

Use of Placentrex to Augment Fertility in Repeat Breeder Cross Bred Cows

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ABSTRACT

The study was conducted on 20 healthy, parous, cyclic cross bred cows which were brought to the Gynaecological unit of Veterinary College and Research Institute Hospital, Namakkal, Tamil Nadu-637 002 with the history of repeat breeding. They were randomly divided in to two groups of 10 animals each. The first group was used as control and the second group was treated with 10 ml of placentrex, intramuscularly. Both the groups were inseminated twice at 24 hours interval during estrus. The mean duration of estrus was 28.90 ± 0.41 and 24.70 ± 0.32 h in control and placentrex administered groups, respectively, which was significantly shorter ($P < 0.05$) in placentrex administered group when compared with the control group. The proportion of intense, intermediate and weak estrus was 30, 40 and 30 per cent in treated group and 20, 40 and 40 per cent in control group, respectively, which was significantly different. The mean length of oestrous cycle in non-conceived cows of treated and control group was 22.25 ± 0.41 and 22.00 ± 0.64 days, respectively, which was not significantly different. The first service conception rate was 60 and 30 per cent in treated and control groups, respectively, which was significantly higher ($P > 0.05$) in the placentrex treated group than the control group.

Keywords: Cross bred cows, Repeat breeder, Placentrex, Conception rate

INTRODUCTION

Repeat breeding in dairy cattle is a main detrimental cause to optimal breeding efficiency that affects the economy of the dairy farms. The incidence of such problem has been reported to be 10-25 per cent in exotic as well as Indian breeds (Sharma *et al.* 1988). Anovulation and delayed ovulation are major causes of repeat breeding in high yielding dairy cows and remain undiagnosed unless serious attention is given through repeated rectal examination. The reproductive failure due to ovulatory disturbances is primarily due to the deficiency of LH secretion at appropriate time after estrus in cows (Khanna and Sharma, 1992). The success of insemination depends not merely on the detection of oestrus, but also on the timing of ovulation related to insemination. Hence, efforts were made to enhance fertility in repeat breeding dairy cows with Gonadotrophin Releasing Hormone (GnRH) or Human Chorionic Gonadotrophin (hCG) at the time of insemination (Srivastava and Aahlawat, 1998 and Sonewane *et*

al. 2001), but the cost of GnRH/hCG is a big constraint. It was reported that GnRH activity present in the human placental extract stimulate LH secretion like GnRH (Lee *et al.* 1981). However, the use of human placental extract had not reported except by Tamuli *et al.* (2002). Hence, the present study was designed to find out the effect of placental extract administration in repeat breeding cows in relation to the conception rate with least cost as it is a major constrain faced by the agrarian community.

MATERIALS AND METHODS

The study was conducted in repeat breeder cross bred cows which were brought to the Gynaecology Unit of Veterinary College and Research Institute Hospital, Namakkal, Tamil Nadu- 637 001. Twenty healthy, parous, cyclic, well maintained cross bred cows, all under ten years of age with no palpable or visible abnormalities in their genital tract and history of failed conception for three consecutive inseminations with good quality semen were included in the study. The selected cows were randomly divided into two groups (I and II) of ten each. Group I served as control and Group II was administered with 10 ml of placentrex (human placental extract), intramuscularly at the time of

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insemination. Artificial insemination was done with good quality frozen semen twice at 24 h interval during the observed estrus in control as well as treated groups. The duration, intensity of estrus, conception rate and length of oestrous cycle for each cow were studied. The data was analyzed as per the method of Snedecor and Cochran (1989).

RESULTS AND DISCUSSION

The mean duration of estrus was 28.90 ± 0.41 and 24.70 ± 0.32 h in control and placentrex administered groups, respectively. Analysis of variance showed that the duration of estrus was significantly shorter ($P < 0.05$) in placentrex administered group when compared with the control group. The mean duration of estrus observed in control group was longer ($P < 0.05$) which was in accordance with the observations of Gustafsson *et al.* (1986), Duchens *et al.* (1995) and Goley and Kadu, (1995). This extended length of estrus in repeat breeder cows might be due to the increased level of progesterone during the estrus resulting in prolonged follicular phase. The duration of estrus in the placentrex treated group was significantly shorter ($P < 0.05$) when compared with the control group. This finding was in accordance with the observations of Maurer and Echternkamp (1982). The shorter duration of estrus in the treatment group might be due to the preovulatory injection of placentrex at the time of insemination which reduced time of ovulation and duration of estrus. Similar observations were made by several authors who reported that the evidence of GnRH activity present in the human placental extract stimulates the release of LH as that of GnRH (Gibbons *et al.*, 1975; Khodr and Siler Khodr, 1980 and Lee *et al.* 1981).

The proportion of cross bred cows that exhibited intense, intermediate and weak estrus was 20, 40 and 40 per cent in control and 30, 40 and 30 per cent in placentrex administered groups, respectively. Statistical analysis revealed that the percentage of intensity of estrus in the present study was significantly ($P > 0.05$) different between the groups. These results reveal that the exogenous administration of placentrex before the endogenous release of LH do not influence the intensity of estrus which was in contrast to the observations of Krishnakumar (2001) who found that the administration of GnRH/hCG at the time of insemination had a higher percentage of intense

and intermediate estrus and lower percentage of weak estrus as compared to control cows. These results indicate that the administration of placentrex at the time of insemination might not favour development of Graafian follicle and there was no influence on estrogen and progesterone concentration like that GnRH/hCG.

The mean length of oestrous cycle in non-conceived cows between the consecutive inseminations immediately after start of treatment was 22.00 ± 0.64 and 22.25 ± 0.44 days in control and placentrex treated groups, respectively. Statistical analysis revealed that there was no significant difference ($P > 0.05$) between the control and placentrex administered groups. Similar observation was made by Coleman *et al.* (1988) who reported that the administration of GnRH agonist 12h after the onset of estrus had no effect on subsequent luteal function and oestrous cycle length in cows. But the result was in contrast to the observations made by Krishnakumar (2001) who observed the duration of oestrous cycle was longer in non conceived repeat breeder cows treated with GnRH/hCG at the time of insemination. The present study reveals that the administration of placentrex at the time of insemination might not have influence on estrogen and progesterone concentration like that of GnRH/hCG in the subsequent estrous also.

The first service conception rate was 30.00 and 60.00 per cent in control and placentrex administered groups, respectively. The first service conception rate in both the groups were significantly higher than the cows received single insemination, which might have a greater value in ensuring the better conception rate in late ovulating cross bred cows (Mee *et al.* 1993). The conception rate in the placentrex treated group was significantly higher ($P < 0.05$) than the control group. The present results are in agreement with the observations of Tamuli *et al.* (2002) who reported that 90 per cent of repeat breeder cows conceived with 10 ml of placentrex administered, intramuscularly at the time of insemination might have greater value in correcting ovulatory defect, brings about a close synchrony between the ovulation and artificial insemination and ensuring better conception rate in repeat breeding cows.

CONCLUSION

It can be inferred from the present study that the administration of 10ml of placentrex at the time of insemination along with second

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insemination at 24 hours interval was found to be effective to achieve a good first service conception rate in repeat breeder cows. But the perusal of literature revealed that there was no sufficient data available on endocrinological changes related to the duration and intensity of estrus, length of oestrous cycle in non conceived repeat breeder cows after treatment and therefore further research needs to be conducted on this aspect.

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