PATTERN OF INDUCED OESTRUS AND CONCEPTION RATE FOLLOWING OVSYNCH PROGRAMME IN POST-PARTUM DAIRY COWS

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ABSTRACT

Sixteen normally calved cows were selected at 35-50 days postpartum and equally divided into two groups as group I and II. All the cows were orally supplemented daily with 30-50 grams of TANUVAS mineral mixture continuously for 15 days. Group I cows were treated with ovsynch protocol between days 50 and 65 post-partum. Oestrus response, mean interval to onset of induced oestrus, duration of oestrus and ovulatory response in group I were 100 per cent, 47.97±2.65 hours, 29.84±0.67 hours and 100 per cent and the corresponding values in group II were 75.00 per cent, 23.50±4.24 **days**, 28.78±0.67 hours and 62.50 per cent, respectively. The percentage of intense oestrus intensity was higher in group I than group II cows. The first service, second service and overall conception rate observed were 37.50, 50.00 and 87.50 per cent in group I and 25.00, 37.50 and 62.50 per cent in group II cows, respectively.

KEY WORDS: Oestrus, Conception rate, Ovsynch, Mineral mixture, Cows

INTRODUCTION

Ovsynch as a reproductive tool with the supplementation of mineral mixture after deworming has been accepted worldwide in many farms. Ovsynch which was introduced by Pursley et al. (1995) worked by controlling follicular development and luteal function based on a scheme of injections of GnRH and $PGF_2\alpha$. Ovsynch allows ovulation to be timed with insemination, so that both egg and sperm are available at the correct time of fertilization (Bello et al., 2006). To initiate cyclicity in the early postpartum period and to improve fertility, treatment with GnRH plus $PGF_2\alpha$, 10 days later has been evaluated with conflicting results in cows (Risco et al., 1994). Because of the conflicting results of postpartum treatment with GnRH, $PGF_2\alpha$ or a combination of both, the present study was conducted to determine whether early postpartum treatments with ovsynch protocol could alter reproductive performance in dairy cows.

MATERIALS AND METHODS

Sixteen normally calved (NC) cows following parturition were selected at 35-50 days postpartum and randomly and equally divided into two groups as group I and II, eight cows in each group. All the cows were orally supplemented daily with 30-50 grams of TANUVAS mineral mixture continuously for 15 days (The percentage of Calcium, Phosphorus, Magnesium, Iron, Iodine, Copper, Manganese, Cobalt, Zinc, Sulphur, Fluorine and Selenium in 1 Kg of TANUVAS mineral mixture was 23, 12, 6.5, 0.5, 0.026, 0.007, 0.12, 0.012, 0.38, 0.5, 0.07 and 0.03, respectively) followed by ovsynch protocol between days 50 and 65 postpartum. The ovsynch protocol included administration of 10 µg of GnRH injected intramuscularly (2.5 ml, Buserelin acetate, Ovulanta®, Vet Mankind, New Delhi) on the day of start of synchronization (day 0), 500 µg of $PGF_2\alpha$ injected intramuscularly (2 ml, Cloprostenol, Pragma®, INTAS, Ahmedabad) seven days later (day 7), another 10 µg of GnRH was injected intramuscularly 48 h after $PGF_2\alpha$ (day 9) and timed artificial insemination (TAI) was done at 16 to 18 hours after the second GnRH injection (day 10). Group II cows were observed for the signs of oestrus for 30 days from 35-50 days postpartum and artificial

insemination was done during the observed oestrus. No treatment was given to group II cows and it served as control

Onset of oestrus was calculated in hours, from the time of $PGF_2\alpha$ administration to the time of first appearance of oestrus signs in group I, whereas in group II, the onset of the oestrus was recorded from the time of completion of mineral mixture supplementation to the first appearance of oestrus signs. Duration of oestrus was estimated in hours between the periods from the time of first appearance of oestrus signs to the time of disappearance of oestrus signs. The intensity of oestrus was measured based on the score card formulated by Rao and Rao (1981) with slight modifications. Ovulatory response was assessed by rectal examination performed 10 days after induced oestrus in group I and observed oestrus in group II by the palpation of the corpus luteum in any one of the ovaries and it was further confirmed by ultrasonography. Conception rate was calculated as percentage of animals that conceived to AI at induced estrus in group I and at observed oestrus in group II. Pregnancy was confirmed by rectal palpation at 60 days post insemination.

