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The Importance of the Study of the Microelement Composition Diet of Children in the Prophylaxis of Microelementosis

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Abstract--- *The concentration of micronutrients in food products of animal origin (the national dish – Khalis, chakka, milk, honey, egg yolk, kidney, liver) in the region of Zarafshan valley: egg yolk, the national dish halise, kidneys, liver and honey - rich in iron halise, meat and egg yolk- rich in zinc, egg white - rich in copper egg yolk, dairy products - rich in calcium, meat and egg white - rich in sodium and potassium meat, honey – magnesium.*

Consider the most optimal and safe for the prevention and correction of deficiency microelementoses, the diet to use foods rich in micronutrients.

Keywords--- *Nutrition, Diet, Microelements, Zinc, Iron*.

I. INTRODUCTION

The nutrition of the child must meet the needs of the growing organism, be as diverse as possible and include all the main food groups. The full value of the children's diet is estimated not only by caloric content, food composition (balance in proteins, fats, carbohydrates), but also in terms of a rational trace element composition [1, 2].

It should be noted that micronutrient deficiencies can develop against the background of sufficient provision of the body with carbohydrates, proteins and fats and lead to the development of alimentary-dependent diseases - rickets, protein-energy deficiency, anemia, which occupies a leading place in the structure of morbidity and mortality among children. The number of data on the role of imbalance of microelements in the formation of cognitive impairment in children is growing [3]. The most vulnerable categories for the development of microelement deficiency (in addition to the fetus and the pregnant woman) are children at critical periods of growth (up to 3 years, 5–7 years, during puberty - 11–15 years), children during socio-biological adaptation (first graders, schoolchildren during the transition to substantive education and during examinations) [4, 5]. A particular risk group is long-term and often whitening children.

In order to prevent and treat deficient forms of microelements, the determination of trace element contents in the traditional diet of the population of a given region is an extremely important task [6, 7]. In this aspect, the issue of trace elements content in the food products of the children's population of the Zerafshan Valley is not sufficiently covered [8]. On the basis of the above, it is advisable to study the content of such trace elements as iron, zinc, copper, cobalt and manganese in plant, animal products and phytochemicals that are part of the traditional dietary structure of the population of this region.

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II. MATERIALS AND METHODS

We have studied food products of animal origin, which are part of the traditional food structure of the population in the region of the Zarafshan Valley of the Republic of Uzbekistan. The concentrations of trace elements in food products were determined by the method of neutron activation analysis and atomic absorption spectrometry. We first studied the national dishes - Khalis, Chakka, as well as products of animal origin: milk, honey, egg yolk, kidney, liver, widely used in the traditional diet of the population of Central Asia and the content of the desired trace elements. Chakka is a filtered sour-flavored kefir prepared in most of the mists of the Samarkand region (method for producing chakka: kefir-katik is passed through a bag of permeable cotton material; Chakka is often used by the local population of adults and children in their pure form and as part of various dishes (chalop, rice soup, dried chakka - kurut, etc.). At present, chakka is prepared in many viloyats of the republic.

Halis (Halim) - porridge made from wheat and meat. This dish is mainly prepared in the Samarkand region, also on the eve of the Navruz holiday. Recently, Halis began to cook in private dining rooms throughout the year.

III. RESULTS

In order to provide children with trace elements - iron, zinc, copper, cobalt, manganese, calcium, sodium, potassium, and magnesium in the Zarafshan valley region, we studied the trace element composition of 9 types of food of animal origin (Table 1).

The Content of Trace Elements in Food Animal Origin (mg / kg)

№	Product	Iron	Zinc	Cobalt	Manganese	Copper	Calcium	sodium	potassium	magnesium
1.	halis	70	85	0,021	14	1	-	7990	0,6%	-
2.	Beef meat (n=11)	27-84	30-74	0,04	0,8	2,8-25-	133-1170	45900	1,4-5,6%	1170
3	Beef liver (n=5)	61-69	15-20	-	-	-	-	-	-	-
4	Kidneys (n=5)	25-60	29-37	-	-	-	-	-	-	-
5.	Egg yolk	18-94	20,3-55	0,01	0,7	1,8	800-3585	1815	0,09-0,2%	140
6.	Egg (protein)	5-6,8	1,7-4,6	0,01	0,2	480	96	14000	1,4%	98
7.	Milk	10	2,8	0,01	0,58	1	750	2488	100	-
8	Chakka (n=9)	0,1-2,7	2-,3-6,8	-	1,65	0,4	390	-	630	140
9	Honey	45,2	3,49	0,028	1	-	465	124	0,24%	145

