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Development of a compounding of meat products with use of vegetable raw materials of the oil and fat industry

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Introduction

The technology developed by us allows to enrich meat products with non-saturated fatty acids, at the same time reducing the price of prime cost of finished goods due to replacement of a part of meat raw materials with secondary waste of the oil and fat industry. The fatty acid composition of vegetable raw materials (linen seeds mill, wheat germ, sesame and pumpkin seeds) was investigated. Study of rheological characteristics (bending moment and shearing force) and thermodynamic parameters (water activity, moisture binding energy and moisture binding capacity) of minced systems with a biological additive from secondary vegetable raw material of linen seeds mill, wheat germ, sesame and pumpkin seeds.

Methods

Study of rheological characteristics (bending moment and shearing force) and thermodynamic parameters (water activity, moisture binding energy and moisture binding capacity) of minced systems with a biological additive from secondary vegetable raw material of linen seeds mill, wheat germ, sesame and pumpkin seeds.

Bending moment and shearing force were determined on the TMS-PRO (USA). As a result of research it is established that in comparison with the control variant in minced systems with a biological additive from secondary vegetable raw materials with the addition of 20% of the bending moment value decreased and the shearing force from 2 to 15 %. This is because the use of a dietary supplement increases the strength of the bond between fat and muscle tissue.

Investigated thermodynamic indicators stuffing systems with biological additives on the instrument Testo 650 (Germany) and on the installation was developed by academicians I. Rogov and Comanov U. (Figures 3,4).

Results

Proceeding from it having studied fat and acid composition of linen seeds mill, sesame and pumpkin seeds the compounding of biological additive is made of linen seeds mill, wheat germ, sesame and pumpkin seeds (table 1) [4,5,6].

Table 1 – A compounding of biological additive from linen seeds mill, wheat germ, sesame and pumpkin seeds

Name of produce	Recipe, g
2	
Linen seed cake	10
Sesame mill	5
Pumpkin seeds mill	5
Wheat germ mill	5
Enzyme nutrase xyl	0,1
Water	75
Subtotal	100

The composition of the formulation of prototypes and control sample are shown in table 2.

Table 2 - Composition of meat products enriched with polyunsaturated fatty acids

№	Composition	Unsalted raw materials, kg (per 100 kg of raw materials)					
Control, ST RK 1333-2005	Test No. 1 (10% additives)	Test No. 2 (15% additives)	Test No. 3 (20% additives)	Test No. 4 (25% additives)	Test No. 5 (30% additives)		
1	Trim beef	25	22,4	21,125	19,825	18,55	17,25
2	Trim pork (not fatty)	25	22,4	21,125	19,825	18,55	17,25
3	Trim pork, fatty	50	44,8	42,25	39,65	37,1	50
4	Biological additives with PUFA	-	10,4	15,5	20,7	25,8	34,5
Spices and materials, g (100 kg unsalted raw materials)							
5	Salt	3000	3000	3000	3000	3000	3000
6	Sodium nitrite	10	10	10	10	10	10
7	Granulated sugar	200	200	200	200	200	200
8	Pepper black or white ground	150	150	150	150	150	150
9	Nutmeg or cardamom ground	30	30	30	30	30	30

Notes

Conclusion

Thus, the production of the biological additive from linen seeds mill, wheat germ, sesame and pumpkin seedswith a residual content of 4.5% obtained by cold pressing does not contain impurities, is a natural product, has a unique chemical composition and high value for the organism. That allows to develop the assortment of products with wide therapeutic properties, to create diets containing ω-6 and ω-3 acids, essential components - vitamins of group B, iron, zinc, copper.

Analysis of the experimental data showed that the use of mill sesame seeds, pumpkin seeds and linen seeds in the production of functional food products is promising and allows to adjust the technological and nutritional properties of the final products

Notes