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RESEARCH ON QUALITY AND SAFETY OF SMOKED QUAIL MEAT

***Addnotation:** This paper is dedicated to the study of the quality and safety of cooked smoked quail meat, a local product, which is made for public consumption. In order to assess the quality and safety of the researched product, the sensory, physicochemical and microbiological characteristics of the product were studied and compared with the standard for this type of product. Following the research, it was found that the product we researched is of good quality, harmless to the consumers, according to the sensory, physicochemical and microbiological indices.*

***Keywords:** food safety, protein, cooked smoked quails, standard.*

The quality and food safety consists in respecting the hygienic-sanitary norms within the production process, and which aims at guaranteeing the health of the population by consuming safe food from a sanitary-veterinary point of view, in terms of health, safety, freshness and nutritional standards. The manufacturer must ensure the correct traceability and quality control of the manufactured product. Obtaining a quality product is the result of a coherent, conscious and sustained process. In this process there are a number of actions or amount of actions that must be performed at a predetermined level of fairness [4,6]. In our paper, the research was carried out on cooked smoked quail meat - a local product, in the period between 12.11.2020-22.12.2020, the product being made for public consumption.

The evaluation of the product quality was carried out within the I.P. "Republican Center for Veterinary Diagnosis. Three samples of the investigated material were taken. All qualitative indices assessed for the product under investigation were made in accordance with the requirements in force for this product. Sampling and determination of food quality and safety characteristics, presentation and labeling were performed in accordance with the rules and methods of analysis, established by the normative and legislative acts in force [7].

Therefore, in order to assess the quality of the investigated product, the organoleptic, physicochemical and microbiological examinations were performed in accordance with the standard requirements for this product category, and the results were processed according to usual methods and compared with the requirements of this product.

The assessment of the quality and safety of the cooked smoked quail meat comprised the sensory analysis: external appearance, color, consistency, taste, smell, etc. The smoked quail meat which has been assessed according to all the organoleptic characteristics specific to this product. The obtained results regarding these organoleptic characteristics are shown below in Table 1.

The results presented in Table 1 regarding the organoleptic characteristics of cooked smoked quail meat correspond to all the requirements presented in the standard in force for this category of products, no deviations were found for the researched product. Cooked smoked quail meat is packaged in an airtight film with

a volume of 1.0 kg. The external appearance of the carcass shows a clean surface, without tears and fringes, wrapped in vacuum film. There is a small amount of liquid in the package, the consistency is elastic. In section, the muscle tissue is pale pink to pink, without gray spots. The smell is characteristic of the type of product, with aroma of smoke and spices, without foreign smell. Pleasant taste, characteristic of the type of product, suitable for salting and seasoning, without foreign taste. The surface of the product is brown, sprinkled with whole and chopped spices. We conclude that all organoleptic characteristics correspond to the standard in force, regarding the freshness of the analyzed product.

Table 1

Organoleptic characteristics of cooked smoked quail meat

Characteristics	Cooked smoked quail meat		STAS analysis method
	Admissibility conditions according to STAS	Obtained results	
External appearance	Whole or parts of the carcass, with or without skin, covered with or without a mixture of spices, the presence of liquid and/or jelly in the package	Carcass with clean surface, without tears and fringes, packed in vacuum film, with whole and crushed spices. A small amount of liquid in the package.	GOST 9959-91, PS-CSA-PRO-01
Consistency	Elastic consistency. Pale pink to pink muscle tissue.	Elastic consistency. Sectional muscle tissue from pale pink to pink without gray spots	GOST 9959-91, PS-CSA-PRO-01
Taste and smell	Taste of spices, without foreign smell or taste.	Smell characteristic of the type of product, with aroma of smoke and spices, without foreign smell. Pleasant taste, characteristic of the type of product, suitable for salting and seasoning, without foreign taste	GOST 9959-91, PS-CSA-PRO-01
Colour	Brown	The surface of the product is brown, sprinkled with whole and chopped spices.	GOST 9959-91, PS-CSA-PRO-01

However, the assessment of the quality and safety of food requires a number of concrete product aspects, which are determined in laboratory conditions by physicochemical indices and which refer to the mass fraction of salt, the mass

fraction of protein, the mass fraction of fat, mass fraction of nitrites, etc. [3.5]. Carrying out the physicochemical analysis of cooked smoked quails` meat, in comparison with the admissible requirements of the regulations in force, we have obtained the results that are presented below.

