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TO THE EXPERIENCE OF USING A BIOLOGICALLY ACTIVE FOOD ADDITIVE NOGLUKIN IN THE NUTRITION OF ATHLETES

Валиева Мархабо Усмоновна
Assistant of the Department of Epidemiology
Samarkandwiththe State Medical University, Samarkand, Uzbekistan.

Тухтаров Бахром Эшназарович
Doctor of Medical Sciences, Associate Professor of the Department of General Hygiene and Ecology of Samarkandwiththe State Medical University, Samarkand, Uzbekistan

ABSTRACT

Modern sports are characterized by intense physical exertion during training and competitions, high nervous and emotional tension of the struggle, focus on record sports results. One of the most important conditions for sports achievements in professional sports, along with the proper organization of training and daily routine, is adequate nutrition to the energy costs and physiological needs of the body, since nutrition is one of the most important factors determining the physical and mental state and health of a person [1, 2].

The high energy requirement of the athletes' body and, accordingly, the high need for vitamins, biomicroelements, essential amino acids and other biologically active substances, and the impossibility of achieving their optimal level by correcting the consumption of natural foods, determined the need to include a set of biologically active food additives (BAA) in the norms. Although, dietary supplements are expensive components of daily rations, their importance in ensuring the health and physical condition of the body of professional athletes is invaluable. At the same time, without establishing the safety and effectiveness of dietary supplements for the body of athletes, including them in the norms of nutrition would be erroneous.

In this connection, we assessed the safety for the body and the effectiveness in increasing the biological value of diets of a new type of dietary supplement for food - Noglyukin.

Noglyukin is a protein hydrolyzat in the form of sodium and potassium salts of silkworm cocoon protein, containing 17 amino acids in its composition.

The objects of research were professional athletes training on the basis of sports complexes in Tashkent and their diets.

THE PURPOSE OF THE WORK

To develop ways to increase the biological usefulness of the diets of athletes through the use of the noglyukin protein source.

RESEARCH METHODS

Studies were conducted on white mice, white rats and rabbits, which were injected with Noglyukine once intragastrically in doses from 7,000 to 15,000 mg / kg.

The calculation method was used to determine the nutritional and biological value of food rations. For statistical analysis, 1260 menu layouts were used. The nutritional value of rations was calculated on the basis of tables of the chemical composition of food products [3].

The biological value of the proteins of the diets was expressed in relative values (in percentage) in comparison with similar indicators of the standard, which is customary to use chicken egg proteins [4].

The calculation of the essential amino acid index (EAC) was carried out by calculating the EAC index defined as the geometric average of the ratios of essential amino acids of the protein under study with their amount in the protein of the whole egg (in %):

$$Индекс\ ЭАК = \sqrt[n]{\frac{лизин_u}{лизин_{ст}} \times \frac{треонин_u}{треонин_{ст}} \times \frac{триптофан_u}{триптофан_{ст}} \times и\ т.д.}\ \text{x100\%}$$

where, n is the number of amino acids in the protein under study; withm is the content of amino acids in the standard; u – the content of amino acids in the protein under study.

RESULTS OF THE STUDY

Our studies showed that the daily excretion of ammonia in the urine of athletes against the background of actual nutrition is: in men 795.07.0 - 812.08.0 mg, in women - 791.08.0 -796.08.8 mg. On an altered diet in the 2nd group of subjects who received Noglyukin in the amount of 2 tablets per day for 0.5 g, there is a significant decrease in this indicator, which amounted to 682.07.0 - 674.05.0 mg in men and 672.06.0 -668.05.0 mg in women. On average, a decrease in the level of ammonia in the daily urine of the subjects on an altered diet in the 2nd group of the studied is 10-15% of the level of ammonia on the actual background of nutrition. The data obtained indicate the normalization of the state of protein metabolism in the subjects against the background of altered nutrition (Table 1).±±±±±±±±

Table 1. Biochemical indicators of protein metabolism in studied on qualitatively different nutritional backgrounds, M±m.

№	Name of indicators	Groups of subjects	
		1	2
Men			
1.	Protein intake, g/day	175,44,8±	224,54,0±
		177,35,3±	236,85,0±
2.	Total biological value of rations, %	72.11.2±	89.81.1±
		72.61.1±	89.91.0±
3.	Urinary excretion of total nitrogen, g/day	12,20,1±	13,80,2±
		12,60,1±	14,10,2±
4.	Excretion of ammonia in the urine, mg / day	795,07,0±	682,07,0±
		812,08,0±	674,05,0±
5.	Urinary excretion of urea, g/day	9,70,2±	12,60,2±
		10,20,2±	12,80,1±
6.	Waterlooy Index	66,70,4±	82,10,4±
		67,80,3±	87,20,5±
Women			
1.	Protein intake, g/day	170,13,0±	218,24,0±
		173,82,5±	227,44,0±
2.	Total biological value of rations, %	71.61.2±	89.11.1±
		71.91.1±	89.21.0±
3.	Urinary excretion of total nitrogen, g/day	11,80,1±	13,70,2±
		12,10,1±	14,10,2±
4.	Excretion of ammonia in the urine, mg / day	791,08,0±	672,06,0±
		796,08,8±	662,05,0±
5.	Urinary excretion of urea, g/day	9,40,2±	12,50,2±
		9,80,2±	12,80,1±
6.	Waterlooy index, in %	66,60,4±	82,00,3±
		67,10,3±	87,40,4±

Note: in the numerator - the winter-spring season; in the denominator - the summer-autumn season.

The study of biochemical parameters of nitrogenous components of urine on qualitatively different nutritional backgrounds shows that there is a direct correlation between the biological value of food and the excretion of total nitrogen, ammonia and urea (r = ±0.61).

Thus, the low excretion of total nitrogen and urea revealed by us, the relatively high amount of ammonia in relation to the total nitrogen of daily urine, the low urea index in athletes who received actual nutrition, indicates the discrepancy between diets and physiological needs and the low biological value of these diets. Changing the qualitative composition of the diets of athletes with the inclusion of the dietary supplement "Noglyukin" made it possible to increase the digestibility of protein compared to the actual background of nutrition.

FINDINGS

1. The revealed low excretion of total nitrogen and urea, a relatively high amount of ammonia in relation to the total nitrogen of daily urine, a low urea index in athletes who received actual nutrition, indicates a discrepancy between diets and physiological needs and low biological value of these diets.
2. Changing the qualitative composition of diets by including sources of high-value protein in the form of dietary supplements for food Noglyukin allowed to normalize the biochemical indicators of nitrogenous components of urine in athletes, to improve protein digestibility.
3. On average, the decrease in the level of ammonia in the daily urine of the studied athletes on the altered background of nutrition is 10-15% of the level of the actual background nutrition.

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