

ZAHRANIČNÍ PŘÍSPĚVKY

ASSESSMENT OF ENERGY AND NUTRITIONAL VALUE OF FOOD RATIONS USED FOR ALIMENTATION OF SOLDIERS SERVING MILITARY SERVICE OUTSIDE POLAND

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Soldiers' military service in Peace Keeping Missions outside Poland is related to staying in different climate conditions and doing special combat duties.

Proper nutrition of Polish soldiers serving abroad is one of the fundamental elements allowing keeping good health state and high psychophysical condition. Soldiers' nutrition manner requires taking into consideration both different climate and service conditions, because these elements may significantly influence on daily energy expenditure, and consequently change of nutritional requirements (1, 2, 3, 4).

Materials and Methods

The examinations topic was estimation of nutrition state of Polish soldiers doing military service in UN Peace Keeping Missions in Syria and Lebanon and in Polish Military unit of KFOR in Kosovo. Examinations on soldiers' nutrition state were based on theoretical analyze of menus and included both quantity and quality assessment. The crucial factors such as energy and nutritive value of mean daily food ration, describing degree of nutrition plan-

ning correctness were analysed in quantity assessment. Estimation of mineral elements content in food rations used for soldiers' nutrition in Syria and Lebanon was done based on theoretical analysed of 50 and 40 daily menus respectively. Energy and nutritive value estimation of food rations planned for soldiers' nutrition in Kosovo was based on discerning analyse of 60 daily menus.

Examined food ration's nutritive value was assessed based on calculation method and data included in "FOOD" software.

Obtained results were compared to compulsory in Polish Army fundamental food dues soldiers in Lebanon, Syria were fed and norms obligatory for soldiers serving in Kosovo. Results of energy and nutritive value exterminations of rations planned for soldiers' nutrition were compared to obligatory in Poland norms for young men.

It was stated that energy value of food rations planned for consumption was as follows 21.05 ± 1.55 MJ (5025.0 ± 371.7 kcal) in Lebanon, 17.27 ± 1.11 MJ (4124.0 ± 266.8 kcal) in Syria and 24.89 ± 2.28 MJ (5941.7 ± 546.4 kcal) in Kosovo (Table1).

Table 1

Mean energy values of basic nutritive elements in daily food ration

Element	Lebanon	Syria	Dues in Syria and Lebanon	Kosovo	Dues in Kosovo	FFI Norm
Energy (kcal)	5025 ± 371.7	4124 ± 266.8	4018	6301 ± 711.2	4762	3500
Proteins in general (g)	174.4 ± 22.7	137.9 ± 13.8	132.3	197.4 ± 35.0	167.2	75–100
Protein's energy (%)	13.9	13.4	13.2	12.6	14.0	12–14
Animal proteins (g)	115.5 ± 23.9	86.0 ± 14.3	68.0	129.1 ± 31.2	78.8	63.7
Fats in general (g)	213.3 ± 27.9	161.7 ± 19.7	130.8	241.4 ± 36.8	182.6	117.0
Fats' energy (%)	38.2	35.5	29.3	34.5	34.5	30.0
UFA's energy (%)	1.76	3.79	— — —	10.6	— — —	3.0
Carbohydrates (g)	599.7 ± 47.1	529.1 ± 43.0	577.6	834.2 ± 89.9	612.5	— — —
Carbohydrates' energy (%)	47.7	51.3	56.7	52.9	51.5	50–65
Cellulose (g)	39.5 ± 4.9	31.0 ± 5.6	62.1	61.6	52.1	20–40

Proteins amount planned in menus in amount of 174.4 g, 137.9 g and 197.4 g exceeded norms compulsory in the army, however percentage of energy originating from proteins was correct and figured out 13.9 % for Lebanon, 13.4 % for Syria and 12.5 % for Kosovo.

Planned in menus fat content was 213.3 g, 161.7 g and 241.5 g respectively what significantly exceeded recommended norms. Low energy value originating from essential fatty acids (EFA) – 1.76 %, testifies usage of products rich in animal fats in soldiers serving in Lebanon nutrition planning. But in Kosovo 10.6 % of entire energy came from essential fatty acids.

Estimating carbohydrates content in daily food ration used for soldiers, serving in Syria and Lebanon, nutrition its insufficiency compared to the Army's norms was found but it met the requirements compulsory in Poland. Cellulose deficiency was found as well but it met requirements obligatory in Poland too. Carbohydrates and cellulose content in meals served in Kosovo met the requirements.

Estimation of mineral elements supply in planned menus showed full coverage of Army's norms except calcium and copper in Syria (Table 2).

Planned for consumption food rations for soldiers serving in UN Peace Keeping Missions in the Middle East and Kosovo met the requirements for A, B1, B2, B6, C, E vitamins and niacin in full (Table 3).

Table 2

Selected mineral elements content in planned daily food rations

Element	Lebanon	Syria	Kosovo	Norm
Sodium (mg)	5883.2 ± 680.5	3286.0 ± 604.9	6823.1 ± 1330.8	> 625
Potassium (mg)	6641.4 ± 753.9	6061.0 ± 663.6	8623.5 ± 1520.9	> 3500
Calcium (mg)	1428.0 ± 299.9	1185.7 ± 249.7	1943.1 ± 532.7	1200
Phosphorus (mg)	2664.0 ± 302.8	2205.4 ± 267.2	3398.3 ± 613.4	900
Magnesium (mg)	548.2 ± 53.0	479.9 ± 70.4	702.3 ± 133.6	370
Iron (mg)	26.9 ± 2.54	24.9 ± 9.9	27.18 ± 4.15	15
Zinc (mg)	26.8 ± 3.09	20.6 ± 2.9	26.24 ± 3.90	16
Copper (mg)	2.35 ± 0.25	1.62 ± 0.6	2.86 ± 0.46	2–2.5

Table 3

Vitamins content in food ration planned for consumption

Vitamin	Lebanon	Syria	Kosovo	Norm
A (μg)	1945.4 ± 423.4	2140.9 ± 721.8	3108.6 ± 938.0	1000
E (mg)	15.58 ± 5.42	27.74 ± 4.14	42.02 ± 12.01	10
B ₁ (mg)	3.83 ± 0.41	2.42 ± 0.61	3.74 ± 0.68	2
B ₂ (mg)	3.24 ± 0.36	2.78 ± 1.5	4.13 ± 0.83	2.8
Niacin (mg)	34.55 ± 4.7	32.26 ± 8.15	38.53 ± 8.65	25
B ₆ (mg)	3.95 ± 0.44	2.98 ± 0.62	5.17 ± 0.93	2.6
C (mg)	193.3 ± 44.1	239.7 ± 74.9	311.58 ± 110.7	70

Conclusions

Energy and nutritive value of daily food rations of Polish soldiers serving in UN Peace Keeping Missions in Syria and Lebanon met the requirements obligatory in Polish army except norms for carbohydrates and especially cellulose.

Energy value of food rations planned for soldiers' nutrition in Kososvo significantly exceeded obligatory norms, what was a result of too much fat usage.

Amount of energy originating from fats should be decreased and vegetable fats usage should be increased in soldiers nutrition planning.

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