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Effect of Gonadotrophin Releasing Hormone (GnRH) on Induction of Ovarian Cyclicity in Pubertal Anoestrus Buffalo Heifers

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ABSTRACT

Effect of GnRH on induction of ovarian cyclicity was studied on 21 pubertal anoestrus buffalo heifers. Animals were divided into three groups. In the experimental group treated with 1.5 ml GnRH, 85.71% heifers exhibited oestrus within 83.02±10.04 (66-90) hrs after the GnRH injection. In the second experimental group treated with 2.5 ml GnRH 71.42% heifers exhibited oestrus within 62.30±17.22 (42-90) hrs after the GnRH injection whereas in the control group 28.5% heifers exhibited oestrus within 90.00±00 (90-90) hrs after normal saline injection. The pregnancy rate in the treated group were 4/5 (80%) and 4/5 (80%) respectively as compared to 2/2 (100%). The results indicated that the ovarian cyclicity can be induced with GnRH in anoestrus pubertal buffalo heifers.

Buffalo breeding success depends to a large extent on early maturity along with desired gain in body weight and regular fertility. Delayed maturity affect the milk yield adversely. Synthetic gonadotrophin releasing compound (GnRH) have recently been used in the management of reproductive problems in cows (Mujumdar 1989) and have been found useful for improving conception rate (Gunzier *et al.*, 1974) and inducing ovarian activity in anoestrus animals (Kanede *et al.*, 1979; Dhoble and Gupta 1986). The present study was, designed to investigate the efficacy of administration of GnRH in inducting oestrus and ovulation in anoestrus pubertal buffalo heifers.

MATERIALS AND METHODS

Twenty one pubertal, acyclic buffalo heifers above thirty months of age were taken for the study. Animals were employed in the experiment only if their genital organs were found to be normal after gynaecological examination. The heifers were randomly divided into three groups having 7 animals in each group. The control group buffalo heifers were given only a single intramuscular injection of 2 ml normal saline (0.9% Nacl). In the two experimental groups, animals were given single intramuscular injection of 1.5 ml (Group 1) and 2.5 ml (Group 2) synthetic GnRH, (Receptal, each ml contain 0.004 mg buserelin), respectively. Total number of heifers exhibiting oestrus, mean duration of oestrus, time of ovulation after end of oestrus, corpus luteum formation and the pregnancy rates were recorded.

RESULTS AND DISCUSSION

The results pertaining to effect of GnRH administration on the occurrence of oestrus and ovulation in anoestrous pubertal buffalo heifers are shown in table 1. In the experimental group treated with 1.5 ml GnRH 6/7 (85.71%) heifers exhibited oestrus within 83.0±10.04 (66-90) hrs after the single injection of GnRH. However,

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in second group treated with 2.5 ml GnRH 5/7 (71.42%) heifers exhibited oestrus within 62.4±17.22 (42-90) hrs after the GnRH injection. In the control group treated with normal seline (0.9% Nacl) 2/7 (28.57%) heifers exhibited oestrus within 90.00 (90-90) hrs after the injection. The mean duration of oestrus in the 1.5 ml GnRH group. 2.5 ml GnRH group and the control group was 18.0±4.89 (12-24). 14.4±2.93 (12-18) and 18.00±00 (18-18) hrs. respectively. The time of ovulation after the end of oestrus was 20.5±3.64 (15-24) and 19.8±4.49 (12-24) hrs for the 1.5 ml and 2.5 GnRH group, respectively. The corpus luteum was palpated only in 5/6 (83.33%) and 3/5 (60%) in the 1.5 ml and 2.5 ml GnRH treated group respectively. The pregnancy was established 4/5 (80%) in both GnRH treated groups V/s 2/2 (100%) in control. Nasr *et al.*, (1983) observed beneficial affect of GnRH therapy in the treatment of Egyptian buffaloes. They found that out of 10, 7 buffaloes exhibited oestrus within 3-10 days after treatment and 5 became pregnant at induced oestrus following single dose of buserelin. Our results are very much similar with the result of Nasr *et al.*, (1983).

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Table 1. Effect of GnRH administration on the occurrence of oestrus and ovulation in anoestrous pubertal buffalo heifers.

Sl.No.	Attributes	Control	GnRH	
			Gr.I (1.5 ml)	Gr. II (2.5 ml)
1.	Number employed	7	7	7
2.	Number in induced oestrus (%)	2/7 (28.57%)	6/7 (85.71%)	5/7 (71.42%)
	a) Standing	--	2 (28.57%)	
	b) Non-standing	2 (28.57%)	4 (57.14%)	5 (71.42%)
3.	Onset of oestrus after injection (Hr)	90±0.00	83.0±10.04	62.4±17.22
4.	Duration of oestrus (hr)	18.0±0.00 (18-18)	18.0±4.89 (12-24)	14.4±2.93 (12-18)
5.	Time of ovulation after end of oestrus (hr)	—	20.5±3.64 (15-24)	19.8±4.49 (12-24)
6.	C.L. 10 days postoestrus (days)	—	5/6 (83.33%)	3/5 (60.0%)
7.	Oestrus following regression of induced C.L. (days)	—	—	24.2±3.32
8.	Pregnancy rate	2/2 (100%)	4/5 (80%)	4/5 (80%)

REFERENCES

Dhoble, R.L. and Gupta, S.K. (1986). Response to synthetic gonadotrophin in anoestrus cows. Theriogenology *25:* 759-765.

Gunzier, O., Schatzol, M. and Schmidt. L.A. (1974). Studies with LHRF in cattle. Theriogenology *1:* 129-130.

Kanada, Y., Kamomae, H., Domaki, I. and Nakashara, T. (1979). Response of quiescent ovaries to gonadotrophins and an LHRH analogue in grazing heifers. Japanese J. of Anim. Reprod. *25:* 89-94.

Mujumdar, K.A. (1989). Efficacy of "Receptal" (GnRH) treatment for various ovarian disorders in Bovines. Indian J. of Anim. Reprod. *10 2:* 183-184.

Nasr, M.T., Sharawy, S.M., E1-Azab, M.A. and Labib, F.M. (1983). Induction of oestrus and improvement of fertility in anoestrus cows and buffaloes with Receptal. The Blue Book. *32:* 91-93.