-----------------|-------|--------|
|     | Before              | After  |                     | 1 <sup>st</sup>                           | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | Total | Mean   |
| ♂   | 150.72              | 158.15 | Rice + Barn         | 13.6                                      | 12.44           | 13.44           | 12.84           | 13.04           | 65.36 | 13.072 |
|     | 141.32              | 149.08 | Rice +Fish          | 8.28                                      | 6.74            | 7.78            | 8.1             | 7.94            | 38.84 | 7.768  |
|     | 149.46              | 157.02 | Rice +Chicken       | 8.38                                      | 8.36            | 8.56            | 7.7             | 8.3             | 41.3  | 8.26   |
|     | 134.74              | 136.02 | Control             | 7.28                                      | 6.58            | 6.58            | 7.18            | 6.18            | 33.8  | 6.76   |
| ♀   | 149.48              | 155.2  | Rice +Wheat<br>Barn | 12.78                                     | 12.86           | 13.4            | 12.79           | 13.6            | 65.43 | 13.086 |
|     | 145.22              | 151.84 | Rice +Fish          | 7.6                                       | 7.76            | 7.5             | 8.04            | 7.04            | 37.94 | 7.588  |
|     | 152.34              | 160.46 | Rice +Chicken       | 7.88                                      | 8.06            | 7.88            | 8.38            | 8.12            | 40.32 | 8.064  |
|     | 142.12              | 147.22 | Control             | 7.24                                      | 7.04            | 5.84            | 7.1             | 7.28            | 34.5  | 6.9    |

Control (rabbit feed Pellet) and Daily consumption grams/5individuals from 1<sup>st</sup> day to 5<sup>th</sup> day.

Table 4. Daily consumption of some food stuff(non- Choice test) by albino house mouse, *Mus museulus* Linnaeus individuals under laboratory conditions (24±3 °C and 73 ± 5 RH).

| Sex | Mean body weight/g. |       | Food items    | Mean daily consumption grams/5individuals |                 |                 |                 |                 |       |      |
|-----|---------------------|-------|---------------|---|-----------------|-----------------|-----------------|-----------------|-------|------|
|     | Before              | After |               | 1 <sup>st</sup>                           | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | Total | Mean |
| ♂   | 22.94               | 27.46 | Rice + Barn   | 5.82                                      | 5.52            | 5.52            | 5.58            | 5.84            | 28.28 | 5.66 |
|     | 24.94               | 28.54 | Rice +Fish    | 4.28                                      | 4.9             | 4.92            | 4.68            | 4.9             | 23.68 | 4.74 |
|     | 29                  | 34    | Rice +Chicken | 4.9                                       | 4.7             | 5.1             | 5.46            | 5.18            | 25.34 | 5.07 |
|     | 19.36               | 20.68 | Control       | 0.34                                      | 1.12            | 1.26            | 0.72            | 1.14            | 4.58  | 0.92 |
| ♀   | 21.76               | 26.38 | Rice +Barn    | 5.66                                      | 5.58            | 5.64            | 5.46            | 5.54            | 27.88 | 5.58 |
|     | 25.54               | 29.86 | Rice +Fish    | 4.66                                      | 4.74            | 4.48            | 5.1             | 4.92            | 23.9  | 4.78 |
|     | 30                  | 35    | Rice +Chicken | 4.5                                       | 4.82            | 5.46            | 5.18            | 5.36            | 25.32 | 5.06 |
|     | 20.1                | 21    | Control       | 1.02                                      | 0.76            | 1.08            | 1.2             | 0.76            | 4.82  | 0.96 |

Control(rabbit feed Pellet) and Daily consumption grams/5individuals from 1<sup>st</sup> day to 5<sup>th</sup> day.

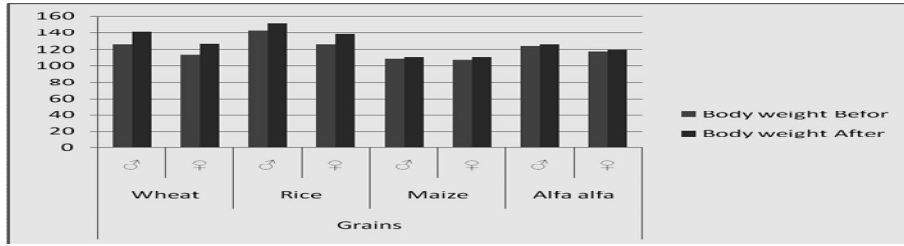


Fig. 1. Comparative between growth body mals and females of albino Norway rat, *Rattus norvegicus* Bekenhout individuals during feed on diffrant grains.

