Sex-dependent differences in the effect of early weaning on the chosen hormones secretion in sheep during the postnatal transition to puberty – Preliminary results

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Abstract

The influence of early weaning on the cortisol, follicle-stimulating hormone (FSH), luteinizing hormone (LH) and growth hormone (GH) secretion in lambs of both sexes and testosterone (T4) level in male lambs during the postnatal transition to puberty was investigated by radioimmunoassay. It was hypothesized that this influence is long-term and sexually dimorphic. Hence, the effect of weaning at 5 weeks of age in comparison with the weaning at 9 weeks of age on hormone concentrations in peripheral blood plasma of 5-, 9-, 12-, and 16-week-old lambs of both sexes was investigated. The cortisol concentrations were greater (P<0.05) in control and early weaned female lambs than in male lambs at investigated stages. Weaning at 5 weeks of age resulted in the lower (P<0.05) cortisol secretion in male lambs in contrast to the greater (P<0.05) cortisol secretion in female lambs at 16 weeks of age. Weaning at 5 weeks of age stimulated (P<0.001) the FSH secretion, but reduced (P<0.001) the LH, GH and T4 secretion in 16-week-old male lambs. In female lambs early weaning inhibited (P<0.05) the FSH secretion at 9 weeks of age, LH secretion after 9 weeks of age and GH secretion after 12 weeks of age. Thus, early weaning results in the sexually dimorphic stress reaction that is more potent and long-lasting in female in contrast to male lambs. This maternal deprivation stress contributes to the inhibition of LH and GH secretion in lambs of both sexes and T4 secretion in male lambs during the postnatal transition to puberty.

Key words: stress, luteinizing hormone, follicle-stimulating hormone, growth hormone, testosterone, lambs

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