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Duration of estrus in Assam local goats and its crossbreds following IVS treatment

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Abstract: *In the present study estrus synchronization was carried out by using indigenously developed vaginal speculum and intra vaginal sponge (IVS) impregnated with four different concentrations of progesterone followed by administration of PMSG. A total of twenty four (24) numbers of normal cyclic adult non pregnant female goats were selected for the study. The animals were divided into four groups with six (6) animals in each group where control group A_0 received 0 mg and the three treatment groups A_1, A_2 and A_3 received 100mg, 200 mg and 300 mg of progesterone impregnated intravaginal sponge respectively and kept in situ for fourteen (14) days. Then it was followed by administration of 200 IU of PMSG intramuscularly on the day of IVS removal. All the experimental animals including animals of the control group were closely observed for the occurrence of estrus by using a vasectomised buck to move around the animals round the clock. Estrus was detected on the basis of behavioral and physical signs viz., mucous discharge from the vagina, wagging of tail, frequent urination etc. First acceptance of the male by the female was considered as the onset of estrus and the rejection of the male by the female was considered as the end of estrus.*
Keywords: *Estrus, IVS, PMSG, goat.*

I. Introduction

Goat occupies an important place in the rural economy of our country. It is said to be a great boon to the poor or landless or marginal farmers. The expanded popularity of meat goat production has lead to increased interest in reliable methods to induce estrus in goats. With this technology, producers can efficiently use improved techniques for reproductive management, like the use of progesterone impregnated vaginal sponges to synchronize estrus in animals. Most of the estrus synchronizing treatments available today are effective but at the same time each commercial product has certain advantages and limitations over others. However it is important to choose estrus synchronization treatments considering the managemental practices prevailing in a particular situation and also the strata of reproductive cycle.

II. Materials and methods

The experimental animals which consisted of 24 numbers of adult cyclic non-pregnant goats were randomly selected for the present study. The animals were randomly divided into four (4) groups viz. A_0, A_1, A_2 and A_3, comprising of six(6) animals in each group, where A_0 is the control group received 0 mg progesterone and A_1,A_2 and A_3 received 100,200 and 300 mg progesterone respectively.

A total of 24 numbers of vaginal sponges were prepared by cutting the sponges into 6.5 cm in length and 2.4 cm in diameter in cylindrical shape and tied with cotton thread for the eventual withdrawal of the sponge from the anterior vagina. The sponges were sterilized in autoclave at 15 lb pressure for 15 minutes.

The PVC (Poly Vinyl Chloride) vaginal speculum, measuring 22 cm in length, 1.5 cm in internal diameter and 2 cm outer diameter, was fabricated.

Prior to insertion of PVC speculum into the vagina of the goat, the sponge was introduced into one of the sterilized PVC speculum. After washing and drying the vulva of the goat, the speculum containing the sponge was slowly and gently introduced up to the anterior vagina. Then with the help of a glass plunger measuring 43 cm in length and 1.2 cm in diameter the sponge was pushed from the speculum into the anterior vagina of the goat and kept in situ for 14 days. After 14 days, the sponges were removed and PMSG (Folligon, Intervet) at the rate of 200 IU per animal was injected intramuscularly in the animals of treatment groups.

III. Result and discussion

Synchronized estrus was recorded in all the goats of the three treatment groups (A_1, A_2 and A_3) and only one animal of the control group (A_0) came into natural estrus.

The duration of synchronized estrus in goats receiving progesterone impregnated intravaginal sponge containing 100,200,300 mg of progesterone followed by 200 IU of PMSG and in natural estrus in control group

of goat are presented in Table 1 and 2 .The mean duration of synchronized estrus in case of group A_1 goats (100 mg progesterone) was recorded as 38.33±0.42 hours. In group A_2 it was observed as 40±0.02 hours. In group A_3, it was observed as 40.16±0.54 hours. In A_0 group of goats showing natural estrus, the duration of estrus was recorded as 36 hours (Table 1). Statistical analysis revealed significant difference ($P<0.01$) in the duration of synchronized estrus between treatment groups (Table 2).

The duration of estrus in the present study was recorded as 38.33±0.42, 40±0.025 and 40.16±0.54 hours in group A_1, A_2 and A_3 and 36.00 hours in group A_0. These figures are somewhat close to the finding of duration of estrus of 36.2± 2.48 hours in Gartole ewes following treatment with progesterone impregnated vaginal sponges for synchronization of estrus (Maurya et al., 2008) [1]. Similar findings of duration of estrus of 30, 35 and 28 to 38 hours in Osmanabadi goats were also recorded (Patil et al., 2004) [2]. Lower mean duration of estrus (18±0.89 and 21± 1.70 hours) were found in Awassi ewes when treated with 20 mg of FGA as vaginal sponge and CIDR as intravaginal pessary containing 0.3 g of progesterone for 12 days (Zonturlu et al., 2008) [4]. On the other hand, higher mean duration of estrus (44.6 ±1.33 hours) has been reported in PMSG treated goats (Senthilkumar et al., 1998) [3]. The difference in the duration of estrus may be due to the variation in the dosage, duration of treatment along with the difference in age and reproductive status of the goats.

IV. Tables

Table 1) Duration of estrus in different groups of animals receiving intravaginal sponge containing different progesterone concentrations

Group	Progesterone Concentration	No. of Animals	Duration of Estrus (Hours) Mean±SE
A_0	0	6	36±0.99
A_1	100	6	38.33±0.42
A_2	200	6	40±0.025
A_3	300	6	40.16±0.54

Table 2) Analysis of variance for duration of estrus in different groups of animals receiving intravaginal sponge containing different progesterone concentrations

Source of variation	d.f.	SS	MS	F
Between groups	3	5062.458	1687.46	**30.78866****
Error	20	1096	54.80833	
Total	23	6158.625		

****Indicates significant at (P<0.01.)**

V. Conclusion

From the experiment, it can be concluded that the IVS treatment is effective in achieving synchronous estrus in a large group of animals thereby facilitating the farmers to go for natural mating or to undertake modern assisted reproductive technologies.

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