



DOES CASTRATION AFFECT THE QUALITY OF MUSCLE TISSUE IN MORAVKA PIG BREED?

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Objective

The aim of this research was to evaluate the castration effect on chemical and fatty-acid compositions of *longissimus dorsi* muscle in Moravka, an autochthonous pig breed of combined production abilities.

Materials and Methods

The trial conducted included 16 pigs: 7 entire males (EM) and 9 surgical castrates (SC). Pigs were fed *ad libitum* with complete feed mixtures: I (25-60 kg, 15 % of crude protein, and 13.6 MJ ME/kg) and II (60-120 kg, 13 % of crude protein and 13.5 MJ ME/kg). The animals were bred in farm conditions in separate, group pens (110 m² open and 40 m² covered part).

Muscle tissue chemical composition was determined by means of standard methods in an accredited laboratory.

Fatty acids as methyl esters were determined using the capillary gas chromatography with flame-ionization detector. Fatty acids were converted into fatty acid methyl esters (FAME) with tri-methyl sulphonium hydroxide according to SRPS EN ISO 5509:2007 method. Fatty acid methyl esters were analyzed on the apparatus GC-FID Shimadzu 2010 (Kyoto, Japan) on cyanopropyl-aryl column HP-88 (column length 100, inner diameter 0.25 mm, film thickness 0.20 µm). The volume of 1 µL was injected. Injector and detector temperatures were 250 °C and 280 °C, respectively. Nitrogen was used as the carrier gas, 1.33 ml/min, with split ratio 1:50, and hydrogen and air as detector gases. The column furnace temperature was programed in the range from 120 °C to 230 °C. Total duration of analysis was 50 minutes and 30 sec.

The effect evaluation was determined by means of a General Linear Model procedure in SAS 9.1.3 software, and besides castration treatment, the model included also a linear regression effect of body weight at slaughter (BW).

Results

An average pig BW was 121 kg at the age of 333 days. The increase of BW for 1 kg resulted in the increase of water content in muscle by 0.06 % (p=0.040). The EM group (Table 1) had higher water content (+2.3 %, p=0.047) and lower content of cholesterol (-15 mg/100 g, p=0.031). The same group had lower content of saturated (-3.6 %, p=0.003) and mono-unsaturated (-5.6 %, p<0.001), and a higher share of poly-unsaturated (+9.0 %, p<0.001) fatty acids compared to SC. From a nutritional aspect, the ratio of omega-6 and omega-3 essential fatty acids was more favorable in SC compared to the EM group (3.9 vs. 18.5, p<0.001).

Table 1. LSMMeans Differences between EM and SC group

Variable	Difference (EM vs. SC)	SE	Significance
Water, %	2.3	1.0	0.047
Proteins, %	1.0	0.7	0.166
Fat, %	-1.4	1.8	0.473
Ash, %	0.1	0.1	0.180
Cholesterol, mg/100 g	-15.0	6.2	0.031
pH	0.2	0.1	0.052
SFA, %	-3.6	1.0	0.003
MUFA, %	-5.6	1.1	0.000
PUFA, %	9.0	0.8	0.000
n-6, %	13.1	0.5	0.000
n-3, %	0.5	0.1	0.000
n-6/n-3	14.6	1.2	0.000



Conclusion

Castration had an effect on the quality of muscle tissue but regardless of some benefits determined in the EM group a main restricting factor for more massive fattening of non-castrated animals is a boar taint in the meat.

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