



# POSTPARTUM OVARIAN CHANGES AND PROGESTERONE PROFILE IN MALABARI CROSSBRED DOES

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## Abstract

*The present study was conducted with the objective to determine the influence of follicular size and progesterone profile on the reproductive outcome of Malabari crossbred does. A total of 10 does were selected, the does were weaned on day 30 post kidding and they were regularly followed up for the display of first postpartum oestrus. Ultrasonographic studies were carried out on day 31 postpartum and on the day of observed oestrus. The serum progesterone profile was estimated on the day of observed oestrus, day 10 and day 21 post-insemination. A comparative study was made between conceived and non-conceived does and it was concluded that the does that had a follicular diameter of > 0.7 cm with a low progesterone level (less than 1ng/ml) at the time of observed oestrus had a higher chance of conception.*

**Keywords:** Follicle size, progesterone, conception, Malabari-crossbred does

The early re-establishment of cyclic ovarian function and estrous activity is essential for maintaining an acceptable kidding interval in dairy goats. Goats are often in negative energy

balance during the first month of lactation and lead to delay in the onset of ovarian activity. Prolonged postpartum luteal activity might arise as a result of the high prolactin hormone observed in the first few weeks postpartum (Lamming *et al.*, 1974). The transrectal ultrasonography was used to study the ovarian follicular growth, resumption of ovarian activity and to study the uterine involution throughout the postpartum period in farm animals (Kamimura *et al.* 1993a).

The complete uterine involution occurred mainly with the first increase of progesterone levels in ewes (Rubianes and Ungerfeld, 1993). The blood concentration of progesterone was a good indicator of luteal function during the postpartum period and systemic progesterone concentrations greater than 1 ng/mL were associated with presence of a corpus luteum or a luteinized follicle (Berardinelli *et al.*, 2001). Hence, the presence study was carried out to study the onset of ovarian cyclical changes by ultrasonography and serum progesterone profile during the postpartum period in Malabari crossbred does in relation to conception rate.

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## Materials and Methods

The experiment was conducted at the Instructional Sheep and Goat Farm, KVASU, located at Mannuthy. Apparently, ten healthy goats that had kidded at least twice were selected for the study. The animals were weaned on day 30 postpartum and the does were monitored regularly for the display of the first postpartum oestrus. Transrectal ultrasonography was performed on day 31 postpartum and on the day of observed oestrus. Blood samples were collected on the day of observed oestrus, day 10 and day 21 post-insemination for progesterone estimation. The serum was separated and stored at  $-20^{\circ}\text{C}$  and progesterone concentration was estimated with ELISA (Pathozyme). All the animals were inseminated with chilled semen. The pregnancy diagnosis in all the does were carried out on day 25 post-insemination. All the data were tabulated and statistically analyzed as per standard statistical procedures (Snedecor and Cochran, 1994).

## Result and Discussion

In the present study, it was observed that the first onset of oestrus after weaning among Malabari crossbred does varied from day 48 to day 72 postpartum. The mean duration of oestrus was  $22.67 \pm 1.33$  h. On ultrasonography, the average length and breadth of right and left ovaries were  $1.42 \pm 0.03$  cm and  $1.05 \pm 0.02$  cm,  $1.55 \pm 0.04$  cm and  $1.05 \pm 0.03$  cm respectively. The ovarian follicles appeared as a black

anechoic circle with hyperechoic boundaries, on ultrasonography. The follicle size observed on the day of treatment and at observed oestrus is shown in table 1.

A conception rate of 30 per cent was obtained in the present study. With regard to the follicle measurement on the day of observed oestrus, a significant difference ( $P < 0.01$ ) was found between conceived and non-conceived. The result obtained was found to be in agreement with Holtz *et al.* (2008) who opined that does possessing follicles not larger than 7 mm on the day before fixed-time insemination, had a lower chance to conceive.

The serum progesterone levels obtained in the present study is shown in Table 2. In comparison to the progesterone profile between conceived and non conceived animals, a significant difference ( $P < 0.05$ ) was obtained on the day of observed oestrus as well as on day 10 and day 21 post-insemination. The present study is in agreement with Panicker, (2012) who found that those does that had a progesterone level lower than 1 ng/mL had a higher chance to conceive.

Hence, it can be concluded ultrasonographic technique and progesterone profile can be used as a tool for predicting the outcome of breeding in postparturient does. In addition, those animals that possessed a follicle diameter of more than 0.7 cm size and a serum progesterone level of less than 1 ng/ml had a preferably higher chance to become pregnant.

**Table 1:** Follicle size (cm) measured on the day of treatment (day 0) and at day observed (Mean $\pm$ SE)

Parameter	Day 0 (Largest follicle observed)	Day observed (Size of dominant follicle)
Mean follicle measurement	0.43 $\pm$ 0.04	0.72 $\pm$ 0.03
Follicle measurement in conceived animals	0.51 $\pm$ 0.03 <sup>a</sup>	0.86 $\pm$ 0.02 <sup>a</sup>
Follicle measurement in non-conceived animals	0.40 $\pm$ 0.06 <sup>a</sup>	0.65 $\pm$ 0.01 <sup>b</sup>

*a, b, values having different superscripts in columns differ significantly at 1% level*

**Table 2:** The mean serum progesterone profile obtained on day of observed oestrus, day 10 and day 21 post insemination in conceived and non-conceived animals

Conceived/Non-conceived	Observed oestrus	Day 10	Day 21
Conceived	0.43 $\pm$ 0.19 <sup>a</sup>	5.76 $\pm$ 0.69 <sup>a</sup>	6.53 $\pm$ 1.29 <sup>a</sup>
Non-conceived	1.06 $\pm$ 0.22 <sup>b</sup>	1.62 $\pm$ 0.39 <sup>b</sup>	1.52 $\pm$ 0.32 <sup>b</sup>

*a, b values having different superscripts in columns differ significantly at 5% level*

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