Micro Trace Minerals Laboratory

environmental & clinical laboratory

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

Telefon: +49 (0) 9151/4332
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http://www.microtrace.de
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MINERAL ANALYSIS — BASELINE URINE

		Lab Number		1UB120000	
Doctor	-			Test Date	2/13/2012
Patient Name	-	Sex	f	D.O.B.	1/1/1969
Clinical Information	Baseline urine				
Creatinine (g/l) *	0.91			Page	1/5

	Baseline URINE Norm	Test Value		
Essential Trace Elements (mcg/g Creatinine)				
Chromium	0.10 --- 3.50	0.20		
Cobalt	< 5.00	0.42		
Copper	1.45 --- 60.00	6.81		
Iron	2.00 --- 95.00	3.71		
Manganese	< 4.50	1.80		
Molybdenum	9.70 --- 100.00	5.21	↓	
Selenium	12.00 --- 90.00	11.25	↓	
Vanadium	< 1.40	0.08		
Essential Macro- & TraceElements (mg/g creatinine)				
Calcium	55.00 --- 245.00	70.22		
Magnesium	12.00 --- 150.00	52.66		
Zinc	0.07 --- 7.00	0.28		
Trace Elements in mcg/g Creatinine				
Germanium	< 1.50	0.29		
Lithium	< 175.00	10.84		
Strontium	< 570.00	116.29		
Tungsten	< 0.79	0.00		
Potentially Toxic Elements in mcg/g Creatinine				
Aluminum	< 125.00	15.15		
Antimony	< 1.00	0.07		
Arsenic-total	< 50.00	10.29		

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

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Patient Name	-	Lab Number	1UB120000	Page	2/5

	Baseline URINE Norm	Test Value		
Potentially Toxic Elements in mcg/g Creatinine				
Barium	< 8.22	4.99		
Beryllium	< 1.20	0.03		
Bismuth	< 0.15	0.01		
Cadmium	< 0.80	0.06		
Cesium	< 11.00	2.77		
Gallium	< 7.76	0.20		
Lead	< 5.00	0.67		
Mercury	< 1.00	0.16		
Nickel	< 3.00	5.71	↑	
Palladium	< 1.40	0.35		
Platinum	< 0.60	n.n.		
Silver	< 1.40	0.01		
Thallium	< 0.60	0.09		
Tin	< 5.00	0.36		
Titanium	< 13.00	0.96		
Uranium	< 0.06	0.00		
Zirconium	< 2.50	0.06		

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Patient Name	-	Lab Number	1UB120000	Page	3/5

URINE ANALYSIS AND CHELATION INFORMATION:
Urine analysis is an indispensable tool for assessing the renal ability to excrete and to assess renal disease. The information contained in this report is designed as an interpretive adjunct to normally conducted diagnostic procedure. The findings are best viewed in the context of a medical examination and history.
The results are reported in mg/g creatinine for the macro elements and mcg/g creatinine for the trace elements and heavy metals. Normalization per mg or mcg creatinine reduces the potentially great margin of error which otherwise can result from sample collection and variation in sample volume. A creatinine value of <0,3g/L is the borderline level for the conversion of test values to mg/g and mcg/g creatinine. When lower creatinine levels are measured (usually due to a high fluid intake during urine collection time), the borderline value of 0,3g/l is used for the conversion.

High levels of toxins in Baseline urines reflect toxic exposure within the past 48 hours. High levels of nutrient elements are generally due to a high intake (supplements, algae products, medication or food such as fish which may be containing high levels of toxic metals such as As or Hg)

RELATED INFORMATION: The data of this report is based on ICP-MS Spectroscopy utilizing cell technique. Strict quality control measurements and licensing requirements are followed, including round robin blind testing by licensing authorities. For more information: www.microtrace.de

MOLYBDENUM (Mo) serves as a co-factor for xanthine and aldehyde oxidases. Dietary molybdenum is readily absorbed by the intestine and is excreted in the urine and bile. SOURCES: whole grains, legumes, leafy vegetables and organ meats. The RDA is 0.15-0.5 mg/day, depending on age and status. Acute deficiency symptoms are unknown in humans. THERAPEUTIC CONSIDERATION: increase molybdenum intake and support intestinal function.

