Growth performance, meat quality and carcass composition of broilers fed rapeseed-enriched diets

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Introduction

The majority of European broiler production’s need for protein is today covered by imported soybean meal. Using imported soy in protein production is questioned, and limiting its use for European meat production is therefore in focus. Replacing imported soy protein by domestic protein, could be one way to strengthen the European broiler brand. Rapeseed is a protein crop that is grown in many EU states, including Denmark, which gives the nation opportunities to increase its use in broiler production. Furthermore, replacing soybean meal with rapeseed could also result in cheaper broiler feed prices. The main objective of the present study was to compare the growth performance, foot pad quality, carcass composition and meat flavour in broilers fed diets including 0, or 15% rapeseed meal from Fjerkræslagteri where they were electrically stunned and slaughtered. On Day 36, the carcasses were cut and the pectoral muscles were stored at +2ºC for 6, 7, 8 and 10 consecutive days and on the next day (day 34) they arrived at the broiler farm.

Material and Methods

Bird and production: In total 720 broilers of the breed Ross 308 were divided into 12 pens, each containing 60 broilers. There were 30 males and 30 females in each pen. The birds were raised on a conventional broiler farm.

Broiler diet: The two diets tested were both based on soybean meal, wheat and corn and both contained the corresponding rapeseed meal. The control diet contained 0% rapeseed meal, while the test diet contained 15% rapeseed meal. Diets were optimized to be equal for protein, could be one way to strengthen the broiler farm.

Replacing imported soy protein by domestic rapeseed in the diets; 15% rapeseed (15% rapeseed diet) were present in all sessions. After the session the sample presentation order was randomized.

Analysis of volatiles: When meat samples were cooked for sensory testing, extra samples were prepared based on a standard curve for daily weight gain. On day 10, the broilers performed well on a rapeseed-enriched diet. Almost all of these compounds are expressed as % fatty acid of the total content of detected fatty acids. Detected fatty acids.

Sensory study: The effect of broiler diet showed significant differences were relatively small with only effects occurring at the prolonged refrigerated storage.

Conclusion

Performance: The broilers performed well on a 15% rapeseed meal diet. Volatiles: Increased oxidation after feeding rapeseed diets, but not enough to be detected sensitively. Fatty acid composition: Feeding rapeseed did not influence total fat content, as well as the contents of the saturated fatty acids C16:0 and C18:0. MUFAs (C18:1) was reduced in the diet containing rapeseed. PUFAs C18:2 was increased and C19:3 reduced in the rapeseed diet only. These results are expected as the fatty acid profile found in chicken meat reflect the fatty acids found in the diet.

Sensory: The overall measurable sensory differences were relatively small with only effects occurring at the prolonged refrigerated storage. Based on these results, there seem to be no economical advantage to use 15% rapeseed meal in the broiler diet as a replacement for soybean meal. However, for the price rapeseed and soy varies over time, and in this light, the results can be of importance. If the price difference between rapeseed meal and soybean meal will be large, the overall production economy could benefit from the use of up to 15% rapeseed meal in the diet.

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