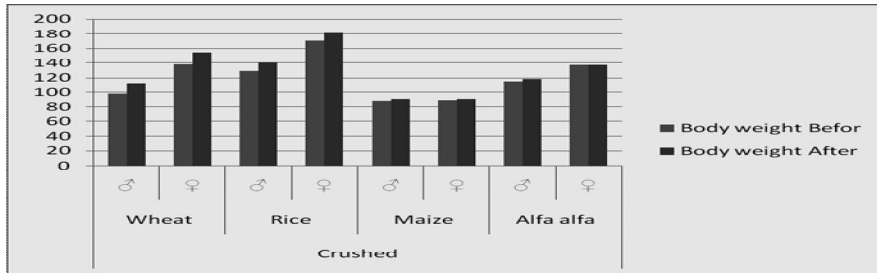


Fig. 2. Comparative between growth body mals and females of albino Norway rat, *Rattus norvegicus* Bekenhout individuals during feed on diffrant crushed grains.

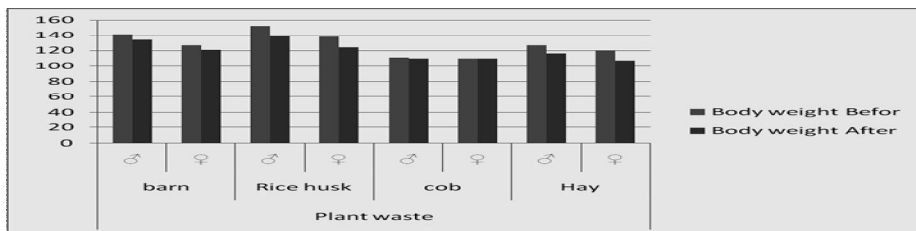


Fig. 3. Comparative between growth body mals and females of albino Norway rat, *Rattus norvegicus* Bekenhout individuals during feed on diffrant plant waste.

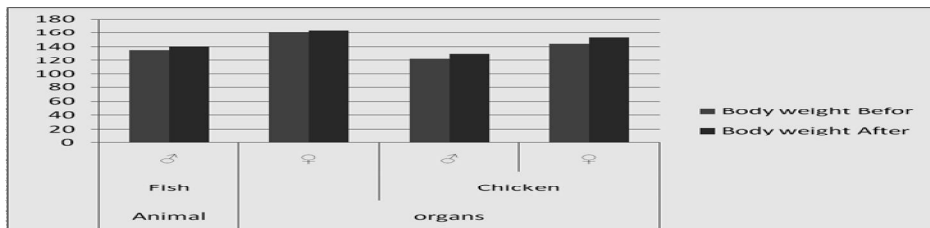


Fig. 4. Comparative between growth body mals and females of albino Norway rat, *Rattus norvegicus* Bekenhout individuals during feed on diffrant animal oragans.

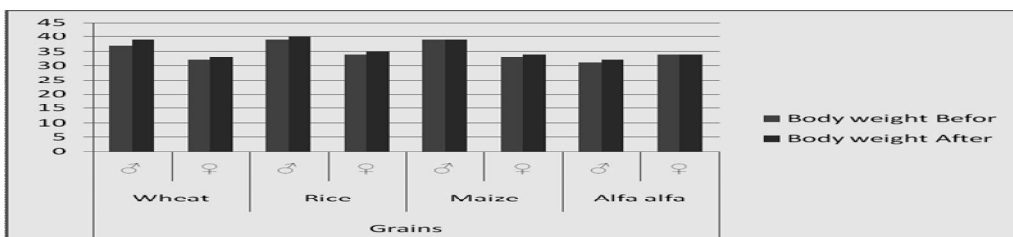


Fig. 5. Comparative between growth body mals and females of albino house mouse, *Mus museulus* Linnaeus individuals during feed on diffrant grains.





Fig. 6. Comparative between growth body mals and femalesof of albino house mouse, *Mus museulus* Linnaeus individuals during feed on diffrant crushed grains.

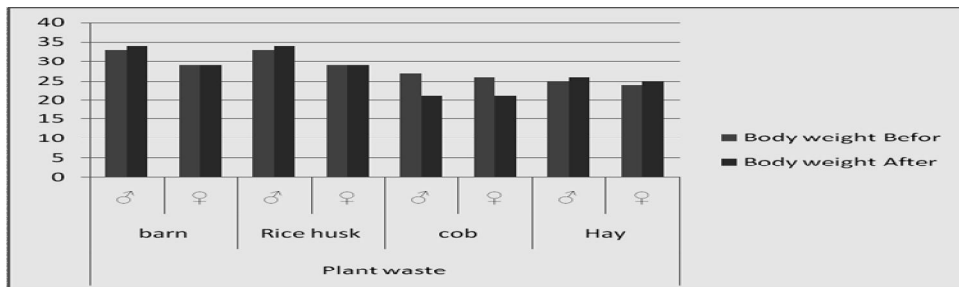


Fig. 7. Comparative between growth body mals and femalesof albino house mouse, *Mus museulus* Linnaeus individuals during feed on diffrant plant waste.

