Dr.SKALNY® LABORATORY
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8 (495) 917-71-21, 916-01-38.

ANO Center for Biotic Medicine

systemic diagnostics and treatment of the metabolic disorders — Method of Dr. Skalny®

Name | Date of Birth 20.04.2015 | Sex F

Analysis № | Analysis date 05.08.2024 | Object Hairs

Analysis results (µg / g)

Indicator	Position in the normal range (Lack / Risk / Normal / Risk / Excess)	Result	Norm limits	Conclusion
Essential (vital) chemical elements				
K Potassium	Normal	101	18 - 250	Normal
Na Sodium	Normal	190	18 - 300	Normal
Ca Calcium	1.4	2859	350 - 2100	Risk
Mg Magnesium	1.8	342	21 - 190	Risk
P Phosphorus	-1	106	110 - 210	Risk
Fe Iron	1.1	41.4	9 - 39	Risk
Zn Zinc	-1.1	91	100 - 360	Risk
Cu Copper	Normal	10.5	9 - 31	Normal
Se Selenium	Normal	0.3436	0.31 - 0.78	Normal
I Iodine	1.5	4.01	0.16 - 2.6	Risk
Mn Manganese	Normal	0.8606	0.13 - 1.4	Normal
Co Cobalt	Normal	0.0312	0.005 - 0.1	Normal
Cr Chromium	Normal	0.1853	0.08 - 1	Normal
Mo Molybdenum	2.9	0.1736	0.01 - 0.06	Excess
Toxic, potentially toxic and conditionally essential chemical elements				
V Vanadium	1.8	0.3677	0.006 - 0.2	Risk
Si Silicon	-1	7.89	7.9 - 79	Risk
B Boron	1.2	2.13	0.11 - 1.8	Risk
Ni Nickel	Normal	0.2859	0.05 - 1.2	Normal
Li Lithium	Normal	0.0572	0.003 - 0.061	Normal
Sn Tin	Normal	0.2847	0 - 0.8	Normal
Ge Germanium	Normal	0.0127	0 - 0.03	Normal
Rb Rubidium	Normal	0.0739	0.07 - 0.5	Normal
Sr Strontium	3.2	53.9	0.7 - 17	Excess

Sb	Antimony		Normal		0.0344	0 - 0.08	Normal
Ba	Barium		Normal		0.9534	0 - 3	Normal
Bi	Bismuth		Normal		0.1095	0 - 0.2	Normal
Ga	Gallium		Normal		0.0038	0 - 0.04	Normal
La	Lantan		Normal		0.0035	0 - 0.03	Normal
W	Tungsten		Normal		0.0078	0 - 0.05	Normal
Zr	Zirconium		Normal		0.0514	0 - 1	Normal
Pt	Platinum		Normal		~0	0 - 0.01	Normal
Ag	Silver		Normal		0.0465	0 - 0.5	Normal
Au	Gold		Normal		0.0033	0 - 0.2	Normal
Al	Aluminium		Normal		2.66	0 - 19	Normal
As	Arsenic		Normal		0.0169	0 - 0.1	Normal
Hg	Mercury		Normal		0.247	0 - 1	Normal
Pb	Lead		Normal		0.5265	0 - 1.7	Normal
Cd	Cadmium		Normal		0.0251	0 - 0.1	Normal
Tl	Thallium		Normal		0.001	0 - 0.002	Normal
Be	Beryllium		Normal		0.0049	0 - 0.01	Normal

The results of laboratory tests do not constitute a diagnosis. Consultation with a doctor is required.

You can find more detailed information about the diagnostic methods used at the Internet address: https://journal.microelements.ru/en

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systemic diagnostics and treatment of the metabolic disorders
Method of Dr. Skalny®

Name Alshamory Jana Meshal Date of Birth 20.04.2015 Sex F

Conclusion on the results of the analysis

It is recommended (in consultation with the attending physician and/or medical consultant) tests of uric acid in the blood, CRP (C-reactive protein), general urine analysis, salts in the urine, as well as consultation with a rheumatologist.

