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Evaluation of metabolic profile at mating, gestation, and early lactation in Gray Shirazi ewes

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Abstract

This study was aimed to investigate the status of energy balance during mating, pregnancy and after lambing and its relationship with reproductive outcomes in Gray Shirazi sheep. Thirty healthy Gray Shirazi ewes that were kept in industrial conditions were randomly selected. During lambing, the ewes were examined for the rate of multiplication as well as abortions and the weight of lambs at birth. Blood sampling was performed during mating, on the last two to four weeks of pregnancy, and on one to two weeks after delivery. Serum levels of insulin-like growth factor-1 (IGF-1), insulin, non-esterified fatty acids (NEFA) and beta-hydroxybutyric acid (BHBA), and progesterone were assessed. There was a significant rise in IGF-1 level in late pregnancy compared to that in early lactation. In addition, the concentration of BHBA was significantly increased during pregnancy and postpartum compared to the mating time. Maximum BHBA and NEFA concentrations at the end of pregnancy and postpartum were in twin and singleton pregnancies, respectively. In addition, the highest BHBA concentrations were accompanied by the lowest BCS of ewes. Moreover, there was a significant direct correlation between lamb weight and NEFA, BHBA, and progesterone. In conclusion, serum indicators of energy balance, particularly insulin and BHBA, are largely influenced by reproductive stages, especially pregnancy and the number of lambs in Gray Shirazi ewes. Accurate identification of these changes is essential in diagnosing abnormal conditions and metabolic and nutritional disorders in this breed.

Keywords: Metabolic profile, Mating, Gestation, Lactation, Gray Shirazi ewes

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