

FERTILITY IMPROVEMENT THROUGH SYNCHRONIZATION OF OESTRUS IN COWS*

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ABSTRACT

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The objective of the present research work was to study the efficacy of PGF2 α for oestrus synchronization and GnRH on conception rate in synchronized cows under field condition. Totally 50 normal cyclic post partum cows were selected from field condition and divided into five groups, containing ten experimental cows in each group. These groups were divided mainly as control group, hormonal treated group and non hormonal treated group. Out of thirty treated cows with PGF2 α , twenty three (77.77%) and thirty (100 %) cows responded after first and 11th day treatment. In Group-II 2 (20%) cows exhibited oestrus up to 30 days after pre synchronization treatment. The time required for onset of oestrus differs significantly in hormonal and non hormonal treated groups. Conception rate was higher in Group-IV than other groups which differ significantly in different groups.

Key words : PSMT, Prostaglandin, GnRH, Conception rate.

INTRODUCTION

The production efficiency of the animals is directly related to the fertility. The fertility of the animals is affected by various reproductive disorders like prolonged postpartum anoestrus, early embryonic mortality, sub clinical reproductive tract infection, repeat breeding, deficiencies of essential minerals, vitamin nutrients in animals, improper heat detection (Stevenson and Britt, 1977), faulty management practices leading to longer calving interval. Synchronization of oestrus is one of the alternatives for the control and manipulation of reproduction. For increasing conception rate in PGF2 α induced oestrus cow, gonadotrophin releasing hormone (GnRH) was administered (Tandle *et al.*, 2000). GnRH given at the time of insemination may modify the function of pre and postovulatory ovarian follicle, thus ensures ovulation (Taponen, 1999). It also recruits good quality of luteal cells which results in increased progesterone

level and increased the conception rate (Mee *et al.*, 1993). Administration of GnRH after A.I. also results in increased progesterone secretion by corpus luteum (Kittok *et al.* 1973). The present study was planned to study the efficacy of PGF2 α for oestrus synchronization and GnRH on conception rate in estrus synchronized cows under field condition.

MATERIALS AND METHODS

The selected cows were examined at fortnightly for the presence of corpus luteum on either of the ovaries and then these cows were grouped into 5 groups irrespective of age, milk production and parity.

Group I (Control)

The selected cows from this group were examined per rectally and the cows having the cyclical corpus luteum were treated with Injection normal saline 2 ml, 11 day apart. The cows were observed for oestrus exhibition up to stipulated period of 30 days and inseminated on oestrus detection.

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The selected cows from Group II, III, IV and V were given presynchronization medicinal treatment (PSMT) which includes Injection Hitek (Virbac pharma) @ 1 ml per 50 kg body wt. s/c., Injection Urimin (Virbac pharma) 10 ml i/m, Injection Intavita (Intas pharma) 10 ml i/m and Chelated Mineral Mixture (Agrimin forte) (Virbac pharma) @ 50gm orally daily.

Group II – After 15 days of PMST, cows from this group were examined per rectally and the cows having the cyclical corpus luteum were treated with injection normal saline 2 ml at 11 day apart. The cows were observed for oestrus exhibition till the stipulated time interval of thirty days and inseminated on oestrus detection.

Group III – After fifteen days of the PSMT, the cows from this group were examined per rectally and the cows having the cyclical corpus luteum were treated with injection Cyclix 2 ml (Cloprostenol sodium 263 µg/ml) (PGF_{2α}) at 11 day apart and timed insemination were carried out after 72-96 hours from last PGF_{2α} injection.

Group IV – After fifteen days of the PSMT, the cows from this group were examined per rectally and the cows having the cyclical corpus luteum were treated with injection Cyclix (Cloprostenol sodium 263 µg/ml) 2 ml (PGF_{2α}) 11 day apart. Timed A.I. was performed on 72-96 hours after the last PGF_{2α} treatment. Cows from this group were treated with injection Receptal (0.004 mg Buserelin) 2.5 ml i/m at the time of A.I.

