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Effect of two sous-vide cooking methods on fatty acid composition and oxidative stability of longissimus thoracis muscle from pigs receiving a diet containing or not extruded linseed

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To verify the effects of two different sous-vide cooking conditions on lipid oxidation and fatty acid (FA) composition of longissimus thoracis (LT) muscle, 24 pigs, evenly divided into two groups of 12 subjects each, were used. One group received a barley-soya bean meal diet (C) and the second was given the same feed where 5% of extruded linseed partly replaced barley, to obtain a n-3 FA enriched diet (L). At slaughter, from each left half carcass, two samples of LT muscle were collected, packed under vacuum and stored at $-18\text{ }^{\circ}\text{C}$ until analysis. The samples were cooked in water bath according to two different methods: at high temperature ($80\text{ }^{\circ}\text{C}$) and short-time i.e. samples left until the core temperature reached $70\text{ }^{\circ}\text{C}$ (A); at low temperature ($60\text{ }^{\circ}\text{C}$) and long-time (15 h) (B). After cooking, the samples were refrigerated ($2\text{ }^{\circ}\text{C}$) for 24 h. Oxidative stability was measured by a dosage of the 2-thiobarbituric acid reactive substances (TBARS) content, expressed as milligrams of malondialdehyde (MDA)/kg of meat, and FA composition was determined by capillary gas chromatography. The content of each fatty acid is expressed as a percentage of the total FAs detected. The statistical analysis was performed by means of ANOVA, using the GLM procedure of SAS. Dietary treatment (C vs. L) and cooking condition (A vs. B) were used as independent variables. The different sous-vide cooking conditions affected neither lipid oxidation nor FAs percentage of LT muscle. Extruded linseed feeding brought about an increase of the percentage of total n-3 FA (2.67 vs. 0.98; $p < .01$) and also of polyunsaturated fatty acids (12.02 vs. 9.68; $p < .01$) in intramuscular

fat but did not affect lipid oxidation. This enabled to obtain pork with a more favourable $n-6/n-3$ ratio (3.68 vs. 10.42 in L and C group, respectively; $p < .01$), according to the global health guidelines. Thus, an enriched linseed diet ameliorates the FA composition of pork. The effect of the two different sous-vide cooking methods on lipid composition and oxidative stability of pork does not differ, irrespective of dietary treatments.

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