Maternal serum progesterone concentration during gestation and mammary gland growth and development at parturition in Javanese thin-tail ewes carrying a single or multiple fetuses

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Abstract

Fifteen pregnant ewes were used to study maternal serum progesterone concentration during pregnancy and mammary gland growth at parturition in ewes carrying single (n = 9) and multiple fetuses (n = 6) as compared to five nonpregnant ewes. The experimental ewes were sacrificed at parturition to determine mammary gland growth and development indices (mammary dry fat-free tissue [DFFT], DNA, RNA, collagen, protein, and glycogen). Nonpregnant ewes serum progesterone concentrations (2.89 ± 0.27 ng/ml) and mammary DFFT (2.34 ± 0.21 g), total mammary DNA (0.10 ± 0.01 g), RNA (0.03 ± 0.003 g), collagen (0.11 ± 0.01 g), protein (1.26 ± 0.15 g) and glycogen (0.02 ± 0.002 g) were lower (P < 0.01) than in pregnant ewes. Ewes carrying multiple fetus had higher average serum progesterone concentrations (18.56 ± 1.55 vs. 12.02 ± 1.44 ng/ml), mammary DFFT (45.88 ± 10.56 vs. 26.39 ± 2.02 g), total mammary DNA (1.51 ± 0.30 vs. 0.92 ± 0.09 g), total mammary RNA (0.94 ± 0.23 vs. 0.30 ± 0.05 g), total mammary protein (36.49 ± 9.64 vs. 19.35 ± 1.74 g), and total mammary glycogen (0.23 ± 0.08 vs. 0.09 ± 0.01 g) as compared to those carrying a single fetus, without a significant difference in total mammary collagen (0.35 ± 0.04 vs. 0.30 ± 0.04 g). The results of the experiment indicated that ewes carrying higher number of fetuses could have higher secretion of pregnancy-related mammogenic hormones that stimulated greater mammary gland growth and development during gestation.

Author Keywords: Progesterone; Mammary growth; Pregnancy; Sheep

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