

Hormonal assay in lactating male goat

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ABSTRACT

This communication reports a case of an extremely rare incidence of lactation in an adult fertile male goat. The serum concentration of prolactin, progesterone, testosterone and estradiol hormones of a lactating male, normal male and female goat were found to be 5.40, 2.40 and 1.90 ng/ml, 144.00, 22.60 and 1.90 nmol/l, 5.00, 18.60 and 0.748 nmol/l and 62.84, 90.97 and 94.80 pmol/l, respectively. The high concentration of prolactin and progesterone with low concentration of testosterone and estradiol hormones in the lactating male goat as compared to normal male might have been responsible for lactation in the male goat.

Key words: lactation, teats, mammary gland, hormones and male goat

The phenomenon of lactation in males is physiologically possible and has been observed both in animals (Francis *et al.*, 1994 and Nair *et al.*, 1981) and humans (Shanley, 2005). Historically, the incidence of male lactation was first noted by the German explorer Alexander Freiherr von Humboldt prior to 1859 in a 32-year-old man who breastfed his child for five months (Shanley, 2005). The present report records a unique case of lactation in male goat with its hormonal profile to understand the physiological basis of male lactation.

A three years old male goat of proven fertility producing 100-150 gm milk per day was observed in a village. The male goat had both well-developed testes and functional mammary glands (Fig 1) from which small amount of milk could be milked. On squeezing the teats, the penis protruded from the penile sheath. Simultaneously the history of the male also indicated that the animal was of high vigour and previously was used for breeding purpose and has sired three kids. The secretion of milk was started when the owner manually

massaged the enlarged teats for 3 to 4 days at the time of grazing. The manual stimulation of the nipples caused prolactin surge in both male and female (Wand, 2003). Blood samples were collected from lactating male, normal male and lactating female goat belonging to same farmer to ascertain the serum concentrations of prolactin, progesterone, testosterone and estradiol hormones by the ECI-Immunodiagnosics method using VITROS-ECI instrument and ORTHO reagent kit (Ortho-clinical Diagnostics) and are presented in table 1.

All embryos are in fact female until a certain point during development, those respond to the Y chromosome develop male genitalia but teats develop before that differentiation occurs, therefore, all newborns have teats. In male, teats are often considered vestigial with regard to lactation and mammary tissue is low in volume and

Table 1: Hormonal profile of lactating, normal male and lactating female goat.

Hormones	Lactating Buck	Normal Buck	Lactating Doe
Testosterone (nmol / l)	5.00	18.60	0.75
Progesterone (nmol / l)	144.00	22.60	178.00
Prolactin (ng / ml)	5.40	2.40	1.90
Estradiol (pmol / l)	62.84	90.97	94.80

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Fig 1. Lactating male goat having small mammary glands with enlarged teats

cannot be noticed. But, under the appropriate hormonal stimulus the mammary gland of males can also produce milk like females. Estrogen and progesterone are main

hormones responsible for development of mammary glands and other hormones, which synergize with them in preparing mammary tissue for secretion of milk include prolactin, growth hormone, insulin, thyroid hormone and cortisole (Bearden and Fuquay, 1992). The hormonal profile of lactating male goat shows that high concentration of prolactin and progesterone concomitant with low concentration of testosterone and estradiol hormones, as compared to normal male, seems to be responsible for lactation in this male goat.

REFERENCES

- Bearden, J.H. and Fuquay, J.W. (1992). Lactation: In Applied Animal Reproduction. 3rdedn. Prentice Hall, Englewood Cliffs, New Jersey. pp 124.
- Francis, C. M., Anthony, E. L. P., Brunton, J. A. and Kunz, T. H. (1994). Lactation in male fruit bats. *Nature*, **367**: 691-692.
- Shanley, L (2005). Milkman: Fathers who breastfeed. www.unassistedchildbirth.com/miscarticles/milkmen.html.
- Nair, B.R.K., Mathai, E. and Kunjikutty, N. (1981). A report on lactating male goats. *Kerala J. Vet. Sci.*, **12**: 145-150.
- Wand G.S. (2003). Diagnosis and management of hyperprolactinemia. *The Endocrinologist*, **13**: 52-57.