

## IMPACT OF SHEARING ON THE BEHAVIOUR AND SERUM CORTISOL OF LAMBS

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### SUMMARY

**32 Fox lambs were allotted into two groups (n=16), each group including 8 males and 8 females. One group subjected to shearing by shearing machine and the other was kept as control. Behavioural observation was carried out by hanged video camera a day before shearing. A complete day behavioural observation was carried out once weekly. Moreover, blood samples collected just before starting shearing and then every 30 minutes for 3 hours continuously.**

**The obtained resulted showed that shearing of lambs increased the ingestive behaviour; resting behaviour, movement activities (standing, walking and running); body care activities (scratching, rubbing and head shaking) and social activities as the butting frequency. On contrary the wall and other exploratory behaviours and jumping activities were decreased. Moreover, sheared males had the highest frequencies of feeding, standing, walking, running, rubbing, head shaking and butting frequency. Whereas the unshorn lambs had highest frequencies of lying, standing time and mounting activities. Moreover, the shorn female lambs spent longer feeding periods than other groups.**

**Shearing and handling of sheep resulted in elevation in the blood serum cortisol of lambs reach its peaks after 90 min then decreased gradually to level lower than that obtained after 180 minutes from shearing and handling. Moreover, although shearing process decreased the body weight of the lambs however, within 6 weeks after shearing the shorn lambs attained more body weight than unshorn ones.**

### INTRODUCTION

Sheep have several advantages for raising such as high fertility, short generation interval, ...etc so the prospects of increased sheep productivity, should have the objective of

increasing the number and size of lambs and frequency of lambing and lengthening the productive life span this achieved by improving most beneficial managerial practices such as shearing which considered as essential practice in sheep as it increased the birth weight of twin lambs and improve maternal behaviour (Revell et al., 2000).

Shearing elevated plasma cortisol levels haematocrit, and increase heart rate, which declined to basal levels 90 minutes after treatment (Hargreaves and Hutson, 1990). The increase in plasma cortisol due to the stressful events such as restraint and the injuries produced by clipping machine and hand clipper during clipping (Samaha et al., 1999). However, the previous experience and genetic factors affecting temperament will interact in complex ways to determine how fearful an animal may become when it is handled (Visscher, 1997).

The aim of this study were to determine the variations in the behavioural parameters, and the changes in the serum cortisol as an internal measuring factors for the animals welfare and the time required for the animal to return to the normal condition before shearing.

### **MATERIAL AND METHODS**

About 32 Fox lambs (average 159 day) belonging to the animal husbandry and breeding institute, Martin Luther university, Germany were allotted into two groups (n=16), each group (8 males and 8 females) one subjected to shearing by shearing machine and the other kept as control.

For behavioural observation a video camera was hanged on the ceiling of the two chambers with a video recording for the behaviour of the sheep one day before shearing and one day after shearing and then one day complete behavioural observation was carried out once weekly from 7:00 a.m. till 5:00 p.m. A focal sampling method was utilized in this study according to Martin and Frs (1986), where the lambs were identified by numbers marked by spray paint on the backs. The video tapes after the daily recording was then replayed with the video and the data collected by computer for each animal.

Blood samples were collected just before starting shearing and handling (setting on buttocks). Blood sampling was continued every 30 minutes from each group till 180 minutes after shearing and handling.

After complete observation of animals and estimation the serum cortisol, the data were analysed by MSTAT (1984). Moreover, for evaluation the performance of lambs after shearing, the animals were weighed a day before shearing, then start weight after shearing (start weight) then every two weeks till 6<sup>th</sup> weeks and the weight gain was calculated.

