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RELEVANCE OF NUTRITIONAL INTERVENTION OF CANNED MILK TO SOLDIERS' DAILY DIET

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Abstract: *The article presents soldiers' needs in nutrients, minerals and vitamins. Drawing on the example of one of the military units of Ukraine, the discrepancy of soldiers' needs and their daily diet is dealt with, which is based on the principles focused not on quality but quantity.*
According to the tests made for soldiers' needs in terms of good nutrition it is recommended to introduce canned milk (dry, condensed), which is characterized by high nutrition value and long-time term of storage under military-field conditions.

Keywords: *canned milk, level of provision, nutrients, vitamins, military, daily diet, needs, minerals.*

1. Introduction

The threat of losing peace and holistic functioning of Ukraine as a united and independent country, pose new and pressing issues to society, which needs urgent solution. Mainly, they are concerned with providing military with highly professional military education and training, new equipment, respective living conditions in the field, nutrition.
In the author's opinion, the speed and success of the task of defending the state, in general depend on the state of health of the defines, their training, resistance of organisms to extreme psychological, emotional and physical stresses.
These factors greatly depend on the provision of daily military's needs in basic nutrients. Therefore, the organization of full, high-quality and balanced diet for the military - is an important task for today.
The diet, which is based on scientific principles specific to military work will strengthen the health and physical development of the military, raise the body's resistance to stress, positively effect on their combat readiness.

2. Materials and methods

Analysis of the nutritional standards of servicemen, approved by the Cabinet of Ministers of Ukraine number 426 of 29 March 2002, showed that none of the rules (combined, air, sea) cannot fully ensure daily physiological needs of the military's body in the nutrients and energy, vitamins and minerals [1].
On the example of really existing military unit of Ukraine, completed daily ration for soldiers does not stipulate detection of the level that provides nutrients, minerals and vitamins at all.
The indicator, on which are oriented officers of the military unit, when are developing the diet -is total weight of food, not its qualitative composition.
Table 1 shows the example of menu according to rates for combined-arms ration for one of the military units of Ukraine.

Table 1

Menu according to rates for combined-arms ration for military unit of Ukraine

Date and days of week	Ingestion	Name	Rye or wheat bread from flour	Wheat bread from first grade flour	Second grade wheat flour	Cereals: Buckwheat	Cereals: Oatmeal	Cereals: Barley	Cereals: rise	Meat-fish: meat	Meat-fish: Fish, herring	Fats: Margarine	Fats: butter	Fats: oil	sugar	Tea, coffee	Dry pudding	Salt	vegetables: Potato	vegetables: Fermented cabbage	vegetables: beet	vegetables: carrot	vegetables: Onion	vegetables: Root, green, tomatoes, cucumbers	Other: Tomato paste	Other: Bay leaf	Other: pepper	Other: vinegar	Other: Mustard powder	Other: First grade flour	Other: yeast	Other: cheese	Total weigh of ready dish
MONDAY, the " of (month) 20 (year)	BREAKFAST	(1)																															75
		(2)			5				86			5										5	5										308
		(3)	100	150									15																			15	
		(4)													30	0.6																	250
	DINNER	(5)												5					90			5	5	20									100
		(6)																	120	90	30	5	5										500
		(7)			5					75																							44
		(8)					28	49														5	5										173
		(9)										50																					50
		(10)	150	100										3	10		20																250
	SUPPER	(11)												5					50			5	5	20									68
		(12)			5						195			12																			212
		(13)				81						5										5	5										277
		(14)	100	150									15		30	0.6														50	0.5		250
Total number of products per day			350	400	15	81	28	49	86	150	195	15	30	25	70	1.2	20	25	260	90	30	30	30	40	6	0.2	0.3	1	0.3	50	0.5	15	

Canned meat – (1), with barley porridge – (2), Bread, cheese, butter – (3), Tea, sugar – (4), Potato salad with cucumber – (5), Borshch – (6), Canned meat – (7), with combined porridge – (8), sauce - (9), Bread, compot – (10), Potato salad with cucumber - (11), Potato salad with cucumber - (12), Fry fish, with rise and sause - (13), Butter, sugar, tea, baking - (14)

One of the reasons of the discrepancy between existing norms and the needs, can be called a lack of dairy products in the diet, which have high nutritional, nutritious and biological value [2].

Experts are recommended to consume milk and dairy products every day for people of all ages and different groups of physical activity. And the military are no exception.

Recommended 30 grams of butter and 15 grams of solid rennet cheese, that are mentioned in Resolution above, are insufficient to provide the body, that has, increasing level of physical activity, with necessary and valuable proteins, fats, carbohydrates and other nutrients of animal origin.

However, considering the dairy products in the military's diet, it is necessary to pay a special attention to the following aspects: availability of the product in the military-field conditions, easiness of preparation to consumption, transportability and expectancy of the term of storage [3].

Taking into account the needs and characteristics of food consumption during military actions, the authors recommend to introduce canned milk (dry and condensed) into military's diet.

Dry canned milk - are products with high content of milk solids (95 ... 98.5%), that ensure their suitability for easy transportation and long-term consumption.

When the degree of thickening of milk-base before drying is 3-4, then it causes high food, energy and biological value of dry canned milk compared to whole fresh milk.

Thus, dry milk food have a high protein (11.1 ... 37.9%); fat (12.5 ... 44.7%); carbohydrates (30.6 ... 65%); essential amino acids (9568 ... 14 237 mg per 100 g); fatty acids (11.85 ... 40.48 grams per 100 grams) content.

