CHANGES IN THE FATTY ACID PROFILE DURING THE AGEING OF PORK MEAT: EFFECT OF THE SEX AND THE VITAMIN E SUPPLEMENTATION

Aldai N. [1], Fernández-Quintela A. [1], Nájera A. I. [2]
(1) Nutrición y Bromatología. (2) Tecnología de los Alimentos. Facultad de Farmacia. Universidad del País Vasco/Euskal Herriko Unibertsitatea. Paseo de la Universidad 7, 01006 Vitoria-Gasteiz. Spain.

Background

Intramuscular fat (IMF) contributes positively on eating quality of meat. Its content and composition may change depending on several factors, i.e. sexr and diet (Castellini et al., 1998; Elias Calle et al., 2000). Furthermore, it has been established the positive effect of supra-nutritional supplementation with vitamin E on IMF fatty acid oxidation (Flachowsky et al., 1997; Bosi et al., 2000).

Objective

The objective of this work was to study the effect of these two factors, sex and vitamin E dietetic supplementation, on the fatty acid profile throughout the ageing of pork.

Material and Methods

Sixteen crossbred pigs (Large White x Landrace) were randomly divided in two groups of eight (4 male, 4 female). One group was fed on a control diet containing 10 mg of vitamin E/kg of the diet (BASAL), and the second group received an α-acetate tocopherol supplemented diet formulated to contain 200 mg of vitamin E/kg of the diet (E200). Both diets were given *ad libitum* for 90 days. Samples (M *Longissimus dorsi*) were stored at 4 ºC under continuos fluorescent light for imitation of retailer practices for 1, 3 and 6 days. After that time samples were removed and lipids were extracted according to the method of Bligh and Dyer (1959) and methylated with 14 % boron trifluoride-methanol by the method of Morrison and Smith (1964). Fatty acid methyl esters were resolved on a Hewlett-Packard chromatograph model HP 6890 equiped with a split/splitless injector and a FID detector. The column consisted of a fused silica tube Supelco SPTM-2380 (30m x 0.25mm i.d. x 0.2μm film thickness). Oven temperature was initially held at 135ºC for 4 min and then increased to 180ºC at a rate of 10ºC/min and held there for 8 min. The temperature was again raised this time to 240ºC at a rate of 4ºC/min, and held there for 8 min. Injector and detector temperatures were both 255ºC, and carrier gas (N_2) flow rate 1 mL/min. Hendecanoic acid was added to the meat samples as an internal standard for quantitative analysis. Statistical analysis was done using the MANOVA and ANOVA procedures of SPSS 8.0.

Results and discussion

Seventeen fatty acids were quantified and then grouped in total fatty acids (TFA), saturated fatty acids (SFA), monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFA). Statistical analysis showed significative differences in fatty acids contents depending on sex, α-acetate tocopherol dosage and ageing period of meat, as well as interactions among all these factors. Summing up, females showed lower individual fatty acid contents than males, except for several PUFA ($C_{20:3}$; $C_{20:4}$; $C_{20:5}$; $C_{22:4}$). Furthermore, in most cases we obtained significative differences, animals fed on α-tocopherol supplemented diets showed less individual fatty acid quantities than animals on the standard diet (without α-tocopherol supplementation).

Pertinent literature

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