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ESTIMATION OF THE IMPORTANCE OF BIOLOGICAL VALUE OF NUTRITION ALLOWANCES OF SPORTSMEN OF WEIGHTLIFTING IN THE CONDITIONS OF THE HOT CLIMATE

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The work observes options of optimal average daily food diets for weightlifting athletes in a hot climate through measuring the biological value of diets. It is established, that balance of nutrients in the changed nutrition background reached an optimum level and made 1:1.1:4.1, against 1:1.2:4.9 on actual food intake. The optimum ratio of nutrients in the average daily food rations of sportsmen on the changed nutrition background is reached by increasing norms of proteins of animal origin, vegetative fats and decreasing sources of carbohydrates. The total biological value of daily average diets on the changed food consumption by sportsmen of weightlifting rose to 88.7±1.0% in summer-autumn season, with 72.4±1.0% on actual nutrition background, and to 82.8±1% in a winter-spring season.

Keywords: Sportsmen, weightlifting, hot climate, food consumption, proteins, fats, carbohydrates, vitamins.

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Introduction

According to known nutriciologists the biological value of food allowances characterizes the force of biological influence on living organism and represents a ratio of biologically active substances containing in foodstuff to daily average requirement of an organism (Tutelyan et al., 1999; Tutelyan et al., 2003; Korolyev, 2007) The purpose of researches was study of optimal variants of daily average norms of a set of products for sportsmen of weightlifting in the conditions of a hot climate on the basis of biological value of food allowances.

Materials and methods

An actual nutrition of sportsmen is studied by a method of the 24 hour monitoring and survey in training bases. For the statistical analysis 720 menus-apportions in 14 male sportsmen were used. Food value of diets was calculated on the basis of tables of a chemical compound of foodstuff (Skurihina and Volgareva, 1987). Biological value of food allowances was estimated for all biologically active substances (BAS), separately for cold and warm seasons of year and expressed in the form of % of satisfaction with daily requirement:

$$BVR = \frac{Vit.C_n}{Vit.C_p} + \frac{Vit.A_n}{Vit.A_p} + \frac{li\sin_n}{li\sin_p} + \frac{metionin_n}{metionin_p} et\ al. \times 100$$

where, *BVR* - biological value of rations; *n* - quantity of biologically active substances in an investigated diet in mg; *p* - daily norm of the given component in mg.

Results of research

The comparative estimation of structural structure of biologically active substances and biological value of daily average food allowances of sportsmen on actual and changed food background, testifies on efficiency of the made corrections (Table 1). Balance of

food substances on the changed background of nutrition has reached an optimum level. So, if on an actual background of a nutrition the balance of food substances made 1:1.2:4.9 in a winter-spring season and 1:1.2:5.2 in a summer-autumn season, on the changed background the given indicator made 1:1.1:4.1 in all seasons. Such optimum parity of food substances in daily average food allowances on the changed nutrition background was reached due to increasing norms of proteins of animal origin and vegetative fats, as well as decreasing carbohydrates sources. So, the ratio of proteins of animal origin on the changed nutrition background on the average increased by 25 % in comparison with an actual nutrition background; the ratio of vegetative fats increased by 15%. Decrease in carbohydrates on the changed nutrition background on the average made 7-10%.

The analysis of biological value of diets for sportsmen did not reveal statistically significant differences connected to seasons of the year. It is conditioned by special attention both in summer-autumn and in winter-spring seasons to sources of vitamins and possibility of all-the-year-round providing of fresh vegetables and greens in Uzbekistan. Significant differences in the content of vitamins B1, B2, PP, isoleucine and valine in food allowances on actual and changed nutrition background were not revealed. This is related to a high consumption level of grain-sources of the given group of biologically active substances on an actual food background. At the same time, biological value of daily average diets on the changed nutrition background increased to 88.7±1.0% in summer-autumn season, with 72.4±1.0% on an actual nutrition background, and to 82.8±1.0 % in winter-spring season. This was achieved due to optimization of the complex of the majority of biologically active substances in diets.

Increases of the general biological value of daily average nutrition allowances was reached due to our offered daily average nutrition norms, which had increased nutrition sources of vitamins A, D, B6, B12, irreplaceable amino acids - leisin, lisin, methionine and iron gemma (from fish, liver, sour-milk products), vitamin C, vitamin B9 (pholasin), cellulose, pectin and beta carotinoids (from vegetables, cucurbitaceous, pumpkins, fruit and greens), potassium, calcium, phosphorus and magnesium (from bean, dairy production and dried fruits), sitosterol, choline, and phospholipids (from vegetable oils and bean).

At the same time, using of natural products did not provide organism of sportsmen with the necessary and sufficient norms of vitamin C, selenium, and amino acids leisin and threonine. According to the recent studies (Barenbojm and Malenkov, 1986; Vrzhesinskaya et al., 2002) selenium performs as important element in development of fermental systems of oxidation-reduction process and metabolism regulation in an organism. Rich sources of selenium are sea products. It appears that for the continental countries without coastlines and typical consumption of low-marine products, the alimentary issue is not only deficiency of iodine but also the selenium deficiency.

