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Meat products for the nutrition of people with the overweight of body – pandemic of XXI century

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Abstract

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Introduction. A basic task in solving a problem of overweight is development of such special foods which would give an opportunity to the people with the overweight of body to bring down body weight, consuming that or other product. Such effect can be attained by adding or changing a certain component in compounding by other one with high functional properties.

Materials and methods. Studied guinea fowl meat and ham balanced in amino acid and fatty acid composition. Methods of mathematical simulation of the finished product formulations, experimental methods of chemical composition, structure and mechanical properties of the product. Amino acid composition determined by ion chromatography analyzer amino acids of T-339. Raw fatty acid composition was determined by gas chromatography.

Results and discussion. For normal human body best ratio of essential fatty acids is considered to be 1:1:1. Most close to this indicator is ideal for fat wild ducks and guinea fowl (1:0.9:0.7 and 1:0.5:1.0). The worst the ratio of fatty acids is mutton fat (1:0.1:1.9). The ratio "polyunsaturated fatty acids" / "saturated fatty acids" is the best pork fat (0.27) and quail (0.21). The worst is fat wild duck (1.27), horse (0.58) and chicken fat (0.56). For normal human body works best ratio of essential fatty acids is considered to be 1:1:1.

Boiled-smoked wis meat of guinea fowl ham has more balanced amino acid composition in comparing to the control standards. In the boiled-smoked ham there is higher content of valine (on 0,6%), lysin (on 0,71%), methionine (on 0,20%), threonine (on 0,69%), alanine (on 0,59%), aspartic (on 0,69%), and glycine (on 0,79%) comparatively with a control standard. A ham with meat of guinea-fowl approaches the albumen of chicken egg by the content of irreplaceable amino acids, and the content of such amino acids as a valine, isoleucine, leucine, lysin, alanine, arginine, aspartic, glycine, glutamic acid and tirosin is higher than in the albumen of chicken egg.

Conclusions. The boiled-smoked ham with meat of guinea-fowl has well balanced amino acid composition and is characterized by a high biological value and can be attributed to the accomplished foodstuffs by a content of irreplaceable amino acids.

Introduction

Research work is extremely relevant. Urgent is the development of new technologies improving food supplies, involving the use of nutrients with high functional and technological properties.

We should investigate the amino acid and fatty acid composition of raw materials and finished product. Also the structural and mechanical properties allow us objectively evaluate the consistency of the finished products.

The purpose of research – to expand the range of meat products for human nutrition overweight.

The peculiarities of technology and main quality characteristics for elaborated products are given.

Literature review

Obesity is a excess lipopexia in an organism (for B.V.Petrovsky). For diagnostics of obesity and determination of his degree (Table 1) use the index of body (IMT) weight, that is expected after a formula: BMI (kg/sq.m.) = body weight (kg) / height (m) of the grown man. In obedience to recommendations of WHO, this index does not spread to the expectant mothers, children, sportsmen and persons who are older than 65 [1].

Table 1

A connection of body weight with a risk of deseases

Weight of body	BMI, kg/sq.m.	Risk of deseases
Optimal weight	18,5–24,9	Average
Before overweight	25,0–29,9	Increased
Overweight of 1 degree	30,0–34,9	High
Overweight of 2 degree	35,0–39,9	Very high
Overweight of 3 degree	>=40,0	Extremely high

For today 312 million persons all over the world have BMI > 30,1; 1 billion of persons – BMI > 25, 15, and also 5 million children have excessive body weight [2].

Geography of obesity is wide: if in the 70th years of XX of century superfluous obesity and obesity was the problem of the exceptionally of developed countries, then presently she spread everywhere, and countries that develop already almost keep abreast of developed. For example , in China the number of people with overweight attained 15% (150 mln persons), a certain record is put on Near east and in North Africa, where the about half of women suffer from obesity or has an ovenweight [3, 4].

Obesity is conditionally separated on primary and secondary one. The primary (alimentary – constitutional) is an independent disease, secondary (symptomatic) – develops on a background of the cental nervous system deseases and deseases of endocrine system (in a case of parafunction of thyroid) , and also in the consequence of reception of some medicinal facilities (glucocorticosteroids, peroral contraceptives).The part of secondary obesity is only 1% cases. Alimentary-constitutional obesity meets mostly and develops in any age, however his first display is usually looked after in 11–13. Large value in an origin of alimentary – constitutional obesity the inherited inclination (45% cases) has [1].

