

Inclusion of the chestnut on the finishing diet of Celta pig: Influence on total amino acid profile

Noemí Echegaray¹, Roberto Bermúdez¹, Paulo E.S. Munekata¹, Márcio Vargas-Ramella¹, Mirian Pateiro¹, Javier Carballo², José M. Lorenzo¹

¹ Meat Technology Center, Ourense, Spain

² Universidade de Vigo, Ourense, Spain

Introduction: Meat is an important source of protein for humans and has an elevated nutritional value in the diet mainly due to its high biological protein values (Pereira & Vicente, 2013). In this regard, pork meat is an important source of amino acids in the human diet, which has a good relationship between essential and non-essential amino acids. However, the nutritional composition and the physicochemical parameters of pork meat can be affected by various factors such as the feeding of the animals (Bermúdez et al., 2012; Domínguez et al., 2015). Therefore, the influence of a traditional foodstuff such as chestnut fruit on the total amino acid profile of the Longissimus dorsi muscle of the Celta pig reared in extensive system was analysed.

Material and methods: For this purpose, 9 pigs were fed chestnut and 9 pigs were fed commercial feed during their finishing diet (the last 3 months). After slaughter of the pigs by electrical stunning and exsanguination, the Longissimus dorsi muscle was extracted from the right side of each carcass for posterior determination. The total amino acid profile was determined through an initial acid hydrolysis of protein and a subsequent derivatization and identification of hydrolysed amino acids by high performance liquid chromatography (HPLC), following the procedure previously described by Domínguez et al. (2015). Additionally, the influence of the inclusion of chestnut in the finishing diet on the total amino acid profile was examined employing a one-way ANOVA with the IBM SPSS Statistics 23.0 software package (IBM, Chicago, IL, USA).

Results: The results obtained in this study showed that the chestnut diet did not significantly ($P > 0.05$) influence the concentration of any individual amino acid (neither essential nor non-essential amino acids) of the Longissimus dorsi muscle of the Celta pig, but a similar trend was observed in both diets. In this way, glutamic acid and lysine were the major amino acids found in the non-essential and essential fractions, respectively, for both feedings. On the other hand, tyrosine and cysteine were the amino acids found in the lowest concentration within the fraction of non-essential and essential amino acids, respectively. In an identical way, the ratio between essential and non-essential amino acids was not affected by the inclusion of the chestnut fruit, being very similar in meat from both pigs. These facts suggest that the nutritional value of meat (many times determined by the quantity and quality of amino acids present/ absent in the food) is very similar in both feedings (Pereira & Vicente, 2013).

Conclusions: The outcomes obtained in this research displayed that the use of chestnut as nourishment in the finishing diet of the Celta pig does not have significant ($P > 0.05$) influence on the amino acid profile of the Longissimus dorsi muscle. Similarly, the relationship between essential and non-essential amino acids was not significant ($P > 0.05$) affected by the diet employed. Thus, it can be stated that the nutritional value with respect to the amino acid profile of both meats did not display significant ($P > 0.05$) differences.

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