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The effect of grape seed extract or *Cistus ladanifer* L. on muscle volatile compounds of lambs fed dehydrated lucerne supplemented with oil

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ABSTRACT

Thirty-six Merino Branco lambs were assigned to six dietary treatments: control diet (C) consisting of 90% dehydrated lucerne and 10% wheat bran; control diet with 6% of oil blend (CO); control with 2.5% of grape seed extract (GS); control with 2.5% of grape seed extract and 6% of oil blend (GSO); control with 25% of *Cistus ladanifer* (an aromatic bush widespread in Portugal; CL); control with 25% of *C. ladanifer* and 6% of oil blend (CLO). The muscle *longissimus dorsi* was then subjected to the analysis of volatile compounds (SPME–GC/MS). The CLO diet increased the concentration of heptanal, 3-hydroxy-2-butanone and 2-ethyl-phenol in muscle compared to the CL diet. When lambs received the CL diet, their meat contained lower amounts of 4-heptenal compared to the other treatments. The meat of the GS and GSO lambs contained similar amounts of volatile compounds deriving from lipid oxidation (such as heptanal, 2-nonenal, 4-heptenal and 3-hydroxy-2-butanone). These results indicate that in the presence of grape seed extract, oil supplementation did not enhance the production of lipid-derived volatile compounds. Verbenone and 2,2,6-trimethyl-cyclohexanone were detected only in the meat of the *Cistus*-fed lambs, suggesting that these compounds could be markers of feeding *Cistus*-containing diets. Meat volatile compounds profile allowed to discriminate between the lambs receiving *C. ladanifer* and those not receiving this bush in the diet.

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