*The Indian Journal of Animal Reproduction; 23(1): 75-76; June 2002,*

*Short communication*

# Efficacy of GnRH and $PGF_2\alpha$ in augmenting the reproductive performance of postpartum cows

H. SHESHAPPA[1], S.S. HONNAPPAGOL[2], R.B. DHABALE[3] AND M.K. TANDLE[4]

Dept. of Animal Reproduction, Gynecology & Obstetrics, Veterinary College, Nandinagar, Bidar-585401

Received : November 27, 2000
Accepted : February 25, 2002

## ABSTRACT

The post-partum GnRH-$PGF_2\alpha$ hormonal therapy employed in the present study resulted in enhanced post-partum reproductive performance in terms of early involution of uterus and exhibition of first post-partum estrus.

**Key words :** Reproductive performance, cows, GnRH, $PGF_2\alpha$

The time taken for resumption of the ovarian activity following parturition regulates the calving interval. The GnRH administered on day 14 post-partum to stimulate the reproductive physiology and assists in cleansing the uterus and bringing faster uterine involution thereby improving fertility and conception rate (Mujumdar, 1993; Foote and Riek, 1999; and Takkar *et al* .,1999;). Further, Prostaglandin F2 alpha and its analogues with their most potent luteolytic activity brings revolutionary advancement in regulation of the estrous cycle of dairy animals (Okuda *et. al,* 1998 and Espanna *et. al,* 1992). The specific objective of the present experiment was to study the efficacy of hormonal treatment in the overall improvement of post-partum reproductive performance.

An experiment was conducted with eighteen advanced pregnant crossbred dairy cows in their first to sixth lactation having good body condition. All these animals were under the routine management and supervision of the respective farmers. The selected cows were randomly allocated into three groups of six each. viz. two treatment groups designated as T1 and T2 and one control group designated as 'C'. The T1 Group of animals received 2.5 ml Receptalâ I/M on day 14 post-partum.T2 Group of animals received 2.5 ml Receptalâ I/M on day 14 post-partum followed by 2.5 ml of Ilirenâ on palpation of a matured corpus luteum ( 22 to 26 days of post- partum) in either of the ovaries. The control group did not receive any treatment. The uterine involution and appearance of estrus was confirmed by regular per-rectal gynaeco-clinical examination of genitalia and the pregnancy was diagnosed per-rectally 60th days post breeding in all the cows that failed to return to estrus. The data were analysed using analysis of variance and students 't' test as described by Snedcor and Cochran (1980).

The mean duration for complete uterine involution, exhibition of first post- partum estrus and conception rate are presented in Table-1. The beneficial effect of GnRH therapy on day 14 post-partum interms of shorter uterine involution encountered in the animals of T1 group of present study is in agreement with the observation of earlier workers in cows.( Mujumdar, 1993; and Foote and Riek, 1999;) and in buffaloes( Honnappagol, 1991; Takkar *et.al.,* 1999). This can be attributed to the fact that responsiveness of endogenous LH to exogenous GnRH increased during day 10 to 18 post-partum with a resultant decrease in calving interval, lesser number of service per conception and high conception rate in post-partum cows (Nash *et.al.,* 1980). The animals of T2 groups where a combined therapy of GnRH and $PGF_2\alpha$ was employed had shorter uterine involution interval compared to T1 group suggesting the additional advantage of $PGF_2\alpha$ in association with GnRH. This is in agreement with the earlier report of

[1]Veterinary Officer Veterinary Hospital Tq. Chincholi Dist. Gulbarga, Corresponding author - [2]Director of Instruction Veterinary College, Bidar. [3]Dept of Physiology, [4]Dept. of Gynecology

**Table 1. Efficacy of GnRH and $PGF_2\alpha$ on reproductive performance of post partum cows**

| Reproductive parameters | Groups | | |
|---|---|---|---|
| | T1 (6) | T2 (6) | C (6) |
| Uterine involution (days) | 31.50 ± 0.69[a] | 29.00 ± 0.01[a] | 35.80 ± 0.63[b] |
| First post-partum estrus (days) | 38.16 ±4.40[a] | 30.00 ±0.06[a] | 52.30 ±3.38[b] |
| Conception rate (%) | 66.00 (4/6) | 83.33 (5/6) | 33.33 (2/6) |

[1]Figures in the parenthesis indicate number of animals [2]Means bearing common superscripts do not differ significantly between the groups.

Okuda *et.al.*, (1988). This observation is supported by the fact that a positive myometrial effect of $PGF_2\alpha$ appears to promote early uterine involution following the exogenous administration in cows. (Ko, ch. Chen *et.al.*, 1985). In the animals of T2 group where a combined therapy of GnRH and $PGF_2\alpha$ was employed had considerably shorter interval for exhibition of first post-partum estrus. This is the agreement with the findings of Espanna *et al.* (1992).

The first service conception rate was considerably higher in the animals of T2 group (83.33%) followed by T1 (66.66%) and 'C' group (33.33%). The animals of T1 group where GnRH therapy was employed had a conception rate of 66.66% which is in conformity with the earlier reports in cows and buffaloes (Mujumdar, 1993; Foot and Riek 1999 and Takkar *et.al.*, 1999). The conception rate in the animals of T2 was considerably higher that is 83.33% in relation to the other two groups of the present study. A first service conception rate ranging between 34 to 50% has been reported by the earlier workers while employing GnRH and $PGF_2\alpha$ in early post-partum period in both cows and buffaloes (Okuda *et. al.*, 1988; Honnappagol, 1999; and Takkar *et. al.*, 1999).

## REFERENCE


Espanna, F, Vivo Rodriguez, R, Lopez Seratian, A., 1992, GnRH and $PGF_2\alpha$ hormone treatment during the puerperium in dairy cattle. Anim. Breed. Abstr., 60 No. 6871.

Foote, R. H., and Riek, P.M., 1999. Gonadotropin releasing Hormone improves reproductive performance of dairy cows with slow involution of the reproductive tract. J. Anim. Sci., 77 (12): 12-16.

Honnappagol, S.S., 1991, Studies on post-partum anestrus in Surti buffaloes with reference to clinico-biochemical and hormonal status. Ph.D., Thesis submitted to Deemed University Indian Veterinary Research Institute Izatnagar.UP India.

Ko, Ch, Chen, Z.Y., Whitmore, H.L., Mckenna, D.J., Brodie, B.O. and Gustafsson, B.K., 1985. The effect of prostaglandin on myometrial activity in post-partum cows. Abstract papers at the 66th Annual meeting of the conference of research workers in animal diseases. pp.7.

Mujumdar K.A., 1993, Improved fertility with the use of GnRH ( Receptal â) during post parturient period Blue-cross-book (Western India) pp.28-29.

Okuda, K., Gaona, W.A., and Sato, K. 1988, Effects of Gonadotropin–releasing hormone and prostaglandin $F_2\alpha$ on the reproductive performance in post-partum cows. Therigenology, 29(4): 823 - 833.

Snedecor, G.W., and Cochran, W. G., 1980, Statistical methods 7th edition,Oxford and IBH Publishing Company, 17, Park Street, Calcutta. pp.32 - 62.

Takkar, O.P., Narinder Singh, Jagjit, Kavr, and Chaudhary K.C., 1999, Augmentation of post-partum reproductive efficiency by the use of GnRH in buffaloes. Indian J. Anim. Reprod., 20(1): 9-11.