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DEVELOPMENT AND COMMODITY EVALUATION OF SEMI-SMOKED SAUSAGES USING PASTE-LIKE CONCENTRATES FROM AMARANTH AND LUPINE SEEDS

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A B S T R A C T

The article gives a descriptive characteristic of lupine and amaranth seeds (historical development, chemical composition, use in the food industry). The principle of operation of a mechanoacoustic homogenizer is considered. Based on the analysis of the principles of quality management, qualimetric tools for assessing the quality of pasty concentrates and products using them are described. The main consumer preferences for pasty concentrates have been formed. A commodity assessment of meat zrazy using paste-like concentrates from lupine and amaranth seeds is given. The economic efficiency of food products using pasty concentrates has been calculated.

K E Y W O R D S

Lupine paste concentrate, semi-finished meat products, commodity evaluation, microbiological evaluation.

Relevance of the Topic

The significance of the meat industry in the system of the national economy is determined, first of all, by the fact that it is designed to provide the population with food products that are the main sources of protein and essential nutrients. In this regard, it is necessary to expand the range of combined meat products with the involvement of local raw materials, including vegetable origin.

The use of vegetable proteins in the production of meat products is due to a decrease in their cost while maintaining quality, which helps to increase the competitiveness of products.

Achievements in the development of modern technologies and consumer properties of combined meat products, incl. for specialized purposes, are laid down in fundamental and applied research by academicians of the Russian Agricultural Academy I.A. Rogova, A.B. Lisitsyna, I.F. Gorlova, V.I. Ivashova, H.H. Lipatov, professors L.S. Kudryashova, A.I. Zharinova, V.M. Poznyakovsky and others.

Currently, soybean products are most often used as a plant component in the production of meat products. It should be noted that with the advent of genetically modified soybeans on the market, meat industry specialists pay great attention to expanding the raw material base of competitive vegetable proteins. Promising are the seeds of lupine and amaranth. Works in this area are isolated and require further development.

The aim of the study was the development and commodity evaluation of meat products using the example of semi-smoked sausages using paste-like concentrates from lupine and amaranth seeds.

In accordance with the goal, the following **tasks** are being solved that determine the structure of the work:

- To conduct sociological studies of consumer preferences of city residents and their attitude to the use of vegetable additives in meat products;
- Scientifically substantiate the feasibility of using paste-like concentrates from amaranth and lupine seeds in the production of semi-smoked sausages;
- To develop a recipe and technology for semi-smoked sausages using paste-like concentrates from amaranth and lupine seeds;
- To give a commodity assessment of the developed products, to determine the regulated quality indicators, including nutritional value, terms and modes of storage;
- Develop and approve technical documentation, conduct industrial testing.

The object of the study was a lupine paste concentrate.

Materials and Methods of Research.

We have proposed the use of a lupine paste concentrate, which is obtained by hydromechanical dispersion during seed processing using a mechanoacoustic homogenizer.

The scientific novelty of the research is as follows:

- Theoretically substantiated and experimentally confirmed the expediency of using paste-like concentrates from amaranth and lupine seeds in the production of semi-smoked sausages to expand the range of combined products and ensure their nutritional value;
- A commodity assessment is given and regulated quality indicators, modes and conditions for storing new types of sausage products are established.

The genus *Lupinus* belongs to the legume family (*Fabaceae*). It has more than 850 species, only a few are used as the main suppliers of vegetable protein.

Selected food varieties of lupine are a highly nutritious, cost-effective, environmentally friendly source of high-protein vegetable raw materials, which has a number of preventive and therapeutic properties.

The main interest in lupine is due to its high protein content, which is considered a good source of lysine. Lupine protein is one of the most complete in terms of biological value, as it is balanced in amino acid composition. Lupine seeds do not contain cholesterol, lactose, which is a powerful allergen. Therefore, the use of lupine has great prospects in the development of combined food products.

The prospect of using lupine as a raw material for the food industry is determined primarily by its chemical composition and biological value (Table 1).

Table 1. Mass fraction of components in the composition of seeds

Name of culture	Protein, %	Fat, %	Carbohydrates, %
Chickpeas	22,7–30,7	4,1–4,5	25–28
Lupine	32–56	5,0–5,7	20–25
Soya	35–40	22–24,3	30–32
Amaranth	18,2–19,6	8,0–8,6	65,0–70,0
Beans	17–32	3,5–5,0	53–72
Peas	20–36	0,8–2,1	55–75

The composition of lupine seeds of food grades contains a high content of proteins (38–50%), 5– 12% fat, 20–25% carbohydrates (10–26% are dietary fibers that reduce cholesterol in the blood and are necessary for the prevention of a number of diseases) , fiber (16.2%), oils (5.95%) and sugar (5.82%). The seed oil is composed of 13.5% saturated, 55.4% monounsaturated and 31.1% polyunsaturated fatty acids. The percentage of sucrose is 71% of the total sugar content in the seeds. Lupine seeds contain 3.9 mg/kg thiamine, 2.3 mg/kg riboflavin and 39 mg/kg niacin.

A characteristic feature of the protein of this culture is a good balance of essential amino acids (Table 2).

