



FERTILITY MANAGEMENT OF EARLY POST PARTUM COWS WITH PROSTAGLANDIN $F_{2\alpha}$ *

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Abstract

A study to determine the effect of Prostaglandin F₂ alpha (PGF_{2α}) in inducing early fertile oestrus to improve reproductive efficiency was carried out. Twenty cross bred cows, which had normal parturition were randomly divided into two groups (I & II) and treated with 25 mg PGF_{2α} (dinoprost) and 5 ml of saline, respectively. It was concluded that PGF_{2α} could be successfully used as a cost-effective measure, for induction of early post partum oestrus, thereby reducing calving to conception interval.

Keywords: PGF_{2α}, post partum cows, fertile estrus.

Resumption of ovarian activity and ovulation during the early post partum period is the key factor in the management of fertility in cattle. PGF_{2α} has been used in cattle for induction of early post-partum estrus and thereby decreasing the intercalving period (Etherington et al., 1984 and Benmrar and Stevenson, 1986). The present work was undertaken to determine the efficiency of PGF_{2α} for early induction of fertile estrus in post partum cows to improve reproductive efficiency.

Materials and Methods

Twenty post partum cross bred cows, maintained at Livestock Research Station attached to Kerala Agricultural University, which

had normal parturition and kept under identical conditions of feeding and management, were randomly allotted to two groups Group I consisted of 10 animals that received 25mg (5 ml) dinoprost (Dinofertin) intramuscularly once on 14th day of calving. Group II consisted of 10 animals that served as control and were administered 5ml of Normal saline intramuscularly once on 14th day of calving.

Animals of both groups were examined twice weekly per rectum to ascertain the uterine involution and ovarian activity. Oestrus was detected by clinical manifestations and confirmed by rectal palpation. Blood was collected 10 days after exhibited oestrus for serum progesterone estimation by ELISA technique. Animals of both groups were inseminated in the first estrus after 45 days of calving with frozen semen. Those which failed to settle with first insemination were re-inseminated at subsequent estrus. Pregnancy was diagnosed based on serum progesterone level on days 10 and 20 after insemination and confirmed by rectal palpation 45 days after insemination. Time taken for uterine involution and the intervals from calving to first exhibited oestrus and service period was calculated in each group. Conception rates and A.I. index among animals of both groups were calculated and subjected to statistical analysis according to Snedecor and Cochran (1967).

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Results and Discussion

The results obtained in the present study are presented in table. Uterine involution was complete in all the treated animals by 25 ± 0.77 days after calving compared to 34 ± 1.79 days among animals of control group. Time taken for first exhibited estrus among animals of group I ranged from 26 days to 48 days (33.5 ± 1.93 d) as against 34 to 64 days (46.11 ± 3.19 d) in group II. Interval from treatment to onset of oestrus was 19.5 ± 1.93 days (12 to 34 d) which was significantly lower than 30.7 ± 3.37 days (20 to 50 d) in control. Majority of treated animals exhibited high and medium intensity of oestrus compared to control. Serum progesterone level 10 days after first exhibited oestrus ranged from 4.1 to 6.2 ng/ml (5.12 ± 0.31 ng/ml) in the treated animals while it ranged from 2.7 to 3.0 ng/ml (2.86 ± 0.09 ng/ml) in the control. The above findings that $\text{PGF}_{2\alpha}$ hastened the ovarian

activity by its action on uterine musculature are in accordance with that of Benmrar and Stevenson (1986); Young (1989) and White *et al.* (1996).

The first insemination conception rate compared to overall conception rate was 20 and 70 percent in group I while the same was 11.1 and 55.5 percent in group II. The average number of inseminations required per conception was 2.25 and 2.8 respectively for animals of group I and II. Service period was significantly lower in group I than that in group II (75.87 ± 5.62 d vs 95 ± 6.04). The above observations are in confirmation with that of Benmrar and Stevenson (1986), Young and Anderson (1986) and White *et al.* (1996). The results indicated that it was possible to reduce the interval from calving to post partum estrus and thereby the service period by administration of $\text{PGF}_{2\alpha}$ during the early post partum period.

Table. Effect of early post partum $\text{PGF}_{2\alpha}$ treatment on conception rate and service period of Crossbred cattle

Group	No. of Animals	Interval from calving to estrus (days)	% evinced oestrus within 45 days of calving	First service C.R. (%)	Overall C.R. (%)	A.I. index	Service Period (days)
I	10	$33.5 \pm 1.93^*$	90*	20	70	2.25	$75.87 \pm 5.62^*$
II	10	$46.11 \pm 3.19^*$	50*	11.1	55.55	2.80	$95 \pm 6.04^*$

* Significant difference between the two groups ($p < 0.01$)

References

- Benmrar, M. and Stevenson, J.S. 1986. Gonadotrophin Releasing Hormone and Prostaglandin F₂ alpha for post partum dairy cows-Estrous, Ovulation and fertility traits. *J.Dairy Sci.*, **69**: 800-811.
- Etherington, W.G., Bosu, W.T.K., Martin, S.W., Cote, J.F., Doig, P.A and Leslie, K.E. 1984. Reproductive performance in dairy cows following post partum treatment with GnRH and/or Prostaglandin: A Field trail. *Can. J. Comp. Med.*, **48**:245-250.
- Snedecor, G.W. and Cochran, W.G. 1967. *Statistical methods*. 6th ed. Oxford and IBH publishing Co., Calcutta-5, pp.163-171.
- White, C.R., Keister, Z.O., McCauley, T.C. and Roy, L.Ax. 1996. Hormonal therapy in dairy cows: Five ways to improve reproductive efficiency. *Vet.Med.*, **91**: 571- 575.
- Young, I.M. 1989. Responses to dinoprost in the bovine early post partum period. *Vet.Rec.*, **124**: 511-512.
- Young, LM. and Anderson, D.B. 1986. Improved reproductive performance from dairy cows treated with dinoprostpromethamine soon after calving. *Theriogenology*, **26**: 199-208.

