SYNCHRONIZATION OF OVULATION USING DOUBLESYNCH PROTOCOL IN CROSSBRED CATTLE UNDER FIELD CONDITIONS

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ABSTRACT

The crossbred cattle (n=110) were randomly divided to receive either no treatment and were regular cycling (group 1, n=10), and the remaining (group II, n=100) were pubertal heifers, repeat breeders and anestrous. The animals were fed area specific mineral mixture @ 30 gm/d/animal for 45d and group II animals were subjected to doublesynch protocol followed by FTAI. Body condition scores (BCS) was accessed and ranged 2.4-3.4 in all the animals. Blood samples was collected for the estimation of plasma Beta hydroxy butyric acid (BHBA) and the animals that failed to conceive to doublesynch had higher plasma BHBA. The conception rate was 54% in synchronized compared to 40% in control group. Thus, doublesynch is a useful protocol to improve the conception rate in infertile cattle under field condition.

Keywords: BHBA, Conception, Crossbred cattle, Doublesynch, Hormone

Low fertility in cow has multifactorial etiology involving genetic improvement, inadequate nutrition and poor reproductive management. The partitioning of the relative impact of the various factors on infertility is not well understood. Doublesynch protocol has the potential to increase the pregnancy rates in primiparous dairy cows (Oztruk and Baran, 2009). Thus, the present study was conducted to assess the efficacy of doublesynch protocol in improving infertility in crossbred cattle under field conditions.

Healthy pluriparous crossbred cows and pubertal heifers free from any palpable abnormalities of the reproductive tract were randomly divided in two groups and provided with area specific mineral mixture for 45 days @ 30 gm/day. Group I (n=10) animals were regular cyclic with no failure of conception and these were inseminated at observed estrus, twice at 24h interval, without any treatment. The group II animals (n=100) consisted of repeat breeders (n=46) with no palpable abnormality of reproductive tract, anestrous animals (n=35) without corpus luteum in the ovary, and pubertal heifers (n=19) of >4 yr age with no reproductive tract abnormalities but failed to conceive. Group II was subjected to Doublesynch protocol ($PGF_{2\alpha}$ analogue @500 µg on day -2, followed by ovsynch protocol from day 0 onward) and subsequent FTAI as per standard procedures.

Body Condition Score (BCS) was assessed for all the animals as per the standard technique (Wildman *et al.*, 1982) and was recorded to be in the range of 2.4 to 3.4. Blood was collected at the time of screening, plasma was separated and stored at -20˚C for the estimation of BHBA by spectrophotometer. In all the groups, the intensity of estrus and duration of estrus were recorded and pregnancy was confirmed by rectal palpation on day 60 post AI. The accumulated data were analysed statistically.

Conception rate in group I and group II cows was 40% and 54%, respectively. Others also reported an increase pregnancy rate in cattle subjected to doublesynch protocol (Oztruk and Baran, 2009). Plasma BHBA levels in cattle that conceived or failed to conceive in group I was 0.45 mmol/l, whereas in group II, their values were 0.54 and 1.00 mmol/l,

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respectively. In fact, BHBA values >0.7 mmol/l indicate severe negative energy balance (Adewuyi *et al.,* 2004). In this study, even though doublesynch protocol was initiated to improve the conception rate, 46% of repeat breeders failed to conceive because of negative energy balance.

In present study, the conception rate in doublesynch treated repeat breeders as well as anestrous cattle was similar (56.5 *vs.* 54.3%, respectively), where as pleuriparous animals showed better conception rate than heifer (55 *vs.* 45%, respectively).

The intensity of estrus ranged from mild to intense, with animals showing moderate estrus in both the control (2/10) and treatment group (55/100) when compared with mild and intense estrus. The mean duration of estrum was 19.05, 18.75, 22.02 and 20.39 h in animals that conceived or failed to conceive in group I and group II, respectively.

It can be concluded from the present study that doublesynch protocol can be a useful tool to improve reproductive efficiency in crossbred cattle under field conditions.

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