Optimizing the Recipe of Food. Improving the System of Healthy Eating

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Abstract: This article discusses the issue of saving raw materials and products by optimizing recipes used in catering establishments. The article also presents ways to optimize protein-rich foods in food recipes, which develop methods for determining the quality indicators of non-exchangeable amino acids in complete proteins in comparison with the ideal protein and processing existing formulations based on it.

Keywords: UNO, recipe, biological value, essential amino acid, optimization, amino acid score, limited amino acid, etc.

Due to the growth of the population, changes in climate conditions and other factors, there are difficulties in meeting the demand of mankind for food products. According to the Food and Agriculture Organization of the United Nations and the World Health Organization (FAO/WHO), at present, about 1 billion people in the world, that is, almost one out of every 8 people, do not have enough to eat.

Due to the rapid increase in the population and limited possibilities of food production, the issue of providing the population with quality food is becoming a major problem in many countries. During the years of independence in Uzbekistan, great achievements have been made in this field, including the production volume of agricultural products is growing year by year.

Under the leadership of the President, in order to provide the population with food products rich in high-quality nutrients, biologically active substances and necessary trace elements, serious attention is being paid to strengthening the raw material base in food industry enterprises, modernizing the processing sector, and increasing the variety of products.

Therefore, in the production of various types of food and culinary products prepared in catering establishments today, the issue of creating new recipes by optimizing the raw materials and nutrients contained in their recipes remains one of the urgent issues facing them. Achieving a solution to the given problem, in turn, leads to the saving of tons of products by establishing the effective use of raw materials and products used in catering establishments.

It is carried out by optimizing the recipes of food and culinary products prepared in catering enterprises, increasing the biological value of the proteins included in the food composition .

The quantitative status of non-exchangeable amino acids in food products or in ready-made food proteins is called the biological value of proteins. Therefore, the biological value of proteins is

determined by the amount of non-exchangeable amino acids and their ratio to each other. The closer the ratio of their amounts to the recommended standards, the higher the biological value of the protein. For this reason, throughout the world, the optimal level of proteins in terms of primary substances is evaluated by their biological value.

of proteins biological value amino acid score in detection indicator is used . Amino acid score when you say of the product or of food 1 г. protein contained known one of amino acid Whole the world healthy blood storage organization by offer done the same so of amino acid 1 г. in an ideal protein to the amount has been to the ratio it is said . Amino acid score in percent is , therefore for too 100 га multiplied by :

$$AK_{скор} = \frac{X \cdot 100}{Y}, \% \qquad (1)$$

This where :   AK $_{score}$ - known one in protein available amino acid score , %;

X is present of amino acid little food or food of protein

1 г. amount in mg.;

He - 1 г. the same as an ideal protein should contain amount of such amino acid (norm), mg.

That's it emphasized to pass of course , food in the composition to the body fell of protein everything both by the body cannot be changed , because their one part from the body without being assimilated out will go That's it for of proteins purposeful integration level their by the body adaptation possible was in quantity determined by :

B $_y$ = B $_1$ · K   (2)

Here: B $_{is}$ the part of the protein that can be modified, g.;

B $_1$ - proteins in food, amount, etc. It is food

from the tables of chemical composition of products is determined .

Scientific research in order to while experiments transfer the way with is found ;

K is this product protein appropriation coefficient (Table 1).

Table 1. Some one product types proteins , fats and human body of carbohydrates by integration coefficients , %

Products name	Oh dear	Oil	Carbohydrates
Go sht , fish and from them prepared products	95	90	-
Milk , milk products , eggs	95	95	98
Protect it wheat , capsicum from him prepared bread, dukkakli and Cereals (semolina, rice , "Hercules" etc.) excitement from cereals except)	70	92	94
The first , the second and the highest from new prepared bread, semolina and rice , "Hercules" and wave	85	93	96
Potatoes	70	-	95
Vegetables	80	-	85
Fruits	75	-	90

In the table given coefficients clearly products proteins , carbohydrates and of fats absorption to levels belongs to As you know , general eating in enterprises food known one guaranteed organization by approved recipe according to prepared , recipe to the composition while the most at least two and from him too k more product types enters That's it because of too each one raw material of protein organism by absorption coefficients through of them prepared food of protein average absorption level the following formula through found :

$$\text{Б}_y = \frac{\text{К}_{y1}\text{К}_1 + \text{К}_{y2}\text{К}_2 + ... + \text{К}_{yн} \cdot \text{К}_н}{100}, \% \quad (3)$$

Here: B $_o$ - food protein prepared from certain types of raw materials

by the body integration level , %;

K $_{u1}$, K $_{u2}$, K $_{up}$ - food composition entering products

protein synthesis coefficients;

K $_1$, K $_2$, K $_p$ - proteins of ready-made food protein products

shares.

