HORMONAL INDUCTION OF OVARIAN CYCLICITY AND CONCEPTION RATE IN POSTPARTUM ANESTRUS BUFFALOES

Rameez Ali, S.P. Shukla and S.P. Nema

Department of Animal Reproduction, Gynaecology and Obstetrics

College of Veterinary Science and Animal Husbandry, MPPCVVV, Mhow, M.P, INDIA, 453446

Received 7-12-2011 Accepted 15-1-2012

ABSTRACT

Therapeutic efficacy of Ovsynch, Heat synch and CIDR hormone protocols in terms of estrus induction efficiency, estrus induction interval and conception rate were judged in 24 postpartum anestrus buffaloes. The buffaloes in treatment group A, B and C were subjected to Ovsynch, Heat synch and CIDR hormone protocols respectively. Response of anestrus buffaloes to different hormonal treatments in terms of estrus induction efficiency was 50, 100 and 83.33 per cent with a mean post treatment estrus induction intervals of 18.67 ±3.18, 12.75 ± 1.86 and 15.60 ± 2.35 hrs in these hormone protocols respectively from the last parentral administration of the drug. Further, in Ovsynch, Heat synch and CIDR protocols the conception rate was 33.33, 50.00 and 60.00 per cent respectively.

KEY WORDS: Ovsynch, Heat-synch, CIDR, Buffaloes, Estrus induction, Conception rate.

INTRODUCTION

Prolonged postpartum anestrum is considered a major cause of economic loss to buffalo breeders (El-Wishy, 2007). Ovarian cyclicity can be induced using various hormone protocols which act on hypothalamic- pituitary-ovarian axis. One of the most classical and widely used hormone protocol for induction of ovarian cyclicity was described by Pursley *et al.* (1995) named as ovsynch. Mohan *et al.* (2010) for first time successfully tested Heat-synch protocol in buffaloes, which involved replacement of the second GnRH injection of ovsynch by estradiol benzoate. CIDR is the most recent hormone protocol available. Progesterone is released from CIDR at a controlled rate into the blood stream of the animal and suppresses estrus and ovulation throughout its duration (Lucy *et al.,* 2001).

MATERIALS AND METHODS

The study was carried out on 24 postpartum anestrus buffaloes belonging to the College dairy farm, College of Veterinary Science and Animal Husbandry, Mhow. Buffaloes were divided into treatment and control groups. Eighteen anestrus buffaloes in the treatment group were further divided into sub group A, B and C with 6 buffaloes in each sub group. The remaining 6 buffaloes were grouped as anestrus control group. The buffaloes in treatment group A were subjected to Ovsynch hormone protocol consisting of an injection of GnRH analogue (Inj. Buserelin-Acetate, 0 .0042mg/ml, total 5.0 ml, IM) on day 0 followed by an injection of PGF2α analogue (Inj. Dinoprost Tromethamine, 5 mg/ml, total 5.0 ml, IM) on 7th day and another injection of GnRH analogue (Inj. Buserelin-Acetate, 0.0042 mg/ml, total 5.0 ml, IM) on 9th day. Buffaloes in group B were subjected to Heat synch protocol, consisting of an injection of GnRH analogue (Inj. Buserelin-Acetate, 0.0042 mg/ml, total 5.0 ml, IM) on day 0 followed by an injection of PGF2α analogue (Inj. Dinoprost Tromethamine, 5 mg/ml, total 5.0 ml, IM) on 7th day and an injection of estradiol valerate (10 mg /ml, total 0.1 ml, IM) on 8th day. Buffaloes in group C were subjected to CIDR protocol, in which an intra-vaginal device CIDR consisting of 1.38 gm of Progesterone was inserted for 7 days along with an injection of estradiol valerate (10 mg/ml, total 0.1 ml, IM) on day 0 followed by an injection of PGF2α analogue (Inj. Dinoprost Tromethamine, 5 mg/ml, total 5.0 ml, IM) on 7th and a 2nd injection of estradiol valerate (10 mg /ml, total 0.1 ml, IM) on 8th day.

Therapeutic efficacy of these regimes was judged on the basis of estrus induction efficiency, estrus induction interval (hrs) from the last parentral administration of the drug and conception rate after natural service by a healthy buffalo bull. Pregnancy diagnosis was done by per rectal examination after 60 days of the service.

RESULTS AND DISCUSSION

From the table it is revealed that 50.00 per cent buffaloes of group A, 100.00 per cent buffaloes of group B and 83.33 per cent buffaloes of group C exhibited estrus while all the buffaloes in control group D failed to exhibit estrus (Table).

