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EFFECT OF SYNCHRONIZATION METHODS ON OESTRUS BEHAVIOUR IN INDIGENOUS GOATS

M. M. ISLAM[1], S. K. MONDAL[2], B. H. M. PATEL[3] AND TRIVENI DUTT[4]
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Indian Veterinary Research Institute, Izatnagar, Bareilly- 243 122

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ABSTRACT

A study was carried out to investigate the influence of buck effect and PGF_2á treatment on frequency of oestrus behavioural pattern in indigenous goats. A total of 16 nulliparous goats with a mean age and body weight of 15.38±0.96 months and 13.63±0.58 kg respectively were divided into three groups. The 1st group (control, n=4) was kept separate without any treatment, the 2nd group (T_1, n=6) was treated with 2 injections of PGF_2á at 11 days apart @ 7.5mg/animal/ injection while the third group (T_2, n=6) was teased with a sexually active buck. Teasing was done by keeping a buck permanently with does till all the does came into oestrus. The buck was approned to prevent unknown mating. Heat detection was carried out for half an hour at every six hours interval using a teaser buck. There was no significant difference (P>0.05) in frequency of oestrus behavioural activities among the groups. Overall, the maximum frequency of behavioural activities was tail fanning (87.5%) followed by bleating (75%), buck clustering and buck teasing (43.75% each), frequent micturition (37.5%) and male seeking (31.25%). While the oestrus behaviour observed with least frequency were mounting and mounted by others (12.5% each). Although there was no significant difference in frequency of behaviour between the groups, there was higher frequency observed in T_2 group especially for bleating and tail fanning. It was found that the buck effect and PGF_2á treatment do not have much influence on frequency of oestrus behavioural pattern in indigenous goats.

Key words: PGF_2á, buck effect, oestrus behaviour, goat

The expression of normal oestrus behaviour by females indicates its well-being and thereby the rider of the production capability. Contrasting to the typical exploitation of production potential of 'animal machine', the recent ethological integration with the animal husbandry principles and practices is mainly directed towards bridging up the age-old demand-supply gap. The oestrus behaviour is associated with sensible animal farming. Nowadays for synchronization of oestrus various natural and unnatural techniques[3] are being used which may lead to change in the frequency of oestrus behaviour in does. This study was carried out to investigate the influence of hormonal treatment (PGF_2á) and buck effect on frequency of oestrus behavioural activities in indigenous goats.

MATERIALS AND METHODS

Present study was conducted at Sheep and Goat Farm of Livestock Production and Management Section, Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh, India. Local goats of Rohilkhand region were the experimental subject. From goat flock a total of 16 apparently healthy nulliparous females were selected based on age (15.38±0.96 months), body weight (13.63±0.58 kg) and general body conformation. Goats were divided into three groups of 4, 6 and 6 in 1st, 2nd and 3rd groups respectively. The 1st group (control) was kept separate without any

1 Ph.D Scholar, [2&3]Senior Scientist, Livestock Production Management, Indian Veterinary Research Institute, Izatnagar, Bareilly- 243 12
4 J.D. (Extn. Edu.) Indian Veterinary Research Institute, Izatnagar, Bareilly- 243 122

Corresponding address:
Dr. M. M. Islam
Assistant Professor
Department of Livestock Production & Management
Anand Agricultural University, Anand- 388001 (Gujarat)
Mob : 7878727966
Email : drislam37@gmail.com

treatment, the 2nd group (T_1) was treated with 2 injections of PGF_{2}á at 11 days apart @ 7.5mg/ animal/injection while the third group (T_2) was teased with a sexually active buck. Teasing was done by keeping a buck permanently with does till all the does came into oestrus. The buck was approned to prevent unknown mating. All the experimental animals were maintained under stall-fed condition and housed in separate sheds, each attached with open paddock, which allowed the animals to loiter freely. The housing and feeding for all the animals were kept identical throughout the study period.

One teaser buck was used to detect oestrus in control and T_1 group while in T_2 group the buck kept with does was used for detection of oestrus. Study of oestrous behaviour was carried out on all the available animals during the experiment. Heat detection was carried out for half an hour at every six hours interval from the start of experiment till all the animals showed oestrus. A teaser buck was used for detection of heat. The frequency of characteristic activities of oestrous behaviour was recorded carefully. There was arrangement for manual behavioural recording with least disturbance to the animals under study. Frequency of oestrus behaviour like bleating (non-specific vocalization by does), frequent micturition (act of urination), male seeking (looking for male when kept separated or while being separated from), mounting (jumping over other animal's body), mounted by others (allowing jumping over itself by other animals), tail fanning (wagging tail sidewise or up-down), buck clustering (colonizing near male's proximity) and buck teasing (rubbing head and neck against male to arouse him sexually) were recorded[2]. The data were analysed using Z-test[6] as the procedure outlined in statistical package[5].