Main reason of obesity and overweight is a energy disbalance between calories that is consumed by a man, and calories that he spends. A Basis of rise of global indexes of overweight and obesity are a few factors, among them there are a global change of feed that is characterized by an increase consumption of foods with high maintenance of carbohydrates and fats and at the same time low maintenance of vitamins and microelements. Fast food products with preservatives, chemical additions, dyes, sugar and him artificial substitutes, margarine and other pseudoproducts, including refined, alcohol, caffeine, a tobacco is inflicting enormous harm on organism. They poison an organism practically, causing the disbalance of insulin, thyroxine, endorphin and other hormones. And the main consumer of such "comfortable foods" are children of school age and people at the age before 30. "Artificial" carbohydrates cause the high getting up of level of insulin (from 3–10 to 22 mcU/ml), and it results also in considerable release of the serotonin (the hormone of hapiness) [7].

But the enhancement of well-being lasts no long and than that a depression from a less of the serotonin wouldn't appear, a brain begins to require the next dose of stimulators. So a dependence on stimulators appears. Insulin protects a brain from the excessive amount of sugar that destroys cages. But at the protracted surplus of insulin cages are closeing from him to be not overloaded. So there is insulin resistance (insensitivity). And, to overcome her, a pancreas begins to produce the additional amount of insulin under the action of that any blood sugar grows into fatty supplies.

Institute of gerontology National academy of medical sciences of Ukraine proved that degree of atherosclerotic violations for elderly people at calorie content of day's ration 1600–2100 kkal considerably less than, than in those the food ration of that presented 2650–3100 kkal [13].

Scientists (Rachel Beterham and Richard Atkinson) underline that the main reason of obesity is a wrong lifestyle. Research results are published in a magazine Science.

The problem of obesity can be decided as well as by the help of surgical and not surgical methods – proper nutrition, use of food supplements and others like that. Among surgical distinguish establishment of gastric bulb, by-passing of stomach.

For a dietary feed at obesity it is necessary to take into account :

- the use of diet with low calories amount;
- the limitation in the ration of carbohydrates that quickly grow into an organism in fat, and fats of animal origin and increase of vegetable ones;
- a frequent (to 6 times/twenty-four hours) feed with the exception of foods that excite an appetite (sharp seasonings, spicinesses and others like that);
- reduction of the amount of liquid and salt in a meal;
- inhibition in the feed of unloading days [11].

As a problem of obesity can be warned by participation of representatives of food industry, then by a basic task in solving a problem of overweight is development of such special foods which would give an opportunity to the people with the overweight of body to bring down body weight, consuming that or other product. Such effect can be attained by adding or changing a certain component in compounding by other one with high functional properties.

The main point, that it was necessary to take into account there are a presence of sources of raw materials and speed of proceeding in raw material during new product development, and during creation of dietary product – functional properties and chemical composition also. For realization of researches meat of bird was select in this work.

The market of meat of bird is one of the most dinamically developed markets of food stuffs presently. The products of the poultry farming become all more attractive for home consumers, so as is one of the cheapest and popular in our country a source of proteins of

animal origin. Since olden times foods from a bird considered a delicious and useful meal. And it not by chance: in fact tender and fragrant meat of chickens, turkey-cocks, shutes, game has a high food value that does him unique food stuff. Excellent features of meat of bird : high digestibility; optimal content with optimal correlation of irreplaceable amino acids; low calorie content. Meat is divided into white and red. The white contains the less connective tissue and this tissue is more soft, tender and evenly up-diffused on all muscles.

The not mastered market of meat of bird are guinea-fowls. Meat of guinea-fowls belongs to the dietary delicacy products. By taste it reminds meat of pheasants and partridges, but considerably more tender. It contains a 25–27 % of proteins, to a 0,5–0,7 % of fat. Correlation of amino acids in an protein is especially favorable to the man. The yield of eatable parts to living mass presents 53–54 %. Eggs are more rich from chicken in relation to content of dry substances, lipids, vitamin A and carotenoids.

