



OOO MICRONUTRIENTS

systemic diagnostics and treatment of mineral imbalances and intoxications

(Dr. Skalny's hair analyses®)

Campus 8, build. 13, Perevedenovsky Lane
Moscow, Russia, 105082

Tel: 8-800-333-33-46, +7(495)641-0391, 641-0393
www.microelements.ru, e-mail: skalny2@microelements.ru

№ of analysis: pr002625 from 09.01.2017

Patient: [REDACTED]

Birthday: 26.09.1982

Object of analysis: Hair

Results of analysis on chemical elements (mcg/g)

Parameter	Положение в диапазоне нормы			Concentration	Normal range	Conclusion
	decreased	norm	increased			

Essential (😊) chemical elements

K	Potassium	😊	-0.9	84.67	30 - 1000	Norm
Na	Sodium	😊	-0.8	259	30 - 2500	Norm
Ca	Calcium	😊	-0.8	580	250 - 4000	Norm
Mg	Magnesium	😊	-0.9	58.91	25 - 500	Norm
P	Phosphorus	😊	-0.4	158	120 - 250	Norm
Fe	Iron	😊	-0.8	11.9	7 - 70	Norm
Zn	Zinc	😊	-0.9	149	140 - 500	Norm
Cu	Copper	😊	-1.2	7.7	9 - 50	Decreased
Se	Selenium	😊	-0.5	0.632	0.2 - 2	Norm
I	Iodine	😊	-0.6	1.89	0.15 - 10	Norm
Mn	Manganese	😊	-2.7	0.092	0.25 - 7	Decreased
Co	Cobalt	😊	-1.0	0.0042	0.004 - 0.3	Lower limit
Cr	Chromium	😊	-0.8	0.125	0.04 - 1	Norm
Mo	Molybdenum	😊	-0.8	0.026	0.015 - 0.1	Norm

Toxic (😞), potentially toxic (😟) and conditionally essential (👹) chemical elements

As	Arsenic	👹	-0.9	0.035	< 1	Norm
Sn	Tin	👹	0.0	0.035	< 3	Norm
B	Boron	👹	-0.8	0.467	< 5	Norm
Li	Lithium	👹	-0.5	0.027	< 0.1	Norm
Ni	Nickel	👹	-0.9	0.122	< 2	Norm
V	Vanadium	👹	0.5	0.078	0.005 - 0.1	Norm
Si	Silicon	👹	-0.7	20.34	11 - 70	Norm
Ge	Germanium	👹	0.3	0.013	< 0.02	Norm
Rb	Rubidium	👹	-0.8	0.126	< 1.5	Norm
Sr	Strontium	👹	-0.9	1.53	< 30	Norm
Hg	Mercury	😞	-0.3	0.338	< 1	Norm
Pb	Lead	😞	0.0	0.064	< 5	Norm
Cd	Cadmium	😞	0.0	0.004	< 0.25	Norm
Tl	Thallium	😞	-0.5	0.0012	< 0.005	Norm
Be	Beryllium	😞	0.0	<0.00024	< 0.005	Norm
Al	Aluminium	😞	-0.6	4.47	< 25	Norm
Sb	Antimony	😞	-0.9	0.0089	< 0.3	Norm
Ba	Barium	😞	-0.9	0.215	< 6	Norm
Bi	Bismuth	😞	0.0	0.004	< 2	Norm
Ga	Gallium	😞	-0.7	0.002	< 0.015	Norm
La	Lantan	😞	0.0	0.0015	< 0.1	Norm
W	Tungsten	😞	0.0	0.00081	< 0.1	Norm
Zr	Zirconium	😞	-0.8	0.159	< 2	Norm
Pt	Platinum	😞	-0.8	0.00049	< 0.005	Norm
Ag	Silver	😞	0.0	0.011	< 1.5	Norm
Au	Gold	😞	0.0	0.0028	< 1	Norm

Deviation's degree: 1 2 3 4 <

Cobalt (Co), daily requirement (depends on sex and age)

Cobalt is one of the major trace elements, necessary first for normal hemopoiesis (as a component of vitamin B12), and also for activation of many enzymes, CNS activity, regulation of functions of the vegetative nervous system and thyroid gland, cell division (vitamin B12 has anabolic effect, i.e. promotes muscle growth and accelerates reparation processes). Cobalt and vitamin B12 are very useful to the persons sustaining increased physical strain, sportsmen. Iodine, protein food, manganese, copper, nickel can promote cobalt assimilation while sodium can obstruct it.

