

ESTRUS INDUCTION RESPONSE FOLLOWING HORMONE TREATMENT IN MURRAH BUFFALO

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ABSTRACT

Eighteen anestrus Murrah buffalo were divided equally into three different groups comprising of 6 buffalo each. One group received norgestomet ear implant for 7 days along with norgestomet and estradiol valerate (i.m.) on day 0. Another group received inj. buserelin acetate (i.m.) on day 0 along with a progesterone impregnated intravaginal insert for 7 days. The remaining buffalo were kept as untreated control. Norgestomet-based and intravaginal progesterone-based treatment led to estrus induction in 50% and 83.3% buffalo, respectively. However, there was no difference ($p>0.05$) in time required for onset of estrus and duration of induced estrus between treatment groups. The intensity of estrus was better in intravaginal progesterone-treated buffalo. In summary, intravaginal progesterone-based treatment had an edge over norgestomet ear implant treatment for induction of estrus in anestrus Murrah buffalo.

Keywords: Anestrus, Buffalo, Estrus induction, Norgestomet, Progesterone,

Anestrus is one of the most commonly occurring reproductive disorders of buffalo in India. Several hormonal and non-hormonal drugs are used to treat this condition in buffalo with varied success rate. Progesterone and synthetic progestins are available in different forms for synchronization of estrus and ovulation in farm animals. Among these, progesterone releasing intra-vaginal device (PRID), controlled internal drug release (CIDR) and norgestomet ear implant (Crestar) are common. The insertion of progesterone device or implant exerts negative impact on hypothalamus-pituitary system by decreasing luteinizing hormone (LH) pulse frequency and sensitizes the hypothalamus to estrogens (Rhodes *et al.*, 1995). The removal of device or implant rapidly drops blood progesterone, followed by an increase in gonadotropin releasing hormone (GnRH) and LH that leads to resumption of ovarian activity (Zerbe *et al.*, 1999). The present study was planned to evaluate the efficacy of two progesterone-based hormonal protocols for induction of estrus in anestrus buffalo.

Anestrus Murrah buffalo were subjected to rectal examination twice at an interval of 15 days. The animals (n=18) without any palpable structure (corpus luteum or graafian follicle) on ovarian surface as well as failing to exhibit overt estrus were selected for the present study. Six buffalo were kept as control and were not administered any treatment. In second group (Norgestomet ear implant group), six buffalo were administered norgestomet ear implant (3 mg) for 7 days along with norgestomet (3 mg) and estradiol valerate (5 mg, i.m.) on day 0. On day 7, ear implants were removed and inj. cloprostenol sodium (2 ml, i.m.), a PGF_{2α} analogue, was administered. In third group (Intravaginal progesterone group), on day 0, six buffalo were administered inj. Buserelin acetate (2 ml, i.m.), a GnRH analogue, and a progesterone impregnated insert was placed intravaginally. On day 7, intravaginal insert was removed with simultaneous administration of inj. cloprostenol sodium (2 ml, i.m.).

The time (in hours) required for induction of estrus was calculated from the removal of implant on day 7 to the onset of estrus. The length of induced estrus (in hours) was calculated as interval from the detection

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Table 1: Estrus induction response following administration of estrogen or GnRH along with norgestomet or progesterone in anestrus Murrah buffalo (n=6 in each group)

		Control	Norgestomet ear implant	Intravaginal Progesterone
Buffalo exhibiting estrus		Nil	3 (50%)	5 (83.3%)
Time req'd for onset of estrus		-	36 - 44 h	36 - 56 h
Duration of induced estrus		-	26 h	24 h
Intensity of induced estrus	Intense	-	1 (33.3%)	4 (80%)
	Intermediate	-	1 (33.3%)	1 (20%)
	Weak	-	1 (33.3%)	0

of first sign of estrus till the cessation of estrus signs. Estrus detection was done by visual observation and parading of buffalo bull twice a day (early morning and evening). The intensity of estrus was classified depending upon the score obtained by an individual buffalo. The collected data was analyzed by applying unequal Completely Randomized Design.

The percentage of buffalo exhibiting estrus was better in buffalo receiving intravaginal progesterone insert (83.3%) compared to their counterparts with norgestomet ear implant (50%, Table 1). Furthermore, the time required for onset of estrus and duration of induced estrus was similar ($p>0.05$) between treatment groups (Table 1).

In the present study, the licking and sniffing of external genitalia was the major estrus sign in the buffalo with norgestomet ear implant, whereas, pronounced

excitement, bellowing, frequent micturition and male like mounting were the prominent estrus signs in the buffalo with intravaginal progesterone device. In brief, the intensity of estrus was prominent in majority of the buffalo with intravaginal progesterone device compared to their counterparts with norgestomet ear implant (Table 1).

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