

35+ years of clinical & environmental laboratory diagnostics Röhrenstraße 20 91217 Hersbruck, Germany

Phone +49.[0]9151.4332 Fax +49.[0]9151.2306

info@microtraceminerals.com www.microtraceminerals.com



Laboratory News

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Laboratory News

Vitamin B12 and Cobalt

The trace element cobalt is an integral component of Vitamin B12 (cyanocobalamin), and the administration of this vitamin before or during chelation therapy results in an increased binding of cobalt, followed by an increase in urinary excretion. Since every chelation agent has a limited ability to bind metals, concurrently adding minerals and trace elements like the cobalt-containing Vitamin B12, will limit the chelation of the more difficult to reach metals.

Saliva testing to evaluate the presence of dental materials

Our basic amalgam profile tests the metals Cadmium, Chromium, Cobalt, Copper, Gallium, Iridium, Mercury, Molybdenum, Nickel, Palladium, Platinum, Rhodium, Silver, Tin.

In addition to those metals, our new and extended profile also tests the dental metals Aluminum, Beryllium, Boron, Cerium, Iron, Lanthanum, Manganese, Niobium, Rhenium, Ruthenium, Tantalum, Titanium, Vanadium and Zinc.

Gold can be added to either profile per request.

Details under:

http://www.microtraceminerals.com/en/diagnostic-humans/saliva-amalgam

Gadolinium (Gd)

• Toxicity:

Free gadolinium is considered to be highly toxic, because it interferes with a number of calciumion channel dependent processes, is easily stored in bone where free Gd ions can remain for years. Free Gd affects the contractility of the myocard and inhibits the coagulation system, hence the toxicity.

Medical Uses:

Gadolinium is also a paramagnetic metal ion, meaning it moves differently within a magnetic field. This trait makes gadolinium useful for magnetic resonance imaging (MRI). Gadolinium-based contrasting agents (GBCAs) are stable Gd complexes, eliminated predominantly via the kidneys.

GBCAs are approved by FDA for use with MRI and for magnetic resonance angiography (MRA), an imaging procedure used to evaluate blood vessels. Since December 2006, FDA has



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Effect:

Gd-containing contrasting agents (GdCA) spread rapidly after injection into the extracellular fluid and with the exception of Gadofosveset trisodium do not bind with plasma proteins. The half-life (HL) of the Gd-based contrasting agents varies. In a healthy person, the GD-contrasting agents are eliminated renally in about 1-2 hours. In renal insufficiency, the half-life is extended much more and estimated to be between 13-89 hours.

When renal function is limited, the plasma half-life can be extended to up to 30 hours (in case of GFR <20ml/min/1, 732). The GdCA Gadofosveset trisodium, however, has a high serum albumin binding of over 80%, remains longer in the vessel lumen than other GdCAs. In healthy subjects, the elimination half-life is approximately 18 hours.

Diagnosis:

The detection limit for gadolinium in urine is 0.1 mcg / L. When we statistically evaluated Gd in 795 baseline urine samples, the 95% ile was 0.3mcg / L or 0.3 mcg / creatinine. Of the 795 total samples tested, 102 samples showed a Gd value of greater than 0.1 mcg / L. A total of 32 samples exceeded 0.3mcg / L and 11 samples showed values > 1.0mcg / I. We had no information if any of these patients had received contrasting agents at any time prior to testing.

In order to provide further evidence, we tested and statistically evaluated another 11908 urine samples after provocation with various chelating agents. In the majority of the investigated mobilization tests (10250 patients), the gadolinium value was < 1mcg / g creatinine. In 10% of the samples, test results showed a slight increased Gadolinium value of 1-10mcg / g creatinine, about 3% of the samples showed values from 10 - 100mcg / g creatinine, 0.5 % showed values of 100 1000 micrograms / g and three patients showed extreme values of more than 12.000 mcg / g creatinine (= 12mg / g creatinine) and one of those patients had received a GdCa one week before the DMPS chelation treatment. See table 1.

Table 1:

Number of Tests	mcg/g Creatinine
10250	<1
1288	>1-10
308	>10-100
51	>101-1000
5	>1001-4100
3	>4101-12000
3	>12001-707229

DiSodiumEDTA easily binds Gd, but DMPS (2,3-Dimercapto-1-propanesulfonic acid) also has a good Gd-binding ability. The extreme urine values as seen in table 1 were due to EDTA and





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DMPS, applied intravenously. Oral DMSA (Dimercaptosuccinic acid) also caused a considerable Gd excretion, meaning Gd chelation can be achieved with various chelating agents.

• Summary:

Diagnostically, Gadolinium is easily detected in urine, long after Gd-containing contrasting agents have been administered. This information may be of use to physicians treating patients with Nephrogenic Systemic Fibrosis who previously received GdCA.

Testkits

We are environmentally conscious i.e. we repeatedly use our plastic mailing envelopes. If you prefer to receive new ones only, let us know.

We are happy to oblige.