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systemic diagnostics and treatment of the metabolic disorders
Method of Dr. Skalny®

Name Alshamory Jana Meshal | Date of Birth 20.04.2015 | Sex F

Doctor's comments

Recommended (in agreement with the attending physician and / or consultant physician) for the correction of detected impaired mineral metabolism disorders:

Course 1

1. Zinc (Zn 5 mg) take supplement twice daily: 2 tablets in the morning after breakfast and 2 tablets in the evening after supper for 4 months

2. Silica (Si 7mg) take supplement daily in the morning after breakfast for 4 months

3. Essentiale forte 300 mg: take 2 tablets twine a day after meal in the morning and evening for 1 month

4. Lecithin 600 mg: take 1 capsule twice a day after meal in the morning and evening for 1 month

Additional notes and recommendations:

The results of hair test revealed moderate deviations in hair elemental profiling. Deficiencies of zinc, phosphorus, silicon are noted, which requires supplemental correction. The observed changes may reflect transistor changes associated with active growth as well as impaired nutrient absorption. Detected selenium deficiency may be associated with the risk of inflammatory diseases, immunodeficiency conditions, etc. Silicon deficiency in combination with zinc deficiency may be associated with the risk of skin, hair and nail diseases. Phosphorus deficiency may be observed in case of insufficient consumption of protein-rich food, as well as in case of changes in the hepatobiliary system, biliary tract, disorders of protein-synthetic function of the liver. Excess of strontium, boron, vanadium, calcium, iodine, iron, magnesium, molybdenum in hair can be caused by geochemical features of residence region and external factors, which requires clarification of anamnesis (hair was not washed sufficiently before cutting, medications intake, increased content of these elements in the water of drinking and technical purposes, area of residence, etc.). Also, excesses of some elements in the hair may correlate with a decrease in their levels in the blood serum. For a correct analysis of elemental metabolism it is recommended to analyze the content of elements in blood serum (reflects the current state of the body, while hair - retrospective assessment), as well as analysis of elements in urine. A change in the course of correction is possible after obtaining the data of serum element analysis. Biochemical blood analysis, general blood analysis is recommended.

The intake of iodine preparations is carried out in agreement with the endocrinologist on the basis of an assessment of hormonal status (especially in people after 35 years).

The recommended date for re-analysis: 05.02.2025

Doctor

Date: 06.08.2024

_____

Signature

Check out our free book with a detailed description of the elements necessary and harmful to the body:

Information about the element imbalances

Calcium (Ca)

Calcium is concentrated mainly in bone tissue (about 99 %), and consequently plays a major role in its status. However, Ca++ ions are also necessary for activity of nervous and muscle tissues, immune system, counteraction for intestinal suction and deposition of toxins or heavy metals in the organism.
Numerous researches shows, that concentration of Ca in hair reflects provision of the organism by this element and correlates well with a degree of Ca deficiency in bones and whole organism. Ca concentration may be lower in gray or decolorized hair.

The excess of Ca in hair usually reflects not its high level but its speed turnover and quick elimination from the organism that can denote the deficiency of Ca in the organism. It can increase the risk of diseases of the locomotor apparatus, dys(hypo)function of thyroid and parathyroid glands, autoimmune thyroiditis. If Ca imbalance in the organism is suspected, the following additional tests may be useful: 1. determination of Ca and P level in the blood serum; 2. determination of calcitonin and parathormone concentration in the blood; 3. routine (general) urinalysis; 4. advices of the stomatologist, endocrinologist, X-radiography of bones, estimation of the thyroid gland function, electroencephalography, ultrasonography of the kidneys.

Magnesium (Mg)

Magnesium is a major endocellular electrolyte, closely related to K, Ca and Na in metabolic processes. This major element participates in many enzymatic reactions as activator. Mainly its normal level is necessary for maintenance of the 'energetics' of vital processes, regulation of neuromuscular conductance and tonus of smooth muscles (vessels, intestine, gall and urinary bladders etc.). In most cases the Mg concentration in hair adequately reflects its level in the organism.

Considerable excess of Mg in hair is likely to indicate intensive elimination of this element from the organism or its redistribution between tissues. It may be also caused by diseases of thyroid gland, chronic stress, excessive consumption of magnesium preparations, or intoxication by aluminium or beryllium (these elements intensify the elimination of Mg from the organism). If magnesium imbalance in the organism is suspected, the following additional tests are recommended: 1. advice of the psychoneurologist, cardiologist; 2. ECG, EEG, brain echoencephalography; ultrasonography of kidneys, liver, thyroid gland; 3. determination of Mg level in daily urine, blood and erythrocytes particularly; 4. analyses of feces on dysbacteriosis (candidiasis).