Table : Response to various hormone protocols in different treatment groups of buffaloes

Parameters	Treatment groups			Control group
	Group A (n = 6)	Group B (n = 6)	Group C (n = 6)	Group D (n = 6)
Estrus induction efficacy (%)	50.00 (3)	100.00 (6)	83.33 (5)	0.00 (0)
Estrus induction interval (hrs) from the last parentral administration of the drug	18.67±3.18 (3)	12.75±1.86 (6)	15.60±2.35 (5)	- (0)
Conception rate (%)	33.3 (1)	50.00 (3)	60.00 (3)	0.00 (0)

Figures in parenthesis indicate number of buffaloes.

The higher response observed in group B and C is in close agreement with Mohan *et al.* (2010) and Ali and Fahmi (2007) respectively, while a lower response in group A supports the findings of Brar *et al.* (2005). The possible explanation for higher estrus induction response in group B and C in comparision with group A may be due to addition of estrogen in Heat Synch and CIDR hormone protocols which has a direct effect on hypothalamus in inducing estrus (Cavalieri and Fitzpatrick, 1995).

The estrus induction intervals exhibited by buffaloes were 13-24, 7-19 and 10-23 hours with a mean post treatment estrus induction intervals of 18.67 ± 3.18, 12.75 ± 1.86 and 15.60 ± 2.35 hours from the last parentral administration of the drug in group A, B and C, respectively. The variation in the time required for induction of estrus in three groups was found statistically non-significant. The shorter post treatment estrus induction interval obtained in group B and C may again be attributed to the addition of estrogen in Heat Synch and CIDR hormone protocols. Estradiol valerate has been observed to be luteolytic when given during the mid-luteal phase of an estrus cycle (Hansel *et al.,* 1973).

The conception rates obtained in induced estrus buffaloes after natural service in group A, B, and C were 33.33, 50.00 and 60.00 per cent, respectively. The present findings are in accordance with earlier studies conducted by various workers. Brar *et al.* (2005) observed 67 per cent conception rate in sub-estrus buffaloes while Ali and Fahmi (2007) recorded 60 per cent conception rate in cyclic buffaloes using CIDR based hormone protocols. Mohan *et al*. (2010) reported 40 per cent conception rate in winter season for buffaloes treated with heat synch protocol. Similar results were also reported by Cerri *et al.* (2004) and Stevenson and Pathak (2005), The conception rate was the lowest in group A which supports the results of Ali and Fahmi (2007) and Fallah Rad and Ajam (2008). Improved conception rates in CIDR protocol relative to the Ovsynch protocol may be due to the prevention of early maturation of follicles by CIDR treatment as observed in buffaloes treated with the Ovsynch protocol, by maintaining elevated blood progesterone concentrations until PGF2α administration (Colazo *et al.,* 2004).

REFERENCES

Ali, A and Fahmi, S. (2007). Theiogenology, **68:** 23-28.

Brar, P.S., Nanda, A.S., Daderwal, D. and Randhawa, B. (2005). In Proc. 21st Annual Convention of ISSAR and National Symposium. SKUAST-Jammu, India.

Cavalieri J. and L.A. Fitzpatrick (1995).. Aust. Vet. J., **72:** 177-182.

Cerri, R.L., J.E. Santos, S.O. Juchem, K.N. Galvao and R.C. Chebel (2004). J. Daiy Sci., **87(11):** 3704-3715.

Colazoa, M.G., J.P. Kastelicb, P.R. Whittakera, Q.A. Gavagaa, R. Wildeb and R. J. Mapletofta (2004).. Anim. Reprod. Sci., **81:** 25-34.

El-Wishy, A. (2007). Anim. Reprod. Sci., **97(3):**216-236

Fallah Rad, A.H. and G. Ajam (2008). J. Anim. and Vet. Advances., **7:** 312-315.

Hansel, W., P. W. Concannon and J.H. Lukaszewska (1973).. Biol. Reprod., **8:** 222-245.

Lucy, M.C., M.J. Billings, J.V. Yelich and H.D. Haffs (2001).. J. Anim. Sci., **79:** 982.

Mohan, K., V. Kumar, M. Sarkar and B.S. Prakash (2010). Trop. Anim. Hlth. Product., **42 (1):** 21-26.

Pursley, J.R., M.O. Mee and W.C. Wiltbank (1995). Theriogenoloy, **44:** 915-923

Stevenson, J.S. and Pathak, A.P. (2005). J. Dairy Sci., **88(1):** 399-405.

❑