Meat of turkeies is an unique dietary product, which combines in itself propertis of chicken, veal and mutton, is rich in vitamins and, besides, is low-caloric, there is a low level of cholesterol in him. The meat of turkeies is in a wide demand in the USA, where it is used as a delicac, but in this country nevertheless yields to in the popularity to meat of chickens and broilers. Dietary meat of turkey-cocks in the rational feed of man is a source of valuable proteins. Chemical composition of meat and his calorie content at the different types of bird are different. Meat of turkey-cocks has a high food value, and young ones has the best indexes in presence in it proteins and their correlation with fat . In the carcasses of turkey-cocks the color of muscular fabric is different: chest muscles and muscles of wings have a white color, and muscles of feet – more dark, red. White meat is biologically more valuable. In him there is not only more protein but also the best correlation is both between valuable and inferior proteins and between single amino acids. Food value of meat of turkey-cocks isn't limited only by its sustenance. The meat also include significant amount of minerals especially calcium and phosphorus, vitamins of E and group B. The specific smell and taste are predefined relatively by a high presence in raw meat of extract substances (1,5–2,5%0%). This group of organic compounds that go across during cooking of meat in clear soup. Meat of turkey-cocks has high taste qualities. It is tender and juicy. Muscular fibres are thin, and connecting tissue between them there is less than in other types of bird.

Thus, meat of turkey-cock and guinea-fowl is the perspective type of raw material for the production of meatproducts for people with the overweight of body, as has enhanceable maintenance of proteins and low content of fat.

Materials and methods

Article of research: meat of guinea-fowl and turkey-cock, hams.

The articles of research are both new foods, selected to consideration in this work and industrial foods that is already used.

Chemical composition of poultry meat was determined on base of laboratory “Globinskiy meat plant” (Ukraine).

Methods, that allow to describe chemical composition, food and biological value, organoleptic, functionally-technological, structural and mechanical and economic indexes of research objects, were used in the process.

The organoleptic evaluation of quality of sausage products and ready-to-cook foods came true on a 5-ball scale.

A organoleptic estimation came true in a next sequence:

- original appearance – by a structure, by a picture on a cut, by even distribution of pieces of mushrooms in stuffing, by the type of shell;
- a color – by sight on the cut of intermediate product;
- a smell (aroma), taste and succulence – absence or presence of extraneous smell, aftertaste, degree of expressed of aroma of spicinesses and salinity determined;
- consistency – by pressing on good.

Determination of amino acid composition was conducted in accordance with the method of ion exchange chromatography. Quality and quantitative determination of components consisted in dividing of them into separate components after the hydrolysis of proteins and determination of their quantitative estimation with the help of automatic analyzer of amino acids as T-339, on polystyrene sulfonate ion exchange resins of "Ostion LJ ANB" in Li-citrate buffer one column mode. The elutions of amino acids from a column conduct in turn by Li- by citrate buffers from pH 2,75 ± 0,01; pH 2,95 ± 0,01; pH 3,2 ± 0,02; pH 3,8 ± 0,02; pH 5,0 ± 0,2. Amino acids rectifying with the help of solution of ninhydrin on a running photometer at a length of waves by 560 nm. The results of detection was registered oneself by a variplotter on a paper in form the peaks of absorption of light of ninhydrin-positive substances in an eluate, that in number in direct ratio concentrations of this substance in solution. Correlation of solution of ninhydrin reagent and eluents is 1 to 2; temperature of thermostatic T1=38,5 °C; T= 65 °C. The prototype was diluted in Li-citrate buffer by pH 2,2 ± 0,02 and inflicted on a ion exchange column with the help of metering device. The quantitative estimation of xromatorpam of pre-production model settles accounts in relation to standard mixture of amino acids of firm BioRaD. The amount of milligrams of every amino acid of A_i in the investigated solution calculates on a formula:

$$A_i = \frac{M_i S_i}{S_i^3},$$

where A_i is mass part of i-th amino acid, mg/100 g of protein;

M_i is molecular mass of i-th amino acid;

S_i is area of peak of i-th amino acid on an aminogram from the investigated solution;

S_i^3 is an area of peak of i amino acid on an aminogram from solution of standard mixture of amino acids, that accords to one micromole.

Amino acid score was expected according to the certificate scale of FAO/WHO.

Method of calculation amino acid skore is taken to determination of relation of content of every irreplaceable amino acid in the investigated protein to their content in a standard – standard balanced in irreplaceable amino acids and recommended by the committee of WHO. Determined by a formula:

$$A = \frac{A_r}{A_i} \cdot 100\%$$

A_r is a content of irreplaceable amino acid in a 1 g of investigated protein, mg; A_i is a content of the same amino acid in a 1 g "ideal" protein, mg; 100 is a coefficient of count in percents.

An amino acid that limits a biological value, is considered that which have the lowest score.

Result and discussing

First, it was found content of water, protein, fat and ash in various types of poultry. The research results are presented in Table 2.