## RESULTS

### **I. Lamb behaviour:**

The data presented in tables (1&2) showed that shearing increased the ingestive behaviour of lambs including feeding frequency ( $5.20 \pm 0.29$  vs.  $4.54 \pm 0.29$  time/h); feeding time ( $7.46 \pm 0.39$  vs.  $7.05 \pm 0.41$  min/h) and drinking frequency ( $0.40 \pm 0.06$  vs.  $0.39 \pm 0.05$  time/h). Moreover, the other maintenance activities were also increased including lying time ( $7.59 \pm 0.42$  vs.  $7.50 \pm 0.41$  min/h), standing frequency ( $6.70 \pm 0.27$  vs.  $6.19 \pm 0.25$  time/h); walking frequency ( $12.92 \pm 0.58$  vs.  $12.09 \pm 0.49$  time/h), running frequency ( $0.21 \pm 0.05$  vs.  $0.25 \pm 0.05$ ), body care activities as scratching frequency ( $1.28 \pm 0.13$  vs.  $0.52 \pm 0.07$  time/h), rubbing frequency ( $0.27 \pm 0.06$  vs.  $0.25 \pm 0.06$  time/h) and head shaking frequency ( $8.27 \pm 0.36$  vs.  $7.54 \pm 0.36$  time/h) and social activities including the butting frequency ( $0.36 \pm 0.08$  vs.  $0.29 \pm 0.06$  time/h). On contrary the wall and other exploratory behaviours as well as jumping activities were all decreased ( $1.86 \pm 0.16$ ,  $2.41 \pm 0.20$  and  $0.09 \pm 0.03$  vs.  $2.12 \pm 0.18$ ,  $2.48 \pm 0.21$  and  $0.13 \pm 0.04$  time/h, respectively).

The effect of sex within the treatment showed that shorn male lambs had the highest frequency of feeding ( $5.24 \pm 0.42$ ), standing ( $6.98 \pm 0.39$ ), walking ( $14.26 \pm 0.83$ ), running ( $0.33 \pm 0.09$ ), rubbing ( $0.36 \pm 0.10$ ), head shaking ( $9.35 \pm 0.52$ ) and butting frequency ( $0.50 \pm 0.12$ ). While the unshorn ones had the highest frequencies of lying ( $2.56 \pm 0.19$ ), standing time ( $6.89 \pm 0.45$  min/h) and mounting activities ( $0.20 \pm 0.07$ ). Moreover, the shorn female lambs spent longer feeding periods ( $8.68 \pm 0.55$  min/h) and higher feeding frequency ( $5.11 \pm 0.39$ ), standing frequency ( $6.14 \pm 0.36$ ), standing time ( $3.27 \pm 0.26$ ), walking frequency ( $10.27 \pm 0.71$ ), running frequency ( $0.08 \pm 0.03$ ), scratching ( $1.48 \pm 0.22$ ), rubbing

( $0.08 \pm 0.05$ ), head shaking ( $6.14 \pm 0.42$ ), litter exploration ( $1.33 \pm 0.15$ ), other exploration ( $0.83 \pm 0.014$ ) and butting ( $0.08 \pm 0.06$ ) than unshorn females (Tables 1&2).

During the first week shearing effects were obvious by increasing the feeding frequency ( $5.83 \pm 0.71$  vs.  $4.92 \pm 0.67$ ), feeding time ( $8.12 \pm 0.086$  vs.  $7.56 \pm 0.97$ ), standing ( $6.88 \pm 0.61$  vs.  $6.35 \pm 0.57$ ), walking ( $14.44 \pm 1.43$  vs.  $12.98 \pm 1.11$ ) and running frequencies ( $0.54 \pm 0.18$  vs.  $0.38 \pm 0.16$ ). The comfort activities were also higher during the first week after shearing including scratching ( $1.63 \pm 0.32$ ) and rubbing ( $0.50 \pm 0.16$ ) followed by gradual decline in these activities, on the other hand, head shaking activities reached the peak ( $9.38 \pm 0.76$ ) during the 4th week of experiment (Table 2).