Cobalt deficiency often occurs in vegetarians, people with hypoacidity or pancreatic gland hypofunction.

The deficiency of cobalt in the organism can cause anemia, physical weakness, decreased sensority, disturbance of heart work. It can increase dysfunction of the vegetative nervous system, slow recovery after chronic diseases.

If cobalt imbalance (either excess or deficiency) in hair is suspected, the following additional tests may be applied:

1. advices of the hematologist, gastroenterologist and neuropathologist;
2. ultrasonography of the thyroid gland;
3. clinical blood analysis;
4. helminthological analysis of the feces.

Manganese (Mn), daily requirement 1-2 mg (depends on sex and age)

Manganese is one of the major essential trace elements. It participates in regulation of many biochemical processes in the organism: synthesis and metabolism of neurotransmitters (CNS), osteogenesis, immune reactions, peroxidation of lipids, metabolism of insulin and lipids.

Deficiency of manganese is a frequent disturbance of the elemental metabolism in modern people. It is probably related to increased psychoemotional strain (manganese is necessary for maintenance of the basic neurochemical processes in CNS), increased toxic influences (Mn-superoxide-dismutase is one of the most important enzymes preventing free-radical oxidation, a mechanism of cell membranes damaging), and, on the other hand, with the considerable decrease in consumption of manganese-rich products (rough vegetable food, potherb) increased consumption of phosphates (lemonades, tinned food etc.). Manganese participates in regulation of the fat and carbohydrate metabolism, formation of bone and connective tissues, metabolism of thyroxin (hormone of the thyroid gland),), so, accordingly, it is necessary for the prophylaxis of fat and carbohydrate metabolism disturbances, diabetes, osteoporosis, goitre disease, diseases of joints.

Estrogens (the main sexual hormones) increase manganese biological activity, while excessive consumption of calcium, phosphorus, iron and copper can slow manganese assimilation and decrease its influence.

Manganese takes part in regulation of metabolism of the vitamins C, E, vitamins of group B and choline.

In adults manganese deficiency in hair is often accompanied with increased fatigability, ill humour, physical weakness, vertigo, overweight, muscle pains. Low level of Mn in hair is also typical for patients with allergoses, rheumatic diseases, diabetes, bronchial asthma, epilepsy, multiple sclerosis, vitiligo.

In women manganese deficiency often associates with gynecological pathologies (ovaries dysfunction, risk of sterility). Postclimacteric disturbance of manganese metabolism is a cause of osteoporosis.

If manganese imbalance in the organism is detected, the following additional tests may be applied:

1. advice of the neuropathologist, EEG;
2. biochemical blood analysis, estimation of the catecholamine level;
3. myography; X-radiography or densitometry of bones.

Copper (Cu), daily requirement 1-2 mg (depends on sex and age)

Copper is an essential trace element, playing an important role in regulation of redox and neuroendocrinal processes, peroxidizing of lipids, connective tissue formation and hemopoiesis. Molybdenum, zinc, manganese, cadmium and lead, entering in large amounts, can disturb assimilation and biological functioning of copper. The Cu/Zn ratio is one of the most important constants for human organism.

The main source of copper is food; and the deviations in copper metabolism are usually of internal origin (disturbance of biochemical processes in the organism). However, living near the factories, producing electric equipment or mineral fertilizers, plants of non-ferrous metallurgy, galvanic industry or radio engineering, contacts with copperware, as well as bathing in water, processed by blue copperas, excess consumption of copper-rich food, overdosing of copper preparations or copper-based contraceptives can also cause Cu imbalance.

In adults copper deficiency can lead to psychoemotional depletion, ergasthenia, neuroses, disturbance of thyroxin synthesis and synthesis of female sex hormones, anemia, leukopenia (decrease in number of leukocytes in blood), immunodeficient and allergic diseases (including asthmatic bronchitis, rhinitis etc.), skin dyspigmentation (vitiligo), other diseases of skin, pathology of connective tissues, bones, especially for elderly (scoliosis, spondylosis, osteoporosis diseases of veins).

The lack of copper increases predisposition to development of diabetes, demyelination diseases, convulsive syndrome.