With the help of this formula, we will consider the average level of digestion of food protein in a specific example. Let's assume that the meal consists of meat, potatoes, carrots and oil, that is, it is prepared from four different products (table 2).

Table 2. Method of calculation of soluble proteins in food

Product name	According to the recipe amount , net, g.	of the product 100 г. still proteins quantity , %	To the recipe entering in products proteins quantity , g.	Improvement coefficients	Customizable o ksil , g.
Go sh	100	20	20	0.95	19
Potatoes	200	2	4	0.70	2.8
Green	50	2	1	0.8	0.8
Oil	25	-	-	-	-
Total	-	-	-	-	22,6

The analysis of the data presented in the table shows that the absorption coefficient of meat protein is 95%, potato protein is 70%, and vegetable protein is 80%. If the total amount of digestible protein in the prepared food is 22,6 г. , the share of meat protein in it is 84.1%, the share of potato protein is 12.4%, and the share of vegetable protein is 3.5%. According to these data, the average protein absorption coefficient (B $_)$ is as follows:

$$\text{Б}_y = \frac{95 \cdot 84,1 + 70 \cdot 12,4 + 80 \cdot 3,5}{100} = 91,4\% \quad (4)$$

According to this method, determining the biological value of proteins, that is, the level of optimization of non-exchangeable amino acids, is based on the coefficient of use (utilization) of proteins. This method uses the "Tables of chemical composition of food products" in the amount of each product included in the recipe to find the amount of proteins and the protein part that can be changed by the body (see the previous example). Then it was possible to use any product 1 г. The amount of non-exchangeable amino acids in the protein is calculated. The amount of protein and amino acids in food is determined by the amount of proteins and non-exchangeable amino acids in the products included in the recipe. Food protein that can be used later 1 г. the amounts of non-exchangeable amino acids are calculated. After that, the score of each amino acid is calculated using the above formula and the limiting amino acid is determined.

According to the limiting amino acid score, the amount used by the body of each non-exchangeable amino acid is calculated using the following formula:

$$AK_ф = \frac{X \cdot AK_{скор}}{100}, \text{mg.} \quad (5)$$

This erda :   AK $_f$ - given of amino acid used

(used) part , mg ;

X - the given amino acid can be modified

was 1 гamount of protein, mg.;

AK $_{score}$ - above as indicated , the limiting amino acid

score , %.

If limiter of amino acid score more than 100% if so , from him used part to standard indicators look calculates

Every one irreplaceable of amino acid not used part too is determined . His for the following to formulate used :

$$\Delta AK = AK_{sr} - AK_f \qquad (6)$$

This where : ΔAK is given amino acid by the body

unused part, mg.;

AK $_{sr}$ - concentration of given amino acid

available protein 1 г, mg.;

AK $_f$ - given of amino acid used

(disposable) part , mg.

From this later irreplaceable amino acids of all unused of parts gathered together found :

$$\Sigma \Delta AK = \Delta AK_1 + \Delta AK_2 + \ldots + \Delta AK_8 \qquad (7)$$

This is where : $\Sigma \Delta AK$ - irreplaceable everyone of amino acids

unused of parts gathering , mg.;

ΔAK_1 , ΔAK_2 , ΔAK_8 - each give irreplaceable

amino acid by the body

unused part , mg.

If food only one protein from the product consists of if so , his oxidation use coefficient (Kf) is as follows to formulate through found :

$$K_{\phi} = \frac{O_c - \sum \Delta AK}{O_c} \cdot 100 \qquad (8)$$

It is known that several protein products are used in cooking. In such cases, the body's food protein utilization coefficient (Kf) can be found from the following formula:

$$K_{\phi} = \frac{(O_c K_1 + O_c K_2 + O_c K_{\text{н}} - \sum \Delta AK}{O_c} \cdot 100 \qquad (9)$$

This there : K $_f$ - food oxidation use coefficient , %;

It 's in the kitchen read amount , mg.;

$\Sigma \Delta AK$ is non- reciprocal everyone of amino acids

sum of unused parts, mg.;

K $_1$, K $_2$, K $_p$ are included in the recipe of the given dish

product proteins in food proteins

share, %.

of food protein utilization coefficient (K_f), a decision is made whether to optimize their recipe or not.

So, in short, the issue of optimizing food recipes is one of the urgent issues of the industry, and it is considered one of the important issues put before specialists in achieving economy of food products and organizing a healthy diet of the population.

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