

FERTILITY RESPONSE IN POSTPARTUM SUBESTRUS SURTI BUFFALO SUBJECTED TO HEATSYNCH ± PRID FIXED-TIME AI PROTOCOL

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ABSTRACT

Eighteen postpartum subestrus (>45 d postpartum) Surti buffalo were equally divided into three groups to evaluate the efficacy of fixed time AI (FTAI) protocols viz. Heatsynch and Heatsynch + PRID (Progesterone Release Intra-vaginal Device), and the third group was not subjected to any treatment protocol (control). In both FTAI groups, the buffalo were administered (i.m.) GnRH analogue (0.01 mg, Inj. Busereline acetate) on day 0, PGF_{2α} analogue (500 µg, Inj. Cloprostenol sodium) on day 7 and estradiol benzoate (0.5 mg) on day 8. In addition, in Heatsynch + PRID group, intra-vaginal PRID implant (0.96 g, progesterone) was inserted for 7 days. In both FTAI groups, inseminations were carried out twice on day 10. In the control group, inseminations were done at spontaneous estrus. In all the groups, the buffalo failing to conceive were re-inseminated at subsequent spontaneous estrus. The overall percentage of buffalo getting conceived in Heatsynch, Heatsynch + PRID and control group was 100, 83.3 and 66.7%, respectively. In brief, Heatsynch protocol, being cost effective, can be recommended to improve fertility status of postpartum subestrus Surti buffalo.

Keywords: Buffalo, FTAI, Heatsynch, Subestrus, Surti

In buffalo, the intensity of heat signs is generally low, thus leading to subestrus (incidence, 15-73%; Kandiel *et al.*, 2014). This is considered as a major constraint limiting the reproductive efficiency in buffalo (Ghuman and Singh, 2009). The problem of poor estrus exhibition and its detection in buffalo can be ameliorated by various estrus synchronization strategies. Hence, the present study in Surti buffalo aimed to evaluate fertility response following Heatsynch and Heatsynch + PRID protocol administration in subestrus Surti buffalo.

Between October to April, 18 Surti buffalo having subestrus condition around day 45 postpartum were randomly and equally divided to receive Heatsynch, Heatsynch + PRID or no treatment (control). In Heatsynch group, buffalo were administered (i.m.) GnRH analogue (Inj. Busereline acetate 0.01 mg) on day 0, PGF_{2α} analogue (Inj. Cloprostenol sodium

500 µg) on day 7 and Inj. Estradiol Benzoate (0.5 mg) on day 8. In Heatsynch + PRID group, in addition to Heatsynch protocol, PRID (0.958 g progesterone) was inserted intra-vaginally for 7 days. In buffalo of both groups, FTAI was carried out twice on day 10. In untreated subestrus control group, the buffalo exhibiting estrus during the study period were detected by observing behavioral signs of estrus and were inseminated. In all the groups, the buffalo were closely observed for re-occurrence of spontaneous estrus and were inseminated again. In buffalo failing to return to estrus, the pregnancy was confirmed by per rectum method on day 60 post-insemination. The data of number of services required per conception and service period was analysed by ANOVA, and the data of percentage of buffalo conceiving at induced and subsequent estrus was analysed by chi-square test using SPSS software version 20.

All the buffalo of treatment group exhibited high intensity estrus within one or two day following estradiol benzoate administration, while the buffalo from control

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Table 1: Fertility response in postpartum subestrus Surti buffalo subjected to Heatsynch (HS) ± PRID fixed-time AI protocol

Group, n=6 each	Services / conception, n	Service period, d	Conception rate (CR), %		Overall CR, %
			AI at induced estrus	AI at subsequent estrus	
HS	1.50±0.22 ^a	78.2±12.1 ^a	50.0 (3/6)	100.0 (3/3)	100.0
HS + PRID	1.33±0.21 ^a	63.0±5.1 ^a	66.7 (4/6)	50.0 (1/2)	83.3
Control	1.50±0.29 ^a	91.7±6.3 ^a	33.3 (2/6)	50.0 (2/4)	66.7

Means bearing common superscripts within a column do not differ significantly ($p>0.05$); PRID - Progesterone Release Intravaginal Device

group exhibited low intensity estrus between days 69 and 110 postpartum. In previous studies, estrus induction response using Heatsynch protocol varied between 91.7-100% (Kandiel *et al.*, 2012; Buhecha *et al.*, 2016). The number of services per conception as well as service period in the buffalo of present study was similar ($p>0.05$) between groups (Table 1). The overall conception rate in buffalo of present study subjected to Heatsynch ± PRID protocol varied between 83.3-100% as compared to 66.6% in untreated controls ($p>0.05$, Table 1). However, a much lower overall conception rates (26-53%) was reported earlier using Heatsynch protocol in cycling and anestrus buffalo (Mirmahmoudi *et al.*, 2014; Buhecha *et al.*, 2016).

In brief, the FTAI protocols used in the present study lead to high conception rate and were able to reduce service period by 14-28 days compared to untreated subestrus buffalo, thus, these protocols can be advocated for augmenting the fertility status in subestrus buffalo.

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