

INFLUENCE OF PIG BREED ON FATTY ACID PROFILE OF DRY-CURED SHOULDER

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Abstract – Dry-cured shoulder from Celta and Duroc pig breeds were manufactured to assess the influence of breed on fatty acid profile. Animals were reared in intensive system and fed with commercial concentrate. The results showed that the most abundant fatty acid in both breeds were the monounsaturated fatty acids (MUFA) (49-51%) followed by the saturated fatty acids (SFA) (35-38%) and polyunsaturated fatty acids (PUFA) (11-15%). The SFA and MUFA were higher ($P<0.01$) in the Celta breed, whereas the PUFA were higher in the Duroc breed ($P<0.001$). All fatty acids from omega-3 and omega-6 series reached significant ($P<0.05$) higher values in the dry-cured shoulder from Duroc breed than in the Celta breed.

Key Words – Autochthonous breed, nutritional value, traditional meat product

I. INTRODUCTION

Traditionally, meat from Celta pigs (an autochthonous pig breed reared in the north west of Spain) has been used for manufactured dry-cured meat products [1]. Previous studies showed that muscles from Celta pigs breed contain higher amounts of intramuscular lipids than industrial breeds [2]. In addition, intramuscular fat content and its composition play an important role in meat quality, especially in products with high added value and human health [3]. On the other hand, there are numerous studies relating the amount of intramuscular fat with a favourable effect on sensory characteristics of dry-cured meat products [3]. Thus, the aim of this research was to study the influence of breed (Celta vs. Duroc) on the fatty acid (FA) profile of dry-cured shoulder.

II. MATERIALS AND METHODS

II.1 Sample preparation and collection

For this study, forty-nine shoulders were obtained from Celta and Duroc breed pigs (29 from Celta and 20 from Duroc breeds). Shoulders were processed according to Reina *et al.* [5]. After dry-cured process, *Triceps Brachi* muscle was extracted, minced and homogenized to carry out the FAs analysis.

II.2 Fatty acid profile

Total fat was extracted from 10 g of ground meat sample, according to Bligh and Dyer method [6]. Total fatty acids were quantified according to Domínguez *et al.* [7] procedure. Separation and quantification of the of total methyl esters (FAMES) was carried out following the chromatographic conditions described by Domínguez *et al.* [7]. Individual FAMES were identified by comparing their retention times with those of authenticated standards, and the results were expressed as % of total FAs.

II.3 Statistical analysis

The effect of breed on fatty acids profile was examined using a one-way ANOVA, where this parameter was set as dependent variables and breed as fixed effect. The values were given in terms of mean values and standard error (SEM). All analyses were conducted using the IBM SPSS Statistics 19.0 program software package.

III. RESULTS AND DISCUSSION

Overall, the FA composition in the dry-cured shoulder from both breeds were predominantly MUFA (~50%) followed by SFA (~37%) and PUFA (~13%). The SFA and MUFA were higher ($P<0.01$) in the Celta breed, whereas the PUFA were higher in the Duroc breed ($P<0.001$) (Figure 1). This result is in agreement with Domínguez *et al.* [8] which noted a high concentration of SFA and MUFA in intramuscular fat from Celta pigs. On the other hand, dry-cured shoulder from Duroc breed showed a significant higher ($P<0.001$) amount of PUFA than the Celta breed. This is an expected result taking into account that there was a higher content of SFA in the dry-cured shoulder from Celta pig breed, that provokes a low content in polar lipids [9], which are rich in MUFA [10], thus low amounts in polar lipids means low content on MUFA.

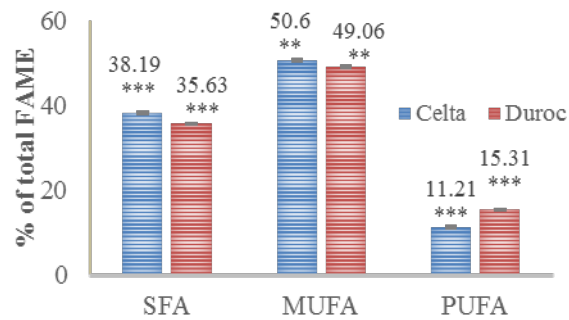


Figure 1. Fatty acids of dry-cured shoulder from Celta and Duroc breeds

On the other hand, oleic and palmitic acid were the most abundant FAs, showing higher values in dry-cured shoulder from Celta pig breed (data not shown). In addition, higher amounts of stearic acid were found in the Celta ($P<0.001$) breed. On the contrary, higher amount of linoleic acid was noted in dry-cured shoulder from Duroc breed ($P<0.001$). Finally, all FAs from omega-3 and omega-6 series reached significant ($P<0.05$) higher values in the dry-cured shoulder from Duroc breed than in the Celta breed

IV. CONCLUSION

Dry-cured shoulder from Duroc breed achieved a healthier FA profile than Celta breed, but the major content of SFA in dry-cured shoulder from Celta breed makes it more appropriate for technological applications.

ACKNOWLEDGEMENTS

Authors are grateful to GAIN (Regional Government) (Project PORCEL/2015) for the financial support.

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