

Effects of two supplementation levels of linseed combined with CLA or tallow on meat quality traits and fatty acid profile of adipose tissue and longissimus muscle in slaughter pigs.

G. Bee, S. Jacot, G. Guex, W. Herzog

Agroscope Liebefeld-Posieux, Swiss Federal Research Station for Animal Production and Dairy Products (ALP), 1725 Posieux, Switzerland

Linseed is an efficient dietary supplement to increase 18:3n-3 concentration in meat and adipose tissue in pigs. Increased concentration of highly unsaturated PUFA can lead to quality deterioration due to lipid oxidation. We hypothesize that inclusion of conjugated linoleic acids (CLA) or tallow could limit the potential for lipid oxidation. In the present study we evaluated the effect of CLA or tallow combined with linseed on carcass characteristics, longissimus muscle (LM) quality traits, and the fatty acid profile of the LM and adipose tissue. From 18 to 104 kg BW, 32 Swiss Large White barrows were fed a grower finisher diet supplemented either with: 1) 3% linseed (**L3**); 2) 2% linseed (**L2**); 3) 2% linseed + 1% CLA (**L2C**); or 3) 2% linseed + 1% tallow (**L2T**). The amount of omental fat was higher ($P < 0.05$) in the L3 (2.09%) compared to the L2 and L2T group (1.60% for each). Initial pH in the LM was higher ($P < 0.05$) in the L2T (6.30) compared with the L2 (6.06) and L2C (6.03) group, but did not differ from the L3 group (6.14), whereas no dietary effects were observed for ultimate pH, color, drip, cooking losses, and shear force values. Inclusion of CLA (L2C) did not affect PUFA level but increased ($P < 0.05$) the concentration of saturated and decreased ($P < 0.05$) that of monounsaturated fatty acids in the tissues compared to the other treatments. Neither CLA nor tallow altered the concentration of 18:3n-3, 20:3n-3, 20:5n-3, and 22:5n-3 compared to the L2 group. Consequently, in the 3 dietary groups the n-6/n-3 ratio was similar in the LM (2.9) and adipose tissue (3.6). As expected, the higher linseed supply (L3) resulted in increased ($P < 0.05$) 18:3n-3 and 20:3n-3 concentrations in the tissues, whereas from the higher unsaturated fatty acids of the n-3 family only 22:5n-3 level was increased ($P < 0.05$) in the adipose tissue compared to the L2, L2C, and L2T group. The present results indicate, that CLA, but not tallow, combined with linseed could help reduce the potential for lipid oxidation by decreasing the unsaturation level without affecting the improved n-6/n-3 ratio.

KEYWORDS: Linseed, CLA, Pig