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Inclusion Of Chestnut On The Finishing Diet Of Celta Pigs: Effect On Fatty Acid Profile (#230)

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Introduction

Meat and meat products are staple foods of diets in developed countries and they are the main source of fatty acids in the diet. It is well known that nutritive value of pork depends on the content and composition of the fat, and both factors have strongly influence in human health (Estévez *et al.*, 2003). On the other hand, due to the high current prices of commercial concentrates in animal feed, nowadays the use of natural resources is essential. In this respect, the use of chestnuts in the maintenance and fattening of pigs takes a special interest owing to its underutilized. Additionally, chestnuts are a good source of unsaturated fatty acids (Pereira-Lorenzo *et al.*, 2006) which could be deposited in animal tissues (Pluguiese *et al.*, 2013; Domínguez *et al.*, 2015a). The use of chestnuts in the feeding of Celta pigs would reduce production costs and bring a product with healthier fat. Therefore, the aim of the present research was to evaluated the inclusion of chestnut in the finishing diet of Celta pigs on the fatty acid composition of intramuscular fat.

Methods

For this study, 18 Celta pigs reared in an extensive system were used. All animals were feed with compound feed, however, 3 months prior to slaughter, 9 animals were feed only with a diet of chestnuts. The animals were slaughtered by electrical stunning and exsanguination. After the refrigeration period (24 h at 4 °C), samples from loin (*Longissimus dorsi muscle*) from each carcass were obtained. Intramuscular lipids were extracted from 10 g of ground meat sample according to Bligh and Dyer (1959). The transesterification, identification and quantification of fatty acid methyl esters were performed using gas chromatography techniques according to the chromatographic conditions described by Domínguez et al. (2015b). Results were expressed as percentage of total fatty acid methyl esters (FAMEs). The effect of finishing diet on fatty acids profile was examined using a one-way ANOVA with the IBM SPSS Statistics 23.0 software package (IBM, Chicago, IL, USA).

Results

The fatty acid composition of *longissimus dorsi* muscle is shown in Table 1. Besides we did not show all FAMEs in Table 1, a total of 28 FAMEs were detected and quantified. Meat from animals feeding with chestnut and commercial feed diets showed the prevalence of MUFA (54.21-52.17%), followed by SFA (34.23-33.96%) and PUFA (11.57-13.87%), respectively. These results are in agreement with the data found in pigs by other authors (Domínguez *et al.*, 2014; De Jesús *et al.*, 2016, 2017). Additionally, finishing diet did not significantly affect ($p>0.05$) the total amounts of SFA, MUFA and PUFA, although the inclusion of chestnuts in the finishing diet seems to increase the MUFA, while the commercial feed seems to increase the PUFA content in the *Longissimus dorsi* muscle.

However, the inclusion of chestnut in the diet significantly affect ($p>0.05$) the individual content of C18:3n-3. This outcome agrees with the data previously described by Bermúdez *et al.* (2012) who found an increase of C18:3n-3 in animals fed only with chestnut in comparison with animals fed with commercial feed. This fact could be due to the C18:3n3 contents in the porcine tissues are directly related to the content of this fatty acid in the diet, because it cannot be synthesised in the tissues, and the chestnut is a rich source of C18:3n3 (Enser *et al.*, 2000).

Conclusion

To conclude, the inclusion of chestnut in the finishing diet of Celta pigs did not seem to affect total amounts of SFA, MUFA and PUFA, although it seems to increase slightly the percentage of MUFA. This fact could be due to the diet period was not large enough to observe any differences. In spite of that, due to the characteristics of this food, the chestnuts would be an alternative for the reduction of production cost.

Notes