The results showed that the most rich in iron from animal products were egg yolk (94 mg / kg), national Khalis dish (70 mg / kg), kidney and liver (60-69 mg / kg), beef meat (59 mg / kg) and honey (45.2 mg / kg). The physiological norm of iron for adults is 10 mg / day (for men) and 18 mg / day (for women), the need of children for iron, depending on age, is from 4 to 18 mg / day. In animal meat, half of the iron is represented by heme iron, 40% of which is absorbed. In plant foods, all iron is non-heme, its absorption is no more than 10%. Vitamin C promotes absorption of non-heme iron.

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IV. DISCUSSION

Zinc is rich mainly in halis, beef and egg yolk (85.74 and 55mg / kg, respectively), in other products the zinc content is from 2 to 37 mg / kg. The daily need for zinc, depending on the age of children is 3-12 mg.

Egg white and beef meat were rich in copper (480 and 25 mg / kg, respectively). The daily need for copper is 0.5-1.0 mg.

Of the macronutrients, calcium is quite abundant in the egg yolk (800-3585 mg / kg), in dairy products the calcium content ranges from 390 mg / kg to 750 mg / kg. From these data, it follows that drinking only dairy products does not satisfy a child's need for calcium. The daily need of a child for calcium is at the age of: up to 1 year, 400-600 mg; 1-3 years - 800 mg; 4–6 years old - 900–1000 mg; 7–10 years old - 1100 mg; 11-17 years old - 1200 mg.

Sodium is found in very large quantities in beef meat (45900 mg / kg) and egg white (14000 mg / kg). Children need for sodium: up to 1 year-200-350 mg; 1-7 years - 500-70 mg; 7-18 years old - 1000-1200 mg.

Moderate potassium is found in beef meat (1.4%) and egg white (1, 4%). Daily need for potassium: 1-2 years - 500 mg; 3-7 years - 600mg; 7-11 years old - 900mg; 11-18 years old- 1500-2500mg.

The concentration of magnesium is high in beef meat (1170 mg / kg), in other products of animal origin - more than 100 mg / kg. Daily need for magnesium: 0-12 months- 35-70 mg; 1-3 years - 80 mg; 3-7 years-200mg; 7-11 years - 250 mg; 11-18 years old - 300-400 mg.

V. CONCLUSION

Thus, on the basis of the foregoing, we consider the most optimal and safe for the prevention and correction of scarce microelementoses of the mother and child, a diet using food products rich in such nutrients. as iron, zinc, copper, cobalt and manganese in plant, animal products and phytomeans included in the structure of the traditional nutrition of the population of this region.

With well-established deficient microelementoses, along with food products, it is imperative to use medical correction.

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Ethical Approval

The ethical approval for the study was granted by the Committee of Ethical Approval for Researches under the Ministry of Health of the Republic of Uzbekistan.

Consent

Written informed consent was obtained from all participants of the research for publication of this paper and any accompanying information related to this study.

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Conflict of Interest

The authors declare that they have no competing interests.

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REFERENCES

[1] WHO. Feeding and feeding infants and young children. // Guidelines for the WHO European Region, with particular emphasis on the republics of the former Soviet Union. //*WHO. European series* - 2001. Denmark. - 369 s.
[2] Gromova O. A. School on vitamins and microelements. - M., 2004. - 59 p.
[3] Kodentsova V.M., Vrzhesinskaya O.A. Vitamin-mineral complexes in the nutrition of children: the ratio, dose - effect. *Questions of children's nutrition.* 2009. V. 7. № 5. S. 6−14.
[4] Legonkova T.I. The clinical significance of zinc deficiency for mother and child. // *Russian Pediatric Journal.* - 2002. - №5. - P.62-63.
[5] Netrebenko O.K. Copper and selenium in the nutrition of premature babies. // *Russian Pediatric Journal.* - 2005. - №1. - pp. 25-27.
[6] Odinaeva N.D., Yatsyk G.V., Skalny A.V. Zinc and the health of young children. *Manual for doctors. M.,* 2002. - 29 p.
[7] Salomov I.T., Rasulov S.K. - Zinc deficiency in children. *Tashkent.* 2009. P.21-62.
[8] Kodentsova V.M. Vrzhesinskaya O.A. Risnik D.V. Analysis of domestic and international experience in the use of micronutrient-enriched foods and salt iodization. *Trace elements in medicine.* 2015 16 (4): 3–20.

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