LABORATORY SERVICES 2012 | 2013

Micro Trace Minerals

Clinical & Environmental Laboratory
for Doctors and Patients Worldwide

www.microtrace.eu
www.microtraceminerals.com

LABORATORY SERVICE 2012 | 2013

CONTENT

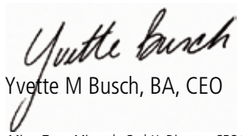
Micro Trace Minerals, Germany, was founded by Dr. E.Blaurock-Busch in 1975.
In addition, she owned and operated Trace Minerals International Inc. in Boulder, Colorado from 1984 to 2000. Today, Micro Trace Minerals and Partners are operating in Germany and Colorado, USA, serving doctors worldwide.

- We regularly participate in laboratory round robins, and have achieved excellent results, which are open for you to see.
- All testing is performed with the highest quality control standards.
- Our turnaround time is between 3-7 days after sample receipt.
- We have researchers who constantly engage in the development of improving protocols
- We invest in research to improve diagnostic and therapeutic knowledge
- We are engaged in teaching of laboratory diagnostics on a worldwide basis
- We regularly publish in international journals
- The food and pharmaceutical testing division under Dipl Ing Friedle & Dr. Rauland performs testing worldwide
- We utilize state-of-the art equipment such as ICP-MS with cell technique for metal testing, and use up-to-date equipment for all other laboratory tests, many of which are not listed here.
- Our personnel holds high academic standards and appreciate inquiries
- We provide reports in English, German, Italian, French, Spanish and Portuguese
- All Profiles & Prices are subject to change.
- **All prices listed herein are without tax. For Europeans to avoid the 19% Tax, a European Tax ID Number must be provided.**
- We are not required to add sales tax for tests performed for doctors and patients of non-European countries..

We are dedicated to serve you and your patients,

Ing. Albrecht Friedle, Laboratory Manager, Quality control
Dr. Armin Schönberger MD, Laboratory Physician

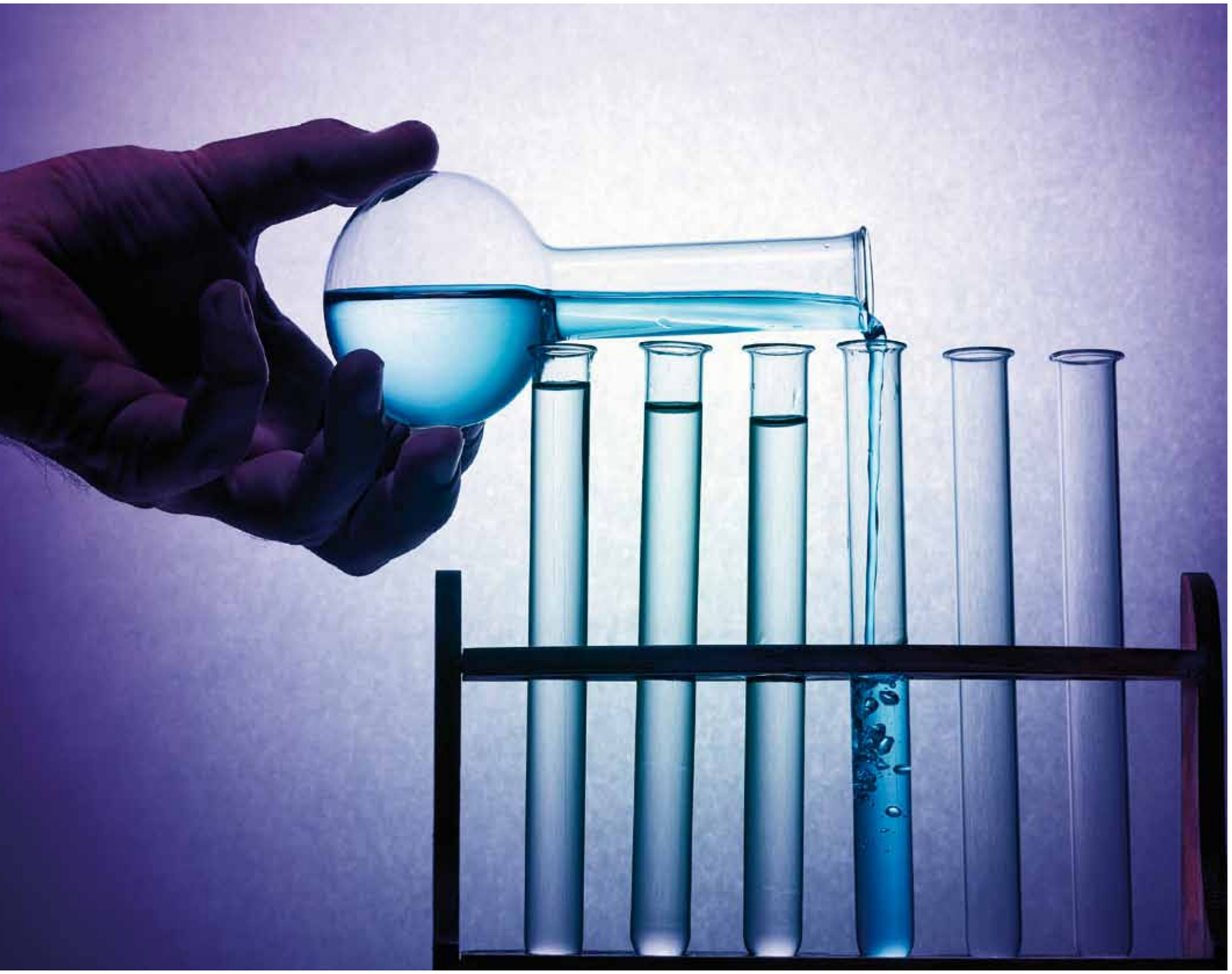
Dr. E.Blaurock-Busch PhD, Director of Research and Data Validation