Phosphorus (P)

Phosphorus is closely connected with calcium in the metabolism; it plays an important role in formation of bone tissue. It participates in cell metabolism, activating many biologically active substances, nutrients (including vitamins of group B), providing the organism with energy. It also participates in transmembrane transport of substances, consists in some enzymes. Phosphorus metabolism is regulated by parathyroid glands. Aluminium and arsenic can be antagonists of phosphorus in biochemical reactions.

Phosphorus (P) deficiency in children is a rather rare case. Usually it accompanies diseases the liver and bile passages, occurs after different kinds of intoxication, long chronic diseases, or as a result of insufficient consumption of proteins. It indicates certain depression of antioxidant defense in the organism (which provides resistance to inflammatory processes, infective agents, free-radical damage of cell membranes), decrease of protein-synthetic function of the liver, risk of pulmonal failure, leukopenia (decrease in number of leukocytes in blood) or dystrophic changes in the myocardium. If phosphorus imbalance (either excess or deficiency) in hair is found, the following additional tests may be useful: 1. advices of the endocrinologist and gastroenterologist; 2. determination of calcium, phosphorus, calcitonin and parathormone concentration in the blood, routine (general) and biochemical analysis of the blood and urine, ultrasonography of the liver, ECG, X-radiography of bones.

Iron (Fe)

Iron is the most important essential trace element. Its major role is providing of the organism with oxygen (96% of iron localizes in blood), participation in many redox reactions in the organism. Both deficiency and excess of iron has negative influence on human health.

In children elevated level of iron in hair usually associates with CNS hyperexcitability, often - with aggression, decrease of ability to concentrate attention. Overaccumulation of iron in the organism can be caused by excessive (uncontrolled) usage

of iron preparations. More often, however, it is related to metabolic disturbances in the organism (diseases of liver, pancreas etc.). If iron imbalance (either excess or deficiency) in the organism is detected, the following additional tests may be applied: 1. advices of the hematologist, gastroenterologist, gynecologist (for girls); 2. clinical blood analysis, or estimation of Fe saturation of transferrin and ferritin.

Zinc (Zn)

Zinc is one of the most important trace elements. It participates in regulation of activity of more than 200 ferment systems and, consequently, influences on very many functions in human organism. The most important functions are regulation of cell division, T-cell immunity, synthesis of digestive enzymes and insulin in the pancreas, synthesis of proteins in the liver, synthesis of testosteron, grows of hair and nails, skin reparation, formation of 'memory proteins' in CNS, processing of alcohol etc.

In children zinc deficiency are usually accompanied with diseases of skin (atopic dermatitis, inclination to suppurative diseases, acne rash in teenagers), disturbance of pancreas function (synthesis of digestive enzymes, insulin), decrease of appetite, distortion of olfaction and taste, predisposition to anemia, allergic diseases, hyperactivity, underweight, decrease of visual acuity, fall of hair. T-cell immunity specifically decreases. Therefore, children with zinc deficiency usually suffer from frequent and long catarrhal, infectional diseases. Improper nutrition and disturbance of assimilation in small intestine (disbiosis) are the most frequent causes of zinc deficiency. Often the decrease of zinc content in the organism is a consequence of excess entering of copper, cadmium or lead (which are functional antagonists of zinc), especially in conjunction with inadequate nutrition (protein deficiency). If zinc imbalance (either excess or deficiency) in hair is found, the following additional tests may be useful: 1. advices of the immunologist, dermatologist, gastroenterologist, endocrinologist; 2. X-radiography of the thymus (for children), clinical and biochemical blood analysis, estimation of the carbonate dehydrogenase activity, immunography.

Iodine (I)

Iodine is an element of the Periodic Table Group VII, a tough black bright non-metal. In nature, iodine exists as iodide and iodate salts consisting in sea-salt, mainly as sodium iodide and magnesium iodide. Iodine is widely used for medical purposes as a component of medicines.
Iodine is an essential non-genotoxic element; it has high physiological activity, and it is a necessary structural component of thyrotropic hormone and thyroid hormones of thyroid gland.
In the organism, the basic iodine functions are: participation in regulation of general rate of biochemical reactions; participation in regulation of energy interchange and body temperature; participation in regulation of protein, lipid and water-electrolyte exchange, regulation of some vitamins exchange; induction of increase in oxygen utilization in tissues.