RESULTS AND DISCUSSION

Oestrus response following ovsynch treatment in group I cows was 100 per cent, whereas in group II it was 75.00 per cent. This result indicated that ovsynch along with mineral mixture administration was highly effective to induce oestrus in crossbred cows. Similar findings recorded by Pursley et al. (1997) and Ramakrishnan *et al*. (2012). The cent per cent oestrus response to ovsynch protocol indicated that ovynch was started at appropriate stage of the oestrous cycle and also proper response of the ovaries to GnRH stimulation (Pursley *et al.*, 1997). Timed response of the oestrus expression in the group II of the present study could be due to the lack of ovarian stimulus. The mean interval to onset of induced oestrus in group I and II was 47.97±2.65 hours and 23.50±4.24 days, respectively. The mean duration of induced oestrus was 29.84±0.67 and 28.78± 0.67 hours in group I and II, respectively. Significant difference was observed between group I and II in the duration of induced oestrus ($P<0.05$). The number and percentage of cows showed intense, intermediate and week oestrus intensities were 4 (50.00), 3 (37.50) and 1 (12.50) in group I and 2 (25.00), 3 (37.50) and 1 (12.50) in group II, respectively. The percentage of intense intensity was higher in group I (50.00 per cent) followed by group II (25.00 per cent). The percentage of intermediate intensity noted in group I and II was same (37.50 per cent). The results of the present experiment showed that pronounced intense intensity of oestrus following ovsynch treatment was observed in group I cows. The intensity of oestrus in the present study was comparable with the findings of Sathiamoorthy (1997) in the cycling cows in which 77.00 per cent intense, 11.00 per cent intermediate and 11.00 per cent weak oestrum were recorded.

The percentage of ovulatory response was 100.00 and 62.50 per cent in group I and II, respectively. These findings with ovsynch protocol were in accordance of Pursley et al. (1997) and Vijayarajan et al. (2009 a and b) who recorded 100.00 per cent ovulatory response in cycling cows. However, Mialot *et al.* (2003) recorded comparatively a lesser percentage ranging from 52.00 to 80.00 per cent. The less ovulatory response observed in the group II (62.50 %) could be due to the sequelae of suppressed hypothalamic GnRH and pituitary LH secretion which depressed the ovarian function. Ovulatory responses require suitable follicular development at the time of initiation of ovsynch and prevention of premature luteolysis (Pursley *et al.,* 1997). The first service, second service and overall conception rate observed were 37.50, 50.00 and 87.50 and 25.00, 37.50 and 62.50 per cent in group I and II, respectively. The result of the present investigation revealed that oestrus induction with ovsynch protocol in group I cows yielded 87.50 per cent overall conception rate, indicating the potentiality of the ovsynch protocol plus mineral mixture in augmenting fertility in postpartum cows. Similar findings were recorded by Pursley et al. (1997) and Muneer et al. (2009) in crossbred cows and SenthilKumar *et al.* (2007) in crossbred dairy cows. The overall conception rate (62.50 per cent) recorded in group II cows was in accordance with the findings of Feng et al. (2003). A

low conception rates ranging from 20.00 to 27.00 per cent reported by Momcilovic *et al*. (1998), 30.00 to 38.00 per cent (Cartmill *et al.*, 2001) and 40.00 to 55.00 per cent (Pursley *et al*., 1997) in postpartum lactating cows were in contrary to the present findings. Hence, it is concluded that ovsynch protocol along with mineral mixture supplementation improved the conception rate in postpartum dairy cows.

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