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Fatty Acid Profile Of Castellana And INRA401 Lambs (#272)

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Introduction

Nowadays, animal welfare and environmental impact have become key factors linked to the concept of meat quality demanded by consumers. In this line of though, assessing the nutritional quality of the meat, such as the fatty acid composition, is one of the main aspects to understand potential barriers and future markets that can be explored to improve competitiveness within the meat sector (Font-i-Furnols & Guerrero, 2014). The present study aimed to evaluate the fatty acid profile of Castellana and INRA401 lamb meat produced in the region of "Castilla y León" (Spain).

Methods

All handling practices followed the recommendations of the Directive 2010/63/EU of the European Parliament and the Council of the European Union (2010). Five Castellana and five INRA401 male lambs (already weaned, 6 to 8 weeks old) were used. Animals from each breed were housed together with straw bedding and had free access to commercial concentrate (894 g DM/ kg fresh matter, 145 g neutral detergent fibre/kg DM, 58 g acid detergent fibre/kg DM, 190 g CP/kg DM and 75 g ash/kg DM), cereal straw (917 g DM/kg fresh matter, 785 g neutral detergent fibre/kg DM, 506 g acid detergent fibre/kg DM, 40 g CP/kg DM and 78 g ash/kg DM) and fresh water during the whole experiment. At 4 months old, they were transported to a commercial abattoir (1.5 h transport), stunned, slaughtered by exsanguination from the jugular vein, eviscerated, and skinned to obtain the carcass (chilled at 4 °C for 24 h). Meat samples (*longissimus thoracis*) were taken and analyzed regarding fat content using an Ankom XT10 equipment (AOAC Official method Am 5-04) and fatty acid methyl esters according to Domínguez et al. (2018). The effect of breed was analyzed by least mean square analysis using a level of statistical significance of $P<0.05$.

Results

The fat content in the meat of both breeds was low and similar (Table 1). The main fatty acids were monounsaturated fatty acids (MUFA; 0.95 g/ 2.02 g total and 0.85 g/ 1.78 g total fat for Castellana and INRA401 lambs, respectively) followed by saturated (SFA; 0.80 and 0.72 g for Castellana and INRA401 breed, respectively) and polyunsaturated fatty acids (PUFA, 0.27 and 0.21 g for Castellana and INRA401 breed, respectively). A similar outcome was observed Esquivelzeta et al. (2017) with the meat obtained from Ripollesa and Lacaune breed. PUFA and n-6 showed significant differences between breeds ($P<0.01$), which indicate a higher deposition of these fatty acids in Castellana breed. Additionally, the n-6/n-3 ratio was similar among breeds (13.47 and 12.54 for Castellana and INRA401 breed, respectively). The n-6/n-3 ratios were higher than recommended (n-6/n-3 < 4) to reduce the risk of cardiovascular diseases (Liu et al., 2016).

Conclusion

The low-fat content of the meat obtained from both breeds supports its production and exploration, particularly the meat from Castellana breed that showed slightly better fatty acid profile (higher PUFA and n-6 content) than that of INRA401 lambs. Improving the n-6/n-3 ratio is an interesting strategy to enhance the quality of meat of both breeds, improve competitiveness (healthier product) and explore new markets.

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Notes

Table 1. Fat content and fatty acid profile (g/100 g meat FW) of Castellana and INRA401lamb meats

	Breed		SEM	Sig.
	Castellana	INRA401		
Fat	2.02	1.78	0.10	ns
SFA	0.80	0.72	0.04	ns
MUFA	0.95	0.85	0.05	ns
PUFA	0.27	0.21	0.01	**
n-3	0.02	0.02	0.00	ns
n-6	0.24	0.20	0.01	**
n-6/n-3	13.47	12.54	0.29	ns

SEM: standard error of mean
Sig.: Significance; ns: not significant; **(P< 0.01);

Table 1

Notes