

## EFFECT OF FSH, PMSG ON SUPEROVULATORY RESPONSE AND EMBRYO RECOVERY RATE IN TELLICHERRY GOATS

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ABSTRACT

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The mean onset of estrum was  $26.18 \pm 0.70$  and  $17.85 \pm 0.44$  h in the FSH and PMSG group, respectively. In the present study, the onset of estrum was significantly ( $P < 0.01$ ) earlier in PMSG than FSH. The mean duration of estrum in PMSG group was longer ( $44.27 \pm 0.86$  h) than FSH group ( $32.58 \pm 2.00$  h) and highly significant ( $P < 0.01$ ). The mean number of ovulation was significantly higher ( $P < 0.05$ ) in FSH group ( $12.07 \pm 1.01$ ) than PMSG group ( $5.17 \pm 1.62$ ), might be due to low LH content or more FSH activity. In FSH group ( $8.00 \pm 0.73$ ) the mean number of total embryos recovered was significantly higher than PMSG group ( $3.33 \pm 1.14$ ). In conclusion, FSH could be used effectively and to superovulate goats with higher superovulatory response and recovery of embryos.

Key words: Goat, Embryo transfer, Superovulation and Embryo recovery

### INTRODUCTION

Pregnant Mare Serum Gonadotrophin (PMSG) and Follicle Stimulating Hormone (FSH) are the most commercially widely used gonadotrophins for superovulation in goats. FSH was reported to result in increased ovulation rate with low incidence of anovulatory follicles. However, PMSG has been used extensively for superovulation due to its low cost, effectiveness and single dose administration. Evaluation of superovulatory response of these gonadotrophins may help to predict the number of viable embryos surgically recovered following superovulation.

### MATERIALS AND METHODS

A total of 12 healthy, parous, cyclical Tellicherry does weighing approximately 20 – 30 kgs were utilized for this study. All the goats were maintained under uniform managerial conditions and fed with adequate quantity of feed and *ad libitum* water and divided

randomly into two equal treatment groups, namely FSH and PMSG groups.

In both the groups, does were synchronized using 0.3gm progesterone EAZI-BREED CIDR (Controlled Internal Drug Releasing device, DEC International Ltd., Newzealand) left *in situ* for 11 days. In group I, does were superovulated with single intramuscular injection of 1000 IU of PMSG (Folligon, Intervet international) on day 9. In group II, does were superovulated with 200mg of FSH (Folltropin-V, Bioniche, Canada) in divided doses during the day 9 to 12 of estrous cycle. In both the groups, does were administered with Injection  $PGF_{2\alpha}$  (10mg Lutalyse, Pfizer) intramuscularly on day 11, and CIDR were removed 12 h later. Does were observed individually for estrus signs at 4 h interval. The time of onset of estrum and the duration of estrum were recorded. All does in estrum were naturally bred using a proven Tellicherry buck. Immediately following first mating, does were administered with Inj. Chorulon (500 IU) intramuscularly. On day 3, prior to surgical flushing, superovulatory response was assessed and the embryos were collected by tubal flushing adopting standard surgical procedures.

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## RESULTS AND DISCUSSION

Estrus synchronization response was 100 per cent in both the groups. The mean onset of estrus was  $17.85 \pm 0.44$  and  $26.18 \pm 0.70$  h in I and II groups, respectively. The onset of estrus was significantly ( $P < 0.01$ ) earlier in group I than in group II. The mean duration of estrus in group I was longer ( $44.27 \pm 0.86$  h) than group II ( $32.58 \pm 2.00$ ) which was highly significant ( $P < 0.01$ ). The mean number of ovulation was significantly higher ( $P < 0.05$ ) in group II ( $12.07 \pm 1.01$ ) than group I ( $5.17 \pm 1.62$ ), might be due to low LH content or more FSH activity (Henderson *et al.*, 1990). In FSH group, the mean number of total embryos ( $8.00 \pm 0.73$ ) recovered was significantly higher than PMSG group ( $3.33 \pm 1.14$ ). The number of transferable quality embryos was significantly higher in FSH group than in PMSG group. This is in agreement with the findings of Pendleton *et al.* (1992). Among the transferable embryos, the excellent quality was significantly higher in FSH group than PMSG. This might be due to relative increase in progesterone level after estrus till the day of embryo collection. The variability in the developmental stages might be due to the occurrence of ovulation over a period of 12 h in superovulated goats (Baril and Vallet, 1990). It can be concluded that, FSH could be used

effectively to superovulate goats for higher recovery rate of embryos.

## REFERENCES

- Baril, B and J.C. Vallet. (1990) Time of ovulations in dairy goats induced to superovulate with porcine follicle stimulating hormone during and out of the breeding season, *Theriogenology*, **34**:303.
- Battye, .M., R.J. Fairclough., A.W.N. Cameron and S.O. Trounson.(1988). Evidence for prostaglandin involvement in early luteal regression of the superovulated nanny goat (*Capra hircus*), *J. Reprod. Fert.*, **84**:425.
- Henderson, K.M., A. Weaver, R.L. Wards, K. Ball, S. Luns, C. Mullin and K.P. McNatty.(1990) Oocyte production and ovarian steroid concentration of immature rats in response to some commercial gonadotrophin preparations. *Reprod. Fert. Dev.*, **6**:671.
- Pendleton, R.J., C.R. Youngs, R.W. Rorie, S.H. Pool, M.A. Memon and R.K. Godke.(1992) Follicle stimulating hormone versus pregnant mare serum gonadotropin for superovulation of dairy goats. *Small Rumi. Res.*, **8**:217.

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