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Effect of the inclusion of rumen-protected amino acids in the diet of high production dairy sheep

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The aim of the study was to examine the effect of including rumen-protected amino acids in the diet of high-production dairy sheep, on performance and milk composition. A total of 188 Lacaune dairy sheep were divided into two homogeneous groups in lactation number (3) and located in separated sheep sheds. Treatments were a control diet (CON) and a diet with rumen-protected amino acids LysiGEM™ and KESSENT® Me (Kemin Animal Nutrition and Health, Belgium) (APR). Diets were supplied after milking (morning and afternoon) for 60 days. Both diets were isoproteic (17% CP and 11.4% PDI) but with different energy levels (1.02 and 1.00 Milk Forage Units, MFU/kg DM, in CON and APR diets, respectively) LysDI and MetDI (7.4 and 2.0% PDIE in CON vs 7.9 and 2.8% PDIE in APR diets). Twenty-five sheep of each group were daily controlled in milk production and a sample of milk was weekly taken to determine milk composition. Blood samples were collected from venipuncture of the jugular vein at 1, 4, 7, and 9 weeks from the start of the trial and after the morning milking in the selected sheep. Data were analysed using the PROC GLM procedure of SAS with diet as a fixed factor. Milk yield was similar in CON and APR diets (3.95 vs 3.79 l/d respectively; P=0.47), however, milk fat content was higher (P=0.0003) in CON (5.53%) than in APR (5.23%), while milk protein content was higher (P=0.0149) in APR (4.77%) than in CON (4.69%). CON and APR showed significant differences (P=0.0013) in plasma D-β-hydroxybutyrate (mmol/l), being lower in APR (0.61) than CON (0.70) while plasma glucose (mg/dl) was higher (P=0.0001) in APR (50.78) than CON (46.78), which means that energy metabolism was more efficient in APR than in CON. Using rumen-protected amino acids, it is possible to formulate diets with lower levels of energy density (MFU/kg DM) and achieve greater efficiency in the use of nitrogen from the diet to synthesize protein in milk without affecting daily milk production.