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Short Communication

Effect of Two $PF_2\alpha$ Injections on Estrous Synchronization and Some Reproductive Traits during Non Breeding Season in Desert Goats

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ABSTRACT

The aim of this study was to investigate the effect of Effect of two $PF_2\alpha$ injections on estrous synchronization and some reproductive traits (Estrous response, gestation rate, gestation length, Kidding rate, fecundity rate, twins rate and postpartum period), during non breeding season. The parameters were studied using 15 desert does age between 2-3 years and managed under controlled condition. Their weights 30±2.1 kg. The results obtained revealed that there were no significant difference (P>0.05) between the groups in estrous response rate, gestation rate, kidding rate and fecundity during non breeding season. The estrus detection, estrus duration, gestation length and postpartum period were slightly shorter in treatment group than control group.

Key words: Estrous synchronization, $PF_2\alpha$, Reproductive traits, Desert goats

INTRODUCTION

Estrus synchronization has become a vital instrument in the management of reproduction in domestic farm animals (Motlomelo *et al.,* 2002; Fonesca *et al.,* 2008). Its benefits include a planned breeding programme and a reduction in labor costs in terms of estrus detection and care of the newborn. (Motlomelo *et al.,* 2002; Fonesca *et al.,* 2008).

Estrus synchronization can play a major role in the improvement of breeding efficiency in goat throughout the year. The primary functions of synchronization protocols is to either synchronize estrus so that goat can be inseminated within 24-72 h time period or to synchronize ovulation so goat can be inseminated at a predetermined time known as a timed artificial insemination (Fatet *et al.,* 2011). Estrus synchronization has also become an important tool for embryo transfer. (Motlomelo *et al.,* 2002; Fonesca *et al.,* 2008). Prostaglandin ($PGF_2\alpha$) used synchronize estrus by terminating the luteal phase through regression of the corpus luteum, prostaglandin-based systems used only during the breeding season. Because not all stages of the estrus cycle are similarly receptive to prostaglandin treatment (Ataman *et al*, 2006).

The common used methods of $PGF_2\alpha$ are the first one is to use progesterone impregnated intravaginal sponges for 7 or 12 days following by a single prostaglandin injection, this method can be use in during season and anestrus season, another method is applied by two injection of prostaglandin at 11 days interval, this method can be used only during breeding season (Ataman *et al*, 2006).

There is no information available about the estrus synchronization during non breeding season in desert goats. The objective of this study was to evaluate the effect of two $PF_2\alpha$ injections on estrous synchronization and some reproductive traits during non breeding season in desert goats.

MATERIALS AND METHODS

Animals: Fifteen adult female desert goats healthy, cyclic aged between 2-3 years with an average body weight 30±2.1kg. The animals divided into groups, (group A consist of ten does) and (group B consist of five does) and two desert buck. All animals were apparently healthy on clinical examination, all animals were dosed against internal parasite by (Ivermectin injection- Aviomec®, Avico company, Jordan), One ml injected subcutaneous. Each group of animals was housed in semi closed pens at the farm of the Faculty of Veterinary Science, University of Nyala.

The feeding regime were based on grazing on natural pasture and supplemented with concentration (sorghum grain, groundnut cake, wheat bra) was offered on 250g per head daily.

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Treatments: All does in group A were injected with $PF_2\alpha$ (125 mg of Cloprostenol, Estrumate®) 1ml dose intramuscular (IM) at day 0 and then repeat the same injection after 11 days interval. While all does in group B was remained natural cycle without treatment (Arthur *et al*., 1989).

Estrous detection and Insemination: Estrous was detected by detector owner (Visual observation method of heat detection, Observable signs of heat include mounting or attempting to mount other goat, standing to be mounted by other goat, depressed appetite, nervous and excitable behavior, vulva swelling and reddening and clear vaginal mucous discharge**)** in the farm twice daily (6:00 AM and 6:00 PM), after 24 h from last injection for 5 days (Britt *et al*., 1986). All does were showed estrous signs were recorded and served naturally by two health active desert buck (Arthur *et al*., 1989). Non return to oestrous was considerate as an indication for conception.

Reproductive traits

Estrous response = number of does showing signs of estrous / total of does treated × 100

Gestation rate = number of does conceived / number of does showing estrous and inseminated ×100

Kidding rate = number of does kidded / number of does inseminated ×100.

Abortion rate = number of does aborted / number of does conceived ×100

Fecundity rate = number of kids born / number of does inseminated ×100

Twins rate = number of twins born / number of does kidded ×100

Postpartum period was calculated from the date of parturition to first expressed oestrus occurrence (Hafez and Hafez, 2000).

Statistical analysis

The data obtained were presented as mean ± standard Error, data obtained were subjected to Student t- test using Graph pad Prism software version 16. Test carried out at 95% level of confidence ($P<0.05$).

RESULTS AND DISCUSSION

The results of estrus synchronization were presented in (Table 1). All the treated does presented in estrus. Overall, 100% estrus response was found in all treated does and control does (Table 1). Estrous response was found in control group during non breeding season, this due to male exposure in treatment group after showed estrous signs in other pen and this agree with that report by (Delgadillo *et al*., 2009). The time of estrus detection, estrus duration and heat period were significantly difference in treatment group than control group, this could be due to the rapid fall of progesterone in blood after luteolysis. This result is in line with that reported by (Chemineau *et al.*, 1988), (Akusu and Egbunike, 1992) in West Africa Dwarf goats, (Ishwar and Pandy, 1992) in Black Bengal goats and (Devendra and Burns, 1983) in tropical goats.

