Quality standardization and certification of traditional food products

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Abstract. The results presented in this study were obtained during the implementation of the Interreg-IPA CBC project Traditional and Standard Quality - TASQ (HUSRB/1602/41/0146). The main goal of this project was quality standardization and certification of traditional food products in order to expand their market presence within the Serbia and Hungary cross-border region, using innovative processing and marketing techniques. In order to achieve that, the TASQ quality assurance system was developed, and the common certification mark Q was registered by Intellectual Property Office (IPO) in both cooperating countries. Numerous traditional food products were collected and analysed for nutritional and sensory quality as well as for safety. In total, 158 products across nine groups of traditional foodstuffs (meat products, dairy products, honey, vegetable oils, processed fruits and vegetables, juices/beverages, pasta and baker’s wares, confectionery, spices and teas) were certified with gold, silver or green Q mark, representing the quality level. A new internet platform (www.tasq.rs) was developed with the purpose to help traditional food producers to promote and sell their products on a wider market. The assigned trademark is clearly indicated for each certified product within the producers’ profiles on TASQ internet platform, and represents a guarantee of product quality intended to raise customer confidence.

1. Introduction

Traditional food products (TFP) are an important part of European culture, identity and heritage. Thus, all European countries have cultural traditions linked with specific TFP, which are in most cases elaborated in micro/small processing facilities, consequently resulting in non-standardized quality or even questionable safety [1, 2]. Increasing consumer demand for TFP emphasizes the need for a significant improvement regarding processing, packaging and labelling practices, guaranteeing high standards in food quality and safety, while keeping the original formulations and typical sensory properties.

A certification mark is a distinctive sign that guarantees that a product meets the standards and characteristics pre-established by the proprietor of the mark, who is obliged to monitor and regularly check that the products with the mark manufactured by third parties meet the established requirements [3]. During the TASQ project lifetime, the expert panel developed a quality assurance system (QAS) for sensory, nutritional and processing quality evaluation in order to distinguish between TFP of high quality. Its integral part are the rulebooks for each TFP group and three-level quality rating scheme. The certification mark, Q, was registered in the IPO of the Republic of Serbia and the Republic of Hungary,
and it is used as a guarantee of high sensory and nutritional quality, i.e. the basic quality indicators of TFP. In combination with additional quality indicators, such as organic product, geographical indication, autochthonous/wild variety/species/breed, traditional production and certified HACCP, TFP can be awarded with a gold, silver or green Q certification mark.

Additionally, manufacturers of traditional foodstuffs, for the most part, are not able to reach urban markets due to insufficient and inadequate promotional and sales activities. In order to maintain and expand the market share of TFP, an innovative internet platform (www.tasq.rs) was designed and developed aiming to help traditional food producers to promote and sell their products on a wider market, i.e. to provide a channel for a direct contact between producers in rural areas and consumers in urban ones, who are craving for tasty, local and ethnic foods. The TASQ web-platform allows traditional food producers to set up their own small virtual shops, creating profiles of their products. The quality of certified TFP is clearly distinguished by assigning one of three defined types (colours) of Q certification mark.

2. Materials and Methods

At the beginning of the project implementation period, mapping of traditional food producers, i.e. identification and selection of the initial group was done. In total, 100 manufacturers were involved in project activities in both countries. As a part of the evaluation process, on-site visits were performed and producers were consulted regarding improvement in production processes. Simultaneously, TFP typical for this geographical region were collected and analysed, in order to certify those with the best performing quality characteristics.

Developed QAS consists of basic and additional quality indicators. Basic quality indicators are related to sensory and nutritive quality. Assessment of total sensory quality (TSQ) was done by a six-member sensory panel, evaluating dominant sensory properties (appearance, taste, odour and texture), using 5-point category scales and appropriate coefficients of importance (CI). The sum of corrected score-values (individual scores given to selected sensory characteristics multiplied by the corresponding CI) for all assessed sensory properties represents the TSQ of a product [4]. According to TSQ, products were classified into three categories following the scheme: TSQ ≥ 90% - excellent sensory quality; 80% ≤ TSQ < 90% - very good sensory quality; 70% ≤ TSQ < 80% - good sensory quality.

Determination of the structural/nutritive quality was done according to a previously defined quality aspect for each group and type of TFP. It could be the share of a valuable raw material/component used for processing, the content of a valuable nutrient in the final product or the content of salt, impurities, etc. By quantifying the difference in the content of the above mentioned components with respect to the prescribed minimum/maximum value, the appropriate nutritive quality level was determined.

The additional quality indicators were: organic product; geographical indication; autochthonous/wild variety/species/breed; traditional production and certified HACCP system. These quality indicators were assessed by inspecting the processing facility and production process, interviewing the manufacturer and by reviewing the relevant documentation (certificates, permits, product specifications, etc.). According the combination of basic and additional quality indicators, TFP were awarded with the appropriate type of Q certification mark (gold, silver, green).

