



Micro Trace Minerals Laboratory

35+ years of clinical & environmental
laboratory diagnostics

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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 calcium-ion 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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continued to investigate reports of nephrogenic systemic fibrosis (NSF) in patients who received GBCAs to help define risk factors for NSF.

- **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 / l. 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 (Al), 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 µg 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 µg U/g. Water, soil, and phosphate fertilizers all seem to play a potential



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Please let us know your feedback/suggestions: [contact us](#)

Your

E.Blaurock-Busch and Team