

STUDY ON THE USE OF CEREAL AND VEGETABLE IN THE DIET OF ATHLETES

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Abstract

Normal human diet, as well as the athlete's diet, should include all the nutrients such as proteins, lipids, carbohydrates, water, mineral salts and vitamins. Cereals, along with tubers, roots and wild fruits, were the first human food. This study presents the nutritional value, the nutritious advantages and disadvantages and also the necessary ration of cereal and vegetables in the diet of athletes.

Key words: athletes' nutrition, cereal products, dried vegetables.

INTRODUCTION

Rational diet is the diet that fulfils the nutrients quantity and quality needs of human body considering the physiological features, the effort and environmental conditions in which the effort takes place (Alexandrescu, 1994). It contains plastic, energy and catalytic substances needed. The state of nutritional balance is the state in which the athlete's body should be found (Craciun, 1996).

MATERIALS AND METHODS

Research method is based on bibliographic study. The most used cereals in human food are: wheat, rice, maize, millet, rye, barley and oats. The most common dried vegetables are beans, peas and lentils. All these must provide 40% of the caloric value of athletes' food ration.

RESULTS AND DISCUSSIONS

The results of the research presents the nutritional values of grain products and vegetables for food rations in athletes' food and also the advantages and disadvantages of using these food groups (Craciun, 1996).

A. Nutritional value

Carbohydrate's main role in the body is to produce energy (Hodosan, 2014). Cereal products are the most important source of energy material, as the starch may provide as much as 70-80% of human carbohydrates needs (Hodosan, 2014). The proteins have a plastic role in the body by forming and growing new cells and by replacing the damaged tissues. Proteins in connection with some enzymes have catalytic action in some reactions of the body. Cereals and dried vegetables can be a source of vegetable proteins. The protide content varies from 7 to 16% for cereals and from 20 to 26% for dried vegetables, reaching up to 32-34% in soy (Taras, 2012). These proteins have a much lower nutritional value than the ones of animal origin because they contain a lower quantity of essential amino acids. Soy proteins have a more balanced content in essential amino acids (Table 1) (Nistor, 2015).

Vitamins (Table 1) are part of the substances acting as enzymes that facilitate various chemical reactions especially those like redox catalysts. The cereals and the dried legumes represent an important source of B vitamins and E vitamin. These vitamins are mainly concentrated in the shell grain (bran) and therefore the vitamin content of extraction flour is reduced. This decrease in vitamins is due baking the bread.

Table 1. The content of vitamins and minerals products derived from cereals and dried vegetables per 100 g food used in the athletes' diet

Food	Vitamins per 100 grams of food				Minerals in milligrams per 100grams of food				
	Carotene Y	B1 Y	PP mg	B6 mg	K	Na	Ca	Fe	P
Rice	30	40	1,0	0,2	200	30	15	0,5	150
Semolina	100	150	2	-	180	25	20	1,5	120
Wheat flour	200	150	5	0,6	350	40	35	3	400
White bread	-	100	1	0,5	120	360	12	1,5	120
Brown bread	-	250	2	0,25	190	400	28	2,5	200
Biscuits	-	60	-	-	90	350	15	0,5	150
Pasta	60	120	1	0,2	140	100	22	1,5	110
Beans	100	700	2,5	0,55	1500	60	110	6	400
Peas	150	600	3	0,45	1000	35	80	5	300

Since bread is the food which mainly covers the humans needs of thiamine (B1), the flour extraction of which bread is made on plays a more significant role. From this point of view black bread is the most appropriate. Even that dried vegetables contain significant amounts of thiamine, their contribution to human needs of thiamine is reduced due to the fact that dried vegetables are consumed in smaller amounts than cereals.

The mineral elements (Table 1) are part of trophines (food substances) with plastic role (calcium, phosphorus, sodium, potassium, iron) and catalytic role (copper salts, iodine, cobalt, iron) (Nistor, 2015). They are indispensable to the organism in maintaining of health and life. Cereals and dried legumes are a source of minerals.

Cereal products contain phosphorus = 200-400 mg %, potassium = 150-350 mg %, magnesium = 50-160 mg %, while dried vegetables contain potassium = 700-1500 mg %, iron and some minerals such as copper and manganese, but they are poor in calcium and sodium (Taras, 2012). Hence, cereals and dried vegetables are not a source of calcium. Consumed in large quantities they can turn insoluble some part of calcium brought in from other foods. This action extends to other minerals.

B. Ration

The food value that composes the ratio is estimated by its content and by its caloric effect per 100 g. Therefore, the diet should contain carbohydrates, lipids and minerals. It was found that calories needs in different sports branches are about 5500 calories/24 hours (Table 2) (Alexandrescu, 1994).

These calories are presented in Table 3 (Alexandrescu, 1994).

Table 2. Grams of energy necessary for an athlete in a sport branch consuming about 5500 calories / 24 hours

	Calories	Grams	
12% Proteins	660	160	Animals origin: 60%=96 g
			Plant origin: 40%=64 g
30 % Lipids	1650	180	Animals origin: 70%=126 g
			Vegetal origin: 30%=54 g
60% Carbohydrates	3190	790	Polysaccharides: 65%=514 g
			Mono and disaccharides: 35%=276 g

Table 3. Foods of plant origin part of the athlete's ration (protein content, fat, carbohydrate and caloric value)

Food	Quantity/week	Proteins	Lipids	Carbohydrates	Calories
Brown bread	7 days x 250 g = 1750 g	148	26	375	3762
White bread	7 days x 250 g = 1750 g	140	18	875	4340
Pasta	4 days x 50 g = 200 g	26	2	252	732
Rice	4 days x 50 g = 200 g	8	2	135	610
Biscuits	4 days x 50 g = 200 g	20	20	144	860
Semolina	4 days x 50 g = 200 g	9	-	152	704
Beans, dried peas	4 days x 50 g = 200 g	10	31	324	1280
Wheat flour	7 days x 400 g = 300 g	41	6	252	1250

The average daily amount required by an athlete diet, for different derived food categories belonging to this food group, is made of: bread 500-600 grams; 70-80 pasta grams; flour 50 grams; rice 50 grams; semolina 50 grams; 50 biscuits grams; dry beans or peas 100 grams (Figure 1).

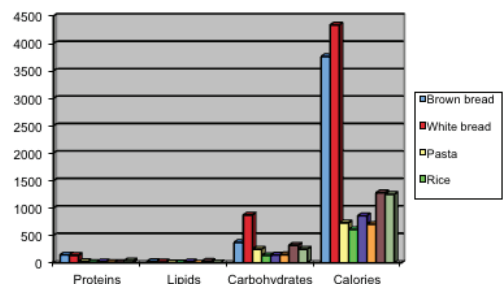


Figure 1. The content of protein, fat, carbohydrate and caloric value of the athlete's ration

C. Advantages and disadvantages

The food categories included in this group may provide almost half the energy needs of the body as well as those of thiamine (Petrescu, 2002). The black bread has a lower caloric value than the white bread, (210 cal % compared to 240 cal %) but it is richer in vitamins and minerals. Due to the fact that it contains more bran it takes longer to digest and therefore it is recommended that, during the first stages and during the recovery phases, the athletes to be administrated intermediary bread, while during competition they should be administrated white bread because it is more easily to be digested (Petrescu, 2002).

CONCLUSIONS

Cereal products are the most important source of energetic material for athletes. Grains and

dried legumes can be a source of vegetable proteins. Cereal products and dried legumes are an important source of B vitamins and E vitamin. Dried legumes and grain products are a source of minerals.

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