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
http://www.microtrace.de
service@microtrace.de

MINERAL ANALYSIS — Nail

		Lab Number		1N120002	
Doctor	Sample Doctor			Test Date	5/5/2012
Patient Name	Sample Patient	Sex	m	Age	20
Clinical Information	Sample Report			Page	1/5

	Acceptable Range	Test Value		
Essential Trace Elements (ppm = mg/kg = mcg/g)				
Chromium	0.10 --- 1.40	0.29		
Cobalt	0.01 --- 0.29	0.02		
Copper	2.80 --- 16.00	11.98		
Iodine	0.06 --- 3.00	0.39		
Iron	6.60 --- 49.00	60.82	↑	
Manganese	0.08 --- 1.45	1.48	↑	
Molybdenum	0.01 --- 0.15	0.02		
Selenium	0.70 --- 3.00	1.46		
Vanadium	0.01 --- 0.21	0.06		
Zinc	80.00 --- 220.00	132.65		
Essential Macroelements (ppm = mg/kg = mcg/g)				
Calcium	550.00 --- 1,850.00	1,087.35		
Magnesium	58.00 --- 197.00	114.45		
Nonessential Trace Elements (ppm = mg/kg)				
Boron	< 3.76	0.32		
Germanium	< 0.28	0.00		
Lithium	< 0.12	0.05		
Strontium	0.30 --- 3.00	0.75		
Tungsten	< 0.03	0.01		
Potentially Toxic Elements (ppm = mg/kg = mcg/g)				
Aluminum	< 70.00	41.86		
Antimony	< 1.50	0.08		

n.n. = not detected
These 95percentile Reference Ranges listed above are representative for a healthy population. All elements are tested quantitatively.
Accreditation: DIN EN ISO 17025; Quality control: Dipl. Ing. Friedle, Ing. J. Merz, Dr. Rauland; Validation: Dr. E.Blaurock-Busch PhD, Laboratory physician: Dr. med. A. Schönberger

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
http://www.microtrace.de
service@microtrace.de

MINERAL ANALYSIS — Nail

Patient Name	Sample Patient	Lab Number	1N120002	Page	2/5

	Acceptable Range	Test Value	
Potentially Toxic Elements (ppm = mg/kg = mcg/g)			
Arsenic-total	< 0.87	0.15	
Barium	< 10.00	7.28	
Beryllium	< 0.03	0.00	
Bismuth	< 0.70	0.06	
Cadmium	< 0.45	0.01	
Cerium	< 0.52	0.18	
Cesium	< 0.01	0.01	
Dysprosium	< 0.01	0.01	
Erbium	< 0.00	0.00	
Europium	< 0.01	0.00	
Gadolinium	< 0.01	0.01	
Gallium	< 0.20	0.01	
Iridium	< 0.01	n.n.	
Lanthanum	< 0.30	0.09	
Lead	< 3.00	0.59	
Lutetium	< 0.01	0.00	
Mercury	< 0.74	1.17	↑
Nickel	< 5.00	3.28	
Palladium	< 0.08	0.05	
Platinum	< 0.02	n.n.	
Praseodymium	< 0.04	0.02	
Rhenium	< 0.01	0.00	
Rhodium	< 0.00	n.n.	

n.n. = not detected
These 95percentile Reference Ranges listed above are representative for a healthy population. All elements are tested quantitatively.
Accreditation: DIN EN ISO 17025; Quality control: Dipl. Ing. Friedle, Ing. J. Merz, Dr. Rauland; Validation: Dr. E.Blaurock-Busch PhD, Laboratory physician: Dr. med. A. Schönberger

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
http://www.microtrace.de
service@microtrace.de

MINERAL ANALYSIS — Nail

Patient Name	Sample Patient	Lab Number	1N120002	Page	3/5

	Acceptable Range	Test Value		
Potentially Toxic Elements (ppm = mg/kg = mcg/g)				
Ruthenium	< 0.01	n.n.		
Samarium	< 0.01	0.01	↑	
Silver	< 5.00	0.23		
Tantalum	< 0.03	n.n.		
Tellurium	< 0.01	0.00		
Thallium	< 0.02	0.00		
Thorium	< 0.03	0.02		
Thullium	< 0.00	0.00		
Tin	< 3.80	1.99		
Titanium	< 6.00	2.67		
Uranium	< 0.01	0.03	↑	
Ytterbium	< 0.01	0.00		
Zirconium	< 1.00	0.03		

n.n. = not detected
These 95percentile Reference Ranges listed above are representative for a healthy population. All elements are tested quantitatively.
Accreditation: DIN EN ISO 17025; Quality control: Dipl. Ing. Friedle, Ing. J. Merz, Dr. Rauland; Validation: Dr. E.Blaurock-Busch PhD, Laboratory physician: Dr. med. A. Schönberger

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
http://www.microtrace.de
service@microtrace.de

MINERAL ANALYSIS		Nail			
Patient Name	Sample Patient	Lab Number	1N120002	Page	4/5

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.

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, vitasmin C and the B-vitamins. A vegetarian diet might be considered.

MERCURY (Hg): Circulating metals in blood ‘feed’ hair and nail roots. Therefore, hair and nails reflects longterm or chronic exposure. Early symptoms of mercury overexposure include insomnia, dizziness, fatigue, drowsiness, weakness, depression, tremors loss of appetite, loss of memory, nervousness, headache, dermatitis, numbness, and tingling of lips and feet, emotional instability and kidney damage. Symptoms of acute toxicity: loss of teeth, extreme tremor, mental and emotional disorders, kidney failure.
SOURCES: overexposure may stem from paints, explosives, electrical apparatus, batteries, mercurial diurectics, fungicides, fluorescent lamps, cosmetics, hair dyes, amalgams in dentistry, contaminated seafood, and petroleum products. Vaccines containing thiomersal are another source of exposure. Improper disposal of broken mercury thermometers and other apparatuses that use mercury including button cells and tube lights may also result in mercury exposure.
THERAPEUTIC RECOMMENDATION: increased oral intake of cysteine and antioxidant intake, esp selenium and vitamin E can support mercury detoxification. Chelating agents such as DMPS or DMSA effectively bind mercury, resulting in an increased urinary excretion and detoxification.

MANGANESE (Mn) high tissue levels suggest longterm 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.

SAMARIUM (Sm) occurs in many rare-earth minerals, but is almost exclusively obtained from monazite, a source of thorium. Like thorium, it is also found in the products of nuclear fission. It has limited application in nuclear reactor control rods and for neutron shielding. Other uses are: infrared absorbing glasses, inorganic and organic catalysis, an in the electronics and ceramics industry.

n.n. = not detected
These 95percentile Reference Ranges listed above are representative for a healthy population. All elements are tested quantitatively.
Accreditation: DIN EN ISO 17025; Quality control: Dipl. Ing. Friedle, Ing. J. Merz, Dr. Rauland; Validation: Dr. E.Blaurock-Busch PhD, Laboratory physician: Dr. med. A. Schönberger

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
http://www.microtrace.de
service@microtrace.de

MINERAL ANALYSIS		Nail			
Patient Name	Sample Patient	Lab Number	1N120002	Page	5/5

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 <0.5µg/kg body weight and <5µg/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.

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.

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.

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.

n.n. = not detected
These 95percentile Reference Ranges listed above are representative for a healthy population. All elements are tested quantitatively.
Accreditation: DIN EN ISO 17025; Quality control: Dipl. Ing. Friedle, Ing. J. Merz, Dr. Rauland; Validation: Dr. E.Blaurock-Busch PhD, Laboratory physician: Dr. med. A. Schönberger