The exploratory activities including litter and wall exploration showed gradual increment after shearing with highest frequencies for shorn animals. While the other exploration showed a reverse trend since the highest frequency was during the first week after shearing ( $3.13 \pm 0.52$ ). However, The social behaviour including butting and jumping frequencies, showed fluctuated trends throughout the experiment although however, were higher in shorn males than unshorn ones especially during the first week after shearing ( $0.35 \pm 0.14$  vs.  $0.27 \pm 0.09$  and  $0.17 \pm 0.11$  vs.  $0.06 \pm 0.05$  time/h, respectively)

## II. Serum cortisol:

The data presented in Table (3) showed that shearing and handling of sheep resulted in elevation in the blood serum cortisol in lambs reached its peaks after 90 min ( $1.72 \pm 0.14$  for shorn and  $1.69 \pm 0.22$  ug/L, for non-shorn ones then decreased gradually to level a lowered than that observed before shearing ( $0.94 \pm 0.10$  and  $1.05 \pm 0.11$  ug/L).

Females lambs were more distressed form shearing and handling than males during the first 30 minutes after shearing ( $2.53 \pm 0.72$  vs.  $1.38 \pm 0.29$  for shearing and  $2.57 \pm 0.68$  vs.  $1.23 \pm 0.72$  ug/L for handling, respectively) and this distress was continued throughout 3 hours after shearing and handling (Table 3).

### III. Productive traits:

Although lambs were allotted into groups on the bases of their mean weight, however, shearing resulted in decreasing the start weight of the shorn lambs due to removal of the wool ( $36.20 \pm 1.30$  vs.  $37.18 \pm 1.01$  kg), moreover, within 6 weeks after shearing the shorn lambs attained more body weight than unshorn lambs ( $43.32 \pm 1.86$  vs.  $42.99 \pm 1.43$  kg). This is due to the faster gain of the shorn lambs during the 2-4 week after shearing ( $2.35 \pm 0.44$  vs.  $1.49 \pm 0.36$  kg) and during the period 4-6 weeks ( $4.07 \pm 0.77$  vs.  $2.91 \pm 0.39$  kg) which resulted in a total weight gain of  $7.12 \pm 1.37$  vs.  $5.82 \pm 5.82 \pm 0.82$  kg for shorn and unshorn lambs, respectively.

The effect of sex within treatment showed that in general males had heavier body weights and faster gains than females especially during the 4<sup>th</sup> to 6<sup>th</sup> week after shearing. Moreover, shearing resulted in improvement of body weights of shorn males and females ( $46.73 \pm 1.60$  and  $39.90 \pm 2.65$  kg) than unshorn ones ( $46.17 \pm 1.95$  and  $39.81 \pm 0.97$  kg) during the 6<sup>th</sup> week after shearing they gained better weight during 2-4 week period ( $3.00 \pm 0.45$  and  $1.70 \pm 0.65$  vs.  $1.5 \pm 0.29$  and  $1.48 \pm 0.59$  kg, respectively) and during 4-6 week period ( $4.95 \pm 0.78$  and  $3.07 \pm 1.36$  vs.  $4.00 \pm 0.79$  and  $1.81 \pm 0.29$  kg, respectively), this reflected in better total gain ( $8.43 \pm 1.39$  and  $5.80 \pm 2.48$  vs.  $6.62 \pm 1.60$  and  $5.01 \pm 0.66$  kg, respectively).

## DISCUSSION

### I. Lambs behaviour:

Shearing increased the ingestive behaviour of lambs (feeding and drinking), lying, standing; walking, running and body care activities (scratching, rubbing and head shaking). This could be attributed to the accelerate heat loss at the skin surface, which likely to cause longer feeding time (Alexander 1974). Shorn lambs invoked physical-thermoregulatory process to conserve metabolic heat, (Curtis, 1981). Diverio, et al (1993) confirmed that shearing and clipping in red deer increased the feeding time than control animals. The higher body care activities as scratching, rubbing and head shaking, are likely to be exhibited by lambs because of the greater sensitivity of shorn lambs to flies counteract, in combination with an increased attraction of flies to the head, neck, back and belly (Brindley, et al., 1989).