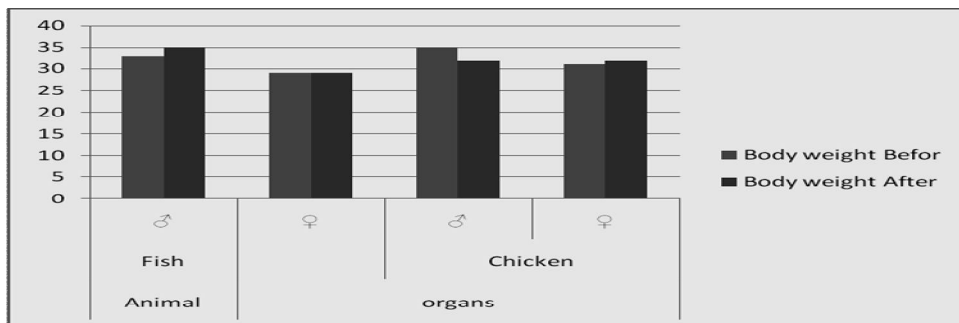


Fig. 8. Comparative between growth body mals and femalesof albino house mouse, *Mus museulus* Linnaeus individuals during feed on diffrant animal oragans.

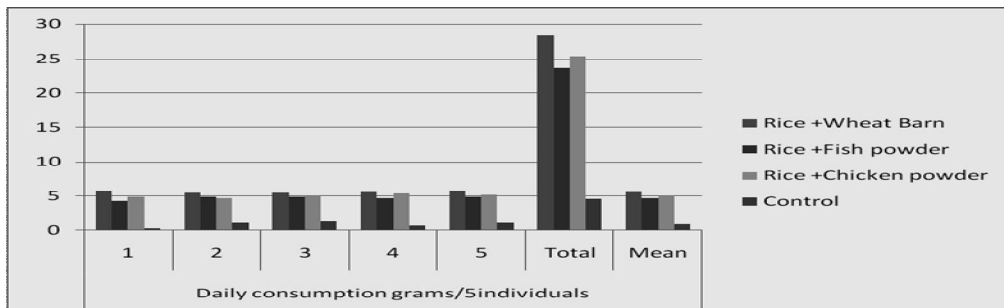


Fig. 9. Comparative between daily consumption of some food stuff(non- Choice test) by albino Norway rat, *Rattus norvegicus* Bekenhout individuals under laboratory conditions ( $24\pm3$  °C and  $73 \pm 5$  RH).

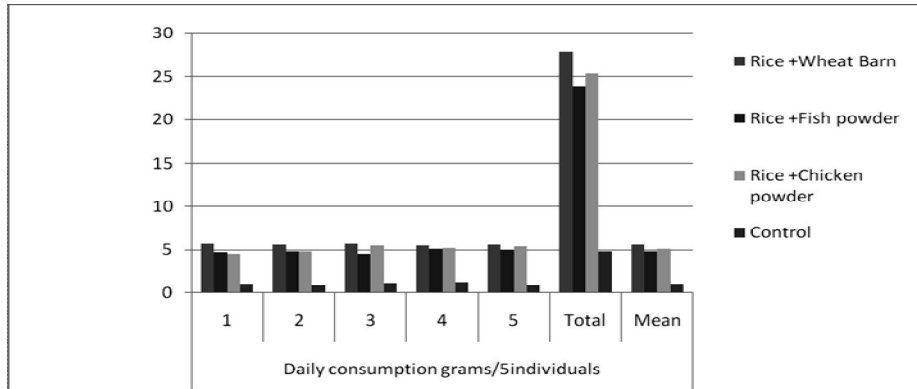


Fig. 10. Comparative between daily consumption of some food stuff(non- Choice test) by albino house mouse, *Mus museulus* Linnaeus individuals under laboratory conditions ( $24 \pm 3$  °C and  $73 \pm 5$  RH).