Yvette M Busch, BA, CEO

Micro Trace Minerals GmbH, Director, CEO Yvette Busch District Court Nuernberg Germany HRB 21937

CERTIFICATES + RECOGNITION



Deutscher Akkreditierungs Rat

Accreditation for clinical and environmental laboratory services

QS – Ihr Prüfsystem für Lebensmittel

Accreditation for testing of food products

VDI DIN

GMP Zertifikat

Accreditation for testing of pharmaceutical products

Accreditation/Recognition/Membership
AKS-PL-20918 Federal Accreditation Bureau Hannover
ISO/IEC 17025:2005
RECIPE Reference Laboratory 2011
RELANA Quality Circle
(Membership granted to laboratories with high level of performance)
QS-recognized laboratory for food testing
GMP Certification §14, 4 Nr 3, Testing of Pharmaceuticals

URINE

BASELINE URINE

- Under normal conditions, a baseline urine test shows urine metal concentrations that are either within, or slightly outside the reference ranges. The test serves as a comparison, and may be legally required to compare urine baseline concentrations with urine challenge test values. A baseline urine test is best taken before the first treatment. We recommend that the patient stops eating fish for three days prior to collecting the urine, because fish may contain high amounts of arsenic or mercury. It is also recommended to stop smoking and to stop nutritional supplementation the day before urine collection takes place.
- Urine is not useful to diagnose a classical deficiency of essential elements such as zinc, copper or selenium. It only suggest an inadequate intake.
- If baseline urine zinc levels are low prior to a EDTA or DMPS provocation, supplementation is recommended.
EDTA and DMPS have strong zinc binding capabilities.

URINE CHALLENGE TESTS

- The urine metal concentration after a challenge test demonstrates the chelating substances metal binding ability.
- We provide reference ranges that apply to specific chelators.
- We reserve the right to limit metal testing, if needed. For instance, if a metal-bound chelator such as CaEDTA is used, we do not report calcium; if
ZnDTPA is used, we do not report zinc, etc.
- High copper values in post chelation urines may mask mercury excretion i.e. provide false low results.

Single element testing elements on request. Please ask for pricing.

