Effect of particle size and soybean oil supplementation on growth performance, carcass and meat quality and fatty acid composition of intramuscular lipids of lambs

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Abstract

Thirty-two Merino Branco (MB) ram lambs were used to evaluate the effects of lucerne particle size and soybean oil supplementation in growth, carcass and meat quality and fatty acid composition of longissimus thoracis muscle. The lambs were divided into four groups and submitted to four diets: conditioned hay of lucerne; conditioned hay of lucerne plus soybean oil; ground and pelleted lucerne; and ground and pelleted lucerne plus soybean oil. Lambs were weighed weekly and slaughtered after 6 weeks of trial. Hay fed lambs showed lower intake, lower average daily weight gain and lower slaughter and carcass weights. Dietary oil decreased intake, especially for pellets, reducing lambs growth rate and slaughter and carcass weights. Physical form of the diet and lipid supplementation had minor effects in carcass and meat quality traits. The results of oil inclusion were not conclusive for meat sensory attributes. Fatty acid composition was strongly affected by treatments and the high number of significant interactions showed that the effect of oil inclusion on fatty acid composition was highly dependent on forage particle size. With oil supplementation, C18:1 trans-11 and C18:2 cis-9 trans-11 increased, but this effect was more pronounced with hay. Linoleic acid also increased but this effect was larger in pellets. The ratio n-6/n-3 fatty acids was lower for hay. It increased with oil supplementation and, with pellets, the value was above the suggested threshold of 4.

Keywords: Lamb; Forage particle size; Soybean oil supplementation; Meat quality; Fatty acids composition; Conjugated linoleic acid