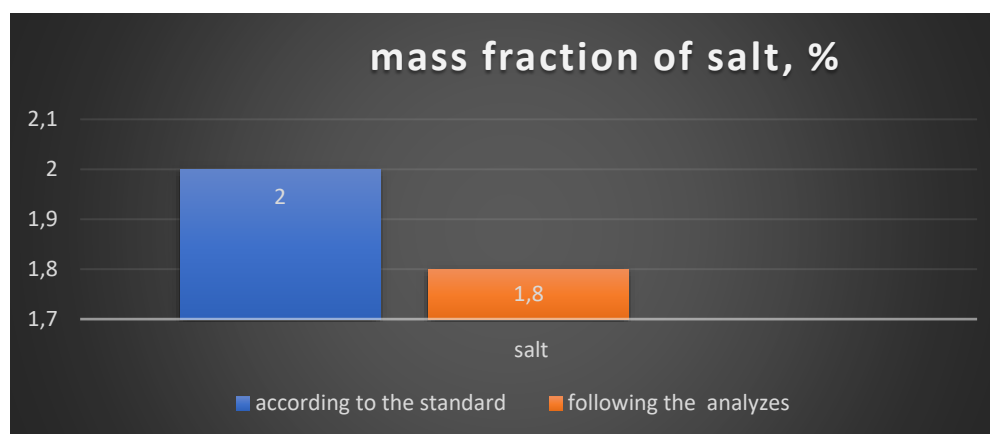


Fig.1. Mass fraction of salt, %

The mass salt fraction of smoked quail meat, according to the admissible norms stipulated in the standard, is de facto, following the performed analyzes, an average value of the mass salt fraction of $1.8 \pm 0.1\%$ was found. The obtained results are specific to the product range that falls within the permissible limits of the requirements in force for this product and are shown in the figures below. For cooked smoked quail meat, an average fat mass of $3.4 \pm 0.1\%$ was found, an index which also falls within the permissible limits of the requirements of the regulations in force.

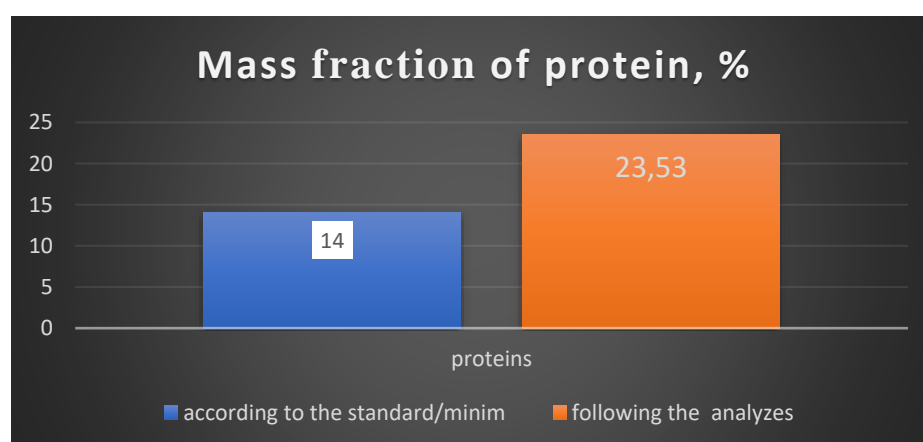


Fig. 2. Mass fraction of protein, %

The obtained results for the cooked smoked quail meat, regarding the mass fraction of proteins, are within the limits of the admissible norm, as an average of $23.53 \pm 0.27\%$ was established.

Regarding the Nitrite mass fraction, mg/kg, max this parameter was detected in the requested product and constituted 150.0 mg/kg, max, the permissible limits of the requirements of the standard in force for this product.

