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EFFECT OF OVSYNCH PLUS CIDR PROTOCOL IN MANAGEMENT OF REPEAT BREEDING CROSSBRED JERSEY COWS

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Abstract: The present study was designed to assess the effect of Ovsynch alone or Ovsynch plus CIDR protocol on pregnancy rate in repeat-breeding crossbred Jersey cows. A total of thirty three repeat breeding crossbred Jersey cows were divided into three groups containing 11 cows in each group. Cows in group I (n=11) served as control. Cows in group II (n=11) treated with Ovsynch alone and Cows in group III (n=11) treated by Ovsynch plus CIDR protocol. Fixed time artificial insemination was carried out following the treatment. The pregnancy rate in Ovsynch protocol and Ovsynch plus CIDR protocol was 54.54 per cent and 72.72 per cent respectively where as it was 27.27 per cent in control group. Thus, the Ovsynch plus CIDR programme can be effectively used to improve the pregnancy rate in repeat breeder cows.

Keywords: CIDR, Ovsynch, Crossbred Jersey cows, Repeat Breeding.

Introduction

The repeat-breeding cow is one that has normal or nearly normal estrous cycles and estrous periods and has been bred two or more times to a fertile bull yet failed to conceive. The clinical examination of the animal may fail to reveal any definite lesion or condition to explain the failure of conception. Embryonic mortality is one of the predominant causes for repeat breeding in dairy animals. The majority of embryonic mortality (70-80% of total loss) occurs between days 8 and 16 after insemination. Luteal insufficiency is a known cause of it. Luteal deficiency during the very early stages of pregnancy has been hypothesized as a cause of pregnancy failures. Low plasma progesterone may affect reproductive process before and after insemination. A delayed progesterone rise and lower total progesterone concentrations are the most prominent endocrine deviations in repeat-breeding cow (Pandey *et al.,* 2016). Repeat-breeding in dairy cattle is associated with estrous detection errors, endocrine dysfunctions, ovulatory defects and hence, poor fertilization rates (Ghuman *et al*., 2011).

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Hormonal interventions have been used to increase the probability of estrous detection and insemination and to increase pregnancy rates of dairy cattle under a variety of management systems. Most estrous synchronization systems employ a method for controlling follicular wave development, promoting ovulation in anestrous cows, regressing the corpus luteum in cyclic cows and synchronizing estrus and (or) ovulation at the end of treatment. The benefits of a timed artificial insemination (AI) system increase under conditions of poor estrous detection rate and poor conception rate.

A new ovulation synchronisation protocol (Ovsynch Protocol) has been developed in cattle; it makes the use of a combination of GnRH - PGF2∝ - GnRH injections which has been reported to considerably narrow down the ovulation time to a range of 24 hours to achieve the maximum conception rate with fixed time artificial insemination and eliminates the need for estrus detection. A small percentage of cyclic cows will prematurely express estrus during Ovsynch protocol. Ovulation of small dominant follicle after Ovsynch protocol leads to smaller corpora lutea, lower blood progesterone concentrations, and shorter estrous cycles in treated cows. Many of the inherent inefficiencies of ovulation synchronization and timed AI programs can be corrected by the appropriate application of progesterone. Progesterone blocks estrus and ovulation. Thus, supplementing progesterone between the first GnRH and PGF2∝ prevents premature estrus expression and improves overall synchrony. The outcome of estrous synchronization is also improved when progesterone is used because anovulatory cows as well as cystic cows benefit from progesterone supplementation. (Lucy *et al.,* 2004).

However, there are few reports available about the effect of Ovsynch with progesterone on pregnancy rate in repeat-breeding cows. Hence, the present study was conducted to assess the effect of Ovsynch alone or Ovsynch plus CIDR protocol on pregnancy rate in repeat-breeding crossbred Jersey cows.

Material and methods

Thirty three Jersey crossbred cattle were selected for treatment and the study was conducted at Veterinary College and Research Institute, Orathanadu. The body weights of the cattle ranged between 300-400 kg. Cows that were free from uterine infection, gross genital tract abnormalities and having good body condition were selected for the study. After selection, all the animals were dewormed and supplemented with mineral mixture for 20 days before initiating treatment. Cows in group I (n=11) served as control. Cows in group II (n=11) treated with Ovsynch alone and Cows in group III (n=11) treated with Ovsynch plus

CIDR protocol. Both treatment protocols were initiated regardless of the stage of the estrous cycle of the cows.