Table 2

The chemical composition of meat of different animal species

Meat type	Content in product, %			
	Moisture	Protein	Fat	Ash
Guinea fowl meat	74,2	23,1	1,5	1,2
Turkey meat	71,6	22,2	5,1	1,1
Meat of quails	67,4	17,3	14,3	1,0
Beef	69,2	20,0	9,8	1,0
Pork	51,5	14,3	33,3	0,9
Poultry	70,1	19,6	10,5	0,8

Table 3

Research of amino acid composition of meat of bird

Amino acids	Content, mg in 100 g of meat						
	Albumen of chicken's egg, %	Meat of guinea fowl		Meat of Turkey		Meat of quails	
		Amount, mg	%	Amount, mg	%	Amount, mg	%
Irreplaceable amino acids:							
Valine	2,3	0,599	3,54	0,555	3,75	0,713	3,76
Isoleucine	3,3	0,557	3,30	0,456	3,08	0,646	3,41
Leucinum	6,9	1,429	8,46	1,338	9,03	1,604	8,47
Lysin	6,9	1,606	9,51	1,437	9,70	1,789	9,44
Methionine	7,4	0,536	3,17	0,456	3,07	0,612	3,23
Threonine	5,0	0,782	4,63	0,716	4,83	0,881	4,65
Phenylalanine	5,6	0,922	5,46	0,740	4,99	0,852	4,50
Replaceable amino acids:							
Alanine	—	1,031	6,10	0,933	6,30	1,148	6,06
Arginine	6,7	1,096	6,48	0,959	6,47	1,272	6,71
Aspartic	8,2	1,488	8,81	1,248	8,42	1,613	8,52
Histidinum	2,4	0,554	3,28	0,601	4,06	0,829	4,38
Glycine	3,6	0,754	4,46	0,651	4,39	0,850	4,49
Glutamic acid	12,6	3,135	18,55	2,760	18,63	3,477	18,35
proline	4,5	0,863	5,10	0,621	4,19	0,922	4,87
Serine	7,8	0,744	4,41	0,694	4,68	0,841	4,44
Thyrosinum	4,1	0,613	3,63	0,547	3,69	0,691	3,65
Cystine	2,3	0,188	1,11	0,108	0,73	0,204	1,07

From the table we can see that poultry is characterized by higher protein and ash content and less fat. Also in guinea fowl meat contains 23.1% of protein, in turkey meat – 22.2% while beef contains 20.0% of protein; meat of quails contains 17.3% protein, and pork – only 14.3%. In the meat of farm animals significantly more fat compared to poultry was fixed.

So in guinea fowl the meat contains 1.5% of fat, in turkey meat – 5.1% and beef – 9.8% of fat; pork contains 33.3% of fat, while the quails meat only 14.3% that is explained by the specific conditions of life and differences in feed that eats the bird. To create products with high biological and nutritional value it is checked for balance amino acid and fatty acid composition of raw materials.

The biological value of product represents his ability to satisfy the requirement of organism in irreplaceable amino acids. For the estimation of biological value a method was used amino acid score method, that is based on comparison of amino acid composition of protein investigated to the standard in amino acid composition of ideal protein.

On the maintenance of amino acids meat of quail approaches the protein of chicken egg, and on maintenance such irreplaceable amino acids as a valine (on 1,24–1,46%), isoleucine (on 0,09–0,11%), leucine (on 1,56–2,13%), lysin (on 2,54–2,80%) and replaceable amino acids – alanine (on 6,06–6,30%), aspartic (on 0,22–0,61 %), histidin (on 0,88–1,98 %), glycine (on 0,79–0,89%), glytamic acid (on 5,75–6,03%) and proline (on 0,37–0,60%) excels him.

It goes to show that the investigated meat is balanced after amino acid composition, characterized by a high biological value and can be attributed to the valuable foodstuffs.

In the feed the important value acquires not only amount but also the quality of fats, especially content of polyunsaturated acids with the certain placing of double connections and cis- by configuration.

Fat and acid composition of raw material was determined at an assistance Ukrderzhmetstandart by the method of gas-liquid chromatography. The obtained data are presented in a Table 4.