Regarding the meat products, the specifications of the most important traditional products (dry-fermented sausages; dry-cured meat products; dry-cured bacon; pork greaves and cooked sausages) were defined within the developed QAS. The specifications contain the legal requirements of the two neighbouring countries, and defined requirements that the product must satisfy in order to achieve a specific level of sensory and nutritive quality. The differentiation between analysed traditional meat products was done according to overall sensory quality and additional quality indicators, while in the case of dry-fermented sausages, the level of nutritive quality was also considered. It was assessed by quantification of meat protein content (Kjeldahl N x 6.25), according to the recommended ISO standard [5]. In this regard, products having at least 25% higher content of meat proteins than required were categorized as excellent quality, while products containing 15% or 10% more meat proteins than required were classified as very good and good quality, respectively.
3. Results and Discussion
Throughout the project lifetime, overall, 158 products across nine selected groups of traditional foodstuffs (80 in Hungary and 78 in Serbia) were awarded with Q certification mark. When it comes to meat products, 28 of them in total were certified, out of which approximately 60% came from Serbia (Table 1).

| Total number | Dry-fermented sausages | Dry-cured meat products and bacon | Cooked sausages | Other |
|--------------|------------------------|----------------------------------|-----------------|-------|
| Serbia       | 17                     | 12                               | 2               | 3     | 0     |
| Hungary      | 11                     | 6                                | 2               | 0     | 3     |
| Sum          | 28                     | 18                               | 4               | 3     | 3     |

Regarding the quality level, most of the certified meat products (23) were awarded with gold Q certification mark, indicating an exceptional quality, i.e. excellent sensory and/or nutritional properties, plus added value expressed through some of the additional quality indicators. Three (3) products were awarded with silver Q certification mark, representing top quality product having excellent or very good sensory and/or nutritional properties, plus added value. Two (2) products were granted green Q certification mark. It indicates the prominent quality product that, in addition to very good or good sensory and/or nutritional properties, has the added value expressed through some of the additional quality indicators, or possesses excellent sensory and/or nutritional properties without added value (Fig. 1).

![Figure 1](image-url)

**Figure 1.** Distribution of different types of Q certification mark (gold, silver, green) among awarded meat products

The majority of certified Serbian traditional meat products (approx. 70%) belong to a group of dry-fermented sausages. *Sremski kulen*, *Petrovačka kobasica* and *Lemeški kulen*, the most important dry-fermented sausages from Vojvodina (Northern Serbia) protected with designation of origin (PDO) at national level [6, 7], were within this group. Mean values and standard deviations of TSQ and protein content for two samples (different manufacturers) of each of these traditional dry-fermented sausages are given in Table 2. According to TSQ value, four products were rated as excellent regarding sensory quality (≥ 90%), indicating typical sensory properties that are particularly pronounced, without or with some slight modifications and/or errors that do not affect significantly the overall product quality. TSQ values for one sample each of *Petrovačka kobasica* and *Lemeški kulen* indicated products with slight alterations or certain defects of sensory properties, amounting 88.6% and 79.5%, respectively. The highest concentration of protein was found in *Sremski kulen*, being almost the same in both analysed samples (37.3% and 37.4%). Considerably lower content of this valuable nutrient was found in samples of *Petrovačka kobasica* and *Lemeški kulen*, ranging from 30.4% to 32.5%. The obtained results regarding the protein concentration are primarily the consequence of different formulation of raw
sausage mixtures, type of casing and processing conditions. Thus, *Sremski kulen* is made of first category meat, containing very small amount of fat and connective tissue. Despite observed differences in protein concentration, the values of this parameter registered in all examined sausages were much higher, i.e. 25% higher, than minimal requirements (24%) for “domestic kulen” made of coarsely minced first category meat and stuffed into pork appendix or rectum [8].

Table 2. Total sensory quality and protein content of three traditional dry-fermented sausages

| Sample          | Total sensory quality (%) | Protein content (%) |
|-----------------|----------------------------|---------------------|
| *Sremski kulen* |                            |                     |
| 1               | 90.8 ± 2.91                | 37.3 ± 0.06         |
| 2               | 95.5 ± 2.07                | 37.4 ± 0.13         |
| *Petrovačka kobasica* |                        |                     |
| 1               | 88.6 ± 2.02                | 30.4 ± 0.16         |
| 2               | 94.3 ± 2.58                | 32.5 ± 0.16         |
| *Lemeški kulen* |                            |                     |
| 1               | 79.5 ± 2.88                | 30.4 ± 0.08         |
| 2               | 97.1 ± 1.97                | 32.4 ± 0.01         |

4. Conclusion

Among other food products typical for the Hungary-Serbia cross-border region, a large number of traditional meat products, especially dry-fermented sausages, have peculiar characteristics which arise from the region specific environmental/climatic conditions and use of local raw materials, formulations and manufacturing techniques. In total, 28 meat products were awarded Q certification mark, and 23 of these products were granted gold Q mark, representing exceptional quality product. Serbian traditional dry-fermented sausages with geographical indication certainly possess high quality, confirmed with high value of TSQ and protein concentration. The awarded type (colour) of Q certification mark is clearly indicated for each certified product within the producers’ profiles on TASQ internet platform (www.tasq.rs), aiming to raise consumer confidence in products’ quality.

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