## REFERENCES

1. Al-Gendy, A.A.R. 1999. Ecological and Toxicological studies on some rodent in Egypt. Ph.D. Thesis, Fac. Agric., Al-Azhar Univ., pp. 176.
2. Ansari,S.A.,Rustamani,M.A.,Kakar,A.W.,Khooharo,A.A.,Fozia, D. and Baloch, H.B. 2005. Grain losses caused by house rat, *Rattus rattus* L. and its control. Pakistan J. of Zool. ,37(1):33-38.
3. Arafa, M.S., Naser, N.T., Salit, A. M. and Khalil, M.S. 1975. A comparative study of slow and quick – acting rodenticides in a confined area in Egypt.International Pest Control pp17-18.
4. Asran, A.A. 1993. Effect of some additives on food consumption of the house mouse, *Mus musculm* L. in new reclaimed area.Egypt. J. Agric. Res.71(4): 90-95.
5. Barnett, S.A. and Spencer, M.M. 1951. Feeding, social behavior and interspecific competition in wild rats. Behav., 3: 229-242.
6. Calhovn, J.B. 1941. Distribution and food habits mammals in the vicinity of the reel fort lake Biological. J.Tennessee Aead. Sci. 17( 1): 177-185.
7. Duncan's, D.B. 1955. Multiple ranged multiple F-test, Bionieinc.--! 1:1-17.
8. Ford,T. 1977. Contemporary rural America: Persistence and Change. Rural USA:4.
9. Kinney,N.E. and Antil, R.W. 1996. Role of olfaction in the formation of preference for high-fat foods in mice.Physiol & Behavior, 59:475-478.
10. Marsh, R.E. 1988. Bait additives as a meanns of improving acceptance by rodents. OEPP, EPPO Bull. 18: 195-202.

11. Meehan, A.P. 1984. Rat and mice. Their biology and control. Published by Rentokil Limited East Grinstead London, pp.383.
12. Pennycook, P.R. and Cowan, R. 1990. Odors and food preferences of house mice, *Mus musculus*. Aust. J. Zool. 38:241-247.
13. Schein, M.W. and Orgain, H. 1953. A preliminary analysis of garbage as food for the Norway rat. Am. J. Trop. Med. Hyg., 2: 1117-1130.
14. Smythe, W.R. 1976. Criteria for rodent bait selection. Proc. Vert. Pest Conf. Calif. USA, 7: 211-214.
15. Soni, B. K. and Rana, B. D. 1982. Feeding behaviours and selection of poison-bait for the control of *Rattus (millardiae) melitensis pallidus* (riley) populations. Sonderdruck aus Säugetierkundliche Mitteilungen. BLV Verlagsgesellschaft München. 30-40 Jbg. Heft 2, Seite : 81-88.
16. Robards, G.E. and Saunders, G. 1998. Food preferences of house mice (*Mus domesticus*) and their implications for control strategies. Wildlife Res., 25: 595-601.
17. Yasutada, I.T.O. 2001. A method for estimating food preference of the commensal rat. Medical entomology and Zoology, 52(3):231-239.

## التفضيل الغذائى للجرذ النرويجى الابيض وفأر المنزل الابيض تحت الظروف المعملية

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أجري البحث فى معمل قسم الحيوان الزراعى والنيماطودا بكلية الزراعة جامعة الازهر بمدينة نصر-القاهرة، وكذلك معمل كلية الصيدلة بالجامعة المصرية الروسية بمدينة بدر بالقاهرة. ويهدف هذا العمل الى أولا: تحديد الغذاء الأكثر تفضيلا واستهلاكا لكلا من الجرذ النرويجى الابيض والفأر المنزلى الابيض. ثانيا: إختيار الغذاء الأكثر تفضيلا وخطها على شكل علف الأرنب.

**النتائج:** كانت حبوب الأرز اكثر استهلاكا وفضلية لافراد الجرذ النرويجى الابيض يليه الأرز المجروش ثم الردة ثم مطحون الدجاج على التوالى بينما حبوب الأرز يليها مجروش الذرة الصفراء ثم الردة ثم مطحون السمك اكثر استهلاكا وتفضيلا للفأر الابيض على التوالى كما يصحب ذلك زيادة فى وزن الجسم مع جميع المواد المستخدمة ماعدا المخلفات النباتية ينخفض الوزن لنوعى القوارض المختبرة.

وعند عمل الشكل النهائى للطعم غير المسمم من المواد السابقة عالية التفضيل والاستهلاك فإن الأرز المخلوط بالرده كان اكثر استهلاكا وتفضيلا يليها الأرز المخلوط مع مسحوق الدجاج ثم الأرز المخلوط مع مسحوق السمك ووزن الجسم يزداد بزيادة الاستهلاك.