

Influence of Celta pig diet on fatty acid profile and cholesterol content of pâté

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Objectives: Diet is one of the factors, that most affects the composition of pork. Thus, the modification of the feed supplied to these animals can influence the lipid profile of processed meat products. Therefore, the purpose of this research was to evaluate the influence of a traditional diet on the fatty acid profile and cholesterol content of pâté elaborated from Celta pigs.

Materials and Methods: In this study, 10 Celta pigs were employed. The animals were divided into two groups according to the diet treatment. One of the groups (4 pigs) was fed with different natural resources from the farm (fruits, potatoes, wheat, etc.), while the other (6 pigs) were fed with commercial feeding. After the slaughter of the pigs, *Longissimus dorsi* muscle, liver, and subcutaneous fat were removed from each carcass. Subsequently, two batches of pâté were elaborated for each diet treatment (traditional and commercial). The pâtés were elaborated according to Pateiro et al. (2014) using the following ingredients: pork liver (33%), lean (20%), fat (30%), salt (2%), sodium nitrite (0.015%), sodium ascorbate (0.025%), sodium caseinate (1%), milk powder (2%), sodium hydrogen phosphate monohydrate (0.5%) and water (11.5%). Fatty acid profile was determined according to the procedure described by Domínguez et al. (2022), meanwhile, total cholesterol was separated and identified by normal phase-HPLC technique (López- Fernández, et al. 2022). The influence of the pig diet was evaluated utilizing a one-way ANOVA.

Results and Discussion: The outcomes obtained in this work displayed that both batches of pâté showed the same trend in terms of their content of saturated (SFA), monounsaturated (MUFA), and polyunsaturated (PUFA) fatty acids, regardless of pig feed. In this line, the tendency of individual fatty acids was the same, being palmitic acid (C16:0), oleic acid (C18:1n-9) and linoleic acid (C18:2n-6) the majority within fatty acid groups, respectively. The diet treatment had no significant ($P > 0.05$) effect on the total SFA, PUFA and omega-6 (n6) content and cholesterol concentration. Nevertheless, pig feeding significantly affected the total amount of MUFA and omega-3 (n3) present in pâté, as well as the individual fatty acids previously mentioned (i.e. C16:0, C18:1n-9, and C18:2n-6), showing the highest values in pates elaborated from commercial feeding. These differences affect the nutritional quality of the pâté since the lipid profile is one of the most important parameters in this fatty product (Vargas-Ramella et al., 2020). Thus, it was observed that the PUFA/ SFA and n6/ n3 indices were significant affected ($P < 0.05$) by diet treatment, showing the most adequate values from a healthy point of view (high PUFA/ SFA and low n6/ n3) in pâtés elaborated from pig feeding with commercial feeding.

Conclusions: In conclusion, the use of a traditional diet did not modify the cholesterol content. However, the pig diet affected the values of MUFA and n3 content present in pâté. Thus, the inclusion of natural sources in pig feed worsened the PUFA/ SFA and n6/ n3 nutritional indices of this meat product. Consequently, the use of natural resources in pig feed requires that the diet must be balanced to achieve meat products with an adequate fatty acid profile. This could improve the nutritional quality of meat products such as pâté, at the same time providing a more sustainable porcine production along with significant reductions in foodstuff wastes. Significant reductions in commercial feeding demand could improve the economic development of small farms.

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Key words: Pig commercial feed, Traditional feeding, Lipid profile, Cholesterol, Pâté