Standard Profile (P1)

Tested are:
Calcium, Magnesium, Chromium, Cobalt, Copper, Germanium, Iron, Manganese, Molybdenum, Lithium, Selenium, Strontium, Vanadium and Zinc, plus Aluminium, Arsenic, Barium, Beryllium, Cadmium, Lead, Nickel, Mercury, Silver, Tin, Antimony, Bismuth, Platinum, Thallium plus creatinin

10-15ml Urine | ICP-MS | **€ 70**

Dental- and Environmental Profile (P40)

Ideal for DMPS or DMSA Provocation

Tested are:
Aluminium, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Cerium, Cesium, Chromium, Cobalt, Copper, Gallium, Indium, Iridium, Iodine, Lead, Manganese, Mercury, Molybdenum, Nickel, Palladium, Platinum, Ruthenium, Rhodium, Selenium, Silver, Strontium, Tantalum, Thallium, Tin, Titanium, Uran, Vanadium, Zirconium, Zinc, plus creatinine

10-15ml Urine | ICP-MS | **€ 98**

Nutrient- and Toxic Profile (P6)

Ideal for EDTA

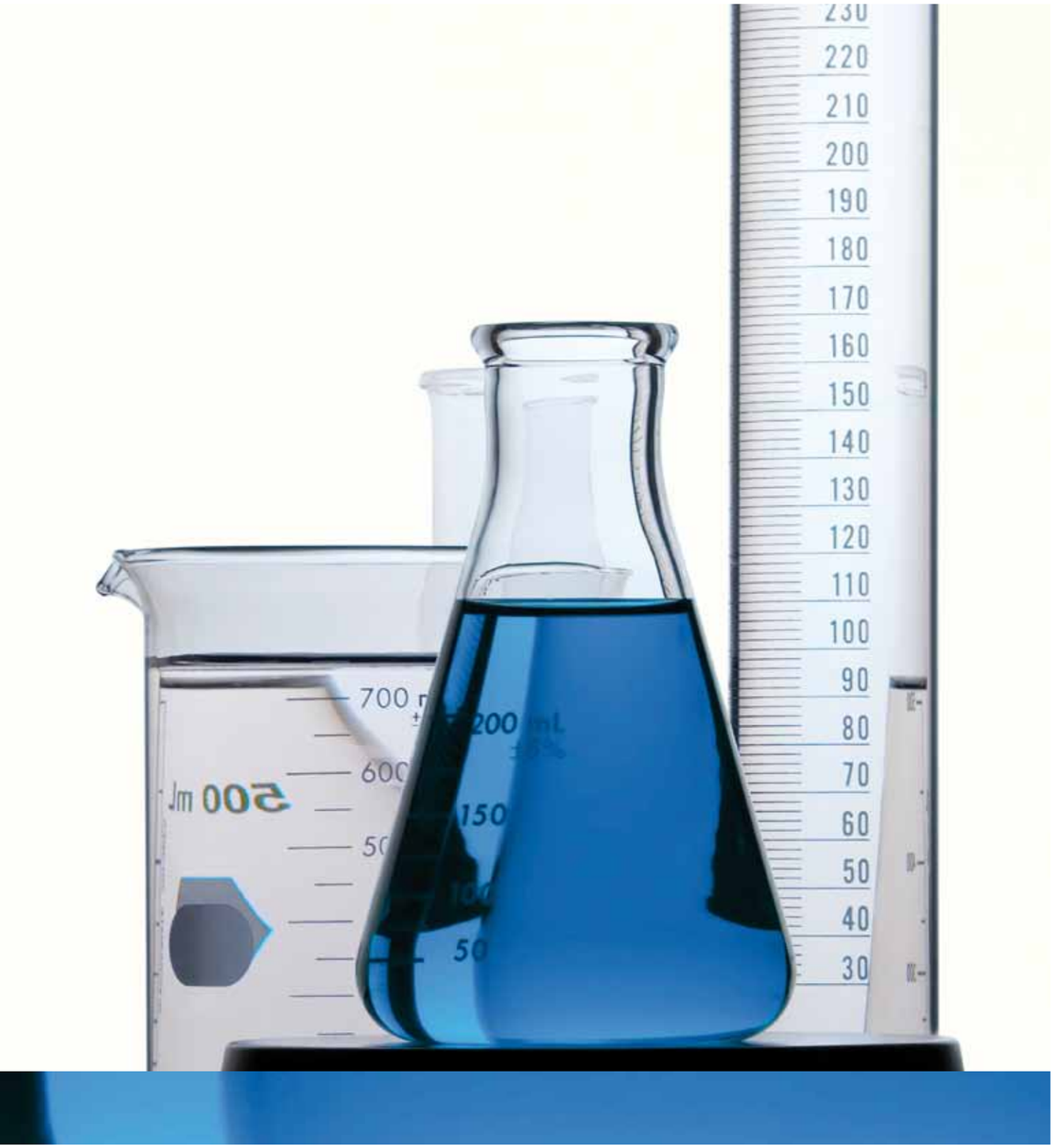
Tested are:
If B12 is given, Cobalt value will be high
Calcium, Magnesium, Chromium, Iron, Cobalt, Copper, Germanium, Lithium, Manganese, Molybdenum, Selenium, Strontium, Vanadium, Zinc plus Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Cadmium, Cesium, Gallium, Lead, Mercury, Nickel, Palladium, Platinum, Silver, Thallium, Tin, Titanium, Tungsten, Uranium, Zirconium, plus creatinine