The problem of iodine insufficiency for the continental countries has been studied intensively; and the challenge can be resolved through mass consumption of iodized salt. While, the problem of selenium deficiency has bee explored insufficiently and demands the deeper studying.

Conclusion

Considering the revealed deficiency of some biologically active substances, results of hygiene-toxicological assessment (Tuhtarov, 2008), chemical compound and properties of some domestic and foreign biologically active additions (BAA) to nutrition, we have chosen domestically produced "Kuvatin" and "Bioferron" as additives to nutrition for sportsmen. "Kuvatin" is hydrolyzed protein of silkworm cocoons and intended for strengthening immunity during intensive physical activities of both sportsmen and people engaged in heavy physical work. This BAA is recommended as additional prophylactic remedy for prevention of disturbances in activity of cardiovascular system (Table 2). Syrup "Bioferron" has the following structure: a barberry, raisin, caraway seeds, a beet, crystal sugar, drinking water (Table 3). Additional application of the BAA "Kuvatin" and

"Bioferron" in nutrition of sportsmen allowed to compensate deficiency in food allowances of vitamin C, selenium and important amino acids leisin, threonine.

References

Barenbojm, G., Malenkov, A., 1986. Biologically active substances. New principles of search [Biologicheski aktivniye veshestva. Novie principi poiska], in Russian, Moscow: Nauka

Korolyev, L., 2007. Hygiene of nutrition [Gigiyena pitaniya], in Russian, Moscow: Academy

Skurihina, M., Volgareva, M. (Eds.), 1987. The chemical composition of foods. Book 2. Reference tables of amino acids, fatty acids, vitamins, macro-and microelements, organic acids and carbohydrates [Khimicheskij sostav pishevyh produktov. Kniga 2. Spravochnye tablici soderzhanija aminokislot, zhirnyh kislot, vitaminov, makro-i mikroelementov, organicheskih kislot i uglevodov], in Russian, Moscow: Agropromzdat

Tuhtarov, B., 2008. "Result of a hygienic estimation BAA intended for application in sports medicine" [Rezultati gigiyenicheskoy ocenki BAD, perednaznachennih dlya primyenyeniya v sportivnoy meditsine], in Russian, Issues of Nutrition, No.3, pp.33-35

Tutelyan, V., Spirichev, V., Shatnjuk, L., 1999. Correction of micronutrient deficiency [Korrekciya mikronutrientnogo defitsita], in Russian, Issues of Nutrition, No.6, pp.3-11

Tutelyan, V., Suhanov, B., Gapparov, M., 2003. Nutrition in struggle for surviving [Pitaniye v borbe za vijivaniye], in Russian, Moscow: Academkniga

Vrzhesinskaya, O., Beketov, H., Nikitin, V., Pereverzev, O., 2002. "Influence of biologically active additives to food with the various maintenance of vitamins on the vitamin status of the person," Issues of Nutrition, No.1-2, pp.27-31

Appendix

TABLE 1. COMPARATIVE ESTIMATION OF BIOLOGICAL VALUE OF DAILY AVERAGE NITRITION ALLOWANCES OF SPORTSMEN OF WEIGHTLIFTING ON ACTUAL AND CHANGED NUTRITION BACKGROUNDS, M±M IN % FROM REQUIREMENT

Seasons of year	The general biological value of diets		
	On the changed nutrition background	On an actual nutrition background	P
Summer-autumn	88.7±1.0	72.4±1.0	<0.001
Winter-spring	82.8±1.0	67.7±1.0	<0.001

TABLE 2. CHEMICAL COMPOUND BAA "KUVATIN", IN MG%

№	The name of amino acids	The maintenance in mg %
1	Glisin	32.3
2	Alanin	20.5
3	Serin	18.0
4	Tirosin	9.2
5	Valin	3.5
6	Aspargen acid	8.2
7	Glutamin acid	2.1
8	Treonin	4.8
9	Phenilalanin	0.9
10	Arganin	1.8
11	Isoleisin	0.8
12	Leisin	0.9
13	Prolin	0.9
14	Lizin	0.3
15	Triptophan	0.2
16	Gistidin	0.7
17	Cystin	0.1

TABLE 3. NUTRITIONAL AND BIOLOGICAL VALUE BAA OF "BIOFERRON"

№	The name of substances	The maintenance
1	Fiber, in g in 100 g of product	2.0±0.2
2	Fats, in g in 100 g of product	2.6±0.3
3	Carbohydrates, in 100 g of product	12.0±1.2
4	Vitamin C, in mg in 100 g of product	50.0±2.0
5	Vitamin B1, in mg in 100 g of product	0.02±0.005
6	Vitamin B2, in mg in 100 g of product	0.02±0.004
7	Vitamin B6, in mg in 100 g of product	0.04±0.01
8	Vitamin PP, in mg in 100 g of product	0.4±0.02
9	Pholasin, in mg in 100 g of product	0.1±0.01
10	Iron, in mg in 100 g of product	4.5±0.02
11	Potassium, in mg in 100 g of product	488±4.8
12	Calcium, in mg in 100 g of product	137±1.3
13	Magnesium, in mg in 100 g of product	44±0.4
14	Phosphorus, in mg in 100 g of product	42±0.4