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Review paper

Characteristics of traditional guaranteed meat specialties in Slovakia

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ABSTRACT

An agricultural product intended for human consumption or foodstuff with a traditional composition, or produced according to a traditional production method, can become a traditional speciality guaranteed (TSG). This possibility encourages the diversification of agricultural production and has positive consequences in several areas. The introduction of a TSG boosts farmers' revenues and maintains the population in less favored or remote areas by promoting the rural economy. It also increases the market value of the products of economic operators, by guaranteeing that they are distinguishable from other similar products or foodstuffs. In addition, thanks to the introduction of this designation, consumers will able be to make more informed choices on the basis of clear information on the specific characteristics of the products they buy. Major TSG products containing meat sold in Slovakia include: *špekačky*, lovecký salami, Spiš sausages, and Liptov salami. These products are contained among TSGs of the Slovak and also Czech Republic. The reason is that all these products have a production tradition in both the Czech Republic and Slovakia. However, Spiš sausages and Liptov salami have a primary geographic relation to the Slovak Republic.

1. Introduction

The European Union recognizes three types of trademarks for foodstuffs: protected geographical indication (PGI), protected designation of origin (PDO) and traditional guaranteed specialty (TGS). Slovakia has already registered: 11 products designated as PDO — Bardejov honey, South Slovak wine, Central Slovak wine, Eastern Slovak wine, Carpathian pearl (wine), Little Carpathian wine, Nitra wine, Zitava pepper, Ruby of Skalica, Stupava cabbage, Tokaj wine; 13 registered as PGI — Skalica trdelnik, Bryndza, Parenica, Ostiepok, Tekov salami cheese, Zazriva and Orava korbáčik, Klenovec cheese (syrec), Hrušov lepnik, Levice malt, Liptov droby, Slovak wine, Zazriva vojky. In total, there are only 84 foods in the world registered in the register of guaranteed traditional EU specialties, and among them, Slovakia has registered 7 products — Sheep's smoked cheese, Sheep's lump cheese, Bratislava roll, Liptov salami, Spiš sausages, Lovecký salami, Špekačky. TGS refers to typical ingredients and production process. The TGS must be produced in a traditional way, having a traditional composition and character. Only food that has been used on the same market for at least one human generation, i.e., for at least 25 years, and which differs significantly from similar products can be labeled 'traditional' (*eAmbrosia*, 2023; EU No. 1151/2012).

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2. Liptov salami

The name Liptov salami is associated with a specific type of meat product. It is known and used thanks to its long tradition. The original Liptov salami smells of mace, nutmeg, ginger and smoking. When cut, it has a soft, uniform appearance. It is made from beef and pork, cutlet and bacon. The Slovak Association of Meat Processors and the Czech Association of Meat Processors jointly applied for registration in the register. In 1956, at the meat processing plant in Dubnica nad Váhom, they tried to prepare a product that would differ from other finely ground meat products. Therefore, part of the bacon was replaced with pork cutlet. The mixture was not ground into a mosaic, as was common at the time, but finely. Paprika was not added to it at that time, because it was not customary to add it to meat products in the Liptov region. That is why the new product was named Liptov salami. At the start of the 1970s, the unique recipe for Liptov salami was created at this research department, and the product went on to find great favor. It was gradually put into production at many meat processing enterprises. Industry standard ON 57 6913 was adopted in 1978. This standard has been regularly updated and revised. One of the most recently renewed joint standards is the technical-economic standard (THN) for product number 764421 64, produced on 1 September 1988. The introduction to this standard includes the following note: 'Conforms to ON 57 6913'. In 1978, the Western Slovakia Meat Industry works at Trnava began producing Liptov salami in cooperation with the research department of the GRT. Until 1990 we produced Liptov salami according to the traditional recipe and did not use paprika. Liptov salami allowed pork fat to be processed to an increased level, and around 600 kg was produced at the Trnava factory daily. It was very popular among consumers because of its distinctive taste (EC. No. 509/2006).