Copper deficiency has negative influence on hemopoiesis, Fe resorption, myelination processes in the nervous system, increases predisposition to bronchial asthma, allergodermatoses, cardiopathies, including cardiac defects; in women - promotes ovaries dysfunction, early development of menopause, can cause pathologies of pregnancy and childbirth.

The most frequent causes of Cu deficiency are non-adequate nutrition, contamination of the environment with cadmium, molybdenum, manganese, zinc, overdosing of hormonal and Zn-containing preparations, chelates or vitamin C.

If copper imbalance (either excess or deficiency) in hair is found, the following additional tests may be applied:

1. advices of the psychoneurologist, endocrinologist, gynecologist;
2. ultrasonography of the liver and thyroid gland;
3. clinical blood analysis, biochemical blood analysis;
4. estimation of activity of ferroxidase, superoxide dismutase, thyroxin and female sex hormones in the blood.

The content of chemical elements in foods

Foodstuff	Ca	Co	Cr	Cu	Fe	K	Mg	Mn	Na	P	Se	Si	Zn
Apricot (fresh, dried)						*	*				*		
Water melon						*	*						
Banana						*	*						*
Legumes			*	*	*	*		*		*	*	*	*
Cherry, plum			*			*							
Buckwheat		*	*	*	*	*	*	*				*	*
Mushrooms				*	*	*				*	*	*	*
Pear				*	*								
Green peas			*		*								*
Green tea								*					
Potherb					*			*	*			*	
Wild strawberry				*	*						*		
Cereals								*			*	*	
Raisins						*	*						
Caviar									*	*	*		*
Kakao, chocolate		*		*	*	*	*	*		*			*
Cabbage, carrots				*		*						*	
Potatoes			*			*			*			*	
Sour milk products			*							*			
Coconut								*			*	*	*
Sausage (salami), ketchup					*				*				
Coffee				*									
Krill				*									*
Gooseberry				*	*			*					
Corn			*		*	*			*				*
Sesame seeds				*							*		*
Leaf vegetables	*	*					*	*				*	
Bulb onion			*					*				*	*
Chard					*			*					
Olives									*		*		
Mussels				*	*						*		*
Almonds, cashew-nuts							*			*	*		
Milk	*		*				*	*		*			*
Sea fish			*	*			*			*			*
Sea algae	*	*		*	*		*	*			*	*	
Meat and variety meats	*	*	*	*	*	*	*	*		*	*	*	*
Oatmeal	*		*		*	*	*	*				*	*
Cucumbers				*									
Olive oil											*		
Nuts (walnuts, hazelnuts)	*	*		*	*	*	*	*		*	*		*
Red pepper				*									
Pearl barley	*		*			*	*	*					
Parsley	*					*	*	*				*	

pr002625 from 09.01.2017

Foodstuff	Ca	Co	Cr	Cu	Fe	K	Mg	Mn	Na	P	Se	Si	Zn
Brewer's yeast		*	*	*	*	*	*	*		*	*		*
Dog rose fruits				*	*								
Wheat acrospires			*				*	*				*	
Wheat bran, acrospires	*		*	*	*	*	*	*		*	*	*	*
Millet		*	*	*	*	*	*						*
Rhubarb		*						*				*	
Small radish			*	*				*				*	
Black radish								*				*	
Turnip								*				*	
Rice		*	*		*	*	*	*					*
Lard									*		*		
Red beet				*			*	*		*		*	
Sunflower, pumpkin seeds			*	*		*	*	*			*	*	*
Black currant				*		*							
Cheese	*						*		*	*			
Curd	*	*		*		*			*	*	*		*
Girasol			*		*	*		*		*		*	
Bread with bran	*		*				*	*				*	
Horse radish						*							*
Citrus fruits				*									
Black tea						*		*					
Bilberry			*			*		*					*
Prunes						*	*						
Garlic										*	*		
Spinach	*	*			*			*				*	
Apples				*	*							*	
Eggs			*	*	*					*	*		
Peeled barley		*		*			*						



OOO MICRONUTRIENTS

systemic diagnostics and treatment of mineral imbalances and intoxications

(Dr. Skalny's hair analyses®)

*Campus 8, build. 13, Perevedenovskiy Lane
Moscow, Russia, 105082*

*Tel: 8-800-333-33-46, +7(495)641-0391, 641-0393
www.microelements.ru, e-mail: skalny2@microelements.ru*

THE CONCLUSION ON THE BASIS OF RESULTS OF THE ANALYSIS

[REDACTED], pr002625, date of birth - 26.09.1982

As follows from results of the hair (nail) analysis, the evaluated deviations in mineral metabolism are moderate.

