Effect of dietary replacement of sunflower oil with linseed oil on intramuscular fatty acids of lamb meat

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ABSTRACT

The effect of stepwise replacement of dietary sunflower oil (SO) with linseed oil (LO) on carcass composition, meat colour and fatty acid (FA) composition of intramuscular lipids of lamb meat was investigated. Thirty-six lambs were fed one of four diets consisting of pellets of lucerne with oil (60 g/kg): the diet varied in the composition of oil added and were: 100% SO; 66.6% SO plus 33.3% LO; 33.3% SO plus 66.6% LO and 100% LO. The experimental period was 7 weeks. Live slaughter weight, hot carcass weight and intramuscular fat percentage of loin and shoulder increased linearly with replacement of SO by LO.

Total FA content of longissimus dorsi muscle and polar and neutral lipids were not affected by the treatments. Replacement of SO with LO increased the content of 18:3n – 3 and total n – 3 long chain (≥C20) PUFA (LC-PUFA) and decreased the 18:2n – 6, total n – 6 LC-PUFA and 18:2 cis-9, trans-11 in meat lipids. Maximum CLA concentration (42.9 mg/100 g fresh muscle) was observed with 100% of SO, decreasing linearly by SO with LO replacement. Maximum n – 3 LC-PUFA was predicted to be 27 mg/100 g of fresh muscle at 78% of SO with LO replacement. Considering both CLA and n – 3 LC-PUFA, the maximum levels were estimated to be reached at 52% of replacement of SO with LO. The utilization of blends of SO and LO is a good approach for obtaining lamb meat enriched with both CLA and n – 3 LC-PUFA.

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