3. Traditional Lovecký salami (hunter's salami)

Traditional lovecký salami differs from other long-lasting fermented meat products on the one hand by its characteristic flat prism shape, which the product acquires by shaping during maturation. Furthermore, it is the specific taste of the product defined by the prescribed composition of the main raw materials, spices, but also by the applied fermentation process. The beginning of the production of traditional lovecký salami can be dated back to the beginning of the 20th century. At this time, it was produced mainly in the winter season due to more favorable conditions for the ripening process and also due to the demanding processing of the raw materials by mild freezing, which is a prerequisite for the creation of perfect graining of the raw material. Later, after the improvement of the cooling and the machinery of the smokehouses, its production was focused mainly on supplying the Easter and Christmas markets and the summer tourist season. Today it is a year-round, traditional and popular durable product. The product "Traditional Lovecký Salami" was listed in the publication, Technology of Meat Industry (Part II, 1955, Main Administration of Meat and Fish Industry, Ministry of Food Industry) and was subsequently included in the Technical and Economic Standards for Meat Products (1st part, set valid from January 1, 1977, MP — General Directorate Prague) as a Czechoslovak state standard under the number ČSN 57 7269, which resulted in the expansion of its production according to this standard throughout the territory of the then Czechoslovakia. Gradual changes in production technologies, due to the limited availability of some production raw materials, but also with the aim of increasing the safety of the final product, resulted in the creation of a stable recipe, which is listed in the description of the production method for traditional lovecký salami. To produce traditional lovecký salami, these ingredients are used: beef with a fat content of up to 10%, pork with a fat content of up to 20%, pork cutlet (pork meat with a fat content of up to 30%), pork meat with a fat content of up to 50%, pork bacon, nitrite salting mixture, antioxidant [E 315 or E 316 (max. 500 mg/kg expressed as erythorbic acid)], ground black pepper, sugar, garlic (in the form of flakes, concentrate or powder in an amount corresponding to the standard amount of fresh garlic), ground cloves, starter cultures [combined culture containing strains of lactic acid bac-

teria (genus *Lactobacillus* and/or *Pediococcus*) and coagulase-negative cocci of the family Micrococcaceae and collagen casings (E.C. No. 509/2006).

It is well known that lactic acid bacteria are among the most important microorganisms used in food fermentation. They contribute to the flavor and texture of fermented products and inhibit food spoilage bacteria by producing inhibitory substances and lactic acid (*Morelli et al*., 2012). An important feature of starter cultures used in the production of fermented meat products is their ability to colonize the meat environment and dominate the microbial community of fermented products in competition with autochthonous microbiota (*Barbosa et al*., 2015). The starter culture must compete with the natural microbiota found in the raw material used with regard to metabolic activities, growth rate and survival in adverse conditions during the production of fermented meat products. Low temperatures, pH, and water activity, high salt concentration and low oxygen availability are among the most important preservation effects, creating an unfavorable environment for microorganisms during meat fermentation (*Vignolo, et al*., 2015). *Casquete et al*. (2011a; 2011b) called for the use of autochthonous starter cultures that not only improve the homogeneity and safety of fermented meat products, but also do not change their sensory properties. They further emphasized the importance of selecting combined starter cultures consisting of strains suitable for each maturation procedure. They concluded that the flavor and aroma of fermented meat products is the result of the combined interaction of lactic acid bacteria producing lactic acid, small amounts of acetic acid, ethanol and acetoin with lactic acid bacteria with proteolytic and lipolytic properties as well as Gram-positive catalase-positive cocci (GCC+) strains, which are essential for the overall sensory quality of fermented meat products. Most of the coagulase-negative strains of *Staphylococcus xylosus* and *Staphylococcus carnosus* are characterized by catalase activity and the ability to reduce nitrate to nitrite. Their antioxidant properties prevent yellowing of fats (*Barriere et al*., 2001; *Rosenstein et al*., 2009), and their catabolism of pyruvate into diacetyl and of acetoin is responsible for the aroma of butter (*Sondergaard and Stahnke*, 2002).

The drying time is approximately 14 days in order for the fermentation process to take place sufficiently in the product at a temperature and relative humidity allowing the development of starter cultures and uniform drying of the product (temperature range 16°C to 27°C; relative humidity range 75% to 92%). In general, fiber, non-meat protein and mechanically separated meat cannot be used in fermented meat products in Slovakia. The product is sold in the characteristic shape of a flat rectangular block with a gut casing.

