IJBPAS, July, 2015, 4(7): 4545-4550

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

ANESTRUS BUFFALO TREATMENT SUCCESS RATE USING GNRH

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ABSTRACT

Anestrus is the most important cause of poor reproductive performance in buffaloes. Therefore, present study was conducted to evaluate GnRH protocol on estrous expression and pregnancy rate in anestrous buffaloes under field conditions.The study population was comprised of 30 multiparous buffaloes with more than 150 days in milk. Buffaloes were allocated into the 2 groups of 15 in each; group 1 received Vetarolin at the dose of 5ml and group 2 received the same drug at the dose of 10 ml by IM route. Estrous signs were assayed 10days after administration of drug. The buffalos the showed no signs of estrous were taken under sonography to ensure the existence of ovulation, CL and ovarian activity. The results showed that the estrus response differed significantly after GnRH ($P<0.05$). In group 1, of 15 experimental animals, 4 of them (26.66%) showed ovarian activity in which 3 of them (20%) showed estrous signs and only 1 of them (6.66%) showed CL. In group 2, of 15 experimental animals, 7 of them (46.66%) showed ovarian activity in which 5 of them (33.33%) showed estrous signs and only 2 of them (13.33%) showed CL.In conclusion, a single injection of GnRH is more effective for the treatment of anestrus in buffaloes. Improvement of nutritional conditions also could enhance the treatment effects on anestrus in buffaloes.

Keywords: Anestrus, Buffalo, GnRH, Pregnancy

INTRODUCTION

Buffalo rearing is very important for rural development in many countries including Iran. Productivity of buffaloes which depends largely on age of first calving and calving intervals is still low. There is a plenty of room for increasing productivity of buffaloes through improvement of reproductive performance.

Anestrus is the most important cause of poor reproductive performance in buffaloes

(Das and Khan, 2010; Devkota et al., 2012). It is also a big reproductive problem in modern dairy cow production worldwide (McDougall, 2010; Peter et al., 2009). Dairy herds are regularly visited by veterinarians at two to four week intervals, and cows with anestrus are treated with hormones for synchronization of estrus and/or ovulation without delay. Regular reproductive examination of buffaloes at an appropriate interval is practically difficult in Iran due to constraints of expense and availability of veterinary service in rural areas. For many marginal buffalo farms, infertility camps which are organized once a year or at a longer interval mainly by district livestock offices, veterinary schools, dairy cooperatives and some other organizations are the occasions to have their buffaloes examined and treated by veterinarians. Anestrus buffaloes are conventionally treated with vitamin-mineral mixture (Vit-M) supplements with the variable effects (Sahand Nakao, 2010). Several methods of estrus and ovulation induction using hormones have been recently developed in buffaloes for treating anestrus and improving reproductive efficiency (Baruselli, 2001; De Rensisand Lopez-Gatius, 2007). More veterinarians have started to use hormones, such as $PGF_{2\alpha}$ and GnRH, for the treatment of anestrus in buffaloes in Iran. The effectiveness of these treatments under the field conditions, however, is yet to be described, since only limited information on the effectiveness of different methods of treatment for anestrus in buffaloes has been available. This is due to the fact that no follow up examination of animals has been conducted after treatment at the infertility camps. Therefore, present study was conducted to evaluate GnRH protocol on estrous expression and pregnancy rate in anestrous buffaloes under field conditions.

MATERIALS AND METHODS

The study was conducted in small herds in the periphery of District Tabriz during the year 2013. The study population was comprised of 30 multiparous buffaloes with more than 150 days in milk, moderate body condition scores (2.5-3.5), 4-6 years age and 400-550 kg weight. Rectal palpation examination and previous calving history revealed normality of involved buffaloes. Anestrous condition was determined by no palpable CL on ovaries and absence of estrus signs after calving. Moreover, blood samples were collected from the buffaloes before the start of trial to measure the progesterone concentration as an index of ovarian activity.

Buffaloes were allocated into the 2 groups of 15 in each; group 1 received Vetarolin at the dose of 5ml and group 2 received the same drug at the dose of 10 ml by IM route.

Estrous signs were assayed 10days after administration of drug. The buffalos the showed no signs of estrous were taken under sonography to ensure the existence of ovulation, CL and ovarian activity.