Shearing resulted in increasing butting while it reduces jumping activities (Table 2). This may be attributed to the change

of the animal's appearance by shearing which seem to be a newly introduced member to the flock. In addition, the male lambs considered as the main members in the butting than females. High aggression frequencies between males may be due to androgen hormones which responsible for male sexual behaviour and aggression. These results are in agreement with those obtained by Sato, et al. (1991) stated that social interactions related to androgen levels so that males exhibit more aggression than females.

The increase in the behavioural activities during the first week than 2<sup>nd</sup>, 3<sup>rd</sup> or 4<sup>th</sup> week after shearing could be attributed to distress of lambs by shearing and blood collections so the animal do much effort to maintain their homeostasis (Samaha, et al., 1999), while, scratching decreased with age due to growing of the wool and healing of the wounds. These results are in close agreement with those obtained by Brindley, et al. (1989) and Hargreaves and Hutson (1990).

## **II. Serum cortisol:**

Shearing as any managerial practice resulted in elevation in the serum cortisol. However, this elevation is of no significant value as compared to the handled group, Moreover, its level increased in both sheared and handled animals during blood collection which reached its peaks after 90 min after shearing and handling then gradually decreased to a level lowered than that obtained before sampling. In shearing animals confronted with longer time securing and sitting on buttocks and may be injured with the shearing machine (Samaha, et al., 1999).

## **III. Productive traits:**

The improvement in body weight and weight gain after shearing may be due to reduction in heat load which may reduce the feed intake and its utilization. Moreover, metabolites consumed in wool growth may converted to weight gain (Tables 4). These results are in close accordance with those obtained by Brindley, et al. (1989) who reported that shorn animals spent longer time feeding than others in dry weather. Moreover, male lambs had faster weight gain than females. The increase in the body weight and weight gain of males than females may be due to androgen hormones that have anabolic effect and increase the masculinity of the males than female. These results are in close accordance with

those obtained by Fahmy, et al. (1969) who reported that males have higher growth rate than females.

From this experiment it could be concluded that shearing of lambs especially before summer season resulted in an increase in feeding time, resting time, standing frequency, comfort activities and playing activities in form of butting as well as increase both body weight and weight gain than unshorn lambs.

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Table (1) Effect of shearing and sex on the ingestive behaviour, resting and movement activities of lambs.

