

Dept. of Theriogenology,  
Faculty of Vet. Med., Assiut University,  
Head of Dept. Prof. Dr. M. Abdel-Raouf.

## TESTOSTERONE LEVEL IN BULLS IN RELATION TO SEXUAL EXHAUSTION (With 2 Tables)

By

**A.M. OSMAN; M.A. EL-NAGGAR; N.H. SALEH  
and A.KH. ABDEL-RAZEK**

(Received at 8/11/1989)

مستوى التستسترون في الطلائق وعلاقته بالإجهاد  
الجنسى

مدوح عثمان ، محمود النجار ، نشأت صالح ، عبدالرازق خليفه

١ - أجرى هذا البحث لبيان تأثير الإجهاد الجنسي للطلائق على مستوى هرمون التستسترون  
٢ - وجد أن تركيز التستسترون بعد الإجهاد كان أكثر منه قبل الإجهاد الجنسي بالنسبة  
لجميع الحيوانات ٢٠ - وجد من نتائج التحليل الإحصائى زيادة معنوية (٥%) في مستوى  
هرمون التستسترون بعد الإجهاد في المحاولة الأولى (فصل الربيع) عنه قبل الإجهاد . بم متوسط  
تركيز هرمون التستسترون لجميع الطلائق في موسم العليقة الجافة ٢٠٥٢ (نانوجرام/ ملليميتر)  
قبل المحاولة الأولى و ٢٠٠٤ بعده وكذلك كان متوسط التركيز للهرمون ٢٠٩٦ قبل المحاولة  
الثانية و ٢٠٢٩ بعده ٥٠ - وجد أن متوسط تركيز هرمون التستسترون لجميع الطلائق في  
موسم العليقة الخضراء كان ١٧٢ (نانوجرام / ملليميتر) قبل المحاولة الأولى و ٢٠٧٥ بعده  
وكذلك كان متوسط تركيز الهرمون قبل المحاولة الثانية ١٧٧ وبعدها ٢٠٦٢ .

### SUMMARY

The effect of sexual exhaustion on serum testosterone level in bulls was studied. It was found that for all the bulls the serum levels of testosterone after exhaustion trial were more than that before. Statistical analysis of the obtained results revealed a significant increase only ( $P/0.05$ ) in serum testosterone level after exhaustion in the first trial within the green season. The mean testosterone level for all bulls in the dry season was 3.52 ng/ml before the first trial and 5.04 ng/ml after it, and 3.96 ng/ml before the second trial and 5.29 ng/ml after it. In the green season the mean testosterone level for all bulls studied was 1.72 ng/ml before the first trial and 3.75 ng/ml after it, and 1.77 ng/ml before the second trial and 3.63 ng/ml after it.

A.M. OSMAN, *et al.*

## INTRODUCTION

Several authors reported an increase in the level of testosterone following copulation or sexual stimulation (HALTMEYER and EIKNESS, 1969; SMITH, *et al.* 1973; WEATHERSBEE and LODGE, 1976 and ILLIUS, *et al.* 1976). However, PURVIS, *et al.* (1974) found that copulation has no effect on testosterone level in adult rams.

The present work was carried out to detect the effect of sexual exhaustion on serum testosterone level in Balady, Friesian and Cross bred bulls.

## MATERIAL and METHODS

The present work was carried out on 8 bulls with varying ages and breeds. These bulls included one balady bull 12 years old, three Friesian (5.0-6.5 years old) and four growing Cross Balady x Friesian breeds (13-20 months old). Four of these bulls were kept at the clinic of the Department while the other four were kept at El-Awamer dairy farm in Assiut province. During the experiment, the bulls were kept under the same managemental and nutritional conditions.

Blood samples were collected from the jugular vein of each bull by veinipuncture at the morning before collection of semen. Another blood sample was collected after collections. The samples were collected in a clean sterile test tubes. These tubes were put in a closed container surrounded by ice to maintain the temperature at 5°C. The blood was rapidly transported to the laboratory, centrifuged at 2000 r.p.m. for 10 minutes. Serum then aspirated by a clean sterile pipette and stored frozen at -20°C till hormone assay carried out. Serum testosterone concentration in the various sera samples were assayed by the procedure of the WHO reagents and equipments provided through WHO special programme of research, development and research training in Human Reproduction. The method used was a RIA technique, the procedure for which was endorsed in the method manual (SUF1, *et al.* 1987).