The basic causes of iodine excess in the body are disorders of iodine metabolism and its excess intake that can result in goitre formation, development of hyperthyroidism and thyrotoxicosis, can cause headache, undue fatiguability, weakness and depression.

Molybdenum (Mo)

Molybdenum is an element of the Periodic Table Group VI, a silver bright soft metal. In nature molybdenum is found as sulphide ores and lead or iron molybdate. The natural source of molybdenum is molybdenite mineral; molybdenum is usually got as co-product in copper industry.
It is applied in alloys, electrodes and chemical fertilisers; molybdenum compounds are used as catalysts in biological nitrogen fixation.
Molybdenum radioisotopes are used in medicine; ammonium tetramolybdate is studied as a cure in the treatment of brain neoplasm and male sterility.
In 1953 molybdenum essentiality for animals and human was established after discovery of xanthine oxidase activation by molybdenum.
Daily dietary intake of molybdenum is about 75-250 mcg. More than 50% of molybdenum is absorbed in gastrointestinal tract as molybdate (MoO_4^{2-}). Liver, bones and dentin are the tissues richest in molybdenum.
Ammonium thiomolybdate, a water-soluble molybdenum salt, is a copper antagonist disturbing copper utilisation in the organism.
After absorption, in blood, 80% of molybdenum binds to proteins, first to albumin, and is transported along the organism, accumulating mostly in liver. In human blood, molybdenum distributes approximately equal between regular blood elements and plasma.
Molybdenum compounds enter the organism from food. Soluble molybdenum compounds are easily absorbed from the gastrointestinal tract. After inhaling or parenteral introduction of molybdenum compounds molybdenum is absorbed from

lungs or site of the introduction. Soluble molybdenum compounds are excreted from body with urine or faeces. Molybdenum is distributed mainly in soft tissues and glandular organs, its accumulation does not occur in mammalian organisms. Molybdenum is a part of some metalloenzymes like xanthine oxidase, aldehyde oxidase, and sulphite oxidase. Molybdenum deficiency is accompanied by decreasing xanthine oxidase content in tissues. Molybdenum deficiency or tungsten excess may cause a reduction in growth velocity and development of inability to oxidise xanthine into uric acid, which are eliminated after addition of molybdenum to diet. Molybdenum deficiency can lead to impairment of cellulose breakdown and excess copper accumulation in the organism up to development of intoxication symptoms. Xanthine stones are formed in kidneys in animals with molybdenum deficiency. Such metabolic disorders as derangement of methionine catabolism and decreased excretion of uric acid and inorganic sulphate, which can be corrected by molybdenum prescription, are connected with molybdenum deficiency.
In some areas of the world, there are described endemic diseases connected with molybdenum supply of a population: increased incidence of cancer of oesophagus on the background of the molybdenum deficiency in the province Henan (Central China) and in Transkei (Republic of South Africa), and 'molybdenum gout' or Kovalsky disease which has been found in the Ankavan region of Armenia with molybdenum excess in soil.
Molybdenum content in the organism can be estimated by investigation of blood or hair. Average level in blood plasma is 0.3-1.2 mcg/L, in hair – 0.02-2.0 mcg/g. At chronic exposure the following parameters are increased: molybdenum concentration in urine, plasma (serum), and hair; copper content in urine; ceruloplasmin concentration in serum; xanthine oxidase activity in erythrocytes; uric acid concentration in serum and urine.

Generally, toxicity of molybdenum compounds is relatively low. In the organism, molybdenum excess can be due to its supernormal intake with food or biologically active supplements (over 0.5 mg/day). Daily molybdenum intake more then 15 mg results in xanthine oxidase activity increase, uric acid accumulation, increased risk of podagra (e.g., in persons contacting to molybdenum occupationally). Under chronic molybdenum intoxication, non-specific symptoms develop manifesting themselves in mucosae irritation, haemopoiesis suppression, pneumoconiosis and body weight decrease. In regions with excess molybdenum content in soil the endemic disease “molybdenum podagra” occurs, first observed in the Ankavan region of Armenia by professor V.V. Kovalsky.

Vanadium (V)

Vanadium is a trace element, which participates in regulation of carbohydrate metabolism, cardiovascular activity. However, its excess entering can have a toxic influence, including carcinogenous one.