10-15ml Urine | ICP-MS | **€ 98**

Gold

10-15ml Urine | ICP-MS | **€ 27,50**

ANALYSES AND TESTS



BLOOD METAL ANALYSIS

Blood is a transport system that provides body systems with nutrients and toxins. High blood metal levels are a direct reflection of immediate exposure, low values of nutrient elements such as zinc reflect a low intake that may result in deficiency symptoms.

As long as metals circulate in blood, organ systems including hair receive and store them. An inadequate excretion system results in increased metal storage.

SALIVA METALS

A high metal concentration of saliva is generally due to metal release from amalgam fillings. When we compare the metal concentration of saliva before and during a chewing gum test, we can see a marked increase in metal release, particularly when amalgam filles are old and porous.

	Material	Method	Cost €
Whole Blood Metal Profile (P4) Tested are: Magnesium, Cobalt, Copper, Manganese, Molybdenum, Selenium, Vanadium, Zinc plus Aluminum, Antimony, Arsenic, Beryllium, Bismuth, Cadmium, Chrom, Iodine, Lead, Nickel, Platinum, Mercury, Silver, Thallium, Tin, Uranium, Zirkonium	5ml EDTA Blood in metal free tubes	ICP-MS	**€ 105**

Please request certified metal-free tubes for blood drawing.

Note: we have reference ranges for children and adults. Provision of age or date of birth needed.

	Material	Method	Cost €
Serum- or Plasma-Metal Profile (P18) Tested are: Calcium, Magnesium, Copper, Manganese, Molybdenum, Selenium, Zinc, plus Aluminum, Antimony, Beryllium, Bismuth, Cadmium, Gallium, Lead, Nickel, Mercury, Platinum, Silver, Tin, Thallium, Uranium	5ml Serum or Plasma	ICP-MS	**€ 98**

	Material	Method	Cost € per Tube
Saliva Dental Profile (P5) **plus Gold** Tested are: Copper, Cadmium, Mercury, Nickel, Palladium, Platinum, Silver, Tin, Cobalt, Chromium, Gallium, Iridium, Molybdenum, Rhodium and Gold	3ml saliva for testing of sample before ***or*** after chew test	ICP-MS	**€ 98**

	Material	Method	Cost € per Tube
Saliva Dental Profile (P3) Tested are: Copper, Cadmium, Mercury, Nickel, Palladium, Platinum, Silver, Tin, Cobalt, Chromium, Gallium, Iridium, Molybdenum, Rhodium	3ml saliva for testing of sample before ***or*** after chew test	ICP-MS	**€ 78**

Sampling Procedure:

Saliva sample before chewing test:

- Patient should not eat or smoke for 15minutes prior to sample collection. Collect 2-3 ml of saliva in clean metal-free tube.

Saliva sample during chewing test:

- Patient should chew gum for 15 minutes and collect saliva during chewing period.

ANALYSES AND TESTS

STOOL METALS AND MICROBIOLOGY

STOOL METALS

STOOL METALS

When oral chelators are used, significant metal binding can happen within the digestive tract. The metal concentration of fecal matters before chelation is a reflection of the oral metal intake.
The metal concentration after oral chelation demonstrates the chelator's metal binding concentration.

