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EFFECT OF HIGH TEMPERATURE ON REPRODUCTIVE ABILITY OF BARKI RAMS

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ABSTRACT

This study was carried out at the animal farm, Bani Walid Feeding trial two season (summer and early autumn) was carried out on 5 Barki rams (12+_ 1 month aged). Animals were fed on a ration containing concentration feed mixture (CFM) were fed at arat 2% of LBW. While wheat straw was offered ad-libitum, The result revealed a significant effect ($p< 0.05$) of the high temperature in summer season on testosterone hormone(ng/ml) dead sperm 5% and abnormal sperm 5% while the cortisol hormone levels remains without significant differences, In conclusion: Barki rams has a great ability to heat temperature adaptation to decline the effect of external hyperthermia on reproductive ability as soon as possible, and can resume almost a perfect sexual activity with high fertility rate immediately at the regression of climatic high temperature.

KEY WORDS: Barki Rams, High temperature, cortisol hormone , testosterone hormone , abnormal sperms.

INTRODUCTION

Reproductive performance of rams during mating is very important to have maximum pregnancy rate in the flock. testicular development and libido performance of rams are affected by genotype, season, age and ambient temperature [1], In tropical and subtropical countries, climatic heat is the major factor restricting animal productivity: growth, milk production and reproduction are impaired because of drastic changes in biological functions caused by heat stress [2].

Hyperthermia may be a consequence of environmental, conditions, microbial infections and hyperthyroidism. Although regulation of body temperature and individual adaptation to environmental climatic changes is well documented, but little known about mechanisms and pathological aspects of hyperthermia [3].

The Awassi ram has agreat ability to heat stress adaptation ehere an exposure to heat stress allows the development of adaptation mechanisms and causes no further effect of subsequent heat stress on spermatogenesis (saab et al, 2011), Heat stress treatment cause decreasing significantly semen concentration and percentage of normal sperms [4].

In Libya Bani walid temperature range from 21c have been reported with June through august usually the hottest months.

MATERIALS AND METHODE

Animals and management

Five Barki Rams (12+_ month aged). this study started from 1st August 2015 continues to 30th nov.2015. concentrated feeds were fed at the rate of 2% of (LBW) for animals. The wheat straw was offered *ad libitum.* Mineral mixture blocks and water give freely to the animals. the experimental animals were kept under routine veterinary supervision of farm throughout the duration of the experiment. The chemical composition of feed stuffs illustrated in table (1)

Analytical Methods

Representative samples all animals sample of ration were analyzed according to A.O.A.C methods (1980) . Blood serum samples were collected from the jugular vein on monthly along study period.

Blood sampling were taken via venipuncture and centrifuged at 3000 r/m for 15 minutes, serum were stored at 20c until hormones assayed with Radio Immunoassay (RIA) according to Berga,S. and Dainiels.T Semen samples

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were collected from animals used (Electro ejaculator) (Baily) one monthly.

Semen mass movement and live sperm% and abnormal sperm% were determined according to the method [5].

Statistical analysis

The obtained data for all studied parameters were analyzed statistically according to Snedecor and Cochran and the significance among means experimental groups were tested by Duncan's multiple range test.

RESULTS AND DISCUSSION

Results of table (2) figure(2) revealed there were cortisol hormone which is known as stressful hormone appeared in highest levels in August and November months. Which were significantly ($p< 0.05$) higher than other study months Generally the cortisol concentration results of this study are higher than that recorded

When estimated the cortisol levels in anesthetized rams. Results reach to fact suggested that sheep especially Barki have a high resistance to environmental and induced high temperature rather than other species by return the cortisol hormone levels to normal range when the effective conditions had to be chronic status [6-8].

Although high ambient temperature during study periods (August& November) the testosterone hormone concentration (table2) ascending gradually from lowest levels of out breeding season to reach the maximum concentration at end of study period (optimal environment to breeding) with statistical differences ($p< 0.05$). testosterone hormone levels of this study (table 2) , near to that record [9] and exceeded that values recorded and that recorded [10] which estimated it about 2ng/ml in one yearling ram lambs, but were lower in comparison with results recorded [11] which found testosterone hormone levels during breeding and non-breeding season about 10.5 and(0.5 ng/ml) respectively , in male oriented rams.

These variations among studies may be due to different locations among studies involved, because the sheep are seasonal breeder animal get sexual activation during short day period [12].

Results of table (3) figure (3) Revealed there were highly significantly ($p < 0.01$) for season on dead and total abnormal sperms were recorded in August versus minimum values of same parameters were in November with highly significant ($p < 0.01$) differences. the major percent of primary abnormal represented by de attached heat spermatozoa (free heads) and acrosomes abrasion while, secondary abnormality represented majorly by proximal cytoplasmic droplet and coiled tail sperms the results of this study exceeding the abnormal spermatozoa percentage recorded [13] Also , some other factors might effect on the percentage of normal sperms such as sire. body weight. Age of male [14-22].

