

# Correlations between lamb birth weight and the concentrations of hormones and metabolites in the maternal serum during pregnancy

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## Abstract

Maternal serum hormones (progesterone, oestradiol, triiodothyronine and cortisol) and blood metabolites ([beta]-hydroxy butyric acid [BHBA] and blood urea nitrogen [BUN]) concentrations at weeks 0, 4, 8, 12, 16 and 20 of pregnancy were measured in 39 pregnant Javanese thin-tail ewes (20 and 19 carrying single and multiple [2–3] foetuses, respectively), and six non-pregnant ewes as controls, to evaluate their correlations with lamb birth weight at parturition. All hormones and metabolites changed with the advance of pregnancy. Regression analyses showed that concentrations of triiodothyronine, cortisol, BHBA, and BUN in the maternal circulation during pregnancy had lower correlations with lamb birth weight at parturition than those of progesterone and oestradiol. Progesterone and oestradiol concentrations in the maternal circulation at week 8 of pregnancy had the greatest correlations with lamb birth weight at parturition. The higher the concentrations of progesterone and oestradiol in the maternal circulation at week 8 of pregnancy, the higher the lamb birth weight at parturition. The results suggested that raising maternal serum progesterone and oestradiol concentrations during early pregnancy in sheep, either by exogenous administration or superovulation, might improve prenatal growth and lamb birth weight.

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