Items	Feeding		Drinking		Lying		Standing		Walking	Running
	Freq.	Time	Freq.	Time	Freq.	Time	Freq.	Time		
Treatments										
Shorn	5.20±0.29 <sup>a</sup>	7.46±0.39	0.40±0.06	0.09±0.02	2.18±0.16	7.59±0.42	6.70±0.27 <sup>a</sup>	4.89±0.25	12.82±0.58	0.25±0.05
Non Shorn	4.54±0.29 <sup>b</sup>	7.05±0.41	0.39±0.05	0.09±0.02	2.23±0.13	7.50±0.41	6.19±0.25 <sup>b</sup>	5.55±0.31	12.09±0.49	0.21±0.05
Sex										
Male	5.24±0.42	6.85±0.54	0.40±0.09	0.10±0.03	2.49±0.27	7.39±0.55 <sup>bc</sup>	6.98±0.39	5.70±0.37 <sup>b</sup>	14.26±0.83 <sup>a</sup>	0.33±0.09 <sup>a</sup>
Female	4.79±0.43	6.65±0.57	0.40±0.08	0.08±0.02	2.56±0.19	6.61±0.49 <sup>c</sup>	6.80±0.36	6.89±0.45 <sup>a</sup>	13.83±0.68 <sup>ab</sup>	0.30±0.08 <sup>a</sup>
Weeks										
1 <sup>st</sup> WK	5.83±0.71	8.12±0.86	0.25±0.08	0.06±0.03	1.73±0.17	7.92±0.89	6.88±0.61	3.89±0.41 <sup>b</sup>	14.44±1.43 <sup>a</sup>	0.34±0.18 <sup>a</sup>
2 <sup>nd</sup> WK	4.92±0.67	7.56±0.97	0.19±0.08	0.06±0.03	2.17±0.27	7.84±0.94	6.35±0.57	4.52±0.55 <sup>3c</sup>	12.98±1.11 <sup>bc</sup>	0.38±0.16 <sup>ab</sup>
3 <sup>rd</sup> WK	4.56±0.51	7.74±0.86	0.33±0.14	0.07±0.03	2.10±0.22	7.61±0.86	6.10±0.50	4.45±0.53 <sup>3c</sup>	10.25±0.86 <sup>c</sup>	0.06±0.05 <sup>c</sup>
4 <sup>th</sup> WK	4.29±0.52	7.53±0.87	0.58±0.13	0.11±0.03	2.46±0.27	6.99±0.75	6.33±0.46	5.41±0.56 <sup>4a</sup>	10.75±0.77 <sup>bc</sup>	0.08±0.06 <sup>bc</sup>
Shorn	5.31±0.42	7.34±0.62	0.52±0.13	0.15±0.04	2.10±0.24	6.71±0.71	6.83±0.47	5.82±0.52 <sup>4a</sup>	13.58±0.94 <sup>a</sup>	0.19±0.06 <sup>bc</sup>
Unshorn	4.47±0.53	6.67±0.68	0.40±0.12	0.08±0.02	2.21±0.26	7.01±0.74	5.94±0.51	6.32±0.65 <sup>4a</sup>	11.98±0.94 <sup>4bc</sup>	0.23±0.09 <sup>bc</sup>
Shorn	5.06±0.62	6.63±0.75	0.51±0.13	0.08±0.02	2.81±0.54	8.12±0.86	6.98±0.58	5.40±0.52 <sup>4b</sup>	13.43±1.23 <sup>4b</sup>	0.19±0.07 <sup>bc</sup>
Unshorn	4.49±0.57	6.39±0.78	0.38±0.09	0.11±0.04	2.06±0.22	8.19±0.82	6.14±0.47	5.95±0.68 <sup>4b</sup>	12.68±1.10 <sup>4bc</sup>	0.15±0.07 <sup>bc</sup>

Means within the same column carry different small superscripts<sup>a-c</sup> are significantly differ at level P<0.05  
 Means within the same column carry different capital superscripts<sup>1-4</sup> are significantly differ at level P<0.01



Table (2) Effect of shearing and sex on the comfort, exploratory and social activities of lambs.