Table 4

The composition of fatty acid animal fats

Fat	The content of essential fatty acids%			Ratio that characterize biological value of fat				
	MFA	PFA	NFA	MFA: PFA: NFA	PFA: NFA	C _{18:2} /C _{18:1}	C _{18:2} /C _{18:3}	ω ₆ /ω ₃
Ideal	33,3	33,3	33,3	1:1:1	0,2–0,4	>0,25	>0,7	4:1
Beef	38,92	2,78	57,89	1:0,1:1,5	0,05	0,06	3,8	3:1
Porcine	43,28	7,47	50,10	1:0,2:1,2	0,27	0,2	9,7	4:1
Sheep	33,81	2,35	63,84	1:0,1:1,9	0,04	0,06	4,9	5:1
Horse	40,68	21,71	37,61	1:0,5:0,9	0,58	0,26	0,7	0,5:1
Guinea fowl	38,50	7,10	51,2	1:0,2:1,3	0,13	0,15	14,0	7:1
Turkey	36,18	18,87	37,23	1:0,5:1,0	0,51	0,20	1,16	6,6:1
Quail	35,33	10,20	47,87	1:0,3:1,3	0,21	0,18	5,7	4,5:1
Gallinaceous	49,81	17,78	32,41	1:0,4:0,7	0,56	0,38	17,0	23:1
Wild duck	34,43	31,73	23,19	1:0,9:0,7	1,37	0,60	2,85	3,7:1

For normal work of human organism the best ratio of essential fatty acids is considered to be 1:1:1. As we can see from the table most approached in this indicator to ideal is fat of wild ducks and guinea fowl (1:0.9:0.7 and 1:0.5:1.0). The worst ratio of fatty acids is mutton fat (1:0.1:1.9). As the ratio of PUFA / NLC the best is pork fat (0.27) and quail (0.21), and the worst is fat wild duck (1.27), horse (0.58) and chicken fat (0.56).

Ratios $\omega_6:\omega_3$ – are important indicators. Scientifically proved that at a fraction of essential fatty acids should be 4–6% of the energy value of the diet of an adult and relation to ω_2 ω_6 PUFAs should be 10: 1, and in violation of lipid metabolism – 5:1 i even 3:1. From the data of the table we can see that the ratio of ω_6 / ω_3 worst is chicken fat (23:1) and horse fat (0.5:1), while all other fats, the figure is at the optimum level.

In order to expand the range of dietary meat products we with the help of our mathematical modeling developed 6 recipes tavern guinea fowl meat and ham are the most favorite product among consumers (Table 5).

Table 5

Developed recipes tavern guinea fowl meat

Raw materials	Control "Meat of guinea fowl boiled in a shall, a/c	Example N1 (Guinea fowl meat +beef) (cooked)	Example N2 (Guinea fowl meat +beef) (sublimated)	Example N3 (Guinea fowl Meat +pork) (cooked)	Example N4 (Guinea fowl meat + chicken) (cooked)	Example N5 (Guinea fowl meat pork + beef + chicken +) (cooked)	Example N6 (Guinea fowl meat pork + beef + chicken +) (cooked)
The main raw material, kg							
Guinea fowl meat	100	50	50	50	50	20	30
Pork bold				50		40	25
Beef w / c		50	50				
Beef ls						25	35
Chicken					50	15	10
Spices and auxiliary materials, r (100 kg of raw salt)							
Salt for food	2500	2500	2700	2500	2500	2500	2500
Integrated additive "SS 6"	600	600	600	600	600	600	600
Sodium nitrite	10	10	10	10	10	10	10
The functional additive N208	300	300	300	300	300	300	300
Water, L	15	15	15	15	15	15	15

All received products are of high quality with a special spicy taste and aroma with high biological value, balanced by amino acid and fatty acid composition, which can be recommended for usage in dietary nutrition.

Organoleptic quality assessment carried tasting tavern commission (14 people) at the Department of Technology of meat and meat products (Table 6).

Table 6
Organoleptic quality assessment made tavern

Sample	Outlook	Colour	Taste	Aroma	Consistence	Succulence	General mark
Control	4,72	4,28	4,50	4,80	4,81	4,87	4,66
Sample N1	4,97	5,00	4,83	4,98	4,90	5,00	4,95
Sample N2	5,00	5,00	5,00	5,00	5,00	5,00	5,00
Sample N3	4,76	4,74	4,44	4,77	4,67	4,51	4,65
Sample N4	4,50	4,39	4,28	4,74	4,67	4,44	4,50
Sample N5	4,61	4,72	4,28	4,83	4,72	4,78	4,64
Sample N6	4,74	4,72	4,28	4,67	4,83	4,50	4,56

As the table shows, all designed hams had higher total evaluation. They were succulent, of sweet taste and smell and attractive in outlook. The highest score (4.95 and 5.00) were ham, which was combined guinea fowl and beef meat (sample number 1 and N2), and the lowest – 4.5 got the sample where guinea fowl meat and chicken combined (recipe N4), but all the samples had high scores (from 4.50 to 5.00).

