

The Quality of Traditionally Smoked Polish Regional Products, Produced of Raw Material Obtained From Native Animal Breeds

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Introduction: The native domestic animal breeds accompany human more than 6 thousand years. They supplied food, served as a draft force and were part of the landscape. Nowadays, in Poland the altogether number of registered and preserved with special in situ programs, is 83 breeds, varieties and lines, where 43 are mammals, 35 domestic birds and 5 bees lines. They are breed in 3259 farms. The raw materials originating from Polish home animal breeds (Polish Red Cattle and White Backed Cattle; Polish Mountain Sheep-colour variety, Heather-Wrzosówka Sheep, Świniarka Sheep, Great Poland Sheep, Olkuska Sheep, Kamieniecka Sheep, Żelaźniańska Sheep, Uhruska Sheep, Pomeranian Sheep; geeses – Zatorska, Kielecka, Biłgorajska, Lubelska, Podkarpacka, Kartuska, Rypińska, Suwalska, Pomorska; ducks – Polish Pekin, Lowered Duck; pigs: Żłotnicka Spotted, Żłotnicka White, Puławska) are applied for production of the best quality traditional, local products.

These products are produced and preserved with traditional methods. Food smoking is one of the oldest food preservation techniques. Since the discovery of fire, this method has been used to preserve meat, fish, cheese and some fruits. Smoking is a process of saturating, with smoke, food products which, previously, have been cured or salted and dried. Traditional smoking is a process, performed in accordance with artistry and knowledge of local producers, and includes drying, cold, warm and hot smoking and hot smoking and roasting, to receive pale, dark, brown, cherry etc. color, depending on, centuries old, local tradition; conducted in traditional smoke chambers, where the smoke and temperature are generated from burning of thick deciduous tree wood, with proper humidity, in a fireplace located directly inside the chamber and above which, at a certain distance, is located the smoked and processed product, hanging on the smoking sticks. During smoking the important meaning, because of their properties, have phenols, which are characterized with specific odour, which builds sensory characteristics of smoked products. Also phenols show an antioxidant activity. The important, but harmful, components of smoke are polycyclic aromatic hydrocarbons, which can migrate to food directly and/or indirectly. The direct route is smoking, grains drying, in dryers heated with some derivatives of oil, and/or contamination by PAHs of food additives. The research conducted on PAHs harmfulness caused that, in 2002, the Scientific Committee on Food at European Commission declared 15 compounds of PAH's group as potentially genotoxic and cancerogenic for people.

Materials and methods: In the scope of project "The ways of usage and the preservation of genetic resources of farm animals under sustainable development" co-financed by the National Centre for Research and Development within the framework of the strategic R&D program "Environment, agriculture and forestry" – BIOSTRATEG, contract number: BIOSTRATEG2/297267/14/NCBR/2016 were analyzed traditionally smoked meat products, fish and cheeses.

The meat products, fish and cheeses were minced and average samples obtained were subjected to following chemical analyses: water, fat, protein, total ash, NaCl content. Polycyclic aromatic hydrocarbons (PAHs) were analyzed according to the HRGC-HRMS method (CZ_SOP_D06_06_180 - except chap. 11.3.3.1 - 11.3.3.7, 11.3.3.9 I, 11.3.4 (US EPA 429, ISO 11338); PAH16: Determination of polyaromatic hydrocarbons by isotope dilution method using HRGC-HRMS).

Results: The differences in protein and fat content in pork, beef, sheep, horse and goose products are caused by breed differences in meat composition. All these products contained amounts of salt within the limits required by the standards. From analysed smoked meat samples, lamb ham did not meet any of the applicable limits (for PAHs levels) set by law regulations. Among 35 sausages 5 did not meet any applicable limits. The highest PAHs content and percentage share of exceeding the PAHs critical limits were observed for 'kabanos' type sausage. None of the studied smoked fish products exceeded the PAHs critical limits.

Conclusions: Traditionally smoked products of animal origin were characterized by very good quality parameters and high marks awarded by consumers. Promotion of traditional products obtained with raw materials of native animal breeds origin, from above assessed will favor the development of animal breeding and their stocks rising.