Items	Comfort activities				Exploratory activities			Social behavior		
	Scratching	Rubbing	Stretching	Head shak	Liter	Wall	Other	Butting	Jumping	
Treatments	Shorn	1.28±0.13 <sup>a</sup>	0.27±0.06	0.02±0.01	8.27±0.36	1.59±0.12	1.86±0.16	2.41±0.20	0.36±0.08	0.09±0.03
	Non Shorn	0.52±0.07 <sup>b</sup>	0.25±0.06	0.31±0.16	7.54±0.36	1.58±0.13	2.12±0.18	2.48±0.21	0.29±0.06	0.13±0.04
	Sex	Shorn	1.17±0.17	0.36±0.10	0.02±0.01	9.35±0.52	1.72±0.19	2.20±0.25	3.21±0.30	0.50±0.12
Male	Unshorn	0.60±0.12	0.34±0.11	0.43±0.27	8.67±0.55	1.77±0.18	2.59±0.27	3.42±0.32	0.41±0.10	0.20±0.07
	Shorn	1.48±0.22	0.08±0.05	0.02±0.01	6.14±0.42	1.33±0.15	1.19±0.16	0.83±0.14	0.08±0.06	0.09±0.00
Female	Unshorn	0.36±0.06	0.06±0.03	0.06±0.04	5.33±0.32	1.20±0.17	1.20±0.16	0.63±0.08	0.05±0.03	0.00±0.00
	Weeks	Shorn	1.63±0.32	0.50±0.16	0.02±0.02	7.52±0.65 <sup>bc</sup>	1.44±0.24	1.17±0.24 <sup>b</sup>	3.13±0.52	0.35±0.14
1 <sup>st</sup> wk	Unshorn	0.58±0.22	0.33±0.14	0.00±0.00	5.73±0.48 <sup>b</sup>	1.23±0.24	1.52±0.35 <sup>bc</sup>	2.73±0.51	0.27±0.09	0.06±0.05
	Shorn	1.23±0.30	0.13±0.08	0.02±0.02	7.02±0.60 <sup>bc</sup>	1.31±0.27	1.15±0.21 <sup>b</sup>	1.63±0.29	0.15±0.09	0.06±0.05
2 <sup>nd</sup> wk	Unshorn	0.63±0.13	0.10±0.06	0.02±0.02	6.79±0.57 <sup>bc</sup>	1.50±0.25	1.73±0.22 <sup>bc</sup>	2.63±0.37	0.10±0.07	0.13±0.09
	Shorn	0.88±0.16	0.29±0.14	0.02±0.02	9.19±0.83 <sup>d</sup>	1.75±0.23	2.81±0.46 <sup>d</sup>	2.75±0.38	0.58±0.17	0.13±0.06
3 <sup>rd</sup> wk	Unshorn	0.40±0.09	0.23±0.11	0.36±0.20	8.51±0.77 <sup>cd</sup>	1.83±0.27	2.51±0.36 <sup>cd</sup>	2.51±0.41	0.28±0.10	0.13±0.06
	Shorn	1.38±0.24	0.15±0.08	0.00±0.00	9.38±0.76 <sup>d</sup>	1.87±0.26	2.32±0.28 <sup>cd</sup>	2.15±0.33	0.34±0.20	0.00±0.00
4 <sup>th</sup> wk	Unshorn	0.45±0.10	0.32±0.18	0.85±0.59	9.19±0.89 <sup>d</sup>	1.77±0.25	2.74±0.41 <sup>d</sup>	2.04±0.39	0.51±0.18	0.21±0.11

Means within the same column carry different small superscripts<sup>a-d</sup> are significantly differ at level P<0.05  
 Means within the same column carry different capital superscripts<sup>bc-d</sup> are significantly differ at level P<0.01

Table (3) Effect of shearing and sex on the serum cortisol concentration of lambs.

Items	before	30 min	60 min	90 min	120 min	150 min	180 min
<b>Treatments</b>							
Shorn	1.21±0.16	1.69±0.24	1.71±0.25	1.72±0.14	1.33±0.14	1.08±0.13	0.94±0.10
Non Shorn	1.12±0.15	1.59±0.23	1.66±0.22	1.69±0.11	1.31±0.16	1.11±0.15	1.05±0.11
<b>Sex</b>							
Male	1.40±0.26	1.38±0.29	1.08±0.16	1.17±0.38	1.21±0.26	1.05±0.16	0.85±0.17
Female	0.70±0.30	2.53±0.72	3.38±0.65	1.92±0.21	1.66±0.17	1.14±0.46	1.20±0.19
Shorn	1.22±0.27	1.23±0.29	1.11±0.17	1.24±0.27	1.17±0.29	0.85±0.20	1.07±0.19
Unshorn	0.85±0.23	2.57±0.58	3.24±0.51	1.82±0.16	1.70±0.19	1.80±0.39	0.99±0.22

Table (4) Effect of shearing and sex on the body weight and weight gain of lambs.

