EFFICACY OF COX-2 INHIBITOR ON CONCEPTION RATE IN BUFFALOES

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ABSTRACT

The present research was carried out to evaluate the efficacy of COX-2 inhibitor (flunixin meglumine) on conception rate in estrous synchronized buffaloes. Twenty four subestrous buffaloes which were non-exhibiting estrous symptom even 90 days after calving were randomly divided into two groups (n=12). The selected buffaloes from both the groups were synchronized with Ovsynch protocol, while buffaloes from Group-II were additionally administered with injection flunixin meglumine @ 1.1 mg /kg b. wt. intramuscularly on day 15 post insemination. The first service conception rate was 41.66 and 66.66 per cent in Group-I and Group-II, respectively.

KEY WORDS: Ovsynch, Estrous synchronization, Conception rate

Ovsynch synchronization protocol recently developed, consist of combination of GnRH and prostaglandin F2 alpha. Synchronization of estrous as well ovulation occurs in Ovsynch protocol (Roy and Praksh, 2009). The lower conception rates in estrous synchronized buffaloes with Ovsynch protocol were reported by Ghuman *et al.* (2009) and Karen and Darwish, (2010). The suppression of luteolytic mechanism during post- insemination critical periods (d 15-17) through various approaches is a possible strategy for improving conception rates in dairy animals (Dhaliwal, 2008).

Flunixin meglumine is the strong non steroidal anti-inflammatory drug (NSAID) that inhibit the activity of enzyme prostaglandin H synthase-2 (PGHS-2) and the conversion of arachnidonic acid to $PGF_{2\alpha}$ (Anderson *et al.*,1990). Modulation of COX-2 pathway with respect to prostaglandin secretion and its mediated luteal function will be helpful in embryo survival thus maintenance of pregnancy in farm animals. The drug had a similar beneficial effect when it is administered just before stress that would have induced embryonic death at 14 days after mating (Merrill *et al.,* 2003). In the view of above-mentioned facts and the paucity of work in buffaloes the present research was planned to study the efficacy COX-2 inhibitor on conception rate in estrous synchronized buffaloes.

The present experiment was conducted in Nandapur Village, Tal. Kalamnuri, Dist. Hingoli (MS) on twenty four subestrous buffaloes which were non-exhibiting estrous symptom even 90 days after calving and were of two to five lactations. The animals devoid of any reproductive abnormality as well as infection were randomly selected on the basis of history and gynaeco-clinical examinations. They were divided into two groups containing twelve buffaloes in each group (n=12).

The selected buffaloes from Group-I (Ovsynch) were given pre-synchronization medicinal treatment like injection ivermectin 10 mg per ml (Hitek) @ 1 ml per 50 kg body wt. s/c., injection sodium acid phosphate 40.3 % w/v (Urimin) 10 ml i/m, injection vitamin A 2,50,000 I.

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U., vitamin D3 25,000 I.U and vitamin E 100 I.U. per ml (Intavita) 5 ml i/m and chelated mineral mixture (Agrimin forte) @ 50gm orally daily. One week after this treatment, buffaloes from this group were checked per rectally and cyclical buffaloes were treated with injection buserelin acetate (Receptal) 2.5 ml on day first, Injection cloprostenol sodium (Cyclix) 2 ml on day 7 and injection buserelin acetate (Receptal) 2.5 ml on day 9. The buffaloes from Group-II (Ovsynch plus flunixin meglumine) were given similar treatment as like to Group-I while additional injection flunixin meglumine 1.1 mg kg intramuscularly was administered on day fifteen and sixteen after insemination. The buffaloes were observed for estrous exhibition by visual observations in the morning and evening. The timed AI was carried out 16 - 20 h after the second dose of injection buserelin acetate (Receptal) with French mini frozen straw of Murrah breed. The pregnancy diagnoses were carried out by per rectal (P/R) examination after two months. The data was analyzed by chi-square test described by Snedecor and Cochran (1994).

The first service conception rate in Group-I and II was 41.66 (5/12) and 66.66(8/12) per cent, respectively. The conception rates were statistically not different among the two treated groups.

The present finding regarding conception rate in Group-II (Ovsynch plus flunixin meglumine) is in agreement with Merrill *et al.* (2003) who achieved 63 per cent conception rate in heifers with flunixin meglumine treatment on 14 day post AI while 54 per cent in non treated heifers synchronized with CIDR. Ladol *et al.* (2010) reported 60 per cent conception rate in repeat breeding buffaloes treated with meloxicam @ 0.5 mg/kg, b. wt, intramuscularly on days 13, 14 and 15 post AI whereas it was 25 per cent only in control Rabagilo *et al.* (2010) reported 59.5 per cent conception rate in flunixin meglumine treated heifers synchronized with Cosynch + CIDR protocol and 59.4 per cent in untreated controls.

It has been suggested that $PGF_{2\alpha}$ is most effective as a luteolytic factor when it reaches the corpus luteum through blood vessels (Hayashi and Miyamoto, 1999). Thatcher *et al.* (1997) reported that the presence of the conceptus in the uterus of pregnant animals induces a number of complex metabolic reactions which signal the mother for the need to sustain pregnancy by keeping proper levels of progesterone.

The administration of prostaglandin synthesis inhibitors is considered a pharmacological tool to prevent the endogenous release of these eicosanoids during the maternal recognition of pregnancy (Scenna *et al.*, 2004). Shukla *et al.* (2011) reported the effect of COX-2 inhibitor (Meloxicam) @ 0.5 mg/kg, b. wt. once daily on day 15 and 16 of estrous cycle and observed the less level of prostaglandin $F_{2\alpha}$ in uterine flushing on day 16 and 17 of estrous cycle in buffaloes indicating that COX-2 inhibitor postpone the luteolysis in buffaloes thus enhancing embryonic survival and maintenance of pregnancy in farm animals.

The processes of maternal recognition of pregnancy induced by IFN-t are not initiated at the appropriate time in poorly developed embryos. The COX-2 inhibitors cause inhibitory effect on the synthesis of $PGF_{2\alpha}$ that delay its pulsatile secretion. Such a delay would provide extra time for a slowly developing but viable conceptus to secrete sufficient IFN-t to inhibit a luteolytic secretion of $PGF_{2\alpha}$. Although flunixin meglumine is relatively expensive but improves the pregnancy rate.

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