EFFECT OF ADMINISTRATION OF hCG BEFORE THE ONSET OF OESTRUS FOLLOWING $PGF_2\alpha$ TREATMENT ON CONCEPTION RATE IN REPEAT BREEDER COWS

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ABSTRACT

Regulating oestrus using oestrus synchronizing agents may help to increase the conception rate in repeat breeder cows. A total of 48 repeat breeder cows were divided into 3 groups viz., group I, II and III. Cows in group I and II were treated with 0.98 mg of Tiaprost ($PGF_2\alpha$) on day 10 following natural oestrus (day 0). Group III cows, served as control without any treatment. AI was done at 72 (first AI) and 96 (second AI) hours following $PGF_2\alpha$ therapy in group I and II. Group III cows were artificially inseminated twice at 24 hours interval during natural oestrus. Group II cows were injected with 1500 IU hCG at 24 hours prior to first AI. There was 100 per cent oestrus response in $PGF_2\alpha$ treated cows in group I and II. The first service conception rate obtained was 43.75, 43.75 and 18.75 per cent, in group I, II and III, respectively.

KEY WORDS: $PGF_2\alpha$, hCG, Conception rate, Repeat breeder cows

INTRODUCTION

Although various factors are responsible for repeat breeding problem in cows, one of them is improper oestrus detection and timing of AI (Duchens et al., 1995) which contributes greatly. Control of oestrus using prostaglandin preparations ($PGF_2\alpha$) has been found to be effective in achieving good fertility in cycling cows (Xu et al., 1997). Odde (1990) stated that $PGF_2\alpha$ treatment has been highly effective in regulating oestrous cycle by inducing complete luteolysis in dairy cows. Further lowered conception rate with $PGF_2\alpha$ in some studies were related to reduced CL weight and subsequent lower serum progesterone content (Hixon et al.,1981 and Rentfrow et al.,1987). Time of administration of hCG in relation to the occurrence of oestrus influenced the conception rate in cyclical cows (Hansel et al., 1975). The present investigation was undertaken to study the fertility rate following administration of hCG at 24 hours prior to fixed time AI in $PGF_2\alpha$ treated repeat breeder crossbred cows.

MATERIALS AND METHODS

A total of 48 healthy, parous crossbred cows which failed to conceive after three or more AIs were selected for this study. They were having regular oestrous cycle with clear genital mucus discharge and were free from gross palpable genital abnormalities. Out of 48 selected animals, 32 cows were treated with 0.98 mg of Tiaprost intramuscularly on day 10 following natural oestrus and were equally divided in to 2 treatment groups viz., group I and group II. AI was done at 72 (first AI) and 96 hours (Second AI) after $PGF_2\alpha$ injection in these cows and in addition,cows in group II were administrated with 1500 IU hCG at 24 hours before first AI. Sixteen repeat breeder cows without any treatment served as control and were inseminated twice at 24 hours interval during natural oestrus. Rectal examination was carried out in all the treated and control cows at 60 days after the AI to confirm pregnancy. First service conception rate was calculated for groups and compared.

RESULTS AND DISCUSSION

In the present study, injection of $PGF_2\alpha$ on day 10 after natural oestrus resulted in 100 per cent oestrus response. This was in agreement with the findings of Zaayer and Van der Horst (1986) and Goley and Kadu (1995) in repeat breeder cows. The 100 per cent efficacy of $PGF_2\alpha$ treatment in inducing oestrus in repeat breeder crossbred cows in this study might be due to the day of the cycle in which the drug was administered (Odde, 1990), higher sensitivity of the corpus luteum on day 10 of the cycle to $PGF_2\alpha$ treatment (Berardinelli and Adair, 1989) and good nutritional status of the cows selected.

In $PGF_2\alpha$ alone treated cows (group I), the first service conception rate obtained was 43.75 per cent. Almost similar conception rate was reported in repeat breeder cows by Stevenson et al. (1988). However, higher conception rates of 76.92 (Zaayer and Van der Horst, 1986) and 80.00 (Kumar et al., 2000) per cent were reported in repeat breeder cows. The conception rate obtained was higher in group I (43.75 per cent) than in control (18.75 per cent). Goley and Kadu (1995) reported that the $PGF_2\alpha$ corrected the uterine milieu and increased the conception rate by preventing early embryonic mortality. Further, they stated that it checked mild endometritis by increasing the phagocytic activity by uterine leukocytes and stimulatory actions on smooth muscles of uterus. Moreover, double inseminations at induced oestrus with good quality semen improved the pregnancy rates in many studies (Fukui et al., 1985; Kumar et al., 2000). These factors might have contributed to achieve a higher conception rate in group I than the control.

In group II, the pregnancy rate obtained with hCG injection at 24 hours before AI was also 43.75 per cent (similar to group I) which was lower than the conception rate (67.20 per cent) reported by Sandhu and Singh (1992) in crossbred normally cycling cows. Induction of oestrus with $PGF_2\alpha$ alone and breeding at fixed time might have helped in eliminating errors in oestrus detection and possibly in bringing more favorable hormonal and uterine milieu and might have resulted in increased conception rate in group I than in control. Further, it is clear that hCG administration prior to the onset of oestrus following $PGF_2\alpha$ treatment is not necessary, and hence it is concluded that $PGF_2\alpha$ treatment on day 10 following natural oestrus and fixed time double AI at induced oestrus may be followed to augment fertility in repeat breeder cows under field conditions.

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