

## Effect of Follicular Fluid on Attainment of Puberty in Female Halfbred (Beetal X Black Bengal) Kids\*

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### ABSTRACT

24 female halfbred (BT x BB) kids of about 12 weeks of age were used for induction of puberty by administration of follicular fluid (FF). The study was conducted in three groups, A (3ml FF), B (1ml FF) and C (untreated control). Kids were exposed to teaser buck daily both morning and evening throughout the period of experiment for detection of first estrus which was taken as indicator for attainment of puberty. Kids treated with 1ml (165.50±3.50 days) and 3ml (160.66±2.72 days) follicular fluid attained puberty significantly earlier than those of untreated control (201.50±0.50).

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In general, the pubertal age in indigenous goats varies from 6-18 months (Sane *et al.*, 1982). Induction of early puberty in sheep, goat and gilts could be achieved by administration of estrogenic compounds (Hughes and Cole 1978; and Wolde-Michael *et al.*, 1989).

Follicular fluid has been known to contain steroid hormones especially estrogen. The fluid of mature graffian follicles contains 0.9 ug oestradiol ml (Short, 1962 and Kruij and Dieleman, 1985). In the present investigation follicular fluid was used as a source of natural oestrogen to induce early puberty in female halfbred (Beetal x Black Bengal) kids.

### MATERIALS AND METHODS

Twenty four female halfbred (BT x BB) kids of 12 weeks age maintained under Bihar Plateau Development Project on goat

running under Ranchi Veterinary College, Birsa Agricultural University, Ranchi were divided equally into 3 groups (A B & C) on equal body weight basis. All kids were reared under identical managerial and feeding conditions.

**Group A:** In this group 3ml of follicular fluid was injected intramuscularly to each kid on alternate day. After seven injections a pause of one week was given to the kids. The same schedule was repeated for five times during the course of experiment.

**Group B:** In this group 1ml of follicular fluid was administered with same treatment schedule as that of group A.

**Group C:** Animals of this group did not receive any treatment and served as control.

The female kids were exposed to teaser buck daily at morning and evening throughout the experimental period. The first observed estrus was taken as an indicator for attainment of puberty. The age and body weight at the first estrus was recorded.

**Collection and preparation of follicular fluid:** Buffalo ovaries were collected in sterile normal saline from local abattoir immediately after slaughter and were

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carried to laboratory on ice. Prior to aspiration the ovaries were wiped with absolute alcohol to maintain optimum level of sterilization. The fluid was aspirated from large mature graffian follicles (11-16 mm dia) using a 22 gauge needle and 2ml glass syringe. The collected fluid was filtered through 24cm whattman number 1 filter paper to remove cellular debris and was used immediately. Statistical methods outlined by Snedecor and Cochran (1980) were used for statistical analysis.

## RESULTS AND DISCUSSION

Average body weight and age at puberty of female kids under different treatment groups has been shown in Table 1. Female kids treated with 1ml and 3ml follicular fluid attained puberty at significantly earlier age than those of untreated control. The present findings are in close agreement with the results of Hughes and Cole (1978) and

Wolde-Michael *et al.*, (1989) wherein, early attainment of puberty in gilts and goats was recorded by administration of oestrogen and zeranol respectively.

The pituitary during prepubertal age is quite responsive to exogenous compounds and administration of low doses of exogenous estrogen in such females stimulates hypothalamus and pituitary which results in onset of puberty (Mc Donald 1980).

Hughes and Cole (1978) stated that the action of exogenous estrogen in prepubertal female is to mature the positive estrogen feed back system and hence has a stimulatory effect on sexual maturity. In the light of this information and previous reports it may be safely inferred that during the present study, the early attainment of puberty in kids treated with follicular fluid was due to estrogen contained therein.

Table 1. Average values of body weight and age of kids at puberty

Traits	Groups		
	A	B	C
Age at puberty (days)	160.66±2.72 <sup>a</sup>	165.50±3.50 <sup>a</sup>	201.50±0.50 <sup>b</sup>
Body weight at puberty (kg)	8.26±0.57	8.30±0.50	8.05±0.85

## REFERENCES

- Hughes, P.E. and Cole, D.J.A. (1978). Reproduction in gilts. *Animal Production*, 27: 11-20.
- Kruij, Th. A.M. and Dieleman, s.J. (1985). Steroid hormone concentrations in the fluid of bovine follicles relative to size, quality and stage of oestrus cycle. *Theriogenology*, 24: 395-405.
- Mc Donald, L.E. (1980). *Veterinary Endocrinology and Reproduction*. Third Edition. Lea and Febiger Philadelphia.
- Sane, C.R., Luktuke, S.N., Kaikini, A.S., Hukeri, V.B. Deshpande, B.R., Velhankar, D.P. and Kadagali, S.B. (1982). *Reproduction in farm animals (Theratology)* Varghese publishing house Bombay. pp. 178.
- Short, R.V. (1962). Steroid concentrations in normal follicular fluid from cows. *J. Reprod. Fert.*, 4: 27.
- Snedecor, G.W. and Cochran, W.G. (1980). *Statistical Methods*, 7th Edn., Iowa State University Press, Ames, U.S.A.
- Wolde-Michael, T., Miller, H.M., Holmes, J.H.G., Mc Gregor, B.A. and Galloway, D.B. (1989). Effect of supplementary feeding and Zeranol on puberty in feral cashmere goats. *Australian Vet. Journal*, 66: 124-126.