

Micro Trace Minerals Laboratory

environmental & clinical laboratory

Röhrenstrasse 20, 91217 Hersbruck, Germany
P.O.Box 4613; Boulder, CO 80306-4613, USA

Phone: +49 (0) 9151/4332
Facsimile: +49 (0) 9151/2306
<https://microtrace.de>
service@microtrace.de



MINERAL ANALYSIS

Nail

		Lab Number		1N288543	
Doctor/Clinic				Test Date	12/31/2024
Patient Name	Kevin Chambers	Sex	m	D.O.B.	9/14/1993
Clinical Information	Ba, Bi, Fe confirmed			Page	1/5

	Acceptable Range	Test Value		
Essential Trace Elements (ppm = mg/kg = mcg/g)				
Chromium (Cr)	< 1.400	0.507		
Cobalt (Co)	0.010 --- 0.292	0.030		
Copper (Cu)	4.450 --- 17.400	9.547		
Iodine (I)	0.030 --- 3.700	0.056		
Iron (Fe)	7.000 --- 77.000	152.717	↑	
Manganese (Mn)	0.082 --- 1.450	1.695	↑	
Molybdenum (Mo)	0.010 --- 0.150	0.039		
Selenium (Se)	0.700 --- 3.000	0.966		
Vanadium (V)	0.009 --- 0.210	0.080		
Zinc (Zn)	80.000 --- 220.000	238.487	↑	
Essential Macroelements (ppm = mg/kg = mcg/g)				
Calcium (Ca)	550.000 --- 1,850.000	1,037.322		
Magnesium (Mg)	58.000 --- 197.000	98.605		
Nonessential Trace Elements (ppm = mg/kg = mcg/g)				
Boron (B)	< 2.100	0.363		
Germanium (Ge)	< 0.280	0.007		
Lithium (Li)	< 0.120	0.087		
Strontium (Sr)	0.300 --- 3.000	4.621	↑	
Tungsten (W)	< 0.034	0.010		
Potentially Toxic Elements (ppm = mg/kg = mcg/g)				
Aluminum (Al)	< 70.000	61.085		
Antimony (Sb)	< 1.000	0.084		

n.n. = not detected, < x = below Detection Limit

Quality control: Dipl. Ing. Friedle, Accreditation: DIN EN ISO 17025; Validation: Dr. E. Blaurock-Busch PhD;

Analytical method: ICP-MS with collision cell technique

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Acceptable Range

Test Value

Potentially Toxic Elements (ppm = mg/kg = mcg/g)

Arsenic-total (As)	< 0.870	0.149		
Barium (Ba)	< 4.000	115.539	↑	
Beryllium (Be)	< 0.028	< 0.010		
Bismuth (Bi)	< 3.140	1.073		
Cadmium (Cd)	< 0.140	0.019		
Lead (Pb)	< 2.000	0.513		
Mercury (Hg)	< 0.740	0.059		
Nickel (Ni)	< 5.000	0.468		
Palladium (Pd)	< 0.080	< 0.050		
Platinum (Pt)	< 0.020	n.n.		
Silver (Ag)	< 1.500	0.036		
Thallium (Tl)	< 0.020	0.001		
Tin (Sn)	< 3.800	1.276		
Titanium (Ti)	< 6.000	2.780		
Uranium (U)	< 0.020	0.026	↑	
Zirconium (Zr)	< 2.800	1.659		

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THIS NAIL MINERAL ANALYSIS DETERMINED THE FOLLOWING TISSUE MINERAL DEFICIENCIES AND OVERLOADS.
The information contained in this elemental analysis report is designed as an interpretive adjunct to normally conducted diagnostic procedures. The findings are best viewed in the context of a medical examination and history.

BARIUM (Ba):

Barium intestinal dysfunction supports the uptake of this potentially toxic element. Barium is then distributed in very low concentration in soft tissues. It appears to inhibit the calcium absorption and has properties that are similar to lead and cadmium. Barium X-ray techniques can increase tissue levels.

OTHER SOURCES: Drinking water. The EPA allows a maximum level of 1PPM.

THERAPEUTIC CONSIDERATION: Digestive support to reduce intestinal uptake. Zinc and antioxidants, including selenium are recommended to normalize barium levels.

IRON (Fe):

Iron is regulated primarily by absorption rather than by excretion. High nail levels suggest elevated tissue storage and the body's inability to mobilize iron. Signs and symptoms of Iron overload are related to the involved organ systems, esp. the liver. About one-third of body iron is stored in the liver, one third in the bone marrow and the remainder in the spleen and other tissue. Excess iron storage carries the risk of hemochromatosis, liver problems, diabetes, heart disease, and an increase in skin. Frequent blood transfusion can lead to excess iron storage. High dietary iron intake can cause copper and zinc deficiencies, resulting in anemia, bone and joint disorders, color and taste acuity, and increased susceptibility to infectious disease. Symptoms of iron overload may include anorexia, dizziness, fatigue, headaches.

SOURCES: Iron-rich drinking water, cooking acidic food in iron cookware, excessive iron supplementation, repeated blood transfusion, protein malnutrition.

THERAPEUTIC CONSIDERATION: Support liver functions by supplying sufficient amino acids, vitamin C and the B-vitamins. A vegetarian diet might be considered.

