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Effect of Buserelin on superovulatory response in cattle*

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ABSTRACT

The present study was conducted to evaluate the effect of administration of buserelin acetate at superovulatory estrus, on superovulation and embryo recovery in bovine embryo transfer programme. A total of 37 donor animals were divided into control (C, n=19) and experimental (E, n=18) groups. At the superovulatory estrus, donor animals of group C were injected with 5ml normal saline solution while animals in group E received 21 mg of buserlin acetate, by IM route. Superovulatory response was measured in terms of mean ovulation rate, anovulatory follicles, viable embryos and total ova/ embryos recovered. The findings of the present study indicate that there was no significant effect of inclusion of buserlin acetate in superovulatory regimen.

Key words: Bovine, Buserline acetate, Embryo transfer, Superovulation.

Embryo transfer technology requires induction of superovulation in embryo donor animals to produce large number of embryos in a cycle. However, the response in terms of quantity and quality of embryos obtained after superovulation in cattle remains variable and is a limiting factor in the development of successful embryo transfer programme. Various factors affecting the superovulatory response of donor have been investigated. GnRH stimulates development of follicles, ovulation, luteinization of ovulated follicle and formation of corpus luteum to secrete the progesterone for maintenance of conceptus, (McMillan and Thacher, 1991; Kesler *et al.*, 1996).

Use of GnRH at superovulatory estrus resulted in variable superovulatory response (Wobhishet *et. al.*, 1986 and Kohram *et al.*, 1998). The present study therefore, was planned to evaluate the effect of buserelin acetate (a GnRH analogue) at the time of superovulatory estrus on superovulatory response and embryo recovery rate in cattle.

Thirty seven cattle between 3-10 years of age at instructional Dairy Farm of the University were superovulated using FSH-P (Folltropin-V, Bioniche*, Canada) @ 400 mg/animal as total dose given at 12 hour interval in 8 divided doses in decreasing order *i.e.* 65:65, 55:55, 45:45 and 35:35 mg, morning and evening, by IM route starting from day 10 of estrus cycle (Day 0 = day of onset of estrus). The superovulatory estrus in treated cows was induced with two IM injections of 25 mg each of dinorprost tromethamin given at 48 and 60 hours, respectively after the 1st FSH-P injection.

Animals were observed for signs of estrus every morning and evening starting 24 hours after 1st injection of dinoprost tromethamin (Day=12). At superovulatory estrus, cows were bred three times at 12 hours intervals through artificial insemination using frozen semen of proven fertility. All the superovulated cows were divided into 2 groups. At 1st insemination donor animals of group C (control) were injected

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with 5ml normal saline solution (NSS) IM (placebo), while animals in group E (experimental) received 21mg, buserelin acetate (Receptal™ : Intervet India Ltd.) by IM route. Embryos were collected non-surgically on day 7 post superovulatory estrus. After flushing, the medium collected into the filter was emptied into integrid disposables dishes. The dishes were thoroughly examined under steriozoom microscope for the presence of embryos. Data obtained (Mean ± standard error) was analyzed using t-test.

The mean ovulation rate, number of anovulatory follicles, viable embryos and total ova/ embryos recovered in the control and experimental groups in the present study are presented in table 1. The number of viable embryos and total oval embryos recovered in experimental group were non-significantly higher a compared to the control group, similar finding have been reported by Foote *et al., (1989),* Wubishet *et al.,* (1986), Posadas *et al.,* (1991) and Savage *et al.,* (1987) using GnRH. In the experiment of Posadas *et al.* (1991) the number of CL and total ova/ embryos recovered were 7.10±4.44 and 6.20±4.70 in control group and 8.60±2.60 and 6.90 in experiment group, respectively. PradoDelgado *et al.* (1989) observed similar results in terms of number of recovered embryos but found less number of CL in GnRH treated animal as compared to control animals. The present study indicated that there was no beneficial effect of inclusion of buserlin acetate in superovulatory regimen at superovulatory estrus on the superovulatory response in cattle.

Table 1. Superovulatory response (Mean ± SEM) of embryo donors

Group	Ovulation Rate (Number of CL)	Anovulatory Follicle	Viable Embryo	Total Ova/ Embryos
Control (n=19)	7.42 ± 0.95	2.68 ± 0.58	1.37 ± 0.43	5.42 ± 0.93
Experimental (n=18)	8.83 ± 1.54	3.06 ± 0.69	3.89 ± 1.71	8.33 ± 1.70

Values within column differ non-significantly

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