The obtained results were subjected to statistical analysis according to SNEDECOR and COCHRAN (1967).

## RESULTS

Serum testosterone level was assayed before and after every exhaustion trial in each of dry and green seasons. The obtained results are demonstrated in tables 1 & 2. The level of testosterone showed a marked increase after the exhaustion trials than before collections during both the dry and green seasons.

## DISCUSSION

It was found from the obtained results (tables 1 & 2) that the levels of serum testosterone after exhaustion for all the studied breeds was higher than those before.

These results coincide with that obtained by HALTMEYER and EIKNESS (1969); SMITH, et al. (1973); WEATHERSBEE and LODGE (1976) and ILLIUS, et al. (1976). The same authors reported that following copulation or sexual stimulation pituitary ICSH is released with subsequent stimulation of secretions of gonadal steroids. They further added that, the increased serum testosterone level during ejaculation may be due to neuro-endocrine events occurring before intromission and not dependent upon actual emission. On the other hand PURVIS, et al. (1974) found that copulation has no effect on testosterone level in adult rams.

It seems possible that bulls of different breeds behave in similar way with regard to serum testosterone levels after mounting or sexual exhaustion.

### REFERENCES

- Haltmeyer, G.G. and Eikness, K.B. (1969): Plasma levels of the testosterone in male rabbits following Copulation. *J. Reprod. Fert.*, 19: 273-277.
- Illius, A.W.; Haynes, N.B. and Lamming, G.E. (1976): Effects of ewe proximity on peripheral plasma testosterone levels and behaviour in the ram. *J. Reprod. Fert.*, 48: 25-32.
- Purvis, K.; Illius, A.W. and Haynes, N.B. (1974): Plasma testosterone concentrations in the ram. *J. Endocr.*, 61: 241-253.
- Smith, O.W.; Mongkonpunya, K.; Hafs, H.D.; Convey, E.M. and Oxender, W.D. (1973): Blood serum testosterone after sexual preparation or ejaculation or after injection of LH or prolactin in bulls. *J. Anim. Sci.*, 37: 979-984.
- Snedecor, G.W. and Cochran, W.G. (1967): *Statistical methods* Iowa 6th Ed. Iowa State Univ. Press.
- Sufi, S.B.; Donaldson, A. and Jeffcoate, S.L. (1987): *The method manual*, 11th, Ed. PP. 80-92.
- Weathersbee, P.S. and Lodge, J.R. (1976): Serum testosterone and estrogen concentrations in the Holstein-Friesian bull after successive ejaculations. *Am. J. Vet. Res.* 37: 465-467.

A.M. OSMAN, *et al.*

Table (1)  
Testosterone level (ng/ml) before and after exhaustion  
in bulls within the dry season

Bull No.	Frist trial		Second trial	
	Before	After	Before	After
I	6.80	8.62	6.30	8.70
II	3.69	4.69	3.17	3.72
III	8.24	12.10	10.80	12.10
IV	2.83	3.46	-	-
V	0.91	1.02	1.91	1.12
VI	0.75	2.90	1.27	2.62
VII	1.43	6.14	1.31	3.49
VIII	-	1.38	-	-
Meant	3.52	5.04	3.96	5.29
S.E.	1.12	1.34	1.60	1.72

Table (2)  
Testosterone level (ng/ml) before and after exhaustion  
trial in bulls within the green season

Bull No.	First trial		Second trial	
	Before	After	Before	After
I	-	-	3.14	7.09
II	1.42	4.15	1.11	1.21
V	1.50	5.65	-	-
VI	3.43	3.63	-	-
VII	0.52	1.55	1.50	2.59
Meant	1.72	3.75 <sup>*</sup>	1.77	3.63
S.E.	0.61	0.85	0.68	1.78

I: Balady; II, III and IV: Friesian

V, VI, VII and VIII: Fr. X Bal.

S.E.: Standard Error.

\*: Significant at 0.05 level.