The excessive entering of vanadium into the organism is usually related to ecological factors (metallurgy - alloy steels, copper eliquation, petroleum extraction and processing, exhausts of automobiles). Some antibiotics also contain vanadium. Environmental contamination with vanadium increases the risk of broncho-pulmonal and respiratory diseases, neoplasms.

Silicon (Si)

Silicon is one of the most abundant elements in the earth crust. However, in usual conditions it gets into the human organism in very small amounts. It plays an important role as a structural component of connective tissue.

Low content of silicon in children's hair indicates predisposition (or presence) to diseases of hair, nails (fall, dystrophic changes), skin (inflammation, irritation), vessels (increased fragility, insufficient elastance), bronchi and lungs (inflammation), joints, bad repair of wounds and fractures. If selenium imbalance (either excess or deficiency) in hair is found, the following additional tests may be useful: 1. advices of the dermatologist, rheumatologist, pulmonologist; 2. ultrasonography of kidneys.

Boron (B)

Boron is an element of the Periodic Table Group III; it is a non-metal chemically resembling silicon. Amorphous boron is brown-black powder, which does not react with oxygen, water, acids and alkalis. In nature it is found mainly as borates (natural salts of boric acids).
Boron is in use for saturation of steel-ware surfaces for increasing hardness, heat resistance and wear resistance, in construction of nuclear reactors and rockets, in the chemical industry, detergent industry, glass industry, etc.
Boron is an essential element for plant growth (at “boric starvation” plant growth is inhibited and various diseases appear). The boron compounds (boric acid and borax) are long used in medicine due to their antiseptic and anti-inflammatory effects. Borax is also indicated for internal use at the initial stage of epilepsy.
Boron is referred to conditionally essential, immunotoxic elements. Average daily requirement of boron for human organism is 1-2 mg; the minimal one is 0.2 mg. Boron incorporates into biomolecules binding with oxygen or nitrogen atoms. In the organism, boron is found in nervous tissue, parenchymal organs and fatty tissue. The role of boron in metabolic control of

vitamin D3, calcium and magnesium is proved. Boron compounds have anti-inflammatory, hypolipidemic, antiosteoporotic and antineoplastic effects.
Dietary boron as well as sodium borate and boric acid are quickly absorbed in gastrointestinal tract and mainly excreted in urine. The boron assimilability is very high, it can exceed 90%.
Adult human organism contains about 20 mg of boron. This trace element is generally distributed in human and animal tissues in concentration of 0.05-0.6 µg/g wet wt.; however, its content in teeth, nails and claws is several times higher. In blood plasma the average boron concentration is 0.02-0.075 µg/mL. In some countries, due to increased boron content in the environment, daily boron intake can reach 17-27 mg, whereupon its concentration in blood increases to 0.450-0.659 µg/mL.
Skeleton contains above 50% of total body boron, soft tissues – about 10%.
Now it is known that boron is especially necessary for plants, in particular, it takes part in bioflavonoids synthesis.
Boron plays a role in exchange of carbohydrates and fats, some vitamins and hormones; it influences upon activity of some enzymes.
It was found that borax, introduced into human organism in the dose of 5-10 mg/kg body wt., causes an increase of blood sugar level.
Borates inactivate vitamins B2 and B12 and inhibit adrenaline oxidation. Boron inhibits activity of two classes of enzymes in vitro. First, these are tyrosine- or flavin-nucleotide-dependent oxydoreductases, such as alcohol dehydrogenase, aldehyde dehydrogenase, xanthine dehydrogenase and cytochrome B5 reductase.
Borates compete with the enzymes for NAD and FAD.
Second, borates or derivatives of boron compounds can bind active centres of such enzymes as chymotrypsin, subtilisin and glyceraldehyde-3- phosphate dehydrogenase.
There are reports that boron plays a necessary regulatory function in parathyroid hormone activity and therefore boron can indirectly influence on metabolism of calcium, magnesium, phosphorus and vitamin D.
Boron has a curative effect in osteoporosis, arthritis and bone fluorosis.
Boron concentration in urine, blood plasma or serum, and sometimes its content in hair are used as biological indicators for estimation of boron status of the organism.

