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PRELIMINARY STUDY ON DROPPINGS OF THE WILD HOUSE MOUSE *Mus musculus* LINN., THE NILE GRASS RAT *Arvicanthis niloticus* (DES.), AND THE CLIMB RAT *Rattus rattus* (LINN.) UNDER THE LABORATORY CONDITIONS.

BY

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ABSTRACT: This study was conducted on three groups of rodents; the wild house mice *Mus musculus* Linn., Nile grass rats *Arvicanthis niloticus* (Des.), and climb rats *Rattus rattus* (Linn.), which composed of mature and immature male and females each group were fed on sugarcane plant and crushed maize under laboratory conditions. The results of differences among groups in the droppings were recorded.

INTRODUCTION

Rodents have become a great social problem, almost in all the world countries. They are extremely damaging to a wide variety of human interests. As a result of that, the rodent control has attracted the attention of both farmers and scientists. To have success control, it is necessary to know your enemy, its biology, and behaviour, the effect of different diets on it, shape, size, number and color of droppings are physical characters led to the classification of rats and mice . Crushed maize was preferable food to *Mus musculus* Linn., *Rattus rattus* (Linn.), and *Arvicanthis niloticus* (Des.), under laboratory conditions, **Abazaid (1990), Abd El-Rahman (1991)** and **Hussien (1991).** The shape and size of any droppings can often indicate the species which may be present, **Meehan (1984).**

The aim of this study is to have description of *Mus musculus* Linn., *Arvicanthis niloticus* (Des.), and *Rattus rattus* (Linn.), droppings feeding on two different food kinds under laboratory conditions.

MATERALS AND METHODS

The wild house mice and Nile grass rats were collected from sugar cane fields while climb rats was collected from houses beside sugar cane fields at Sohag Governorate. To study the effect of sugarcane plant and

crushed maize on tested animal droppings, for each animal strain four groups were prepared for study: mature male, mature female, immature male, immature female, each group consists of five individuals. Animals were reared in individual cages, 42×24×17 cm. for a maximum of two weeks before initiating tests. Abnormally large or small animals or obviously pregnant individuals were omitted from the experiment. In the first test one cup was provided to individually caged animals, contained crushed maize. In the second test sugarcane stalks internodes were provided to individually caged animals. Water was removed from the animal cages through three days in each week for four weeks after initiating test and recorded the length, diameter, shape and color of droppings.

RESULTS AND DISCUSSION

This study was conducted on three groups of rodents; the wild house mice *Mus musculus* Linn., Nile grass rats *Arvicanthis niloticus* (Des.), and climbing rats *Rattus rattus* (Linn.), which composed of mature and immature male and female each group were feed on sugarcane plant and crushed maize under laboratory conditions.

1-Dropings of house mice:-

Data in Table(1) showed that the dropping of mature and immature male and female house mouse individuals which fed on sugarcane plant tend to be irregular in shape, discrete, pale brown to brown in color. However the dropping of mature individuals were 3-9 mm. length, 2-3 mm. in diameter and about (50-63 droppings/day for male) and (50-70 droppings/day for female), while immature individuals were 3-7 mm. in length, 2-3 mm. in diameter and about (57-78 droppings/day for male) and (53-69 droppings/day for female).

The dropping of house mouse mature and immature male and female which were fed on crushed maize tend to be irregular in shape, discrete, black in color. However mature droppings were 2-6 mm. length, 2-2.5 mm. in diameter and about (28-30 droppings/day for male) and (28-35 droppings/day for female). While immature droppings were 2-5 mm. in length, 1.5-2 mm. in diameter and about (32-37 droppings/day for male) and (35-41 droppings/day for female).

2-Dropings of Nile grass rat:-

Data in table showed that the droppings of mature male and female

of Nile grass rat individuals which were fed on sugarcane plant tend to be cylindrical in shape, discrete, buff to pale brown in color. However the dropping of mature individuals were 5-16 mm. in length, 2-5 mm. in diameter and about (51-80 droppings/day for male) and (60-98 droppings/day for female), while immature males and females tend to be irregular in shape, discrete, pale brown to brown in color. However, the dropping of immature individuals were 4-9 mm. in length, 2-4 mm. in diameter and about (85-118 droppings/day for male) and (90-118 droppings/day for female).

The dropping of Nile grass rat mature male and female which were fed on crushed maize tend to be spindle in shape, deposited in groups, black in color. The dropping of mature individuals were 5-10 mm. in length, 2-4 mm. in diameter and about (17-30 droppings/day for male) and (17-40 droppings/day for female), while immature males and females tend to be irregular in shaped, discrete, pointed ends, black in color. However the dropping of immature individuals were 4-8 mm. in length, 2-3 mm. in diameter and about (25-44 droppings/day for male) and (25-49 droppings/day for female).

3-Dropings of climb rat:-

Data showed that droppings of climb rat mature male and female were fed on sugarcane plant tend to be curved shaped, taper end, scattered, buff to pale brown in color, but mature male and female were 9-16 mm. length, 2-4 mm. in diameter and about (45-60 droppings/day for male and (48-67 droppings/day for female),while immature males and females were 5-10 mm. in length, 2-3 mm. in diameter and about (45-50 droppings/day for male) and (40-59 droppings/day for female).

