PROGESTERONE PROFILE IN POSTPARTUM LACTATING ONGOLE (ZEBU) COWS

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ABSTRACT

Serum progesterone (P_4) concentrations were estimated and correlated with postpartum ovarian activity in 6 lactating Ongole cows. The P_4 concentration was low initially (0.33 to 1.13 ng / ml), with a gradual increase up to day 25 (1.13 to 1.85 ng / ml) and thereafter the concentration was associated with ovarian activity in cyclic cows (1.05 to 0.75 ng / ml). In an acyclic cow continuously low progesterone levels were observed. During standing estrus P_4 levels varied significantly (P> 0.05) with an increase up to day 17 of the cycle.

Key words: Progesterone, Ongole, Postpartum, Estrus

Progesterone profile is capable of providing an objective description of the estrous cycles as well as revealing disturbances. P_4 concentration was lower (o .1 ng / ml) during postpartum samples (Humphrey et al., 1983). The mean levels of serum P_4 were found to be ranging from 0.23 to 5.92 ng / ml in a normal fertile cow (Pargaonkar and Kaikini 989). Dimmick *et al.* (1991) reported an increase in P_4 concentration preceded by a reduced follicle diameter. In Nellore (Ongole in India) cows, concentration in blood increased steadily from second day post ovulation and reached maximum by day 16 (Figueiredo *et al.,* 1997). Similar findings were also observed by Agrawal *et al.,* 1997 in Hariana (Zebu) cows. The present study was conducted with the aim of evaluating the ovarian activity and hormonal profile (progesterone) in postpartum lactating cows.

Blood samples were collected in six cows from the day of calving to day 60 at 5 days interval and in eight cows during first postpartum estrous cycle (on day 0, 5, 10, 17, and 25 after AI) with rectal palpation for ovarian activity. The blood samples were allowed to clot for 30-60 minutes at 15 to 20°C and serum was separated by centrifuging the clotted blood at 3000 rpm for 15 minutes (Barros *et al* 2000) and stored at -20°C in plastic bullets until assay. The serum P_4 concentration was estimated by ELISA technique using progesterone kits (Microwell TM, progesterone EIA, Lot No. 104296 A) syntron Bio research Inc. The sensitivity of the test was 0.1 ng/ml Intra and Inter assay coefficient of variation were 7.3 and 7.5% respectively.

In the present investigation, the progesterone levels during postpartum period in lactating Ongole cows are presented in table. All the cows showed low levels of progesterone on the day of calving (0.33 ng/ ml). There was a steady increase to 1.85 ng/ml up to day 25, which could be due to silent ovulations during postpartum period (Morrow et al., 1966; Rajamahendran and Taylor, 1990). After this initial increase, the Progesterone declined to 0.65 & 0.75 ng / ml on days 40 & 45 respectively, in all cows with observed estrus and palpable follicle on the ovaries. The progesterone concentration varied significantly ($p < 0.05$) between days. During first postpartum estrous cycle, the mean serum P_4 levels on the day of estrus, day 10, day 17, and 25(after AI) was 0.55(0.4-0.8), 1.91 (1.0-2.4), 2.13 + 0.29 (1.0-3.4)and 2.25 (0.7-4.2) ng/ml respectively. The P_4 concentration significantly increased from day 0 to 17. The serum P_4 level observed in this study is closer to the findings of Figueiredo et al. 1997 in Nellore cows and lower than findings of Ruiz - Cortes and Olivera Angel (1999) who reported the minimum and maximum as 1 and 13.5 ng/ml in Zebu cows. The significant increase in serum P_4 concentration during estrous cycle from the day of estrus to day 17 (0.4- 4.2 ng / ml) was due to Corpus luteum formation (Hansel *et al.,* 1973), which could be palpable from day 10 to 15 during the cycle.

This article is based on the Ph.D. work done by the first author on "Hormonal induction of estrus and Ovulation in postpartum lactating Ongole cows".

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In conclusion these observation suggest that the P4 concentration was low on the day of calving followed by a steady increase up to day 25 with a steady decline to >1ng/ml at which the cows showed standing estrous around day 40 - 45 postpartum.

Table:1 serum progesterone concentration (ng / ml) in lactating postpartum during Ongole cows (n= 6)

Post partum day	P_4 concentration (Mean + SE ng / ml)	P_4 range (ng / ml)
On the day of calving	0.33 ± 0.04^{c}	0.2 – 0.4
5	0.40 ± 0.05^{c}	0.2 – 0.6
10	0.65 ± 0.22^{ab}	0.4 – 1.6
15	1.13 ± 0.25^{ab}	0.7 – 2.2
20	1.58 ± 0.32^{a}	0.5 – 2.5
25	1.85 ± 0.52^{a}	0.6 – 4.0
30	1.40 ± 0.25^{a}	0.6 – 4.0
35	0.82 ± 0.04^{a}	0.7 – 1.0
40	0.65 ± 0.16^{a}	0.4 – 1.1
45	0.75 ± 0.05^{a}	0.7 – 0.8

Means with different superscripts differ significantly ($P < 0.05$)

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