

## Synchronization of oestrus in Osmanabadi goats

A.D. PATIL<sup>1†</sup>, B.P. KURHE, K.R. PHALAK AND R.L. DHOBLE<sup>2</sup>

Department of Gynaecology & Obstetrics  
College of Veterinary and Animal Sciences, MAFSU, Parbhani - 431 402 (MS)

### ABSTRACT

Synchronization of oestrus in Osmanabadi goats was carried out by using different hormones. The objective of the present study was to evaluate mean time interval for exhibition of oestrus, duration of oestrus, conception rate and biochemical changes of serum total protein and serum cholesterol before and after treatment and in control groups. It was observed that the efficacy of PGF<sub>2</sub> alpha for synchronization was 50 percent by IM route, 75 percent by IVSM route. The efficacy of progesterone and PMSG was 60 percent. The conception rate 60.0, 66.67 and 50.0 percent in group I, II and III, respectively. Serum total protein did not show appreciable change in treatment and control groups both before and after treatment. However, the serum cholesterol level was found to be higher after injection in treatment group between 24 to 72 hrs.

**Key words :** Goat, oestrus, synchronization

Osmanabadi goats are well recognized dual purpose breed in Marathwada region. There is increasing awareness regarding the potential of goat keeping as an enterprise in all eight districts of Marathwada region. The actual profitability of goat keeping depends on exploitation and fertility potential. This can be achieved by using assisted reproductive technology like synchronization of oestrus. Synchronization of estrus denotes a collective exposure of estrus signs in a group of animal. This helps in planned mating. The present study was aimed at fertility improvement using synchronization of oestrus by prostaglandin F<sub>2</sub> alpha, progesterone and PMSG in Osmanabadi goats.

Thirty four Osmanabadi goats were divided into four groups comprising of ten goats in group I, ten goat in group II, eight goat in group III and six goat in group IV. Group I animals were treated with two injections of 7.5 mg PGF<sub>2</sub> alpha intramuscularly 11 days apart. Group II, animals were treated with 12.5 mg progesterone intramuscularly was administered per day per doe for 7 days and 400 I.U. PMSG intramuscularly was administered after withdrawal of progesterone treatment. Group III animals were treated with 3 mg PGF<sub>2</sub> alpha intravulvomucosally. Group IV, animals were kept as untreated (control). Blood was collected from jugular vein aseptically before treatment and after (24, 72 hr and 120

hr) treatment. Serum was separated from blood for estimation of total protein and cholesterol. The estimation was carried out by kits supplied by Transasia Bio-Medicals Ltd., Mumbai.

The percentage of synchronization of estrus was 50, 60 and 70 in group I, II and II, respectively. The present finding regarding synchronization of oestrus are in close agreement with Mahmood and Koul (1990) and D'Urso and Dell'Aquila (1981). None of the does from control group exhibited oestrus during the present study. Meantime interval in group I was 35.20±11.74 hrs. The findings are in agreement with Pandiya and Rathor (1986) as they reported 36.33±3.43 hrs mean time interval. The time required for onset of oestrus was 48 to 120 hrs in group II. The minimum interval for onset of response from administration of treatment was found in group I animals, while in other groups this interval was relatively longer. These findings are in agreement with Kleinviehzuchter (1978) as they recorded 48 hrs. time required for onset of oestrus. The does from group III showed oestrus within 72 to 120 hrs after treatment. These findings do agreement with Mgongo (1987). Average duration of oestrus was observed as 30 hrs (24 to 38 hrs) in group I. These findings are in agreement with Sahani and Roy (1967) who reported the average duration as 30 hrs. The average duration of oestrus in group II was observed 35 hrs. These findings are agreement with Wani *et al.* (1986). The duration of oestrus in group III was in range between 28 to 38 hrs and in close agreement with Bhattacharya *et al.* (1981).

