The Impact of Chosen Oils Seeds and Food Oils to Supplementation of Last Fattening Pig Period on Fatty Acids Structure in Pig Muscle Fat

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Abstract
The impact of chosen oils seeds and food oils to supplementation of last fattening pig period on fatty acids structure in pig muscle fat. The fatty acids profile in broilers feed is possible to influence their share in a desired structure, which can balance the n-6: n-3 ratio in food, according to the consumers needs. Flax seed to lactating goats can be used as nutritional supplement to reduce saturated fatty acids and increase polyunsaturated fatty acids in milk. A significant increase in CLA in milk was achieved by supplementation to goats.

The experimental groups of pigs was fed in the last month of fattening with a basal diet which incorporated various fats resources (lean seed 100 g/kg, linseed oil -2%, raps press seed 150g/kg (110g fat), raps oil 2%). The indicators (food intake, body weight gain, and the conversion) were established during the experiment, and in the end, the content of essential fatty acids (linoleic and linolenic acids) in pigs meat were determined. The data was analyzed and statistically interpreted. There are some variations of the determined fatty acids content in muscles as well as in muscles fat in the for experimental groups compared to the control group. The content of SFA was reduced and the content of PUFA and MUFA fatty acids are increased.

Keywords: fatty acid profile, food vegetal oils, pig, protein and fat structure, ω-3 enriched foods

1. Introduction
For consumers has many information about meat quality from functional foods for healthy. Near the rich of protein content is the meat low content of fat. Aim of this experiment is the information of fatty acids in monounsaturated MUFA and polyunsaturated form in the body fat of muscle. Many researchers organized experiments with addition chosen food oils and oil seeds to supplementation of fatty acids structure in milk of ruminants and meat from chicken, pig and fish. In two experiments at three experimental groups (each n=9 cows) the supplement of protein through extracted soya and AMINOTEK were observed. The contents of milk nutriments were decreased at the control group and at the both experiment groups in January. The content of lysine is constant. The oil acid could be basic component in another non-saturated acid in milk fat (NNKT) [1]. Flax seed to lactating goats can be used as nutritional supplement to reduce saturated fatty acids and increase polyunsaturated fatty acids in milk. A significant increase in CLA

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in milk was achieved by supplementation to goats [2].
The content of polyunsaturated fatty acids (PUFA) in poultry meat depends on their content in the diet to great extent. Enrichment of poultry products within 3 PUFA (ω-3) may provide an excellent alternative source of these acids in the human diet [3]. Fatty acids profile in broilers feed, it is possible to influence their share in a desired structure, which can balance the n-6: n-3 ratio in food, according to the consumers needs [4]. Unsaturated lipids readily undergo oxidation to produce peroxides and aldehydes. The oxidative stability of unsaturated lipids decreases as their degree of unsaturation increases. Poultry meat with enhanced linolenic acid content is more susceptible to oxidative damage than meat with similar concentration of linoleic acid. The balance of volatile compounds resulting from an oxidative breakdown of n-3 PUFA causes the occurrence of fishy aroma and off taste characteristic of the meat of poultry fed a higher level of n-3 PUFA [5]. Effects of high fat rapeseed press cake on growth, carcass, meat quality and body fat composition of leaner and fatter pig crossbreeds [6].

The aims of this study was to investigate the effect of chosen addition of chosen oil seed and food oils at last fattening

2. Materials and methods

Thirty crossbreed fattening pigs (Czech Large White x Czech Landrace) x (Czech Landrace x Pietrain x Hampshire) in period CDP-concentrate feed with addition of food oils was in control station mixed individual for each experimental group separate. In experiment last month of fattening group of pig in five groups of pig was fed with a basal diet, which incorporated various fats-instead barley (lean seed 100 g/kg, linseed oil-2%, raps press seed 150g/kg (110 g fat) , raps oil 2%).
The indicators (food intake, body weight gain, and the conversion) were established during the experiment, and in the end, the content of essential fatty acids (linoleic and linolenic acids) in pigs meat were determined. The data was, analyzed and statistically interpreted. Feed, meat analyze by the standard method AOAC 2003 (structure of mixture was wheat, barley, soya bean diet and premix), Amino acids on the equipment and methods AAA 400, fatty acids of methyl esters by Colognado Monzese Italy on department of chemistry were analyzed. By the four experimental groups, there are, some variations of the determined fatty acids content in pectoral muscles (musculus longissimus lumborum et thoracis) as well as in breast. The animals are weight each 14 days, feed concentrate for groups were registered. Water consumption was ad libitum. The experiment was end in average weight 105 kg. Animals were slaughtered in special slaughter house, and after 24 hours post mortem the individual samples of meat from each pigs were collected in PE bags and frozen. Statistic Anowa method for the evaluation were used.

3. Results and discussion

The pig meat in Czech Republic is 40% of total meat consumption. In this meat is too much saturated fatty acid there have negative effect on human healthy. There are two ways how solve this negative situation. First one is crossbreed with the meat pigs as Landrace, Pietrain, Haempshire. Second opportunity is feed the food oil and oil seed, but it is necessary the daily dose observed and also the influence of meat structure. In last experiment the whole supplementation of food oils and oil seeds were observed. The content of SFA are in experimental groups reduced and the PUFA and MUFA are increased. But the experiment was too expensive. In this experiment we the last fattening period with the same orientation we were organized. The content of crude protein in experimental group were 155g/kg, Fat 5.2 g, 13.12 MJ MP/kg In control group 152g/kg, 2.1 g/kg , 12.7 MJ MP respective/kg. It was no statistic significant.
The results of fatty acid profile in MLLT has, in compare with control group better results in aim positive influence on healthy for human protection. The results with linseed adition Okrouhlá et al. (2013) [9], and Václavková et al. (2007) [10] described by Woods et al. (2009) [11] confirm the dietary sources of unsaturated fatty acids for animals and their transfer into meat, milk and eggs.
In our experiment the polyunsaturated PUFA and monounsaturated MUF A acid were increased but the PUFA/SFA recommendation less than 0.4 are in experimental groups higher 0.434-0.583. The other PUFA/SFA was better in profile and with conjugated linseed acid in group with linseed oil and raps oil, but not statistic significant. The experiments are continued.

4. Conclusions

The effect of supplementation of food oils in last period of fattening pigs has positive effect on fatty acid profile in muscles MLLT fat structure. Resource of unsaturated fatty acids MUFA, PUFA has protective effect for human health of heart and head.

Acknowledgements

This study was supported by grant projects NAZV QJ1210144, NAZV QJ1210375

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