

HORMONE PROFILE OF TELLICHERRY GOATS DURING PERIPARTURIENT PERIOD

G. Suganya¹ and V. S. Gomathy²

Department of Veterinary Physiology
Madras Veterinary College, Chennai- 600007

The regulatory mechanisms that operate to maintain the physiological status during gestation, parturition and postpartum are mainly aimed at homeostasis and homeorrhexis. The present investigation was aimed at studying the changes in the serum concentrations of cortisol, insulin, growth hormone, triiodothyronine and thyroxine during antepartum and postpartum period in Tellicherry does.

The study was conducted in twelve Tellicherry does maintained at Livestock Research Station, Kattupakkam, Tamilnadu. Blood samples were collected from the jugular vein on day 30 and day 15 prior to kidding, on the day of kidding and on days 5, 10, and 15 of postpartum. Serum samples were analysed for cortisol, insulin, growth hormone, triiodothyronine (T_3) and thyroxine (T_4) by radioimmunoassay (RIA) technique. Serum T_3 and T_4 were estimated using kits procured from BARC, Mumbai. Insulin, cortisol and growth hormone concentrations were analyzed using DPC's (Diagnostics Products Corporation, USA) coat-a-count kit. The data were subjected to statistical analysis by Completely Randomized Design (CRD) as per Snedecor and Cochran, 1994.

The results are presented in the Table. It was observed that the concentration of cortisol started to increase 15 days prior to kidding and reached a maximum on the day of kidding. Thereafter the level was significantly decreased till day 15 postpartum. The elevation of serum cortisol levels 15 days prior to parturition was attributed to stress as per Challis

et al (1981). The values recorded are similar to the findings of Ezzo and Shalaby (1990) in goats. Hennessy et al (1982) reported that during late pregnancy the maternal cortisol levels increased due to the placental transfer from foetus to the mother. A three fold increase in the cortisol concentration was observed and agrees with the findings of Okab et al (1992) in ewes. The elevated cortisol level around parturition could be due to stress induced by the foetus in initiating parturition (Ninan Jacob and Vadodaria., 2000). During the postpartum period the decline in the values of cortisol are similar to the findings of Sarma and Ray (1984) in goats and Henze et al (1994) in sheep.

The insulin level was decreased significantly by day 15 prepartum and reached a lowest concentration on the day of kidding. The level remained significantly lower till day 10 of postpartum, which significantly increased on day 15 postpartum. The serum insulin levels recorded in the present investigation are similar to that of Blom et al (1976) and Khan and Ludri (2002). The fall in insulin level is associated with a concomitant decrease in the insulin receptors of the adipocytes which is responsible for fat mobilization during late pregnancy (Vernon et al., 1981). During the postpartum period hypoinulinemia is attributed to the continued mobilization during lactation as insulin is being removed by the mammary gland (Williamson, 1980).

The growth hormone levels were found to increase significantly from day 30 prepartum to 15 days of postpartum. The increase in the serum

¹ Assistant Professor ² Professor

growth hormone levels during the late gestation and parturition are similar to that of Khan and Ludri (2002) in cross bred goats. The increased growth hormone changes during late gestation was attributed to the increased metabolic demands of the fetus, altered ratios of progesterone and estrogen and altered feed intake (Kronfeld., 1976). Cowie et al (1980) reported that growth hormone plays an important role in regulating the partitioning of nutrients between adipose tissues in lactating ruminants.

Serum T_4 and T_3 concentrations were declined from 30 days prior to kidding, and lowest on the day of kidding followed by an increase till day 15 postpartum. The findings were similar to that of Eswari et al (1999) in sheep. This could be attributed to the inhibitory effect of glucocorticoids on TSH (Mondal *et al*, 2006) whereas Blum *et al* (1983) related it to be a self defence mechanism to reduce metabolic demand when catabolic functions are

high. The increase in the concentrations of thyroid hormones during the postpartum period could be due to the influence of estrogen on the development of mammary gland (Patel et al., 1993)

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Table

Hormone profile during antepartum and postpartum in Tellicherry goats

Hormones	Antepartum (days)		Day of kidding	Postpartum (days)		
	30	15		5	10	15
Cortisol ($\mu\text{g}/\text{dl}$)	0.94 ^b ±0.01	2.3 ^a ±0.11	2.94 ^c ±0.1	1.8 ^x ±0.03	1.53 ^y ±0.09	1.58 ^z ±0.07
Insulin (ng/ml)	1.87 ^a ±0.05	1.54 ^b ±0.05	0.76 ^c ±0.07	0.64 ^x ±0.02	0.6 ^y ±0.02	0.72 ^z ±0.01
GrowthHormone (ng/ml)	7.88 ^a ±0.29	10.12 ^b ±0.8	15.63 ^c ±0.49	23.95 ^x ±1.6	28.1 ^y ±1.22	30.7 ^z ±1.48
Thyroxine ($\mu\text{g}/\text{dl}$)	7.42 ^a ±0.21	5.63 ^b ±0.023	4.58 ^c ±0.38	6.33 ^x ±0.17	6.58 ^x ±.45	7.91 ^y ±0.45
Triiodothyronine(ng/ml)	1.45 ^a ±0.07	1.09 ^b ±0.06	0.43 ^c ±0.04	0.87 ^x ±0.1	0.82 ^x ±0.09	0.66 ^y ±0.06

Means having atleast one common superscript do not differ at 5% level within a row

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