Boron is referred to conditionally essential, immunotoxic elements. Syringing by boric acid solution can cause symptoms of intoxication. Processing of mammilla by boric acid solution in nursing mothers can be accompanied by poisoning of babies. Acute intoxication by boron compounds (borax, boric acid) results in vomiting and other dyspeptic disorders and in shock as well. It has been described such endemic disease as boric enteritis, which is found on the South Ural and the North Kazakhstan. Main manifestations of chronic boron excess are anorexia, nausea, vomiting, watery diarrhoea, exsiccosis, rash and peeling skin, reduction in sexual activity and impairment of spermogram.

Strontium (Sr)

Strontium is an element of the Periodic Table Group II, a silver-white soft metal belonging to the alkaline earth group. Chemically, it is very reactive. It reacts with water, burns on air. It is used in special glasses for TV and video equipment. Radioactive strontium isotopes, dangerous to life, are formed at nuclear tests.
Strontium is used in metallurgy, at production of accumulators, pyrotechnic means; it is a part of anticorrosive means and paints. In medicine, strontium radioactive isotopes 89Sr and 90Sr are applied in radiotherapy of bone tumours. The 90Sr isotope can be formed at nuclear explosions and accidents on objects of nuclear energetics. It causes marrow affection, promotes leukaemia and bone cancer.
Daily dietary strontium intake is 0.8-3.0 mg. Excess strontium intake into the organism causes so-called “strontium rickets”, or Kashin-Bek disease (an endemic disease, which was found in the population living at the Urov river in Eastern Siberia). The disease develops due to displacement of calcium ions by strontium ions in bone tissue.
Generally, plant foods are rich of strontium as well as bones and cartilage. Alimentary availability of strontium is estimated as approximately 5-10 %. Strontium is mainly absorbed in duodenum and ileum. Then the absorbed strontium is excreted, mainly with urine, less - with bile. Faeces contain mainly non-absorbed strontium.
An adult body weighting 70 kg contains ca. 320 mg of strontium with 99% of it being in bones. Strontium concentrations is relatively high in lymph nodes (0.30±0.08 mcg/g wet wt), lungs (0.20±0.02 mcg/g), ovaries (0.14±0.06 mcg/g), liver and kidneys (0.1±0.03 mcg/g). Whole blood contains 0.02±0.002 mcg Sr/mL.
Strontium content of the organism can be estimated by investigating blood, urine or hair. Average strontium level in blood plasma is 20-70 mcg/L, in urine - 30-250 mcg/L, and in hair – 0.5–5.0 mcg/g. The indicator of strontium elemental status is its content in hair, urine and bone biopsy material.

Generally, toxicity of stable strontium for human is low. However its increased dietary intake for a long time can cause “strontium rachitis” and Kashin-Beck disease accompanied by calcium metabolism disturbance and increased bone fragility. Inhalation of strontium compounds induces lung fibrotic changes.

The content of macro- and micronutrients in food

Product name	Ca	Co	Cr	Cu	Fe	K	Mg	Mn	Na	P	Se	Si	Zn
Apricot						*	*				*		
Watermelon						*	*						
Bananas						*	*						*
Legumes			*	*	*	*		*		*	*	*	*
Cherry, plum			*			*							
Buckwheat		*	*	*	*	*	*	*				*	*
Mushrooms				*	*	*				*	*	*	*
Pear				*	*								
Green pea			*		*								*
Green tea								*					
Greens					*			*	*			*	
Wild strawberry				*	*						*		
Cereal								*			*	*	
Raisins						*	*						
Caviar									*	*	*		*
Cocoa, chocolate		*		*	*	*	*	*		*			*
Cabbage, carrots				*		*						*	
Potatoes			*			*			*			*	
Dairy products			*							*			
Coconut								*			*	*	*
Sausages (salami), kutchup					*				*				
Coffee				*									
Krill				*									*
Gooseberry				*	*			*					
Corn			*		*	*			*				*
Sesame seed				*							*		*
Leafy vegetables	*	*					*	*				*	
Bulb onions			*					*				*	*
Chard					*			*					
Black olives									*		*		
Mussels				*	*						*		*
Almonds, cashew							*			*	*		
Milk	*		*				*	*		*			*
Sea fish			*	*			*			*			*
Seaweed	*	*		*	*		*	*			*	*	
Meat and offal	*	*	*	*	*	*	*	*		*	*	*	*
Oat groats	*		*		*	*	*	*				*	*
Cucumbers				*									
Olive oil											*		
Nuts (walnut, hazelnuts)	*	*		*	*	*	*	*		*	*		*
Sweet red pepper				*									
Pearl barley	*		*			*	*	*					
Parsley	*					*	*	*				*	
Brewer's yeast		*	*	*	*	*	*	*		*	*		*
Dog-rose fruit				*	*								
Sprouted wheat grains			*				*	*				*	

