

Measurement of Circulating Insulin-Like Peptide 3 and Testosterone Concentrations in Prepubertal Male Goats

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Abstract

The objectives of the present study were to: (1) simplify the enzyme immunoassay (EIA) for the measurement of insulin-like peptide 3 (INSL3) concentrations in goats (2) to measure circulating INSL3 and testosterone in prepubertal Jamnapari goats (3) to examine the relationships among INSL3, testosterone, testicular circumference and body weight during the prepubertal age. Serial blood samples were collected from normal male prepubertal Jamnapari and local crossbred goats at the ages of 19th to 28th weeks. Serum INSL3 was measured by using a recently reported EIA procedure with modifications. The detection ranges of the INSL3 and testosterone assays were 0.08-80 ng/mL and 0.01-40 ng/mL, respectively. The intra-assay coefficient of variations was 3.79% for INSL3 (n=6) and 3.72% (n=6) for testosterone. Serum INSL3 concentrations ranged from 13.62±3.25 to 22.45±6.09 ng/ml in prepubertal goats. Those concentrations increased (P<0.05) from 20th (13.62±3.25 ng/ mL) to 22nd (22.45±6.09 ng/ mL) weeks of age. Testosterone concentrations ranged from 0.30±0.07 to 1.22±0.43 ng/ mL in prepubertal goats. Decreased (P<0.05) testosterone concentrations were observed at 23rd weeks of age. INSL3 was correlated (r=0.58; p<0.05) with testicular circumference while no significant correlation was observed among other tested parameters. In conclusion, a rapid, sensitive EIA system was developed to quantify INSL3 in goats, by simplifying the existing procedure. Different serum INSL3 and testosterone dynamics were found from 19th to 28th weeks of age of the goats. Compared with testosterone concentrations, INSL3 concentrations seemed to be more consistent with the age of prepubertal goats and showed a relationship with the testicular growth.

Keywords: Enzyme immunoassay, INSL3, Prepubertal goats, Serum, Testosterone

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