Production of Dalmatian prosciutto from Black Slavonian pig in a silvo-pastoral production system

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The aim of the research was to define production parameters, technological processes and feeding of Black Slavonian pigs in a silvo-pastoral production system for the production of traditional Dalmatian prosciutto. The Black Slavonian pig is an autochthonous Croatian pig breed, created in the second half of the 19th century in Eastern Croatia, in the region of Slavonia. It was created by crossing the Hungarian Swallow Bellied Mangalitsa and the English Berkshire breed. Later, at the beginning of the 20th century, the American Polland China and the English Large Black breed also took part in the breeding of this breed. The black Slavonian pig is distinguished by its high resistance to diseases and conditions of keeping, and throughout history it was bred mainly on drains and pastures, and during the winter it was kept in oak forests where it was fed exclusively on oak acorns. This breed is especially known for its high-quality muscle and fat tissue, which makes it suitable for processing into traditional pork meat and fat products. Dalmatian prosciutto is a traditional dry cured ham produced in the historical region of Dalmatia, along the Adriatic Sea. Dalmatian prosciutto is produced from the thighs of multi-breed crossbred pigs, fattened up to a body weight of 170 kg and aged 12 months. Fresh hams are salted with sea salt, smoked in cold smoke and matured in specific conditions for 1.5 to 3 years. Dalmatian prosciutto is protected by a designation of geographical origin at the level of the European Union. The research was conducted on 120 fattening piglets of the Black Slavonian breed, of both sexes, which were kept in the traditional way on drains and fed with cereals and green alfalfa, and in the last fattening period lasting 3 months, the pigs were kept in an oak forest and fed exclusively with oak acorns. Pigs were slaughtered in a commercial slaughterhouse at the age of 18 months and an average weight of 145 kg. At the same time, 120 commercial farm-raised pigs used in the production of Dalmatian prosciutto were slaughtered, and a comparative analysis was made of the slaughtering properties of the slaughtered pig carcasses and the technological properties of muscle and fat tissue. Among the meat quality parameters, pH values were determined in musculus semimembranosus (MS) and musculus biceps femoris (BF), using a Mettler MP 120-B device (Mettler-Toledo, Schwerzenbach, Switzerland). The final pH values (pH24) were determined 24 h post mortem at the same locations as pH45. Flesh color (CIE L*, a* and b*, CIE, 2007) was determined using a Minolta CR-410 colorimeter (Konica Minolta Sensing Ltd, Singapore, calibrated against a ceramic white plate (Y = 84.9; x = 0, 32 and y = 0.3381), with a D65 light source and a standard two-stage observer. The color was determined on the muscle section. The release of meat juice was measured according to the EZ drip method (Christensen, 2003). Intramuscular fat of of MS and BF was determined using near -IR FoodScan equipment (Foss Analytical, Hillerød, Denmark). Carcasses of Black Slavonian pigs were statistically significantly lighter (145 kg vs.173 kg; $p<0.01$) as well as the corresponding thighs which were significantly lighter (12 kg vs. 16 kg; $p<0.01$). In terms of qualitative indicators of muscle tissue, statistically significant differences were found between the examined groups of pigs in terms of pH value 45 minutes after slaughter in MS and in BF. The pH value 24 hours after slaughter was statistically significantly higher ($p<0.05$) in the muscle of pigs kept in the silvo-pastoral system in relation to the pH value of the muscle of commercial pigs. Muscle color values (CIE L*, CIE a* and CIE b*) were statistically significantly lower ($p<0.01$), that is, the color of MS and MF was darker in pigs from the silvo-pastoral system. The values of meat juice release in MS and BF 24 and 48 hours after slaughter were statistically significantly ($p<0.01$) lower in pigs from the silvo-pastoral system. Intramuscular fat content was statistically significantly higher in MS and BF pigs from the silvo-pastoral system. Then, the fresh pork legs of both groups of pigs were processed according to the specification for Dalmatian prosciutto, salted, smoked and left for ripening. Prosciutto from Black Slavonian pigs reached full maturity at 3 years of age, compared to prosciutto from commercial pigs whose prosciutto was matured after 12 months. Weight loss during ripening (calo) was significantly lower ($p<0.01$) in pigs from the silvo-pastoral system (29%) compared to commercial pigs (39%). We can conclude that the silvo-pastoral system of keeping Black Slavonian pigs is very suitable for the production of high-quality traditional Dalmatian prosciutto.

Keywords

native breeds, acorn, oak, autochtonous pig breed, prosciutto, production systems, quality, silvopastoral systems

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