Medical Workshops and Conferences

International Conferences & Workshops 2014

03/01/2014	Nutrient and Toxic Metals: diagnosis and treatment Sofia, Bulgaria (English)	Dr. R. Toshkov	
03/15/2014	Physicians Workshop Nuremberg, Germany (German)	Dr. T. Fischer	
03/29/2014	Natural Health Professional Workshop Nuremberg, Germany (German)		
05/01/2014 - 05/03/2014	Chelation Conference Sao Paulo, Brazil (English / Portuguese)	Prof. Dr. Efrain Olszewer	
Details under:			
http://www.microtraceminerals.com/en/workshops			

Studies and Analyses

• Comparing the metal burden of cancer patients and healthy relatives living in the same household.

Blaurock-Busch E, Buerner H, Busch Y, Friedle A, Parkash C, Kaur A. Clinical Medical Insights: Oncology Jan 2014

The cancer prevalence in the Malwa region of Punjab (1089/million/year) is much higher than the national average cancer prevalence in India (800/million/year). The participants in the present study were 50 healthy individuals and 49 cancer patients all living in the Malwa region of Punjab, with the healthy people being selected from the same household as the cancer patients. High concentrations of several potentially toxic elements were found in hair samples from people living in Punjab. Compared to standard reference ranges, the metals in excess in both the control and patient groups were aluminium (AI), barium (Ba), manganese (Mn), strontium (Sr) and uranium (U). The most significant findings are high lead (Pb), U and Ba concentrations. The maximum values for Ba, Mn, Pb and U were found in hair from breast cancer patients. The mean concentration of U in hair from the breast cancer patients was 0.63 μ g U/g, which is more than double the value found in the control group and over six times higher than reference range of 0.1 μ g U/g. Water, soil, and phosphate fertilizers all seem to play a potential



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role, causing an increased metal burden in Punjabi people living in the Malwa region.

Conclusion:

The present study indicates that metals, and especially U, may be a factor in the development of breast cancer among Punjabi women

Read or download the whole study "Comparing the Metal Concentration in the Hair of Cancer Patients and Healthy People Living in the Malwa Region of Punjab, India" here.

Comparing the metal binding efficacy of DMSA, DMPS and EDTA

Blaurock-Busch E, Busch Y. British Journal of Medicine and Medical Research. 4(9): 1821-1835, 2014

Several chelating agents are presently used among environmental physicians to diagnose and treat a chronic metal overexposure. We evaluated and compared the binding capacity of the most common chelating agents DMPS (2, 3-dimercapto-1-propanesulfonic acid), DMSA (dimercaptosuccinic acid), also called Succimer) and EDTA (ethylene diamine tetraacetic acid) for the potentially toxic metals Antimony (Sb), Arsenic (As), Cadmium (Cd), Lead (Pb) and Mercury (Hg). Secondly, we evaluated how the nutrient elements Calcium (Ca), Copper (Cu) and Zinc (Zn) are affected by the chelating agents tested.

The intravenous application of DMPS is most suitable for the diagnosis and treatment of a single or multiple metal exposure, involving the metals Sb, As and Hg. Both EDTAs (NaCaEDTA and NaEDTA), administered intravenously, are the agents of choice for Cd, while Pb can be chelated using DMSA, DMPS, or the EDTAs. Both EDTAs have a strong Zn binding ability, but only NaEDTA is suitable for binding appreciable amounts of Ca. DMPS best binds Cu.

Conclusion:

The intravenous application of DMPS is most useful for the diagnosis of multiple metal overexposure. It is also the treatment of choice for Sb, As and Hg and has the strongest Cu binding ability of the chelators tested.

Read or download the whole study "Comparison of Chelating Agents DMPS, DMSA and EDTA for the Diagnosis and Treatment of Chronic Metal Exposure" <u>here</u>.

Laboratory Diagnostics to Detect Environmental Metal Exposure (Labornachweis umweltbedingter Metallbelastungen)

Blaurock-Busch E, Umweltmedizin Gesellschaft 27:1, 2014 (German)

Abstract:

Toxicity is the ability of a certain dosage of a drug or poison to produce harm, potentially causing permanent injury or death. Environmental toxins such as heavy metals show different degrees of toxicity, and multiple exposures are common in environmentally-caused diseases. To confirm a multiple metal exposure or single metal intoxication, we have various diagnostic means. Due to their easy accessibility, blood or urine are useful for testing, and under specific circumstances fecal matter, saliva or biopsy material such as hair or nails provide useful information. The urine provocation test provides valuable information about chronic metal exposure that may otherwise go undetected. In this paper, we describe the pros and cons of various diagnostic tests.

Specific laboratory diagnostics allow us to distinguish between acute and chronic exposures. Though diagnostic means we are able to determine the most significant metal exposure, which is useful therapeutically. For example, acute aluminum intoxication necessitates specific measures that are different than those needed to treat a lead or mercury exposure. Different approaches such as hair analysis or provocation tests are options for the diagnosis and treatment of a chronic metal exposure.



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Your

E.Blaurock-Busch and Team