Table 2. Amino acid composition

Culture	Valin	Isoleutin	Leucine	Lysine	Threonine	Tryptophan	Phenylalanine	Arginine	Histidine	Methionine
Peas	4,6± 0,002	3,7± 0,002	7,9± 0,003	4,66± 0,001	3,9± 0,001	1,17± 0,001	5,1± 0,001	11,4± 0,002	2,48± 0,002	1,63± 0,001
Soya	4,2± 0,001	4,0± 0,02	7,8± 0,002	3,09± 0,002	4,1± 0,001	0,92± 0,001	5,0± 0,001	6,93± 0,001	2,45± 0,002	1,73± 0,002
Beans	16,0± 0,001	-	44,0± 0,003	4,32± 0,001	11,0± 0,002	1,39± 0,001	14,6± 0,003	8,54± 0,003	3,00± 0,002	1,80± 0,002
Lupine (white)	4,9± 0,002	8,4± 0,003	5,3± 0,002	6,0± 0,001	4,3± 0,002	-	6,0± 0,001	11,7± 0,003	3,0± 0,002	1,6± 0,002
Amaranth	5,7–7,2	4,8–6,2	7,5–9,2	7,0–9,1	4,0–5,8	1,4–2,2	9,6–12,5	0,467	-	5,9–7,5

The amino acid complex of lupine in the production of food products significantly increases the amino acid score of the finished product. The limiting amino acid in the protein of lupine, as in other legumes, is methionine.

The given data on the chemical composition of lupine seeds testify to the high-protein qualities of vegetable raw materials and its use as a valuable protein product as a partial replacement for meat raw materials.

The use of a vegetable paste concentrate as a filler is relevant when creating a new type of semifinished meat products with increased nutritional and biological value, thereby reducing the cost of the finished product and increasing its yield.

The process of production of meat zrazy includes deboning, trimming of meat raw materials, formation of cutlet mass from beef and pork in equal proportions, preparation of the filling (sautéed onions and mushrooms) and formation of meat zrazy. The introduction of vegetable paste-like concentrate in the amount of 5, 10, 15% in minced meat allows you to get meat zrazy with the following recipe (Table 3).

The recipe for meat zrazy, which could serve as a control, is not approved in the technological collections of recipes.

Table 3. Recipe for meatballs

Name of products	Sample № 1	Sample № 2	Sample № 3
Pork	45,5	43	41,5
Beef	45,5	43	41,5
Lupine Paste Concentrate	5	10	15
Canned mushrooms	3,5	3,5	3,5
Onion	0,2	0,2	0,2
Spices	0,3	0,3	0,3

The filling is formed from canned mushrooms and onions with further sautéing in vegetable oil.

The final stage in the production of semi-finished meat products is the formation of finished products using the filling, meat zrazy is sent for storage in a refrigerator at a temperature of t = –25 ^{0}C.

Organoleptic evaluation of experimental samples is characterized by the following indicators: appearance (consistency), smell, taste.

For a long time, the results of organoleptic studies were not considered sufficiently reliable due to the so-called human factor, since the results of sensory evaluation are influenced by the physical and mental state of experts.

The essence of the sensory profile method of analysis is that a complex concept of one of the organoleptic properties (taste, smell or texture) is presented as a set of simple components (descriptors), which are evaluated by tasters in terms of quality, intensity and order of manifestation.

It is known that these product quality indicators are unmeasurable, the values of which cannot be expressed in physical scales. Characterization of taste, smell, texture and other sensory features is given in qualitative descriptions. To translate quality into quantity, peer review uses a scoring scale. Identification of the most characteristic taste elements for a given product allows us to establish the profile of the product's goodness, as well as to study the influence of various factors (technological modes, storage conditions, raw materials).

Conclusion

The technology of semi-smoked sausages with lupine paste-like concentrate has been developed. The expediency of using lupine seeds in food production has been scientifically substantiated. A

commodity assessment of meat zrazy with concentrates from lupine seeds is given. It has been established that the developed meat zrazy according to organoleptic indicators have the highest score with a paste-like concentrate ratio of 10%. According to the results of studies of microbiological indicators, the shelf life of meat zrazy with lupine paste-like concentrate was established: 6 months (180 days) at a temperature of –25
0C.

List of Used Literature

1. Karaseva, A.N. Prospects for the use of plants of the genus Lupinus for the production of vegetable oils / A.N. Karaseva, V.V. Karlin, V.F. Mironov, N.A. Sosnina, I.N. Konovalov, P.I. Gryaznov, Yu.Ya. Efremov, D.R. Sharafutdinova, A.S. Kononov, I.P. Takunov // Chemistry of plant raw materials. - 2001. - No. 4. - P. 83–86.
2. Yurchenko, N.A. Biotechnological bases for the production of combined cheeses. - Novosibirsk, 2006. - 180 p.
3. Gurinovich, G.V. Protein preparations and food additives in the meat industry / G.V. Gurinovich,
4. N.N. Potipaev. - Kemerovo: Kuzbassvuzizdat - ASTSH, 2005. - 394 p.
5. Zheleznov, A.V. Amaranth: scientific basis of introduction / A.V. Zheleznov, N.B. Zheleznova, N.V. Burmakina, R.S. Yudin. - Novosibirsk: Geo, 2009. - 236 p.
6. Morozov, A.I. High-protein cultures - sources for the production of vegetable paste-like concentrates / A.I. Morozov, O.K. Motovilov, K.N. Nitsievskaya // Food. Ecology. Quality: Proceedings of the VIII Intern. scientific-practical. conf. dedicated to the 20th anniversary of Independence of the Republic of Kazakhstan. - Almaty, 2011. - p. 141-143.
7. SanPiN 2.3.2.1078-01. Hygienic requirements for the safety and nutritional value of food
8. products.