Group V After fifteen days of the PSMT, the cows from this group were examined per rectally and the cows having the cyclical corpus luteum were treated with injection Cyclix 2 ml (PGF_{2α}) 11 day apart and timed insemination were carried out after 72-96 hours of last PGF_{2α} Injection All the inseminated cows were treated with injection Receptal (0.004 mg Buserelin) 2.5 ml i/m on day 11 after A.I.

The pregnancy diagnosis of all inseminated cows was carried out 60 days after artificial insemination by ultrasonography as well as by per-rectal examination. The various parameters were analyzed by two way factorial CRD, student's 't' test and chi-square test.

RESULTS AND DISCUSSION

In the present research experiment, cows from group- I did not exhibited oestrus however only two (20%) cows from group-II responded after PSMT treatment only. Out of thirty cows from group III, IV and V treated with PGF_{2α}, 23 (77.77 %) cows responded to first injection where as 100 per cent responded for 2nd injection.

The result of present study for oestrus exhibition after 1st PGF_{2α} injection is in close agreement with result obtained by Pawshe *et al.* (1991), reported 77.77 per cent oestrus response in crossbred cows and Jadhao (1999) observed 80 per cent oestrus exhibition. However, the response after 1st PGF_{2α} injection was not in concurrence with Mane *et al.* (1992) recorded 50 per cent oestrus response. The response of 2nd PGF_{2α} injection was not in agreement with Pawshe *et al.* (1991) recorded 77.77 per cent response in crossbred cows and Sathlamorthy *et al.* (2008) observed 62.01 per cent oestrus response. The variation in the oestrus response is may be due to the luteal activity represented by the age of the existing corpus luteum on the ovary (Watts and Fuquay, 1985). Also the variation in the response may be due to age, breed, managerial practices, nature of PGF_{2α} molecule used and route of administration.

The first service conception rate was 0, 20, 40, 60 and 40 per cent in group- I to V, respectively. The conception rate differs significantly in different treatment groups. The present finding regarding conception rate in group III are in close agreement with Gupta *et al.* (1978) reported 37 per cent conception rate after injecting 500 mg of PGF_{2α} in 9 lactating Haryana cows. However some research workers have reported higher conception rate than the present study. Ingawale *et al.* (2003) reported 50 per cent conception rate treated with 25 mg of PGF_{2α} (Lutalyse) intramuscularly as a single dose treatment. . However some workers have reported low conception rate Ott and Gustafasson (1981) observed 20 per cent conception rate after 25 mg of Lutalyse administration in 25 cows and heifers.

The conception rate observed in the group IV is higher than other treated group which might be due to effect of GnRH given at the time of insemination. The present finding regarding conception rate in GnRH treated cows are in close agreement with Ingawale *et al.* (2003) reported 66.66 per cent conception rate in 10 cows treated with 25 mg of PGF_{2α} (Lutalyse) intramuscularly as a single dose treatment and 2.5 ml GnRH were administered intramuscularly at the time of insemination. Lajili *et al.* (1991) reported 62 per cent conception rate in 59 dairy cows after PGF_{2α} induced oestrus and given 10 mg buserelin injection 13-14 days of artificial insemination. The lower conception rate then present study is also reported by Tandle *et al.* (2000) observed 46.67 per cent conception rate in post pubertal repeat breeding heifers with 0.75 mg Tiaprost and given 0.25 mg GnRH (Fertagyl) post insemination and again on 10th day. Variation in conception rate might also be due to the technique of insemination, semen quality, and individual variation, managemental and nutritional practices and difference in breed, parity, and nature of GnRH used for administration. Although the present work was done in dry hot season conception rate found was better than (Shrivastav and Sahni, 1999), it might be due to effect of PSMT treatment which includes treatment with Vitamin AD₃, phosphorus and chelated mineral mixture, which increases bioavailability of minerals to support metabolic functions.

The double dose PGF_{2α} regime is better synchronization protocol for oestrus synchronization because all thirty cows (100 per cent) exhibited oestrus with double dose PGF_{2α} treatment. The conception rate is improved in group IV indicating that GnRH administration at the time of insemination is beneficial for improving conception rate.

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