Table 1. the chemical composition of feed stuffs (on DM basis)

	DM %	OM%	CP%	CF%	EE%	ASH%	NFE%
C.F.M	100	89.70	13.60	14.00	3.80	10.30	58.30
W.S	100	88.50	4.61	38.40	1.50	11.50	44.99

C.F.M : Concentrate feed mixture; W.S : wheat straw.

Table 2. Effects of heat temperature on the cortisol hormone (ng/ml) and testosterone hormone (ng/ml)

	August	September	October	November
Cortisol Hormone (ng/ml)	A 65.30 ± 0.484	B 64.50 ± 1.928	B 63.25 ±1.928	A 66.50 ± 10.193
Testosterone Hormone (ng/ml)	C 4.20 ± 0.595	B 6.55 ± 0.520	A 8.73 ±0.647	A 8.41 ± 0.654

Different letters refer to significant difference figure (2) ($p< 0.05$) among months

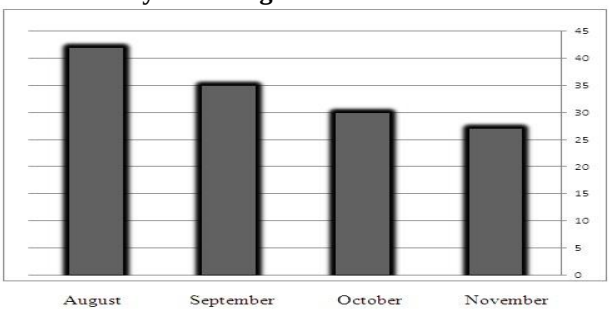
Table 3. Effects of heat temperature on percentages of dead and abnormal sperms

	August	September	October	November
Dead sperms %	A 35.02 ± 4. 822	B 14.55 ± 1.391	C 8.51 ± 0.719	C 8.65 ± 0.580
Abnormal sperms %	A 12.43 ± 2.118	B 9.90 ± 0.833	C 7.95 ±0.647	C 6.52 ± 0.284

Different letters refer to significant difference figure (2) ($p< 0.05$) among months.

Fig 1. Average of temperature (co)along months involved in the study from August 2015 to November 2015.

Fig 2. Effect of heat temperature on the cortisol hormone (ng/ml)



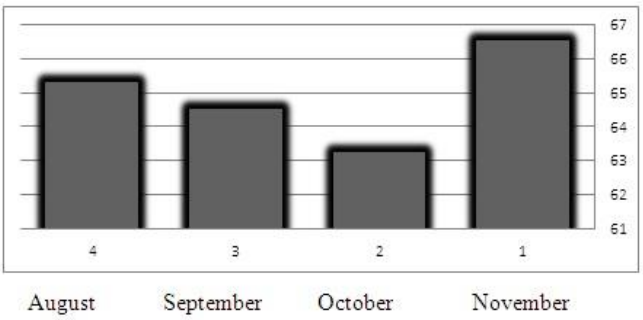


Fig 3. Effect of heat temperature on the testosterone hormone (ng/ml)

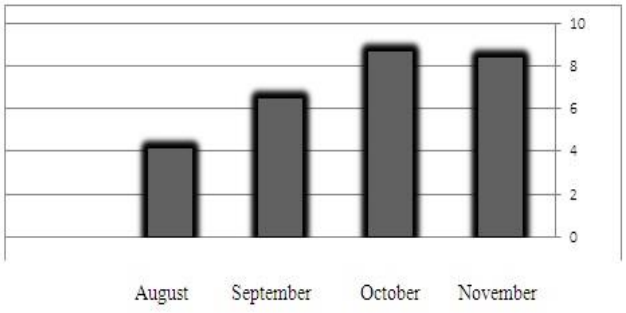


Fig 4. Effect of heat temperature on percentages of dead sperms.