RESULTS

The effect of GnRH on estrus response, ovulation and pregnancy rate in anestrous buffaloes is presented in Table 1. The results showed that the estrus response differed significantly after GnRH ($P<0.05$). In group 1, of 15 experimental animals, 4 of them (26.66%) showed ovarian activity in which 3 of them (20%) showed estrous signs and only 1 of them (6.66%) showed CL. In group 2, of 15 experimental animals, 7 of them (46.66%) showed ovarian activity in which 5 of them (33.33%) showed estrous signs and only 2 of them (13.33%) showed CL.

Table 1: effect of GnRH protocol on estrus response and pregnancy rate in anestrous buffaloes

Event		GnRH
Ovarian activity	Group 1	26.66%
	Group 2	46.66%
Estrous signs	Group 1	20%
	Group 2	33.33%
CL	Group 1	6.66%
	Group 2	13.33%

DISCUSSION AND CONCLUSION

The results obtained in the present field study showed that an administration of GnRH for the treatment of anestrus buffaloes showed a tendency to be more effective. A number of studies have reported that buffaloes with a CL respond well to GnRH treatment (Chohan, 1998; Devkotaand Bohara, 2009; Sahand Nakao, 2010). The effect of treatment of anestrus buffaloes with GnRH obtained in this study was closer to the results reported in previous studies. One report from Nepal (Sahand Nakao, 2010) showed that treatment of anestrus buffaloes with a CL using $PGF_{2\alpha}$ resulted in higher pregnancy rates within one month after treatment than treatment with a Vit-M supplement.

Treatment of anestrus with inactive ovaries using GnRH show beneficial effects in both groups. Administration of GnRH to anestrus buffaloes with inactive ovaries has been shown to produce a variable response (Barile, 2005; Rao and Venkatramiah, 1991). In cattle, those with DFs 10 mm in diameter or larger can respond to LH with ovulation (Sartori et al., 2001). The presence of a DF at the time of GnRH treatment is also a pre-determining factor for ovulation induction in buffaloes

(Baruselli, 2001; De Rensis and Lopez-Gatius, 2007). The success of GnRH treatment, therefore, depends largely on the timing of GnRH injection during a follicular wave. There will be no response of buffaloes with inactive ovaries after GnRH, if the animals do not have healthy DF with the adequate size. In their earlier study on the treatment of inactive ovaries in buffaloes, Sah and Nakao, (2010) gave GnRH to anestrus buffaloes having DF 10 to 12 mm in diameter or larger, which were 6 months postpartum or later. They found that the GnRH-treated buffaloes showed a significantly higher pregnancy rate within one month after treatment. In the present study, GnRH was injected to anestrus buffaloes regardless of the presence and size of DF. This might have attributed to the poor response of the cases after GnRH treatment. To increase conception rate in non-cycling anestrus buffaloes after treatment, progesterone supplementation for one week in combination with some other hormone treatments, such as Ovsynch (De Rensis et al., 2005), was shown to be effective. This has yet to be applied to buffaloes in Nepal.

Nutrition is one of the most important factors influencing reproductive performance in cattle (Butler, 2000). Several factors including nutrition affect the response of buffaloes with anestrus to treatment (Das and Khan, 2010). It has been reported that BCS affects the response of anestrus dairy cows after treatment and the success of timed AI after ovulation synchronization in beef cattle.

It is worthy to know that 29.4, 23.5 and 47% of the anestrus buffaloes has subnormal blood levels of Ca, iP and TP, respectively. Deficiency of blood Ca and TP was associated with a lower pregnancy rate or a tendency for a lower pregnancy rate, respectively. It is known that Ca is involved in steroidogenesis and ovulation (Hurley and Doane, 1989), and its deficiency might have caused hormonal incompetence or ovulation failure resulting in pregnancy failure. Protein deficiency may adversely affect reproductive function via a decrease in IGF-1 release in response to exogenous growth hormone. It was reported that true anestrus buffaloes showed lower levels of serum protein as compared to normal cyclic buffaloes. In conclusion, a single injection of GnRH is more effective for the treatment of anestrus in buffaloes. Improvement of nutritional conditions also could enhance the treatment effects on anestrus in buffaloes.

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