Results recorded that the dropping of climb rat mature male and female fed on crushed maize tend to be curved shaped, taper end, scattered, black in color, but mature male and female were 7-12 mm. in length, 2-3 mm. in diameter and about (26-35 droppings/day for male) and (30-35 droppings/day for female), while immature males and females were 5-10 mm. in length, 1-2 mm. in diameter and about (45-50 droppings/day for male) and (42-47 droppings/day for female. **Meehan (1984)** mentioned that, *Rattus norvegicus* (Berk.), dropping tend to be spindle shaped (20mm) and generally were grouped together. *Rattus rattus* (Linn.) dropping were on average somewhat smaller, more sausage –shaped (15mm) and more scattered. *Mus musculus* Linn., dropping was

much smaller (spinal shaped 6mm). *Rattus norvegicus* (Berk.), about 40 droppings a day, and *Mus musculus* Linn., about 80. **Brown *et al.*, (1992)** noticed that, *Rattus norvegicus* (Brek.), faeces vary in color with content, were about 1.7- 2 cm long, 0.6 cm in diameter and taper to a point and deposited in groups in regular latrine spots ,such as the rafter junctions in roofs. *Rattus rattus* (Linn.) droppings were 1 - 1.2 cm long and 0.2 - 0.3cm in diameter, have rounded but were smaller than those of brown rat, deposited singly and at random. *Mus musculus* Linn., concentrations occur in favorite places, the faeces were rounded in section and smaller than those of wood mouse (about 0.6cm long and 0.2 –2.5cm in diameter, color varies with diet.

Table (1): Characteristics of droppings of three rodent species under laboratory conditions.

Species	Sex	Stage	Item of food	Characteristics				
				Shape	Colure	Length (mm)	Diameter (mm)	No. of droppings
Mus musculus (Linn.)	♂	Mature	sugarcane	irregular, discrete	pale brown to brown	3-9	2-3	50-63
	♀							50-70
	♂	Immature				3-7		57-78
	♀							53-69
	♂	Mature	crushed maize	irregular, discrete	black	2-6	2-2.5	28-30
	♀							28-35
	♂	Immature				2-5	1.5-2	32-37
	♀							35-41
Arvicanthis niloticus (Des.),	♂	Mature	sugarcane	cylindrical, discrete,	buff to pale brown	5-16	2-5	51-80
	♀							60-98
	♂	Immature		irregular, discrete		4-9	2-4	85-118
	♀							90-118
	♂	Mature	crushed maize	spindle, deposited in groups.	black	5-10	2-4	17-30
	♀							17-40
	♂	Immature		irregular, discrete, pointed ends,		4-8	2-3	25-44
	♀							25-49
Rattus rattus (Linn.)	♂	Mature	sugarcane	curved, taper end, scattered,	buff to pale brown	9-15	2-4	45-60
	♀							48-67
	♂	Immature				5-10	2-3	45-50
	♀							40-59
	♂	Mature	crushed maize		black	7-12	2-3	26-35
	♀							30-35
	♂	Immature				5-10	1-2	45-50
	♀							42-47

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الملخص العربى

دراسة أولية على بعرات فأر المنزل *Mus musculus* Linn. والجرذ النيلى *Arvicanthis niloticus*(Des.) والجرذ المتسلق *Rattus rattus* (Linn.) تحت الظروف المعملية

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أجريت هذه الدراسة على ثلاث مجموعات من القوارض وهى فأر المنزل. *Mus musculus* Linn و جرذ الحشائش النيلى *Arvicanthis niloticus* (Des.) والجرذ المتسلق *Rattus rattus* (Linn.) تتكون كل مجموعه من ذكور وإناث بالغين وغير بالغين وتم تقسيم كل مجموعة إلى قسمين طبقا لنوع الغذاء سواء كان قصب السكر أو جريش الذرة .

الهدف من البحث دراسة المميزات الخاصة لبعرات بعض أنواع القواض تحت الظروف المعملية لإستخدامها فى إستكشاف وجود ها وتصنيفها وتقديركثافتها .

* وأظهرت النتائج بالنسبة إلى الفأر المنزلى مايلى:-

بعرات الفأر المنزلى كانت غير منتظمة الشكل ، متفرقة عندما تغذت على كل من قصب السكر و جريش الذرة ،ولكن كان لونها بنى باهت إلى بنى فى حالة التغذية على قصب السكر وسوداء اللون عند التغذية على جريش الذره وكانت البعرات أقصر وأقل قطرا وعددا عندما تغذت على جريش الذره عنها فى حالة التغذية على قصب السكر لكل من الذكور والإناث البالغة وغير البالغة.

**كما أظهرت النتائج بالنسبة إلى جرذ الحشائش النيلى مايلى:-

كانت البعرات للأفراد البالغة اسطوانية، متفرقه، مائلة للبنى الباهت عند التغذية على قصب السكر ، بينما كانت بنفس الشكل ولكن سوداء اللون عند التغذية على جريش الذره.ومره أخرى أظهرت التغذية على قصب السكر زيادة فى الطول والقطر والعدد عنها فى حالة التغذية على جريش الذره لكل من الأفراد البالغة وغير البالغة ذكورا وإناثا.

***كما أظهرت النتائج بالنسبة إلى الجرذ المتسلق مايلى:-

كانت البعرات منحنية ،شريطية الأطراف ، مبعثرة عند التغذية على كل من قصب السكر وجريش الذره. وكانت صفراء مائلة إلى البنى الباهت ، أطول ، أكبر قطرا و أكثر عددا عن المقابله لها عند التغذية على جريش الذره إلا أنها سوداء اللون.