The effect of $PF_2\alpha$ on fertility traits show that there were no significant difference ($P>0.05$) between the groups in gestation rate, kidding rate and fecundity rate during non breeding season (Table 2).

Table 1: Estrous traits of desert do

Reproductive traits	Treatment animals	Control animals	Significance level
No of does	10	5	-
Estrous response %	100(10/10)	100(5/5)	NS
Detection of estrous (HAI)	69.60±.65	181±45.51	*
Duration of estrous (d)	20.80±0.13	22.20±0.53	*
Heat period (h)	32.70±0.87	38.80±0.49	*

* = significant at $P<0.05$; NS = No significant at $P>0.05$; HAJ= hours after last injection; h = hour; d = day.

Table 2: Fertility traits of desert do

Reproductive traits	Treatment animals	Control animals	Significance level
No of does	10	5	-
Gestation rate %	100(10/10)	100(5/5)	NS
Gestation length (day)	149.90±0.35	152.0±1.05	*
Abortion rate %	0.0	0.0	-
Kidding rate %	100(10/10)	100(5/5)	NS
Twins rate %	1.1(11/10)	0.0	*
Fecundity rate %	1.7(17/10)	1(5/5)	NS
Postpartum period (days)	34.80±0.25	73.60±1.12	*

* = significant at $P<0.05$; NS = No significant at $P>0.05$.

The gestation length was shorter in treatment group than control group and this related to twins , because the twins have shorter gestation length than single birth and this is in agreement with (Abebe, 1996) and (Akusu, 2000).

The differences in twining rate could occur due to differences in breeds, treatment, and season of the year (Gonzalez *et al.*, 1993).However the postpartum period was shorter in treatment group than control group, this could be due to the effect of breed, season of the year, nutritional level, suckling stimulant, prolificacy and parity of the does (Greyling, 1991; Abebe, 1996; Walkdon, 2001).

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REFERENCES

Abebe C, 1996. Studies on performance potential of Somali goats and their cross with Anglo-Nubian. A contribution to breed documentation and evaluation Dissertation, Humboldt Universitat Berlin, Institut für Nutztierwissenschaften, Verlag Drköster, ISBN 3-89574-204-X.

Akoz M, B Bülbül, MB Ataman, S Dere, 2006. Induction of Multiple Births in Akkaraman Cross-Bred Sheep Synchronized with Short Duration and Different Doses of Progesterone Treatment Combined with PMSG Outside the Breeding Season, Bull Vet Inst Pulawy, 50: 97-100.

Akusu MO and Ajala OO, 2000. West African Dwarf reproduction Reproductive performance of West Africa, Dwarf Goats in humid tropical environment of Ibdan, Asral Vet Medi Assoc, 55: 1-10.

Akusu MO and Egbunike GN, 1992. Effects on oestrus duration of West African Dwarf goats Smal Rumin Res, 3: 413-418.

Arthur GH, DENoakes and H Pearson, 1989. Veterinary, reproduction and obstetrics 5thed London: Bailliere Tindal.

Britt JH, RG Scott, JD Armstrong, and MD Whitacre, 1986. Determinants of estrous behavior in lactating Holstein cows. J Dairy Sci, 69: 2195-2202.

Chemineau P, Gauthier D, Poirier JP and Saumande J, 1988. Plasma level of LH, FSH, prolactin oestradial-17 B and progesterone during natural and induced oestrus in dairy goat. Theriogenology, 17, 3.

Delgadillo JA, Gelez H, Ungerfeld R, Hawken PA, Martin GB, 2009. The "male effect" in sheep and goats – re-visiting the dogmas. Behav Brain Res, 200: 304–314.

Devendra C and Burns M, 1983. Goats production in the tropics G Carton House Terrace London.

Fatet A, MT Pellicer-Rubio and B Leboeuf, 2011. Reproductive cycle of goats Anim Reprod Sci, 124: 211-219.

Fonseca JF Torres CAA, Santis ADF, Maffili VV Amorim LS, and moraes EA, 2008. Progesterone and behavioral features when estrous is induced in Alpine goats Anim Reprod Sci 103: 366-373.

Gonzalez, JLE and Garcia MA, 1993. Reproductive performance of goat managed according semi-extensive system, Iberion Aragoness system Avinces en Alimentaclony. Meroro Animal, 33: 11-16.

Greyling JP and Van Nierkerk CH, 1991. Different synchronization techniques in Boer goats outside the normal breeding season. Small Rumin Res, 5: 233-243.

Hafez B and Hafez ESE, 2000. Reproduction in farm animals (7th ed) Awolters kuwe company, Phildelphi USA.

Ishwar AK and Pandey JN, 1992. Oestrus synchronization and fertility in Black Bengal goats following administration of progesterone prostaglandin and gonadotrophin. Res Vet Sci, 52: 141-146.

Montlomelo KC Greyling JPC Schwalbach LMJ, 2002. Synchronization of estrus in goats: the use of different progestagen treatments. Small Rumin Res, 45: 45-49.

Walkdon-Brown SW, 2001. Reproduction in goats P and C Murray consulting Services Pty Ltd, www.goatonline.com.