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Antioxidant mixture supplementation in the medium-heavy pigs: effects on performances and shelf life of *Longissimus Dorsi* muscle

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The improvement of quality and shelf life of meat has received great attention in the production chain. Moreover, the relationship between diet and health has modified in consumer habits, demanding healthier products. Due to concerns about the synthetic antioxidants safety, meat products containing natural antioxidants are needed to improve the consumers' acceptability. A previous study showed that natural antioxidant supplementation in pig enhanced meat vitamin E content. The aim of the study was to investigate the effects of dietary supplementation with antioxidant mixture in medium-heavy swine on growth performances, oxidative status and shelf life of *Longissimus Dorsi* (LD) muscle. Seventy-four pigs were assigned to two experimental groups: one was fed a commercial diet (CTR) and the second one the same diet with the addition of an antioxidant mixture containing vitamin E and verbascoside (AOX) from Verbenaceae extract. The antioxidant mixture was administered to pigs 45 days before slaughter. Growth performances were recorded and oxidative status was assessed by KRL test. At slaughter, the LD muscle was sampled from 10 pigs per treatment and packaged under modified atmosphere (MAP). Physical, chemical, and microbiological parameters were evaluated during 15 days (T0; T6; T12; T15) of storage at 4°C and sensory analyses was performed using a difference test. Blood total antiradical activity was higher ($P < 0.05$) in AOX group than control (94.4 ± 2.8 HT50 CON *vs.* 124.8 ± 3.7 HT50 AOX). Dietary treatment positively affected ($P < 0.05$) carcass dressing percentage (79 ± 0.27 % AOX *vs.* 80 ± 0.26 % CON). Oxidative stability and colour indices were significantly affected ($P < 0.05$) by dietary treatment and storage time. No differences in total viable count was observed in relation to dietary treatment. Sensory analysis revealed a loss of colour during storage along with the appearance of off odours. The shelf life of LD under MAP, based on sensory data, was established at 15 days. The present data shows that dietary supplementation with antioxidant mixture improve total antioxidant status and carcass dressing percentage in medium-heavy pigs. The oxidative and colour stability in LD muscle was improved by antioxidant supplementation during storage under modified atmosphere.

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Effects of breed and a different lipid supplement on beef quality in heifers: performances, meat quality and fatty acid composition of *Longissimus dorsi* muscle

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The present study is part of a larger project aimed to evaluate both the most suitable breed and the most appropriate nutritional strategies to improve healthy properties (ω -3 fatty acids concentration in intramuscular fat) and to increase marbling in muscle of beef. Sixty four heifers of two crossbreed Bleu Belge x Frisian (I) and Charollais x Aubrac (F), after an adaption period of forty days, were divided into 2 homogenous groups that differ for dietary lipid source used: group C (control) received a basal diet composed of ground ear corn (4.5 kg), wheat bran (1.5 kg), wheat straw (1 kg), commercial feed (3.8 kg) containing rumen-protected vegetable fats (6.3% of feed); group T (treated) received the basal diet supplemented with a different commercial feed containing extruded flaxseed (0.8 kg/head/day). Animals were subdivided in 8 boxes (4 thesis, 16 animal per thesis, 8 heifers per box), diets were offered *ad libitum* and weekly daily consumption of each boxes was recorded as a difference between feed delivered and refusal, all diets were isoproteic and isoenergetic. Slaughtering took place every week after 10 months of rearing; carcasses were chilled for 24 h before sampling. Samples of *Longissimus Dorsi* (LD) from 56 heifers were collected for meat quality analysis (composition %, Warner-Bratzler shear force, instrumental color parameters and cooking loss) and fatty acid content. Results were analyzed by two-way ANOVA, with breed and diet as main effect, using Student's t-test and Newman-Keuls as post-hoc test. As regards zootechnical parameters and slaughtering performances statistical differences were observed and Charollais x Aubrac (F) groups shown better results; conversely marbling score improved in I groups (Bleu Belge x Frisian), due both to breed and interaction between breed and dietary treatment. No differences were observed on meat quality and composition. Concerning fatty acid profile of LD muscle, statistical differences were observed in MUFA and α -linolenic acid content in IT groups, due both to diet and to interaction between breed and dietary treatment. In conclusion animals deriving from FT groups seem to have better growth and slaughtering indexes (conformation and fattening) and ω -6/ ω -3 ratio in intramuscular fat, but IT groups have a better marbling score and a high level of α -linolenic acid content in LD muscle. The crossbreed Bleu Belge x Frisian (I) appears to be more interesting for our purposes.