MANGANESE (Mn):

Manganese high tissue levels suggest long-term overexposure due to industrial pollution or high water content. Well water can be rich in manganese, contributing to bacterial growth in water. Plants grown in industrially polluted soil and water can contribute to excess intake, which interferes with the iron metabolism and impairs vitamin B1 metabolism. Toxicity symptoms are central nervous system disorders, neurological and behavioral disorders, depressed appetite, and gait problems.

THERAPEUTIC RECOMMENDATIONS: Low calcium levels increase manganese uptake. High manganese increases the demand for vitamin C and copper.

STRONTIUM (Sr):

Strontium possesses physiological and chemical properties similar to calcium. Strontium is poorly absorbed by humans, and the intestinal uptake lies between 5-25%. Of that, about 99% is found in bone and teeth. People living in areas where high levels are found in the water supply, show higher tissue levels. The daily intake varies considerably from 1 mg/day to 4.7 mg/day, according to geography. Strontium can interfere with the calcium metabolism, leading to bone disorders, incl. rickets.

THERAPEUTIC CONSIDERATION: Strontium may compete with the calcium absorption and storage in bone and teeth and when high nail strontium levels are followed by high nail calcium levels, the need for an increased calcium supply is indicated. Algae and fibrous cellulose reduce strontium and calcium utilization.

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URANIUM (U):

We tested Uranium-238 (U-238), the most common isotope of uranium, 99.3 percent being present in natural uranium. Uranium's most stable isotope, uranium-238, has a half-life of about 4.5 billion years. It decays into thorium-234 through alpha decay or decays through spontaneous fission.

TOXICITY: In 2003, the WHO (World Health Organization) recommended a daily intake of soluble compounds of <0.5 µg/kg body weight and <5 µg/kg body weight for insoluble compounds. Uranium is not absorbed through the skin, but open wounds facilitate the uptake. When ingested, between 0.2 and 2% is absorbed, when inhaled about 5% is absorbed. The rest is excreted by the kidneys.

Uranium-238 emits alpha particles which are less penetrating than other forms of radiation, and weak gamma rays. As long as it remains outside the body, uranium poses little health hazard (mainly from the gamma-rays). If inhaled or ingested, however, its radioactivity poses increased risks of lung cancer and bone cancer. Uranium is also chemically toxic at high concentrations and can cause damage to internal organs, notably the kidneys. Animal studies suggest that uranium may affect reproduction, the developing fetus, and increase the risk of leukemia and soft tissue cancers. The most serious health hazard associated with uranium mining is lung cancer due to inhaling uranium decay products. Uranium mill tailings contain radioactive materials, notably radium-226, and heavy metals (e.g., manganese and molybdenum) which can leach into groundwater. Near tailings piles, water samples have shown levels of some contaminants at hundreds of times the government's acceptable level for drinking water.

DEPOSITS: U-238 is located in different amounts in soil, water, plants and animal tissues and is often found with other earth metals such as gold or vanadium. Natural uranium is found in Canada, USA, Brazil, South and Central Africa, Australia, France, Sweden and the former USSR. In the Federal Republic of Germany relatively insignificant uranium deposits exist in areas such as the Black Forest. Traces of uranium are contained in coal and are released during combustion.

LABORATORY DETECTION: Uranium can be detected in tissue and urine months after exposure. Water can, depending on the geographical nature, contain high amounts of uranium.

ZINC (Zn):

High tissue levels of this important trace element may be due to long-term overexposure such as long-term supplementation of nutritional zinc or inhaling zinc oxide as in certain industries. High hair zinc levels are also found in the presence of a disturbed hair and nail growth pattern as is seen in people suffering from hair loss. Since zinc uptake can be competitive with that of iron and copper, it is important to evaluate iron and copper tissue levels. When iron and copper levels are low in the presence of high nail zinc levels, a multimineral may be recommended instead of zinc supplementation. The daily-recommended intake is 3-30 mg/day, depending on age and status.

THERAPEUTIC CONSIDERATION: Symptoms of zinc overload are similar to zinc deficiency symptoms, causing immune dysfunction and slow wound healing.

NUTRITIONAL RECOMMENDATIONS

The following nutritional program is aimed at providing optimum health. The program is suitable for patients 12 years and older.

To optimize health, it is recommended for 3-4 months. To repeat the test, either before or after dental work, check with your doctor. A follow-up test would evaluate the stability of your dental materials. Other tests, such as a blood or hair mineral analysis test may be needed to determine your body's ability to digest and absorb nutrients.

The following nutritional and medical recommendations are based on present clinical knowledge, and do not replace medical treatment. The nutrients listed below have been selected based on their quality, and because they are easily digested and absorbed by sensitive patients. These products are available without prescription, and can be ordered at your doctor's office.

If any questions or problems arise, consult your doctor or health care provider.

Barium (Ba)

To reduce the barium uptake, support digestive function. Increase the intake of fiber-rich foods and Lactobazillus acidophilus

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Iron (Fe)

To reduce tissue iron levels, support liver function. Avoid iron-rich foods such as meat and reduce alcohol consumption. Digestive enzymes, B-vitamins and lecithin intake support liver function. High iron levels increase the need for antioxidants.

Manganese (Mn)

To normalize manganese tissue levels, increase intake of free amino acid complex, 1/day. Increase plant protein intake. Avoid black tea and herbal teas.

Strontium (Sr)

An increased intake of vegetable fiber, seaweed and calcium can normalize strontium levels.

Zinc (Zn)

High zinc levels in the presence of hair loss problems may reflect a masked deficiency. A blood test to confirm deficiency is recommended. Ask your physician.

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