Alfalfa grazing increases vitamin E content and improves fatty acid profile in *L. dorsi* from light lambs

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Feeding strategy affects intramuscular fat quality and meat shelf life. Forage-based diets increase naturally the polyunsaturated fatty acids (PUFA) n-3 and α-tocopherol contents in lamb meat. The aim of this study was to assess the effects of forage inclusion (alfalfa grazing vs. concentrate-fed indoors) in the diet and lactation length (weaning at 13 kg vs. suckling until slaughter at 23 kg) on the fatty acid (FA) profile and vitamin E content in L. dorsi of Rasa Aragonesa lambs. Thirty-two single lambs were assigned to one of four treatments in a 2 x 2 factorial design. ANOVA test was performed. The effect of forage inclusion was significant on FA profile and on α-tocopherol and γ-tocopherol contents while the effect of lactation length was less clear. Alfalfa grazing lambs had greater content of α-tocopherol and lower γ-tocopherol than concentrate-fed lambs ($P<0.05$). Some concentrate feedstuffs (as soybean and colza) increase the γ-tocopherol content, whereas forage has a negligible content. Alfalfa grazing increased the MUFA and CLA content and decreased the PUFA n-6/n-3 ratio ($P<0.05$). Lactation length had a less noticeable effect on vitamin E content and on FA profile. Weaned lambs had slightly greater α-tocopherol ($P=0.06$) because alfalfa grazing lambs had greater content than lactating lambs whereas weaning did not affect the content in concentrate-fed lambs ($P<0.001$). Weaning did not affect γ-tocopherol content ($P>0.05$). Weaned lambs presented less SFA, CLA and PUFA n-3 and more PUFA and PUFA n-6/n-3 than the lactating lambs ($P<0.05$). It can be concluded that alfalfa grazing improved the FA profile and increased the α-tocopherol in light lamb meat, which could contribute to human health. Lactation length had a less clear effect on vitamin E but suckling until slaughter increased CLA content and the PUFA n-6/n-3 ratio.