

## **EVALUATION THE SPERMS OF BUCKS BY SPERM QUALITY ANALYZER AFTER INJECTION BY PROSTAGLANDIN F2A.**

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(Received 26 April 2015 ,Accepted 25 May 2015)

**Keywords:** Prostaglandin, Bucks, Semen.

### **ABSTRACT**

The present study discusses effect Prostaglandin F2 $\alpha$  on characteristics of semen in bucks Iraqi local and evaluation by Sperm Quality Analyzer ,present study has been conducted on ten bucks (male goat) divided in to two group (first group) five bucks injection by Prostaglandins F2 $\alpha$ , five bucks injection normal saline ( second group)as control group during out breeding season, Semen was collected by artificial vagina ,and evaluation by sperm quality analyzer, the experimental result show :

There are significant differences in increase in Individual motility and increase concentration of sperm and decrease in abnormality of sperm as compared with normal group .

### **INTRODUCTION**

The male goat is called a “buck” or “billy.” If he is castrated he is called a wether. When male goats are between six to twelve months of age they are sometimes referred to as “bucklings.”, depending on their breed, health and nutritional status. The earliest age the buck should be used for breeding is one year of age. The number of does the buck can service at one time is referred to as “Buck Power” [18], at one year of age, the buck should not be pressed no more than 10 does at one time. When he is two, he should be allowed to service 25 does at one time (during the breeding season or per month). At the age of 3 and older he can breed up to 40 does at one time, providing his health and nutritional needs have been met, The effect of the buck to the female within the process is caused by a chemical substance called pheromones. The substance produces an odor that stimulates the onset of estrus in the female, [6] .

The bucks are exposed to the photoperiod lengthens, sperm production is reduced and more abnormal spermatozoa (the mature male gamete or sex cell) are present in

the ejaculate. During the summer and fall, the endocrine system also increased levels of testosterone and luteinizing hormone [19].

Motility of spermatozoa is among the most important indicators in semen quality assessment. At present the objective assessment of motility of spermatozoa is possible due to computer analysis considering many motility properties , The objective of this study was to compare motility properties of goat spermatozoa subjected to prostaglandin F<sub>2</sub> $\alpha$  with control group, with the use of the computer-assisted semen analysis system (CASA),[25,11]

Treatment with PGF<sub>2</sub> $\alpha$  has been used to expedite mounting behavior, as well as, restores libido in bulls displaying decreased sex drive [14]. Use of PGF<sub>2</sub> $\alpha$  prior to semen collection may increase the number of sperm in a collection by enhancing sperm movement from the Epididymis to the deferent duct, where they are available for ejaculation [22].

## MATERIAL AND METHODS

The study conducted in the farm of veterinary medicine college/Basra University .during June and July/ 2014. The animal of the study included ten adult male goat, its ages ranged between (18-24) month, and their weights ranged between (20-23) kg.

The equipment used were , Artificial vagina specially in buck ,and Prostaglandins F<sub>2</sub> $\alpha$  , ( Cloprostenol) Kepro B.V company, Holland ,and Sperm Quality Analyzer (SP-A700) Genex , Laboratories , Florida, USA, and normal saline.

Design of the study : The study has been divided in two experimental stages:

The first stage included the 5 bucks injection Prostaglandins F<sub>2</sub> $\alpha$  7.5 mg intramuscularly at a rate of one dose per week 24 hours before semen collection for a period 5 weeks.

The second stage, included 5 bucks injection normal saline 1 ml intramuscularly at a rate of one dose per week 24 hours before semen collection for a period 5 weeks, each stage collection semen by artificial vagina, and then evaluation by Sperm Quality Analyzer .

### **Semen procedure**

One month before starting the semen collection all bucks were trained to mount a local female goat in estrus ,Semen was collected using artificial vagina (AV) specific for buck. the space between outer and inner layer was filled with hot water 55 C ° to perform internal AV temperature of 42– 43 C ° during the semen collection process, used vasilen for lubricant AV when the buck mounted to the doe, penis was kindly control inside the AV [20], Semen ejaculate was collected in tube and was directly placed in water bath at 37 C ° until test. The evaluated of sperm done by using computerized sperm analyzer systems.

### **Statistical analysis**

The statistical analysis done by using the computerized software STATGRAPHICS Centurion XVI Version 16, 2013. The result read depend on the mean  $\pm$  standard deviation; the statistical test done depend on means one-way ANOVA, the difference between the mean were consider significant at( $p < 0.05$ )

## **RESULT**

### **1- Individual motility:**

In the prostaglandins F2 $\alpha$  group the results appear there are present significant ( $P \leq 0.05$ ) marked increase in the individual movement from the third week of the injection table (1), while when compared the result of the control group, we found no differences from the first week to last week. Table(2)

### **2- Sperm concentration:**

the prostaglandin F2 $\alpha$  group showed that the sperm concentration appear significant( $P \leq 0.05$ )increase after the second week of injection table (1), in compared with control group, Table (2).

### **3- Sperm abnormality:**

The injection of prostaglandin F2 $\alpha$  lead to significant ( $P \leq 0.05$ ) decrease the abnormality percentage in the semen of , Table (1).