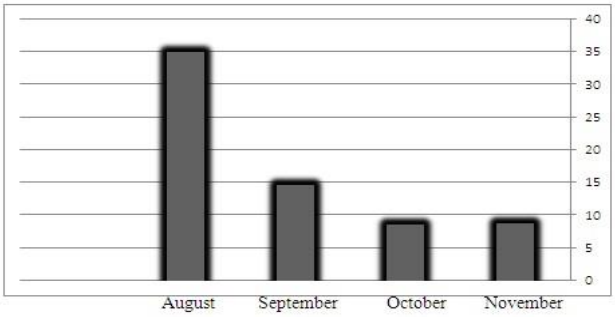
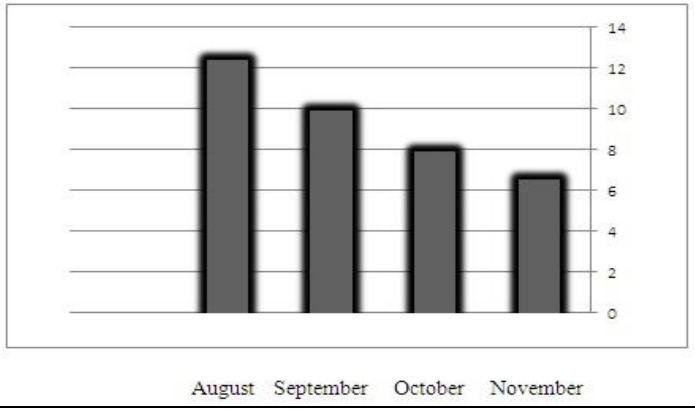


Fig 5. Effect of heat temperature on percentages of abnormal sperms



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Nil

CONFLICT OF INTEREST
No interest

REFERENCES

1. Alexopoulos K., Karagiannidis A and Tsakalof P. Development of macroscopic and microscopic characteristics of ejaculates from Chios, serres and Karaguniki breed lambs. *Theriogenology*, 36, 1991, 667-680.
2. Association of official Agricultural chemists. official methods of analysis,10th Ed Washington, D.C, 1980.
3. Bearden H and Fuquay J. Spermatogenesis and maturatiom of spermatozoa. In: Applied Animal Reproduction. Bearden, H. and Fuquay, 1992, 67.
4. Berga S and Dainiels T. Use of the laboratory in disorder of reproductive neuro- endocrinology. *J. Clin. Immune. assay*, 14, 1991, 23-38.
5. Beoom D and Kirkden R. Welfare, stress, behavior and pathophysiology. In: Publishing Ltd. Iowa. USA, 2004, 337.
6. Duncan DBK.. Multiple range and Multiple F test. *Biochemistries*, 11, 1995, 1-42.
7. Colas G, lefebre J and Guerin Y. A study of the transmission from sires to male progeny of seasonal variations in testis diameter and percentage of abnormal spermatozoa in lle-de-France ram Reproduction. *Nutrition and Development*, 30, 1990, 589-603.
8. Elmaz O, Cirit U and Demir H. Relationship of testicular development with age, body weight, semen characteristics and testosterone in Kivircik ram lambs. *South Africa J. Anim. Sci.*, 37(4), 2007, 269-274
9. Darawany A. Improving semen quality of heat stressed rams in Egypt. *Indian J Anim Sci*., 69, 1990, 1020-1023.
10. Zelaky O, Khalifa E, Mohamed K. and Hussein A. Productive and reproductive performance of Rahmani male lambs fed rations containing Jatropha cake. *Egyptian J Sheep and Goat Sci*, 6(2), 2004, 15-24.
11. Godkal O, Atay O and Eren V. The effect of supplemental vitamin E on reproductive development of pre pubertal Karya male lambs. *Egyptian J. Sheep and Goat Sci*., 7(1), 2012, 11-17.
12. Marai I. Effects of Egyptian sub-tropical conditions and the heat stress alleviation techniques of water spray and diaphoretics on the growth and physiological functions of Friesian calves. *J. Arid. Environ*., 30, 1995, 219-225.
13. Mediterranean. *Lebanese Sci. J*., 12(1), 2000, 31-44.
14. Setchell B. The parks lecture. Heat and the testis. *J ReprodFert*., 114, 1998, 179-194
15. Mohamed S and Abdelatif A. Effect of level of feeding and season on thermoregulation and semen characteristics in Desert rams (Ovisaries). *Global Veterinaria*, 4(3), 2010, 207-215.
16. Rosella C, Stormshak F, Stellflug J and Resko J. Relationship of serum testosterone concentrations to mate preferences in rams. *Biol. Reprod*., 67, 2002, 263-268.
17. Saab S, et al. Effect of adaptation and heat stress on reproductive performances of fat tail Awassi rams in Eastern, 2011.
18. Sessler D. Thermoregulatory defense mechanisms. *Critical Care Medicine*, 37(7), 203-210.
19. Silanikove N. Effects of heat stress on the welfare of extensively managed domestic ruminants. *Livestock Prod Sci*, 67, 2000, 1-8.
20. Simitzis P, Deligeorgis S and Bizelis J. Effect of breed and age on sexual behavior of rams. *Theriogenology*, 65, 2006, 1480-1491.
21. Snedecor GW and Cochran WG. Statistical Methods 7th Ed. Allied Pacific. Bomaby, 1998.
22. Swanson EW and Bearden HJ. An eosin nigrosin stain differentiating live and dead bovine spermatozoa. *J. Anim Sic.*, 10, 1951, 981-987.