The structural and mechanical properties allow us objectively evaluate the consistency of the finished products to determine physical fitness tavern for use. The research results are presented in Table 7.

Table 7
Structural and mechanical properties of finished products

Sample	Cutting work, J	Cutting power, $\kappa\text{H}/\text{m}^2$
Control	442,00 ± 9,1	113,54 ± 4,8
Sample N1	396,18 ± 6,5	110,20 ± 3,1
Sample N2	434,24 ± 8,2	105,30 ± 3,3
Sample N3	270,87 ± 6,3	86,02 ± 2,3

As we can see from the table reference sample has the biggest job (442.00 J) and cutting force (113.54 kN/m^2) compared with test samples. In the experimental samples cutting force is in the range of 86.02–110.20 kN/m^2 , that indicates on rather soft

consistence. The information that we have got tells us that according to structural and mechanical indicators prepared ham are suitable for usage in dietary nutrition.

The research of amino acid composition of samples of cooked hams shown in Table 8.

This table shows that boiled-smoked ham has a balanced amino acid composition compared to control. In boiled-smoked ham it is observed higher levels of valine (0.6%), lysine (by 0.71%), methionine (at 0.20%), threonine (at 0.69%), alanine (at 0.59%), aspartic acid (to 0.69%) and glycine (at 0.79%) in comparing with the control sample.

According to the content of essential amino acids ham meat guinea fowl close to egg protein, and according to the content of amino acids as valine, isoleucine, leucine, lysine, alanine, arginine, aspartic acid, glycine, glutamic acid, tyrosine surpasses it.

This indicates that the cooked ham and smoked guinea fowl meat have well balanced amino acid composition, it is characterized by high biological value and can be attributed to high-grade food for the content of essential amino acids.

Table 8

Amino acid composition of cooked hams

Amino acids	Content, mg per 100 g						
	Egg protein, %	Control			Cooked ham, smoked guinea fowl meat		
		Quantity, mg	%	Biological value of protein in %	Quantity, mg	%	Biological value of protein in %
Essential amino acids:							
Valine	2,3	0,500	4,59	92	0,545	5,19	104
Isoleucine	3,3	0,571	5,24	131	0,445	4,25	106
Leucine	6,9	0,911	8,36	119	0,745	7,30	104
Lysine	6,9	0,851	7,81	142	0,894	8,52	155
Methionine	7,4	0,246	2,26		0,258	2,46	
Threonine	5,0	0,527	4,84	121	0,580	5,53	138
Phenylalanine	5,6	0,542	4,15		0,401	3,82	
Replaceable amino acids:							
Alanine	—	0,594	5,46		0,634	6,05	
Arginine	6,7	0,747	6,86		0,664	6,33	
Aspartic acid	8,2	0,917	8,42		0,956	9,11	
Histidine	2,4	0,377	3,46		0,346	3,30	
Glycine	3,6	0,461	4,23		0,527	5,02	
Glutamic acid	12,6	2,203	20,22		2,121	20,21	
Proline	4,5	0,457	4,20		0,394	3,76	
Serine	7,8	0,508	4,66		0,490	4,67	
Tyrosine	4,1	0,439	4,03	136	0,371	3,54	123
Cystine	2,3	0,134	1,23	99	0,100	0,95	97

Conclusion

1. By amino acid and fatty acid composition poultry meat dominates upon farm animals. In guinea fowl meat contains the largest amount of methionine (0.561 mg), aspartic acid (2.321 mg), histidine (0.830 mg), glutamic acid (3.623 mg) and cysteine (0.459 mg). By the ratio MFA: PFA: NFA closest to the ideal (1:1:1) is a fat turkey (1:0.5:1.0).
2. With the help of mathematical modeling method we optimized six recipes of guinea fowl meat tavern.
3. According to the results of sensory analysis of the highest rating (5.00 points) got boiled ham, smoked guinea fowl meat and beef.
4. According to structural and mechanical properties (work and cutting force) the best are cooked ham with guinea fowl meat and pork, that have the lowest index of power (270.87 J) and force (86.02 kN/m²) and cutting that characterize its softness.
5. It is established that the combination of guinea fowl meat with beef provides a product with a high content of essential (valine, lysine, methionine) and replacement (threonine, alanine, glycine and aspartic acid) amino acids, which are characterized by high biological value and can be attributed to proper food.

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