RESULTS AND DISCUSSION

There was no significant ($P > 0.05$) difference in frequency of oestrus behavioural activities among the groups following treatments (Table-1). Overall, the most frequent activity was tail fanning (87.5%) followed by bleating (75%), buck clustering and buck teasing (43.75% each), frequent micturition (37.5%) and male seeking (31.25%). While the behavioural activities observed with least frequency were mounting and mounted by others (12.5% each). Although there was no significant difference in frequency of behaviour among the groups, there was little higher frequency observed in T_2 group especially for bleating and tail fanning, which might be due to continuous presence of buck. In earlier studies[1] the behavior reported were restlessness in 94.25% oestrus while non-specific bleating, wagging of tail, frequent micturition and tendency to cluster around the buck were noticed in 91.95, 94.83, 31.6 and 62.07% oestrus respectively. However, similar studies[4] reported swollen vulva (93.8%) as most common sign of behavioural oestrus. Tail fanning (53.1%) and buck clustering (37.5%) were other signs observed. The maximum frequency of activities observed in the present study was tail fanning which is in agreement with previous study[1]. However, the frequency of tail fanning (53.1%) in earlier study was lower[4] than the present study, which might be due to seasonal variation and parity and physiological status of females. Other behavioural activities like non-specific bleating, frequent micturition and buck clustering were similar as reported earlier[1&4]. The progesterone concentration (Table. 2) remained at basal levels (<1ng/ml) during the day of oestrus, as observed by others[7&8]. The level of oestradiol-17â (Table. 2) recorded during oestrus period were considerably higher than the Surti and Marwari goats[9]. However, this level was in agreement with others[10&11].

CONCLUSION

There was no significant difference in frequency of behavioural activities among the groups, though a higher frequency was observed in T_2 group for bleating and tail fanning. It was found that the buck effect and PGF_{2}á treatment did not have much influence on frequency of oestrus behavioural activities in goats. It can be concluded that the behaviour of oestrus goats induced by PGF_{2}á and by buck effect was similar to natural oestrus behaviour of the species.

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Table.1 Frequency of oestrus behavioural activities following treatments

Groups	Activities							
	Bleating	Frequent micturition	Male seeking	Mounting	Mounted by others	Tail fanning	Buck clustering	Buck teasing
Control (n=4)	3(75)	2(50)	1(25)	1(25)	-(0)	3(75)	2(50)	2(50)
T_1 (n=6)	4(66.66)	2(33.33)	2(33.33)	1(16.66)	1(16.66)	5(83.33)	2(33.33)	2(33.33)
T_2 (n=6)	5(83.33)	2(33.33)	2(33.33)	-(0)	1(16.66)	6(100)	3(50)	3(50)
Sig	NS	NS	NS	NS	NS	NS	NS	NS
Overall	12(75)	6(37.5)	5(31.25)	2(12.5)	2(12.5)	14(87.5)	7(43.75)	7(43.75)

Figures in parenthesis indicate percentages
NS: Non-significant (P>0.05)

Table.2 Concentration of serum progesterone (ng/ml) and oestradiol-17β (pg/ml) at oestrus

Groups	Progesterone (ng/ml)	Oestradiol-17β (pg/ml)
Control	0.49±0.17	35.95±4.09
T_1	0.48±0.18	31.41±4.71
T_2	0.65±0.16	31.18±2.61

REFERENCES

1. Ghosh, S.K. and Das, A., 2002. 'Studies on behavioural and physical symptoms of oestrus in Black Bengal goat'. In: Abstracts, XVIII Annual Convention and National Symposium on Reproductive Technologies for augmentation of fertility in livestock, Indian Veterinary Research Institute, Izatnagar, India. 14-16 November, 2002, Abstr. No. AFP-P 22, P.128.
2. Hafez, E. S. E., 1975. The behaviour of sheep and goat. In: Behaviour of domestic animals. 3rd edition. Bailliere, London. P.296.
3. Keskin, Mahmut. 2003. Influence of buck effect and exogenous hormone treatments on oestrus synchronization and litter size in Shami (Damascus) goats. *Turk. J Vet. Anim Sci.,* **27:** 453.
4. Mondal, S. K., Joshi, H. C., Pandey, H. N. and Dutt Triveni. 2010. Comparison of sexual behaviour of buck and ram under mixed flock system. *Indian J. Anim. Sci.*, **80** (5): 481.
5. STATS., 1998. STATS™ User's Guide: Release Version 1.1. Dicision Analyst, Inc. USA.
6. Steel, R. G. D. and Torrie, J. H. 1984. Principles and procedures of statistics: a biometrical approach. 2nd edition. Mc Graw-Hill International, Auckland.
7. Nandy, D.K., Kumar, Puneet. and Singh, Khub. 2001. Reproductive behaviour of goat in different seasons. *Int. J. Anim. Sci.* **16(1):** 167.
8. Khadiga, M.G., Mohamed, K.G. and Doaa, F.T. 2005. The hormonal profile during the oestrus cycle and gestation in Dmascus goats. *Small Ruminant Research.* **57:** 85.
9. Pathak, M.M., Patel, A.V., Jaiswal, R.S., Mehta, V.M. and Janakiraman, K. 1992. 'Circulating hormone levels in cyclic goats'. In: Proc. And Papers presented at V Int. Conf. on Goats, Recent advances in goat production, IGA, IDRC, FAO, ISGP and Fodder Production Project, New Delhi, India, 2-8 March, 1992, pp.1383.
10. Chemineau, P., Gauthier, D., Poirier, J.C. and Saumande, J. 1982. Plasma levels of LH, FSH, Prolactin, oestradiol-17â and progesterone during natural and induced oestrus in the dairy goat. *Theriogenology.* **17:** 313.
11. Leyva-Ocariz, H., Munro, C. and Stabenfeldt, G.H. 1995. Serum LH, FSH, estradiol-17â and progesterone profiles of native and crossbred goats in a tropical semiarid zone of Venezuela during estrous cycle. *Animal Reproduction Science.* **39:** 49.

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