Group II animals were administered 10 µg GnRH (Gynarich) i.m. on day 0, 500 µg of PGF2∝(Pragma) i.m. at day 7 and a second dose 10 µg of GnRH i.m. on day 9. Fixed time AI was performed at 12 and 24 h after the second-GnRH treatment. In group III, 10 µg GnRH was administered and CIDR (1.8g of progesterone) was inserted on day 0, and 500 µg of PGF2∝ was administered and CIDR was removed on day 7. Second dose of GnRH was administered on day 9. Fixed time AI was performed at 12 and 24 h after the second GnRH treatment. Pregnancy diagnosis was done by rectal examination on day 60 after the fixed time artificial insemination.

Results and discussion

The result revealed that the overall pregnancy rate for cows in the control group (group I) was 27.27 per cent (3/11). The overall pregnancy rate for cows in the Ovsynch group (group II) was 54.54 per cent (6/11) and in Ovsynch plus CIDR treatment group (group III) was 72.72 per cent (8/11). The conception rate was greater in the Ovsynch plus CIDR group (72.72 per cent) than in the Ovsynch group (54.54 per cent) and control group (27.27 per cent). Kawate *et al.,* (2004) also reported higher conception rate in the Ovsynch plus CIDR group than in the Ovsynch group (72.5 percent versus 47.7 percent). They also found that providing exogenous progesterone (by the inclusion of a CIDR device) improved conception rates to the Ovsynch protocol in postpartum suckled Japanese Black beef cows. Rastegarnia and Anvari Savojbolghi (2010) observed greater conception rate in the Ovsynch plus CIDR group (64.4 percent) than in the Ovsynch group (46.7 percent). They inferred that treatment with a CIDR may prevent early maturation of follicles observed in non-pregnant cows treated with the Ovsynch protocol, by maintaining elevated blood progesterone concentrations until PGF2∝ treatment.

Ali *et al.,* (2012) also reported conception rate of 60 percent in Ovsynch plus CIDR protocol treated post-partum anestrus buffaloes which were fairly higher as compared to 33.33 percent in Ovsynch treated buffaloes. Mohd Alyas *et al.,* (2013) also found higher first service conception rate in Ovsynch plus CIDR treated buffaloes (66.67 percent) as compared to Ovsynch treated buffaloes (33.00 percent). Sakase *et al.,* (2005) and Schafer *et al.,* (2007) reported 67.70 percent and 66.00 percent conception rate respectively in cows treated with Ovsynch plus CIDR hormone protocol.

The overall pregnancy rate for cows in the Ovsynch group of our present study was 54.54 per cent which is comparable with the findings of Caraba and Velicevici (2013) as 57 per cent and Buhecha *et al.,* (2016) as 58.33 per cent. This increase in pregnancy rate in ovsynch group as compared to control might be due to prevention of delayed ovulation as well as anovulatory defects. Ovsynch ensures a homogenous ovarian follicular status at induction of luteolysis.

Plasma progesterone concentrations were significantly higher in CIDR-treated cows compared to control cows on Day 1. Furthermore, plasma progesterone concentrations in CIDR treated cows remained elevated for 7 days (to the time of CIDR removal). Perhaps these elevated progesterone concentrations increased the conception rate (Kawate *et al.,* 2004). Rastegarnia and Anvari Savojbolghi (2010) suggested that higher blood progesterone concentrations prior to insemination reduced uterine secretion of PGF2∝ (in response to oxytocin) during the late luteal phase after insemination.

It is well known that the priming of reproductive system with adequate amount of circulating progesterone during the preconception period is favorable for the better development of preovulatory follicle that will yield a better developed CL and hence successful conception occurs subsequently (Senthil kumar *et al.,* 2014). The major limitation of GnRH and PGF2∝ based synchronization protocols was the inability of GnRH to turnover dominant follicles late in the estrous cycle leading to premature estrus in 8 to 10 per cent of treated animals. Ovsynch plus CIDR protocol may be an ideal strategy to improve fertility in lactating postpartum subestrus buffaloes than in lactating postpartum anestrus buffaloes (Ravikumar *et al.,* 2010).

Several factors may be involved for conception failure: (a) unsuccessful fertilization due to poor association between time of AI and ovulation, (b) compromised development of oocyte due to exposure to small LH surge, and (c) suboptimal luteal profile which is unable to support embryo development (Bage, 2002). Higher conception rates reported in Ovsynch plus CIDR group indicated that these endocrine dysfunctions might have been eliminated due to synchronized ovulation subsequent to fixed-time AI.

Conclusion

In conclusion, the inclusion of CIDR to the Ovsynch protocol considerably increased pregnancy rates (72.72 per cent) as compared to Ovsynch protocol alone (54.54 per cent) in repeat breeding crossbred jersey cows. So Ovsynch plus CIDR protocol can be used in the

management of repeat breeding problem in crossbred Jersey cows to improve the pregnancy rate.

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