Vitamin and mineral composition of the main types of dry canned milk is characterized by containing retinol, β-carotene, thiamine, riboflavin, ascorbic acid, sodium, potassium, calcium, magnesium, phosphorus, iron [4, 5].

Canned condensed milk – are high-calorie nutritional products with a shelf life about 12 months to consumption, mass fraction of protein about 7 ... 11% fat - 8.5 ... 19% lactose - 9 ... 14.5%; sucrose - 37 ... 44%.

100g of condensed product contains about 2,600 mg of essential amino acids; 8 ... 18 g of fatty acids. Chemical constitution of condensed canned milk, consists of the same macro elements and vitamins as dry milk products [4, 5, 6].

3. Results and discussion

The feasibility of the introduction canned milk into military's diet is confirmed by a comparative analysis of the value of 100 grams of canned milk with daily needs of the human body in nutrients [1].

For calculation of daily military's energy consumption ,the quantity of basal metabolism is multiplied by a factor of physical activity (2.3) for group IV activity - working hard, especially hard physical labor, high and very high physical activity (Table 2-4).

Table 2

Daily requirement of men of 4 group of physical activity in proteins, fats, carbohydrates and energy

Age of man (years)	Energy [kcal.]	Proteins, [g]		Fats, [g]	Carbohydrates, [g]
		all	animal		
18…29	3900	107	59	10	624
30…39	3700	102	56	10	592
40…59	3500	6	53	97	560

Table 3

Daily requirement of men of 4 group of physical activity in minerals

Age of man (years)	Ca, [mg]	P, [mg]	Mg, [mg]	Fe, [mg]	F, [mg]	Zn, [mg]	I, [mg]	Se, [mg]
18…29	1200	1200	400	15	0.75	15	0.15	70
30…39	1200	1200	400	15	0.75	15	0.15	70
40…59	1200	1200	400	15	0.75	15	0.15	70

Table 4

Daily requirement of men of 4 group of physical activity in vitamins

Age of man	E, mg	D, mg	A, mg	B_1, mg	B_2, mg	B6, mg	PP, mg	Folate, mg	B_{12}, mg	C, mg
18…29	15	2.5	1000	1.6	2.0	2.0	22	250	3	80
30…39	15	2.5	1000	1.6	2.0	2.0	22	250	3	80
40…59	15	2.5	1000	1.6	2.0	2.0	22	250	3	80

On the example of the daily needs of men aged 30 ... 39 years authors defined the integral score of canned milk for protein fat, carbohydrates, vitamins and mineral substances, which are shown in figure 1. It was determining in the products that have the greatest demand among consumers - whole condensed milk with sugar and 8.5% of fat, dry whole milk with 25% of fat.

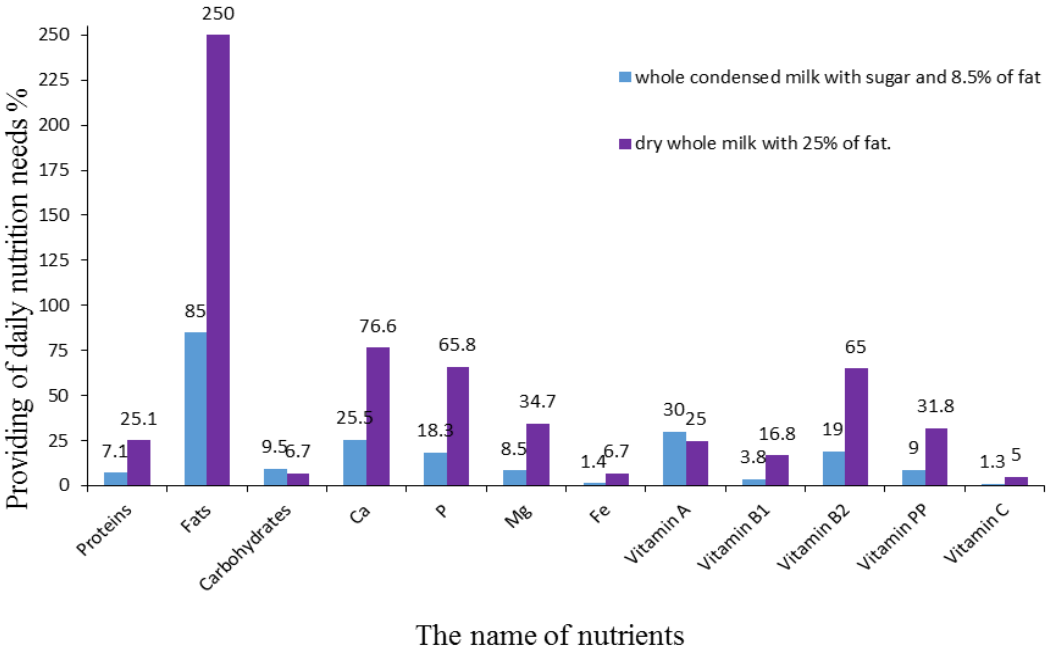

Fig. 1. The integral score of canned milk on the content of nutrients and minerals, vitamins.

4. Conclusion

Analysis of the results shows that canned milk are able to provide military's needs in nutrients, particularly fats, calcium, phosphorus, magnesium, vitamin B_2 on the high-level.

In conclusion, I must say that the procedure of drawing up the daily diet for the military of Ukraine needs innovation, radically opposing to the existing concepts in which the primary purpose will be balanced and quality diet for each of the military, not the mere provision of food by weight.

This will allow to improve feeling of military, their health and physical fitness in general.

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