Items	Body weight					Weight gain				
	Start	2 week	4 week	6 week	Total	0-2 wk gain	2-4 wk gain	4-6 wk gain	Total gain	
<b>Treatments</b>										
Shorn	36.20±1.30	36.96±1.10 <sup>a</sup>	39.31±1.37 <sup>a</sup>	43.32±1.86	0.75±0.48 <sup>a</sup>	2.35±0.44	4.07±0.77	7.12±1.37		
Non Shorn	37.18±1.01	38.60±1.06 <sup>a</sup>	40.09±1.19 <sup>a</sup>	42.99±1.43	1.43±0.41 <sup>a</sup>	1.49±0.36	2.91±0.39	5.82±0.82		
<b>Sex</b>										
Male	38.30±0.77	38.78±1.20	41.78±1.05	46.73±1.60	0.48±0.48	3.00±0.45	4.95±0.78	8.43±1.39		
Female	34.10±2.08	35.13±1.40	36.83±1.90	39.90±2.65	1.03±0.87	1.70±0.65	3.07±1.36	5.80±2.48		
Shorn	34.80±0.48	36.53±0.87	38.00±0.69	39.81±0.97	1.73±0.41	1.48±0.59	1.81±0.29	5.01±0.66		
Unshorn										

Means within the same column carry different small superscripts<sup>a, b, c</sup> are significantly differ at level P<0.05  
 Means within the same column carry different capital superscripts<sup>A, B, C</sup> are significantly differ at level P<0.01

## الملخص العربي

### تأثير الجز على سلوكيات و مستوى كورتيزول الدم للحملان

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أجريت هذه الدراسة على عدد 32 حمل من سلالة الفوكس قسمت الى مجموعتين كل منها ستة عشر حمل (ثمانية ذكور وثمانية أناث) وتم جز الصوف لمجموعه بأستعمال ماكينه كهربائيه وتركت الأخرى كمجموعه ضابطه وذلك لأستبيان أهميه جز الصوف بالنسبه للأغنام وكذلك تحديد مستوى الأجهاد الذى يقع على الحيوانات من الجز ومصادره وكيفيه التغلب عليه

تم مراقبه الحيوانات بوضع كاميرات تم تعليقها فى سقف كل حظيره ولتميز الحيوانات داخل كل مجموعه تم ترقيم الحيوانات بأرقام على ظهورها بأستعمال ألوان رش وتم تسجيل سلوكيات الحيوان يوم الجز وبعد ذلك يوم كامل مراقبه أسبوعياً بينما تم أخذ عينات الدم قبل الجز مباشره وبعد الجز ثم كل نصف ساعه حتى ثلاث ساعات بعد الجز.

أظهرت النتائج المتحصل عليها أن الحملان التى تعرضت للجز قضت وقتاً أطول فى تناول الغذاء مع أكثر تكرار وكذلك قضت فترات طويله فى الرقاد وسلوكيات الراحة وكذلك زادت معدلات التناطح بين الحملان بينما قلت سلوكيات الوقوف ساكناً، السير والجري والسلوك الأستكشافى والوثب على الحيوانات الأخرى.

كانت الذكور داخل كل مجموعه وخاصه التى تعرضت للجز قضت وقتاً أكثر فى تناول الغذاء، وفى الوقوف، والسير و الجري وأكثر معدلاً فى سلوكيات الراحة مثل حك الجسم وهز الرأس وكذلك ذات معدلات عاليه للنطح بينما الذكور التى لم تجز كانت ذات معدلات عاليه فى الرقاد والوثب على الحيوانات الأخرى بينما تميزت الأنثى بفترات تناول غذاء و فترات رقاد طويله.

أظهرت نتائج تحليل عينات الدم أن مستوى الكورتيزول ارتفع فى كل من المجموعتين الضابطه والتى تعرضت للجز ولكنها كانت زياده غير معنويه وأنها أمتدت حتى 90 دقيقه فقط وبعدها بدأت فى الأنخفاض مره ثانيه وأن الذكور كانت أقل تأثراً بعملية الجز عن الأنثى. وكذلك كانت الحيوانات التى تعرضت للجز ذات معدلات زياده فى الوزن أفضل من الأخرى التى لم تجز وذلك فى الفتره من 2- 6 أسابيع بعد الجز.

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