<sup>1</sup>Asstt. Professor  
<sup>2</sup>Professor & Head

<sup>†</sup>Corresponding author

**Table 1. Mean serum total protein and mean serum cholesterol levels before and after treatment**

Group of animals	Serum total proteins (g/dl)				Serum cholesterol (mg/dl)			
	Before treatment		After treatment		Before treatment		After treatment	
	24 hr	24 hr	72 hr	120 hr	24 hr	24 hr	72 hr	120 hr
Group I	6.88±0.13	6.99±0.16	7.14±0.19	6.93±0.15	92.22±4.93	96.75±6.08	101.33±7.69	98.44±6.27
Group II	7.03±0.09	7.17±0.09	7.25±0.11	7.25±0.11	83.22±3.78	88.36±3.48	97.50±4.47	94.63±4.36
Group III	6.87±0.16	6.94±0.18	7.09±0.20	7.18±0.17	97.63±6.01	99.23±5.84	108.80±5.62	113.6±7.06
Group IV	7.01±0.15	6.93±0.16	7.00±0.17	7.05±0.17	76.53±2.25	77.73±2.29	77.55±2.16	77.22±2.18

Conception rate was observed to be 60 percent in group I. The present findings regarding conception rate are in close agreement with D'Urso and Dell'Aquila (1981) as they reported 52.49 percent conception rate. Conception rate was observed 66.67 percent in II group and are close agreement with Chavez *et al.* (1992) who reported as 66.60 percent conception rate. Conception rate in group III was 50 percent are in agreement with D'Urso and Dell'Aquila (1981). The conception rate was found to be highest in group II animals as against other groups. This could be probably due to timing of uterus with progesterone further leading to conducive uterine environment. In the present study, serum total protein before and after treatment in treatment and control group have not shown any appreciable change. The level of cholesterol increased on day of oestrus and decreased gradually on subsequent days after oestrus. The results of this study have shown that there has been concomitant increase significantly is not in serum cholesterol with clinical response. These findings are in agreement with Dhaliwal *et al.* (1990), Dhaliwal and Sharma (1990) and Singh *et al.* (1994).

#### REFERENCES

- Bhattacharya, B.K., Muzumdar, N.K., Muzumdar, A. and Luktuke, S.N. (1981). Studies on certain aspects of oestrus behaviour in Pashmina goats. *Indian J. Anim. Sci.*, **51**: 67-69.
- Chavez, G.L., Zarco, Q.L., Ducoing, W.A. and Flores, P.G. (1992). Use of MGA and FGA (alone or combined with PMSG) for synchronization of oestrus in dairy goats. *Anim. Breed. Abstr.*, **60**: 7704.
- Dhaliwal, G.S., Sharma, R.D. and Bhakar, S.H. (1990). Serum total protein levels around induced oestrus in buffaloes following PGF<sub>2</sub> alpha administration. *Indian J. Anim. Reprod.*, **12**: 162-164.
- Dhaliwal, G.S. and Sharma, R.D. (1999). Cholesterol levels following induction of oestrus with Prostaglandin F<sub>2</sub> alpha in buffaloes using two route of administration. *Indian Vet. J.*, **67**: 719-723.
- D'Urso, G. and Dell'Aquila (1981). Use of prostaglandin F<sub>2</sub> alpha for oestrus synchronization in goats. *Anim. Breed. Abstr.*, **51**: 150.
- Kleinviehzüchter (1978). Artificial insemination and oestrus synchronization in the goats. *Indian Vet. J.*, **63**: 848-850.
- Mahmood, S. and Koul, G.L. (1990). Synchronization of oestrus in Pashmina goats by prostaglandin analogue. *Indian Vet. J.*, **67**: 326-328.
- Mgongo, F.O.K. (1987). Doses of PGF<sub>2</sub> alpha analogues "Chloprosteol" by interval- vosubmucosal (IVSM) injections effective for induction of oestrus in goats. *Anim. Breed. Abstr.*, **56**: 826.
- Pandiya, S.C. and Rathor, S.S. (1986). Embryo transfer in goats. *Indian Vet. J.*, **63**: 34-36.
- Sahani, K.L. and Roy, A. (1967). A study on the sexual activity of the Barbery goat (*Caprus hircus*) and conception rate through AI. *Indian Vet. Sci. AH*, **37**: 269-276.
- Singh, Vijay, Bugalia, N.S. and Pradeep Kumar (1994). Biochemical variations in plasma total protein, cholesterol and minerals during oestrus cycle in goats (*Caprus hircus*). *Indian Vet. J.*, **71**: 666-669.
- Wani, G.M., Geldermann, H. and Hahn, J. (1986). Oestrus synchronization in goats. *Anim. Breed. Abstr.*, **54**: 2254.