4. Spiš sausages

Spiš sausages were born in Spišské Podhradie at the turn of the 19th and 20th century. There were three butchers at their birth: Michal Blaško, Karol Grieger and Štefan Varsányi. 'Spiš sausages' have a good name not only in the Spiš region, Slovakia as a whole and the Czech Republic, but also in other countries. Among those who regularly enjoyed them were President T.G. Masaryk and Count Albín Csáky, who was speaker of the upper house of the Hungarian Parliament and Minister for Education and Culture. This influential man made sure that these sausages were served at Hungarian cabinet meetings. After the Second World War, a standard was adopted throughout the Czechoslovak Republic, in the context of standardization and maintenance of traditional quality, establishing the composition of the ingredients and defining the production method (Quality standard TP of 8 September 1954, Ministry of the Food Industry). It is clear from historical records that the product recipe gradually changed somewhat, with the addition of a proportion of beef to the recipe; this did not change the nature or use of the product, but on the contrary, this combination of ingredients improved its flavor (ÚNK 57 7260, 1964). The product's defining characteristic features are its succulence after being cooked and the mildly piquant taste that the paprika imparts. This recipe is still used by producers of Spiš sausages today (CSN 57 71 34, dating from 1977, and later STN 57 71 34). Spiš sausages are registered with name reservation in the Register of Traditional Specialties Guaranteed since 2011 (Commission

Regulation (EU) no. 159/2011). The name "Spiš sausages" is specific in itself, because it is well-established and well-known in both Slovakia and the Czech Republic, has a long tradition and a good reputation and relates to *párky'*sausage of a particular type. The specific character of Spiš sausages derives from the composition and proportions of the ingredients and seasonings used, the smoothness of the homogeneous mass, the use of sheep-intestine casings and their physical and chemical and organoleptic properties. Spiš sausages are contained in sheep-intestine casings of up to 24 mm in diameter and are separated by twisting. The individual sausages weigh about 50 g. The surface of the product is smooth or slightly wrinkled, orange-brown in color and glossy to matt. The cut surface is pinkish red, owing to paprika, and small collagen particles are permitted. The product has a pleasant, freshly-smoked aroma. The taste is slightly hot, appropriately salty and succulent to the bite when heated up. Consistency is soft to compact (EC. No. 509/2006).

5. Špekačky

Špekačky was applied by the Czech Association of Meat Processors and by the Slovak Association meat processors. The name "špekačky" expresses the specific character of the agricultural product or foodstuff, which derives from the unevenly distributed pieces of bacon (spek) in a coarse mixture with a small proportion of collagen particles. The basic character of the products is smoked, and heat-processed meat sausage made from a continuous strand several meters long, stuffed into casing made of pork small intestine or beef rounds, and the products are golden-brown in color. The size of each piece is 4.0 to 4.6 cm in diameter and 8 to 9 cm in length. They weigh around 65 to 85 g. In terms of their consumption, ingredients and production processes, špekačky have been known in the territory of the Czech Republic for over 100 years now. They began to be produced on a large-scale scale in the second half of the 19th century, with the development of the smoked meat industry, and came to be regarded as a high-quality meat product in beef round casing. In 1891, they were exhibited. After meat-production and meat-processing businesses were nationalized, the composition of the ingredients, additives, casings and technological processes became subject to technical and economic standards, which continued to improve the quality of this traditional Czech product. Production of špekačky was covered by the technical and economic standards for meat products (Part 1 of the rules applicable from 1 January 1977, meat industry directorate-general, Prague) under No. ČSN 57 7115. As a result, their manufacture according to those standards spread throughout the former Czechoslovakia. As the production technology gradually changed, and owing to the limited availability of certain ingredients or casings (for example beef rounds), a set recipe was created, which is given above in the description of špekačky production methods. Bacon, chopped into pieces up to approximately 8 mm, is then added to the mixture, which is stuffed into beef rounds or pork small intestine casing with a maximum diameter of 4.0 to 4.6 cm. The mixture is then divided off into individual segments with string. The strands of product are tied to a smoking stick, then taken to a smokehouse, where they are dried and smoked in order to achieve their distinctive color and aroma. The smoked product is then heat-processed at 75 to 78°C until the middle of the product reaches 70°C for at least 10 minutes (EU No. 1151/2012).

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