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Effect of pigs feed phytonutrient enrichment on pork sensory quality and shelf life (#247)

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Introduction

Different approaches have been proposed for the production of carcass meat with a modified chemical composition (Balev et al., 2015). Newly discovered plant-based phytonutrients such as Siberian larch (*Larix sibirica* Ledeb) dihydroquercetin (DHQ) (Fomichev et al., 2016) and extract of distilled rose (*Rosa damascena* Mill.) petals (Schieber et al., 2005) have been investigated for benefiting meat quality. The objective of this work was to determine the effect of antioxidant feed enrichment of pigs with 3.5 and 7.5 mg DHQ (groups D1 and D2, resp.), or 0.255 and 0.545 g dry distilled rose petals (DDRP) (groups R1 and R2, resp.)/kg live weight/day added as supplements to pig diets on sensory properties and shelf life of pork m. *Longissimus lumborum* (LL) stored 7 d at 2 ± 1°C.

Methods

A total of 120 pigs were randomly divided to five groups - control (C) and four experimental groups (D1, D2, R1 and R2) each fed 45 d prior to harvest with different levels DHQ and DDRP enriched diets. The sensory properties of carcass meat were estimated by a 7 member's panel as is described Meilgaard et al. (1987). A hedonic scale was used. The total microbial count and moulds/yeasts count were determined by ISO 4833:2001 method. ANOVA analysis was used to estimate the significant ($p < 0.05$) differences (SAS Institute Inc., http://www.jmp.com/support/notes/35/282.html).

Results

The sensory scores of raw pork LL demonstrates that supplementation with 0.545 mg DDRP/kg live weight/day (group R2) guarantees the maximal ($p < 0.05$) sensory quality (Fig. 1). The highest sensory scores of aroma and flavor ($p < 0.05$) were found in experimental groups R1 and R2 after meat cooking (Fig. 2). The use of 0.545 g DDRP/kg live weight/day as forage supplement has strong antimicrobial effect on LL. Compared to control (C), the most significant ($p < 0.05$) decrease of the total count of mesophilic microorganisms was found in experimental groups D1 and R2, and of the molds and yeasts in the experimental groups R2 and D1(Fig. 3). Our results can be explain with bioactivity of DHQ (Artem'eva et al, 2015) and DDRP flavonol glycosides (Schieber et al., 2005) against pathogenic microorganisms. They confirm the hypotheses for effectiveness of DHQ and DDRP use not only in animal and poultry husbandry (Fomichev et al., 2016; Balev et al., 2015) but for pork quality and shelf life improvement.

Conclusion

The conclusion was made that pigs feed with enrichment of 3.5 mg DHQ/kg live weight/day and as well as 0.545 g DDRP/kg live weight/day can increase the pork sensory quality and shelf life.

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Literature

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Notes

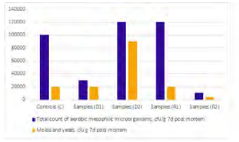

Figure 3. Microbiological data of pork stored 7 d at 2 ± 1°C influenced by pig's supplementation

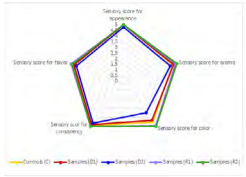

Figure 2. Sensory scores of cooked pork affected by pig's supplementation

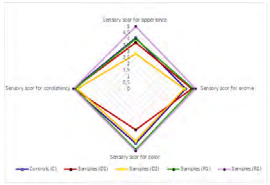

Figure 1. Sensory scores of pork Longissimus lumborum affected by pig's supplementation

Notes