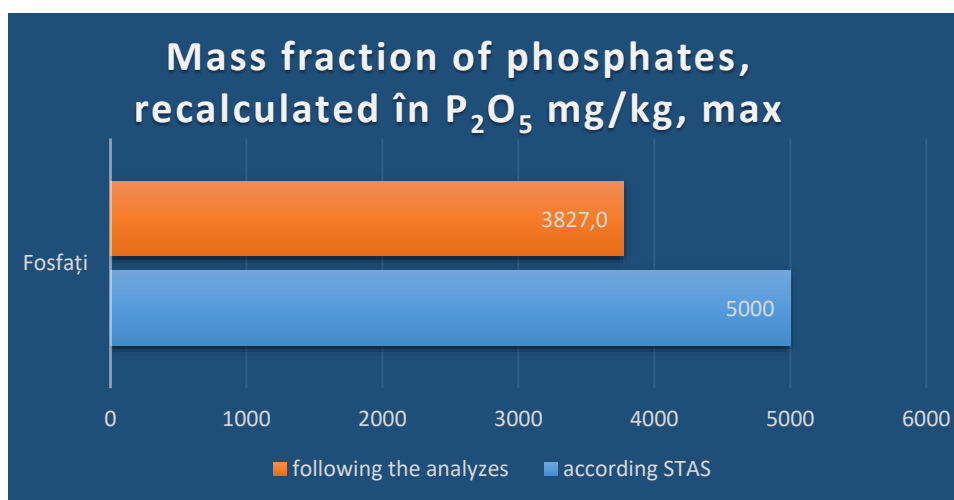


Fig. 3. Mass fraction of phosphates, recalculated in P_2O_5 mg/kg, max

The mass fraction of phosphates, recalculated in P_2O_5 mg/kg, max in cooked smoked quail meat is 3827.0 ± 119.22 mg/kg, max and falls within the permissible limits of the requirements of the standard in force.

In conclusion, we could underline that all the physicochemical parameters investigated by us, on the analyzed product, fall within the admissible limits regarding the examined parameters, and no deviations were found, indicating the good quality and safety of the researched product.

It should be also noted that the microbiological control plays an important role in the safety and quality of meat products [1,2,8]. The microbiological characteristics of the quality and safety of the cooked smoked quail meat are mentioned in the requirements in force for this product, in order to highlight their presence or absence, and also indicate the quality and safety of this product.

The estimated microbiological indices for cooked smoked quail meat are shown in Table 2.

The microbiological indices for cooked smoked quail meat

Characteristics	Admissibility conditions according to STAS	Obtained results	STAS analysis method
		Cooked smoked quail meat	
Listeria monocytogenes in 25 g	Nu se admite	Not detected	SM EN ISO 11290-1:2017
Number of colonies at 30°C ufc/g	De facto	<10	SM EN ISO 4833-1:2014
Coliform bacteria, g	De facto	Not detected in 1,0:0,1 g	SM ISO 4831-1:2010
Sulphite reducing clostridia ,g	De facto	Not detected in 1,0:0,1 g	GOST 29185-91
E. coli beta-glucuronidase positiv, ufc/g	De facto	<10	SM SR ISO 16649-2:2011
Salmonella spp (detection), g	De facto	Not detected in 25 g	SM EN ISO 6579-1:2017

Analyzing the obtained data from laboratory research, we can conclude that the cooked smoked quail meat falls within the limits of the requirements in force. This determines the fact that this delicious product is of high quality and safe for consumers. Another argument would be the sensory, physicochemical and microbiological indices.

Conclusions

– The sensory characteristics regarding external appearance, color, taste, smell and consistency of the **Cooked smoked quail meat** taken under study are within the permissible limits of the standard for this product.

– Following the analyzes performed on the physicochemical indices of the cooked smoked quail meat, we can conclude that the obtained data fall within the limits imposed by the standard and indicate that the product is made of quality raw material, according to the technical requirements indicated in the standard.

– The microbiological parameters reflect food safety. In the case of cooked smoked quail meat, according to the standard, there should not be present anaerobic mesophilic microorganisms, as well as aerobic and facultatively anaerobic mesophilic microorganisms, which has been demonstrated following the microbiological examination of the product. The results have confirmed the quality and safety of the investigated product, harmless to the health of the consumers.

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