FERTILITY IMPROVEMENT BY HORMONAL THERAPIES IN REPEAT BREEDING COWS

R. M. MORE, A. D. PATIL[1], U. B. KUMBHAR AND R. R. MUGALE

Department of Animal Reproduction, Gynaecology & Obstetrics, College of Veterinary and Animal Sciences, MAFSU, Udgir, Dist. Latur – 413517 (Maharashtra)

Received : 05.09.2012 Accepted : 25.04.2013

ABSTRACT

The present experiment was under taken to study the efficacy of progesterone and GnRH in repeat breeding Deoni cows. Thirty two Deoni cows were selected and divided into four groups. Each group comprises eight animals. Group I cows were administered inj. Hydroxyprogesterone @ 250 mg on 5th day of artificial insemination, Group II cows were administered inj. GnRH @ 10 mcg at the time of artificial insemination, Group III cows were administered inj. GnRH @ 10 mcg on 5th day of artificial insemination and Group IV remains untreated served as control. The conception rate of groups I, II, III and IV was 50.00, 75.00, 62.50 and 25 per cent, respectively. The conception rate of group II was higher than that of group I and group III. Thus the study reveals that the administration of GnRH at the time of artificial insemination improves the conception rate in repeat breeder Deoni cows.

Key word: Deoni cow, repeat breeding, GnRH, progesterone,

Repeat breeding is one of the major gynaecological problem affecting reproductive efficiency and economy of milk production in dairy animals. The cause of repeat breeding may originate either during early stages of follicular maturation and / or during preovulatory period (Bage *et al*, 2002). Progesterone is responsible for maintaining a quisient favorable environment in the uterus for embryo development. Higher embryonic mortality has been reported to be a major cause of repeat breeding than the fertilization failure. Endogenous insufficiency of progesterone may be one of the reasons for low conception rate in cattle. GnRH therapy at the time of insemination increase the pregnancy rate by 5 to 6 per cent in cattle and reduce embryonic death.

(*Part of M. V. Sc. thesis submitted by first author to Maharashtra Animal & Fishery Sciences University, Nagpur)

[1]Corresponding author: Assistant Professor, Department of ARGO, COVAS, MAFSU, Udgir – 413 517 (MS) Email:rupanil.1@rediffmail.com

Thirty two repeat breeding pluriparous Deoni cows were selected after clinical evaluation. They were screened by rectal palpation for detection of any uterine pathology, anatomical abnormalities, adhesions, etc. After thorough examinations, normal repeat breeder Deoni cows were selected.

The cervico-vaginal mucous from estrous cows were collected aseptically in a test tube for white side test. The cervico-vaginal mucus was mixed with equal volume of 5 per cent sodium hydroxide solution and heated up to the boiling point in a water bath for two minutes as described by Pateria and Rawal (1990). Positive samples developed yellow colour after boiling. The intensity of colour development as light yellow and deep yellow was indicative of mild, moderate and severe uterine infection, respectively and the negative samples showed no change in colour and continued to be clear and colorless.

In group I (n=8) cows were injected Hydroxyprogesterone caproate (Inj. Progesterone) @ 250 mg intramuscularly on 5th day of artificial insemination, Group II (n=8), cows were injected GnRH

@ 10 mcg intramuscularly at the time of artificial insemination, Group III (n=8), cows were injected GnRH @ 10 mcg intramuscularly on 5th day after artificial insemination and Group IV (n=8), cows were inseminated during estrus without any treatment.

Cows from all four groups were inseminated at standing estrus using frozen thawed Deoni breeding bull semen. Pregnancy diagnosis was done 60 days post AI by rectal palpation.

The fifty percent conception rate for group I in this finding were in close agreement with Singh *et al.* (2002) and Kavani *et al.* (2008). Corpus luteum dysfunction decreases progesterone concentrations and then negatively affects fertility. It has been noted that the administration of progesterone between 3 to 5 days post insemination improves conception rates in repeat breeding cows. Kimura *et al.* (1987) noted that the delayed formation of CL induces estrus repetition, and suggested progesterone therapy between 4 to 5th day post insemination.

In group II the conception rate was 75 percent. Roy *et al.* (1995) and Holtemoller (1981) reported 73.60 and 71.00 per cent respectively. GnRH administration during estrus may affect the time of ovulation, fertilization rate, corpus luteum development, progesterone secretion and embryo survival. Asynchrony in the time between LH surge and ovulation or an insufficient LH surge will stimulate a series of events that culminate anovulation or may end up in delayed ovulation in sub-fertile cow (Maurer and Echternkamp, 1982). Therefore, exogenous GnRH therapy at the onset of estrus may co-ordinate the events ending up with ovulation thereby increasing fertility rate.

In group III cows were administered inj. GnRH on 5th day of A.I. and out of eight animals five animals were pregnant (62.50%) and 3 animals non pregnant and returned to estrus at regular interval. Mandal *et al.* (2009) observed higher conception rate (87.50 %) as compare to present study and Prabaharan *et al.* (2009) reported lower conception rate of 23.07%. Dhaliwal (2008) reported increased pregnancy rate by 45.00 per cent in cows treated with GnRH on the day of 5th or 6th of estrus. Treatment with GnRH and its analogue in cattle causes acute secretions of luteinizing hormone and follicular stimulating hormone such that concentration in peripheral blood is increased for 3 - 5 hours. GnRH induced alteration in the function of corpus luteum or follicular dynamics appears to be indirect through alteration in luteinizing hormone and follicular hormone secretions (Thatcher *et al.*, 1993). In group IV the conception rate was 25 percent. Thus the present study reflects that the inj. GnRH administered at the time of artificial insemination was beneficial to achieve the higher conception rate.

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