The Mn deficiency is one of the most frequent disturbances of the elemental metabolism in modern people. It is probably related with the increased psychoemotional strain (Mn is necessary for the basic neurochemical processes in CNS), increased toxic affections (Mn- superoxidismutase is one of the most important antioxidant enzymes, which prevent free-radical oxidation, the mechanism of cell membranes damaging), and, on the other hand, with the decrease in consumption of Mn-rich products (rough vegetable food, potherb), increased consumption of phosphates - lemonades, tinned food etc.). Mn takes part in regulation of the fat and carbohydrate metabolism, formation of bone and connective tissues, metabolism of thyroxin (hormone of the thyroid gland), so, accordingly, Mn is necessary for the prophylaxis of fat metabolism disturbances, diabetes, osteoporosis, diseases of joints, goitre disease.

Excess entering of Ca, P, Fe and Cu can slow Mn assimilation and decrease its influence on the biochemical processes in the organism.

Mn takes part in regulation of metabolism of the vitamins C, E, vitamins of group B, choline.

In adults Mn deficiency is usually accompanied with increased fatigability, ill humour, physical weakness, vertigo, overweight, muscle pains. Low level of Mn in hair is also typical for patients with allergoses, bronchial asthma, rheumatic diseases, epilepsy, multiple sclerosis, diabetes, skin dyspigmentation (vitiligo).

For verification of preliminary diagnosis the following investigations (in coordination with physician) can be useful:

Consultations:

- Psychoneurologist;
- Endocrinologist;

Analyses:

- Determination of Mn in whole blood;

Correction of the found imbalances (1-4 degrees) requires intake of specialized food supplements with particular macro- and trace elements according to the recommendations provided with the test results.

In addition, it is recommended to pay attention to the diet (see the table below) for eliminating found mineral deficiencies.

GLOSSARY

Normal range	Concentrations of chemical element, in the ranges of which this element assists to normal functioning of human organism (essential elements), or not affected negatively upon the functions of the organism (relatively toxic elements).
	1 1 1
Upper limit	Maximum physiologically permissible content of chemical element in hair of a healthy human.
	1 1 1
Lower limit	Minimum physiologically permissible content of chemical element in hair of a healthy human.
	1 1 1
Toxic elements	Elements, exposure of which to an organism results in development of intoxication syndromes (intoxications).
	1 1 1
Conditionally essential elements	Elements, the functional role of which is not certain or limited by metabolic processes in particular body tissues.
	1 1 1
Essential elements	Elements, the absence or deficient intake of which results in disruption of normal life, development disorder and inability of reproduction.
	1 1 1
Deviation's degree	Significance of the determined variation for the human's organism (1-minimum, 4-maximum).

For each element calculates particularly!

(for example, doubled content of Na in hair is much less important for the organism, than such variation of P).

As a rule, variations of 1-2 degrees in content of chemical elements in the hair are corresponding to the depletion of organism's functional reserves, and variations of 3-4 degrees indicates the high degree of probability of chronic diseases.

Variations of 1-2 degrees are usually well corrected by food ration changing or biologically active supplements applying. Variations of 3-4 degrees, as a rule, demand prolonged restoration treatment using not only biologically active supplements, but also correction of food ration, administration of pharmacological preparations prescribed by specialists (gastroenterologists, pediatricists, nephrologists, neuropathologists etc.).



OOO MICRONUTRIENTS

systemic diagnostics and treatment of mineral imbalances and intoxications

(Dr. Skalny's hair analyses®)

Campus 8, build. 13, Perevedenovskiy Lane
Moscow, Russia, 105082

Tel: 8-800-333-33-46, +7(495)641-0391, 641-0393
www.microelements.ru, e-mail: skalny2@microelements.ru

Recommendations

№ pr002625

According to the hair element test results, we recommend you to use the following dietary supplements after the consultation with your doctor or health consultant:

Course 1

1. Bio-Manganese, 1 tablet 2 times a day, with meals, 3 months

A hair element retest is recommended after 4-5 months

Date: 09.01.2017



Doctor: Skalnaya M.G., M.D., Prof.