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NICKEL (Ni) HIGH:
Smoke, cigarette smoking and food are major sources of nickel exposure.
•Elevated nickel in baseline urine reflects increased immediate exposure
•Studies (Micro Trace Minerals 2004) indicate that the highest nickel binding has been observed with the combination treatment EDTA+DMSA. Average urine nickel levels of approximately 16mcg/g creatinine were recorded in patients that were not industrially exposed.

Environmental/Occupational Sources
•Ni is found in ambient air at very low levels, as a result of releases from manufacturing facilities, oil and coal combustion, sewage sludge incineration, and other sources.
•Exposure may be through contact with everyday items such as nickel-containing jewelry, cooking utensils, stainless steel kitchens, and clothing fasteners.

Toxicity and Symptoms:
•Nickel carbonyl is the most acutely toxic nickel compound, also found in cigarette smoke. Symptoms include headache, vertigo, nausea, vomiting, insomnia, and irritability, followed by chest pains, dry coughing, cyanosis, gastrointestinal symptoms, sweating, visual disturbances, and severe weakness.
•Lung and kidney appear to be the target organs for acute nickel carbonyl toxicity in humans and animals, with pulmonary fibrosis and renal edema reported.
•EPA's Office of Air Quality Planning and Standards, for a hazard ranking under Section 112(g) of the Clean Air Act Amendments, considers nickel carbonyl to be a "high concern" pollutant based on severe acute toxicity.
Chronic Effects (Noncancer):
•Contact dermatitis is the most common effect in humans from nickel exposure, and have been reported following occupational and non-occupational exposure, with symptoms of itching of the fingers, wrists, and forearms.
•Chronic exposure to nickel in humans also results in respiratory effects, including asthma due to primary irritation or an allergic response, and an increased risk of chronic respiratory tract infections.
Cancer Risk:
•Human studies have reported an increased risk of lung and nasal cancers among nickel refinery workers exposed to nickel refinery dust. Nickel refinery dust is a mixture of many nickel compounds, including nickel subsulfide. EPA has classified nickel refinery dust and nickel subsulfide as carcinogens.
•Nickel carbonyl has been reported to produce lung tumors in rats exposed via inhalation.

References:

1. U.S. Environmental Protection Agency (EPA). Integrated Risk Information System (IRIS) on Nickel. Environmental Criteria and Assessment Office, Office of Health and Environmental Assessment, Office of Research and Development, Cincinnati, OH. 1993.
2. Agency for Toxic Substances and Disease Registry (ATSDR). Toxicological Profile for Nickel (Draft). U.S. Public Health Service, U.S. Department of Health and Human Services, Altanta, GA. 1993.
3. U.S. EPA. Technical Background Document to Support Rulemaking Pursuant to the Clean Air ActCSection 112(g). Ranking of Pollutants with Respect to Hazard to Human Health. EPAB450/3-92-010. Emissions Standards Division, Office of Air Quality Planning and Standards, Research Triangle Park, NC. 1994.

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SELENIUM (Se): Low urinary levels may reflect a low dietary intake.
The biochemical role of this essential trace element is to serve as an essential constituent of the enzyme gluthathione peroxidase. Selenium is linked to cysteine residues in the protein as selenocysteine, which is found in the cytoplasm and mitochondria of liver, erythrocytes, platelets and other tissues. The antioxidant role of Se parallels that of vitamin E, and Se-deficiency responds to Vit. E supplementation. Chronic selenium deficiency has been epidemiologically associated with certain cancers, cardiovascular disease, cardiomyopathy and immune dysfunctions.

CAUSES OF DEFICIENCY include inadequate selenium or cysteine intake, exposure to toxins incl. mercury, arsenic, cadmium, PCB, etc.

SELENIUM SOURCES: wheat bran and germ, Brewer's yeast, garlic, whole grains, liver, kidney, fish. The RDA is 10-200mcg/day.
THERAPEUTIC CONSIDERATION: increase intake of selenium, cysteine and vitamin E.

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