Wheat bran, germ	*		*	*	*	*	*	*		*	*	*	*
Millet groats		*	*	*	*	*	*						*
Rhubarb		*						*				*	
Radish			*	*				*				*	
Radish								*				*	
Turnip								*				*	
Rice		*	*		*	*	*	*					*
Fat									*		*		
Beet				*			*	*		*		*	
Sunflower and pumpkin seeds			*	*		*	*	*			*	*	*
Black currant				*		*							
Cheese	*						*		*	*			
Cottage cheese	*	*		*		*			*	*	*		*
Jerusalem artichoke			*		*	*		*		*		*	
Bran bread	*		*				*	*				*	
Horseradish						*							*
Citrus				*									
Black tea						*		*					
Blueberries			*			*		*					*
Prunes						*	*						
Garlic										*	*		
Spinach	*	*			*			*				*	
The apples				*	*							*	
Eggs			*	*	*					*	*		
Barley grits		*		*			*						

Dictionary

DS — Dietary supplement

* * *

Normal limits — The concentration range of the chemical element, within which the chemical element contributes to the normal functioning of the human body (vital elements) or does not adversely affect the body's functions (conditionally toxic elements)

* * *

Upper limit of normal — The maximum physiologically permissible content of a chemical element in the hair of a healthy person

* * *

Lower limit of normal — The minimum physiologically permissible content of a chemical element in the hair of a healthy person

* * *

Deviation degree — The significance of the established deviation for the human body.

* * *

Risk — Corresponds to the risk group for deficiency or excessive accumulation (in the case of toxicants - intoxication). Additional examination is desirable.
Increased - suspicion of clinically significant excess or intoxication. Mandatory examination is required.
Reduced - a suspicion of a clinically significant deficiency of vital or conditionally essential trace elements. Additional examination is desirable.
Essential - vital chemical elements.
Conditionally essential - conditionally vital chemical elements.
Potentially toxic - chemical elements that can have a toxic effect on the human body in case of excessive and prolonged accumulation.
Toxic elements are chemical elements that have a toxic effect on the human body.

Children's health groups

I group of health — Healthy children with normal physical and mental development.

* * *

II health group — Children who do not have chronic diseases, but have some functional impairments. These are children who often and for a long time suffer from acute respiratory infections, recovering from severe and moderate infectious diseases. Also in the II health group are minors with a general delay in physical development in the absence of diseases of the endocrine system (short stature, lagging behind in the level of biological development), with a deficit or excess body weight, with physical disabilities, the consequences of injuries or operations with the preservation of the functions of organs and systems.

* * *

III health group — Children with rare exacerbations of chronic diseases. Also, a child should be attributed to group III if he has physical disabilities, the consequences of injuries and operations, with compensated functions of organs and systems that allow him to work and study.

IV and V health groups — Children with severe chronic or frequent exacerbations of diseases, with severe physical disabilities.

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V health group — Disabled children.

Adult health groups

I group of health

People who have not established chronic non-communicable diseases, there are no risk factors for the development of such diseases or there are specified risk factors with a low or medium absolute cardiovascular risk and who do not need dispensary observation for other diseases (conditions).

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II health group

People who do not have any chronic diseases, but who are at an increased risk of acquiring them. In addition, this includes people with a predisposition to the development of cardiovascular diseases.

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III health group (a)

People with chronic non-infectious diseases requiring the establishment of dispensary observation or the provision of specialized, including high-tech medical care, as well as citizens with suspicion of the presence of these diseases (conditions) who need additional examination.

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III health group (b)

People who do not have chronic non-infectious diseases, but require the establishment of dispensary observation or the provision of specialized, including high-tech, medical care for other diseases, as well as citizens with suspicion of the presence of these diseases who need additional examination.
Citizens with III (a) and III (b) health groups are subject to dispensary observation by a general practitioner, specialist doctors with preventive, therapeutic and rehabilitation measures.