

Dietary Selenium and Linseed Oil Influence the Concentration of Fatty Acids in Tissues of Sheep

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Twenty individually-housed male Polish Merino lambs divided into four groups (5 individuals each) with an initial body weight of 25 ± 2 kg were used in the experiment. Sheep were fed *ad libitum* the control (C) or experimental diets enriched with 5% linseed oil (LO); 2 ppm Se as selenate (SE); combined addition of 5% LO and 2 ppm Se (LOSE). The LO diet with or without SE, increased the body mass gain, feed conversion efficiency and masses of the liver and *M. biceps femoris* (MBF), *M. longissimus dorsi* (MLD). The LO diets with or without SE decreased the level of atherogenic and thrombogenic saturated fatty acids (FA) in MBF, MLD and spleen. The LO diet increased the level of conjugated linoleic acid (CLA) isomers in MLD in comparison with the C group. The LO diet with or without SE resulted in negligible changes in the level of CLA isomers in MBF. The LO diet most efficiently increased the level of *cis9trans11*CLA (*c9t11*CLA), the sum of *ct/tc*CLA, *tt*CLA, all CLA isomers and non-CLA conjugated FA (CFA) in the spleen and pancreas. The LO diet or/and SE decreased the *c9t11*CLA/*t10c12*CLA ratio in both muscles compared with the C group, while most effectively increased in the liver, spleen, pancreas, kidneys, heart and in subcutaneous and intermuscular fat. The level of all CLA isomers was lowest in the pancreas, spleen, heart, MBF and MLD of sheep fed the diet with SE compared with the C group. The LO diet with or without SE, increased the sum of monounsaturated FA and all FA in both muscles and all organs compared with the C and SE groups. The LO and LOSE diets decreased the atherogenic and thrombogenic indexes in the spleen and pancreas, while increased in both muscles compared with the C and SE groups. These diets increased the level of polyunsaturated FA (PUFA) in MBF, MLD and all internal organs as compared with the C and SE groups. The LO diet with or without SE increased the nutritional value of MBF, MLD, and adipose tissues as the ratio of unsaturated FA/saturated FA increased. The LOSE treatment especially improved the nutrition quality of MBF as this diet increased the level of CLA isomers and particularly n-3LPUFA. Our investigation provide useful information for nutritionists carrying out further studies to improve the nutritional quality of diets for humans and farm animals.