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Effect of Gonadotrophin Releasing Hormone (GnRH) on ovulation in Buffaloes Superovulated with pregnant mare serum gonadotrophin

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ABSTRACT

Four healthy normally cycling buffaloes were selected and superovulated with 2500 IU PMSG each. Half of the donors (Group A) were given 0.1 mg GnRH (Vet Veb Berlin Chemie) on day 0 at the time of artificial insemination. Superovulation response was assessed on day 7 by rectal palpation of ovaries. On an average there were 4.0±0.0, 4.0±1.0 Corpora lutea and 1.0±1.0, 1.0, 4.0±4.0 unovulatory follicles (UF) for group A and B, respectively. Ovulation rate was 80 per cent (4/5) for group A and 50 per cent (4/8) for group B.

Pregnant mare serum gonadotrophin (PMSG), the most commonly and readily available drug, is extensively used to superovulate buffalo donors. However, presence of unovulated follicles is a problem, with this drug (Vlahov *et al.*, 1985, Despande *et al.*, 1987) but the number of CI's obtained is comparable to FSH-P (Nanda and Bhat, 1988). Some workers (Humbolt and Thibler, 1981, Mapletoft, 1982) have used GnRH in donor cattle to enhance the number of ovulations. GnRH causes release of LH from the anterior portion of the pituitary gland which acts on a mature follicle resulting in ovulation. Very limited information is available with regard to use of GnRH in superovulation of buffaloes for enhancing ovulation rate (Shariffudeen and Jainudeen, 1984). Therefore, present investigation was undertaken to study the effect of GnRH on ovulation in buffalo donors superovulated with PMSG.

MATERIALS AND METHODS

Four healthy buffalo donors were superovulated on day 11 (day 0 day of estrus) with 2500 IU PMSG. Each donor was given an injection of prostaglandin F_2 alpha (Lutalyse, 30 mg i/m) on day 13. Half of the animals (Group A) were treated with gonadotrophin releasing hormone (Gn RH - Vet. Veb. Berline Chemie) at the rate of 0.1 mg per animal on the day of estrus following superovulation. Rest of the animals (Group B) served as control. Selection of donors, heat synchronization, estrus detection, artificial insemination (AI), and embryo recovery were attempted as already described else where (Sodhi *et al.*, 1991).

RESULTS AND DISCUSSION

There were 4.0±1.00, 4.00±0.0 CL, 4.0±4.0, 1.0±1.0 F, for PMSG alone and PMSG±GnRH treatment groups, respectively. It is evident that on an average 50 per cent follicles (4/8) in PMSG alone and 80 per cent in PMSG±GnRH treatment groups (4/5), respectively ovulated.

GnRH treatment at superovulatory estrus was found to affect ovulation rate. Consequently the ovulation rate in group A was higher (80%, 4/5) as compared to

group B, Viz. PMSG alone (50%, 4/8). The buffaloes given GnRH had lower number of unovulatory follicles (1.0 Vs4.0), although, the number of CL in both the groups were similar. Sharifuddin and Jainudeen (1984) obtained more number of CL with GnRH in PMSG treated buffaloes (5.2, 3.0). The results obtained in the present investigation are also in agreement with Wang *et al.,* (1994) who have reported significantly higher number of ovulations by addition of LH to the superovulation regimens (12.0vs 2.31) in Swamp buffaloes. Similarly number of ovulations was found to be higher in GnRH treated cows (Peter and Bosu, 1988). The timing of GnRH administration may have affected the time, duration and amptitude of LH surge and consequently ovulation rate as observed in cows by Troxel *et al.,* (1980) and Lucy and Stevenson (1986). The study indicated the usefulness of LH to enhance ovulation of superovulated buffaloes. However, further investigation on a larger number of buffaloes is required to precisely quantify the effect of GnRH on superovulation in this species.

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