**Table – 1 – The effect Prostaglandins F2  $\alpha$  on Physical Characteristics sperm out breeding season by Sperm Quality Analyzer .**

Time of injection	Individual movement %	Concentration of sperm X10 <sup>6</sup>	Abnormal sperm %
7 days before inj.	51±4.18	1219±4.64	6.6±0.65
First inj.	58±5.7	1300±4.30	6.4±0.54
Second inj.	65±8.66	1312±4.81	5.8±0.57
Third inj.	66±4.18	1334±4.72	5.9±0.41
Fourth inj.	70±3.53	1458±3.76	5.2±0.44
Fifth inj .	74±4.18	1528±6.22	4.6±0.41

**Table –2 – The effect Normal saline on Physical Characteristics sperm out breeding season by Sperm Quality Analyzer .(control group)**

Time of injection	Individual movement %	Concentration of sperm X10 <sup>6</sup>	Abnormal sperm %
7 days before injection.	51±4.18	1124 ±8.25	5.3 ±0.75
First inj.	51±6.51	1119 ±7.09	5.1±0.65
Second inj.	52 ± 2.73	1089 ±9.33	5.8±0.44
Third inj.	53 ±7.58	1091 ±8.11	5.1±0.65
Fourth inj.	48 ±5.70	1076±8.02	6.3±0.27
Fifth inj.	48 ±2.73	1074 ±6.98	5.3 ±0.57

## DISCUSSION

Prostaglandins important biological compounds, is general term a group of unsaturated fatty acids such as the Linoleic Acid & Arachidonic Acid , observed medicinal effect on semen, which have stimulating effect of the uterine muscle contractions outside the body known these compounds later Prostaglandin,[13].

Although injection Prostaglandin or copulation in the Rams and rabbits leads to the secretion of ICSH,[10] and increase the secretion Testosterone hormone[1], therefore, the presence Prostaglandin in semen helps to stimulate the movement of

sperm, and injected into the body leads to increased transmission speed of sperm in the reproductive canals of both male [9] .

The injection of prostaglandin F2 $\alpha$  before seminal fluid collection in a dose of 7.5 mg leads to increase in the movement of mass and individual sperm and increase the survival of sperm alive during the injection period and beyond, [26] in bucks.

The concentration of sperm in the present study showed that the injection Prostaglandin F2 $\alpha$  in buck cause significantly increased (P <0.05) in the concentration of sperm from second week and matched this result with the results of most studies[4] and [3] in the Rams and [2] and [21] in bulls and [5] and [26] in bucks and [22] in buffalo. may be the reason that the dose of the Prostaglandin F2 $\alpha$  lead to a severe contraction of the genital glands and stimulated directly to the secretion of the sperm plasma high quantities because Prostaglandin at its incentive effect on the smooth muscle of the male reproductive system outside the body for the majority of the animals [7] , [15]in Rams.

The injection of Prostaglandin F2 $\alpha$  lead to significant decline in the percentage of sperm abnormalities. And that to what have find by [23] and [16] where they confirmed that the injection Prostaglandin F2 $\alpha$  before semen collection or constant injection reduces the percentage of sperm abnormalities and significantly during the period of injection, and the result is opposite to what have found by [4] in Ram,[8] in bulls and [12] in horses and [17] in pigs.

The microscope estimate of spermatozoa motility in all cases yielded higher values, but not significantly different from those obtained with the computer method. Also in other studies involving analysis of dog semen motility properties, conventional assessment resulted in higher values [11].Likewise,[24] obtained similar results estimating spermatozoa motility with subjective and computer methods in fresh goat and boar semen, and freezing/thawing bull, goat and boar semen.

In conclusion , the injection of prostaglandin F2 $\alpha$  improve the physical characteristic of the buck semen out of the breeding season , and also decrease the sperm abnormalities.

## تقييم الحيوانات المنوية لذكور المعز المحلي بواسطة جهاز الجودة لتحليل النطف بعد الحقن بمادة البروستوكلاندين

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### الخلاصة

الدراسة الحالية تناقش تأثير البروستوكلاندين  $F2\alpha$  على خصائص السائل المنوي في ذكور المعز العراقي المحلي خارج موسم التناسل والتقييم بواسطة جهاز الجودة لتحليل النطف ، وقد أجريت هذه الدراسة على عشرة ذكور قسمت الى قسمين : المجموعة الاولى حقنة بمادة البروستوكلاندين في العضل بجرعة ٧.٥ ملغم بمعدل حقنة واحدة اسبوعيا ولمدة خمسة اسابيع اما المجموعة الثانية كمجموعة تحكم تم حقنها بمحلول ملحي ١ مل في العضل ولنفس الفترة في المجموعة الاولى، وقد تم جمع السائل المنوي من خلال المهبل الاصطناعي، وتم تقييم الحركة الفردية وتركيز النطف ونسبة التشوهات للحيوانات المنوية في كل قذفة بواسطة جهاز تحليل النطف واطهرت النتائج : ان هناك زيادة في الحركة وزيادة في تركيز الحيوانات المنوية وانخفاض في نسبة التشوهات للحيوانات المنوية بالمقارنة مع مجموعة السيطرة وقد اظهرت النتائج تحسن كبير في جودة الحيوانات المنوية عند الحقن بالبروستوكلاندين خارج موسم التناسل .

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