

## **HYDROXY PROGESTERONE, HUMAN CHRONIC GONADOTROPIN AND GNRH ANALOGUE ON FERTILITY OF REPEAT BREEDING DAIRY CATTLE IN THENI DISTRICT OF TAMILNADU**

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**Abstract:** The objective of the study was to evaluate the efficacy of different hormonal treatment regimens in repeat breeding dairy cattle of Theni district. The study was conducted in 60 apparently healthy crossbred repeat breeding dairy cows and divided in to four treatment groups with 15 animals each. Treatment group 1 was administered with 2 ml of hydroxy progesterone intra muscularly on 4th day of estrum after post insemination. Treatment groups 2 and 3 were administered with 1500 IU of human chronic gonadotropin and 10 mg GnRH analogue respectively intra muscularly, immediately after first insemination. Treatment group 4 was inseminated without any hormone therapy and kept as control group. All treatment groups were re-inseminated at 12 hour interval after the first insemination. Pregnancy diagnosis was carried out in all treatment groups at 60 days post AI by rectal examination. Analysis of data showed that, the duration of estrum in treatment groups was significantly less than control group. The conception rate in treatment groups 1 to 4 was 46.67, 73.33, 60.00 and 30.00 per cent respectively. A maximum of 73.33 per cent conception rate was observed in treatment group 2. All groups were re-inseminated at 12 hrs interval to increase the conception rate in repeat breeding dairy cows with prolonged oestrus. Thus the present study reveals that, the Inj. hCG administered at the time of artificial insemination positively improves the conception rate in repeat breeding dairy cows.

**Keywords:** Repeat Breeder Dairy Cattle; hormonal Treatment Regimens; Theni District of Tamilnadu.

### **Introduction**

Repeat breeding has been considered as one of the important gynaecological disorder in dairy cattle and the incidence rate are varies among different management systems, environments and regions. The cause of repeat breeding may originate either during early stages of follicular maturation and /or during pre ovulatory period (Bage *et al.*, 2002). Progesterone is responsible for maintaining a quiescent favourable environment in the uterus and it prevents the early embryonic mortality, which results in improved conception rate. GnRH or human Chorionic gonadotropin (hCG) administration at the time of insemination

favours LH surge, which results in improved conception rate. In this paper, different hormonal therapeutic approaches viz, Hydroxy progesterone, human chorionic gonadotropin and GnRH analogue were used, following artificial insemination in repeat breeding dairy cattle and their efficacy and pregnancy rate were compared.

### **MATERIALS AND METHODS**

The study was conducted in 60 apparently healthy crossbred repeat breeding dairy cows which showed prolonged estrus behaviour, normal estrual discharge, no uterine pathology, no anatomical abnormalities and not conceived in 3 successful inseminations. Selected dairy cows were randomly divided in to four treatment groups with 15 animals each. Treatment group 1 was administered 2 ml of hydroxyl progesterone (Duroprogen–Vetcare Pvt Ltd) intra muscularly on 4th day of estrum, post insemination. Treatment groups 2 and 3 were administered intra muscularly 1500 IU human chronic gonadotrophin (Chorulon- Intervet Pvt Ltd) and 10 mg GnRH analogue (Buserelin Acetate – Receptal - Intervet Pvt Ltd) respectively, immediately after first insemination. The treatment group 4 was inseminated without any hormonal therapy and was kept as control. All 4 treatment groups were re-inseminated at 12 hours interval after first insemination. Pregnancy diagnosis was carried out in all treatment groups at 60 days of post AI by rectal examination and the data obtained were subjected to statistical analysis.

### **RESULTS AND DISCUSSION**

The mean duration of estrum of all treatment groups before hormonal therapy was  $75.00 \pm 3.17$ ,  $70.12 \pm 2.76$ ,  $72.00 \pm 1.76$  and  $74.13 \pm 3.10$  hours respectively and mean duration of estrum after treatment was  $48.21 \pm 3.12$ ,  $49.00 \pm 1.76$ ,  $48.13 \pm 3.12$ , and  $73.36 \pm 3.14$  hours respectively. Analysis of data showed that, the duration of estrum in treatment groups were significantly lower than control group. Mathew *et al.* (2013) reported that treatment with hCG or GnRH analogue at the time of insemination affects the duration of estrum in dairy animals.

The conception rate in treatment groups 1 to 4 was 46.67, 73.33, 60.00 and 30.00 per cent respectively. A maximum of 73.33 per cent conception rate was observed in treatment group 2 repeat breeding dairy cows. The conception rate of group 1 was 46.67 per cent. The result is in close agreement with Singh *et al.* (2002); Kavani *et al.* (2008) and Ferguson *et al.* (2012) who reported. Improper function of corpus luteum decreases progesterone concentrations which negatively affect fertility. It has been noted that the administration of progesterone on 4<sup>th</sup> day of post insemination increases the conception rates in repeat breeding

dairy cows. Kimura *et al.* (1987) quoted that delayed formation of corpus luteum induces estrus repetition and suggested progesterone therapy between 4 to 5<sup>th</sup> day post insemination.

The conception rate of group 2 was 73.33 per cent. Mathew *et al.* (2013) reported that 75 per cent conception rate in repeat breeders treated with 1500 IU hCG, receiving two inseminations. Patel *et al.* (2010) reported 83.3 per cent conception rate in hCG treated (1500 IU) repeat breeder. The At the time of insemination, administration of human placental extract stimulates LH secretion favouring ovulation increases the conception rate in repeat breeding cattle (Tamuli *et al.*, 2002).

The conception rate of group 3 was 60.00 per cent. The finding was in close agreement with Kharche and Srivastara (2007) where the same was 58 per cent. More *et al.* (2012); Roy *et al.* (1995) and Holtemoller (1981) observed 75.00, 73.60 and 71.00 per cent conception rate respectively as compared to the present study. Tanabe *et al.* (1994) did not find any difference on treatment with GnRH on conception.

The conception rate of control group 30.00 per cent. Hernandez Ceron *et al.* (1993) observed that conception rate of repeat breeders was 34.60 per cent with double insemination.

#### **SUMMARY AND CONCLUSION**

The study was carried out to find out the efficacy of progesterone, hCG and GnRH analogue for increasing the conception rate in 60 apparently healthy crossbred dairy cows with prolonged oestrus. A higher overall conception rate of 73.33 per cent was obtained in repeat breeder dairy cows treated with hCG compared to GnRH analogue given immediately after insemination (60.00%), progesterone on 4th day post insemination (46.67%); and control with double insemination (30.00%) respectively. Thus the present study reflects that the Inj. hCG administered at the time of artificial insemination was beneficial to achieve higher conception rate in repeat breeder dairy cows.

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