

XI International Conference on Goats



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BOOK OF ABSTRACTS



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Dietary fatty acids on subcutaneous adipose tissue modulation in transition dairy goats

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The goal of the present study was to evaluate the metabolic and immune response of periparturient dairy goats to dietary supplementation with fish oil or stearic acid. 15 multiparous alpine dairy goats were involved in the trial. Starting from the last week of gestation until 3 weeks after kidding date the experimental diets, based on alfalfa and mix hays and a concentrate mix, were added either with protected fish oil (FO) or with stearic acid (ST). Feed intake, body weight, energy balance, milk production and composition were measured weekly. Adipose tissue biopsies were performed on day -7, 7 and 21 relative to kidding date and samples were immediately fixed in formalin, paraffin embedded and Hematoxylin Eosin stained. The results discussed in the present work are relative to a subsample of 8 goats, representative of the two experimental groups. Hematological and histological data were analyzed by a Generalized Estimating Equation (GEE) in IBM SPSS 19.0 was used. Production parameters were analyzed by a MIXED repeated model in SAS 9.2. No differences were observed between FO and ST in milk production, BCS, weight, dry matter intake and milk components except for a higher milk protein percentage in the 7 to 21 d period for ST. BHB serum content was higher in ST overall the experiment, whereas NEFA and ALAT serum content were higher at day 7 in FO compared to ST ($P < 0.08$). ALAT was higher also at day 21 in FO. Treatment had no effect on blood cellular component except for WBC in FO group, where a significant decrease at 7 d was observed. WBC and HCM parameters were in the physiological range for dairy goats during transition period. Histologic adipose tissue analysis revealed a significant decreased adipocytes surface between -7 and 21 d in ST, whereas in FO the adipocyte surface reduction was related to the -7 to 7 d interval reaching a plateau until day 21. The EB pattern and the NEFA serum content at 7d in particular for FO are well correlated with histologic observations indicating goats were using fat depots to cope their negative energy balance. NEFA levels did not confirm the histological evidence at day 21 for ST suggesting a possible different action on subcutaneous adipose tissue during time. Results suggest a modulation in lipid storage management during periparturient negative energy balance by saturated vs. unsaturated dietary fatty acid supplementation that did not affect production levels of goats.