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И ПРОДОВОЛЬСТВИЯ РЕСПУБЛИКИ БЕЛАРУСЬ

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**ТЕХНИЧЕСКОЕ И КАДРОВОЕ ОБЕСПЕЧЕНИЕ  
ИННОВАЦИОННЫХ ТЕХНОЛОГИЙ  
В СЕЛЬСКОМ ХОЗЯЙСТВЕ**

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лозы – основного компонента клеточных стенок растений, в процессе хранения при само-разогревании зерна или при термообработке растений появляется гликольальдегид. Состав продуктов пиролиза целлюлозы сложен; в результате термопревращений полисахарида образуется более ста соединений.

В процессе терморазложения зерна был также обнаружен формамид. Его наличие может быть следствием поражения зерна некротрофными паразитами.

Однако, в виду того, что пока ещё не набрана достаточная база данных многих молекулярных соединений, а также в виду того, что не все соединения имеют линии поглощения, лежащие в рабочем диапазоне спектрометра идентификация состава зерна при термическом разложении весьма затруднена.

Предлагаемая методика исследования компонентного состава зерна на основе спектроскопического анализа «запахов» зерна различных злаковых культур и приборы на основе ТГц спектроскопии высокого разрешения являются перспективными для диагностики состояния семян сельскохозяйственных растений и выявления различных инфекций, включая грибковые заболевания. Использование данного метода может дать возможность раннего выявления поражений зерна на основе детектирования наборов метаболитов, характерных для конкретных грибковых заболеваний. Потенциальными потребителями представленных приборов могут быть крупные фермерские хозяйства, предприятия по производству кормов, предприятия пищевой промышленности, связанные с переработкой и хранением зерна, учреждения, осуществляющие контроль пищевых и перерабатывающих предприятий.

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### **MEAT PRODUCTS FOR OBESE PEOPLE**

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**Introduction.** 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 milliard of persons - BMI > 25, 15, and also 5 million children have excessive body weight [2].

Institute of gerontology of NAMS 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.

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.

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.

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

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.

**Result and discussing.** First, it was found content of water, protein, fat and ash in various types of poultry. Chemical composition of poultry meat was determined on base of laboratory "Globinskiy meat plant". 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

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.

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.

The research of amino acid composition of samples of cooked 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.

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

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.

**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.

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