Stool Metal Analysis	**Material**	**Method**	**Cost €**
Standard Profile (P39) Tested are: Antimony, Arsenic, Beryllium, Cadmium, Copper, Lead, Mercury, Nickel, Palladium, Silver, Tin, Uranium	5gr Stool	ICP-MS	**€ 98**

HAIR- OR NAIL TISSUE ANALYSIS

SAMPLING PROCEDURE

Hair provides a record of past and current trace element levels. Unlike blood, hair is an inert substance that consists of a fibrous protein and trace elements. As hair grows, nutrient and toxic elements are deposited from the blood stream into the hair follicle and hair shaft. Once a trace element has been incorporated into the hair, it remains fixed. To measure these values reliably and with good reproducibility, the following criteria must be met:

- Untreated head hair cut from the occipital area (back of head) is the preferred sample.
- Do not mix different sample types (i.e. hair with nails).
- Hair that has been chemically treated ("permed", dyed, bleached, or otherwise treated) will not provide accurate results. If the hair has been treated, it should be allowed to grow for at least 2-3 months before new sampling.

Long Hair

1) Part the hair in the middle of the back of the head, and pull it out and up.
2) Cut 1.5 to 2 inches (4.5 to 5.5 cm.) strands of hair close to the head. DISCARD ends of long strands and KEEP less than 2 inches (less than 5.5 cm) closest to the scalp.
3) Repeat cutting on various regions on the back of the head until enough hair is obtained.
5) Place hair in sampling envelope, fill out the Sampling Instructions Form with the appropriate information and send to Micro Trace Minerals

Short hair

1) Trim .5 to 1 gram of hair from the back of the head. Use thinning scissors, if possible.
2) Place hair in sample envelope, fill out the Sampling Instructions Form with the appropriate information and send to Micro Trace Minerals.

Nails

Needed material:
0,2gr clean finger- or toenails.
No nail polish, please

Hair- or Nail Tissue Analysis	**Material**	**Method**	**Cost €**
34-Element Basic Profile (P9) Tested are: Boron, Calcium, Chromium, Cobalt, Copper, Germanium, Iodine, Iron, Lithium, Magnesium, Manganese, Molybdenum, Selenium, Strontium, Vanadium, Zinc, plus Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth Cadmium, Lead, Mercury, Nickel, Palladium, Platinum, Silver, Thallium, Tin, Titanium, Tungsten, Uranium, Zirkonium	0,25 gr Hair or 0,2gr Nail	ICP-MS	**€ 85**
52-Element Extended Profile (P10) This extended profile tests all metals as shown in the Basic Profile above, plus these additional metals which find use in industry, medicine or dentistry.			
Cesium, Cerium, Dysprosium, Erbium, Europium, Gallium, Lanthanum, Praesodymium, Rhenium, Rhodium, Ruthenium, Samarium, Tantalum, Tellurium, Thorium, Thullium, Ytterbium, Gadolinium, Iridium, Lutetium	0,25gr Hair or 0,2gr Nail	ICP-MS	**€ 110**

ANALYSES AND TESTS

Water Analysis

	Material	Method	Cost €
Metal Profile (P8) Tested are: Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Calcium, Chromium, Cadmium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Selenium, Silver, Strontium, Thallium, Uranium, Zinc	10-15ml	ICP-MS	**€ 85**
Metal Profile (P8) **+ hardness**	10-15ml	ICP-MS	**€ 100**

Soil Analysis

	Material	Method	Cost €
Standard Profile Tested are: Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Calcium, Chromium, Cadmium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Palladium, Platinum, Selenium, Silver, Strontium, Thallium, Uranium, Zinc	20gr	ICP-MS	**€ 150**

Metal Analysis of Cosmetics, Pharmaceuticals, Nutritional Supplements, Algae and Foods

	Material	Method	Cost €
Toxic Profile Tested are: Aluminum, Arsenic, Barium, Beryllium, Boron, Cerium, Cadmium, Gallium, Manganese, Mercury, Nickel, Palladium, Platinum, Rhodium, Selenium, Silver, Strontium, Thallium, Tellurium, Tungsten, Uranium, Zinc, Cesium, Chromium,Indium, Iridium,Jod, Cobalt, Copper, Molybdenum, Tantalum, Titanium, Vanadium, Tin, Zirconium	please ask	ICP-MS	**€ 175**

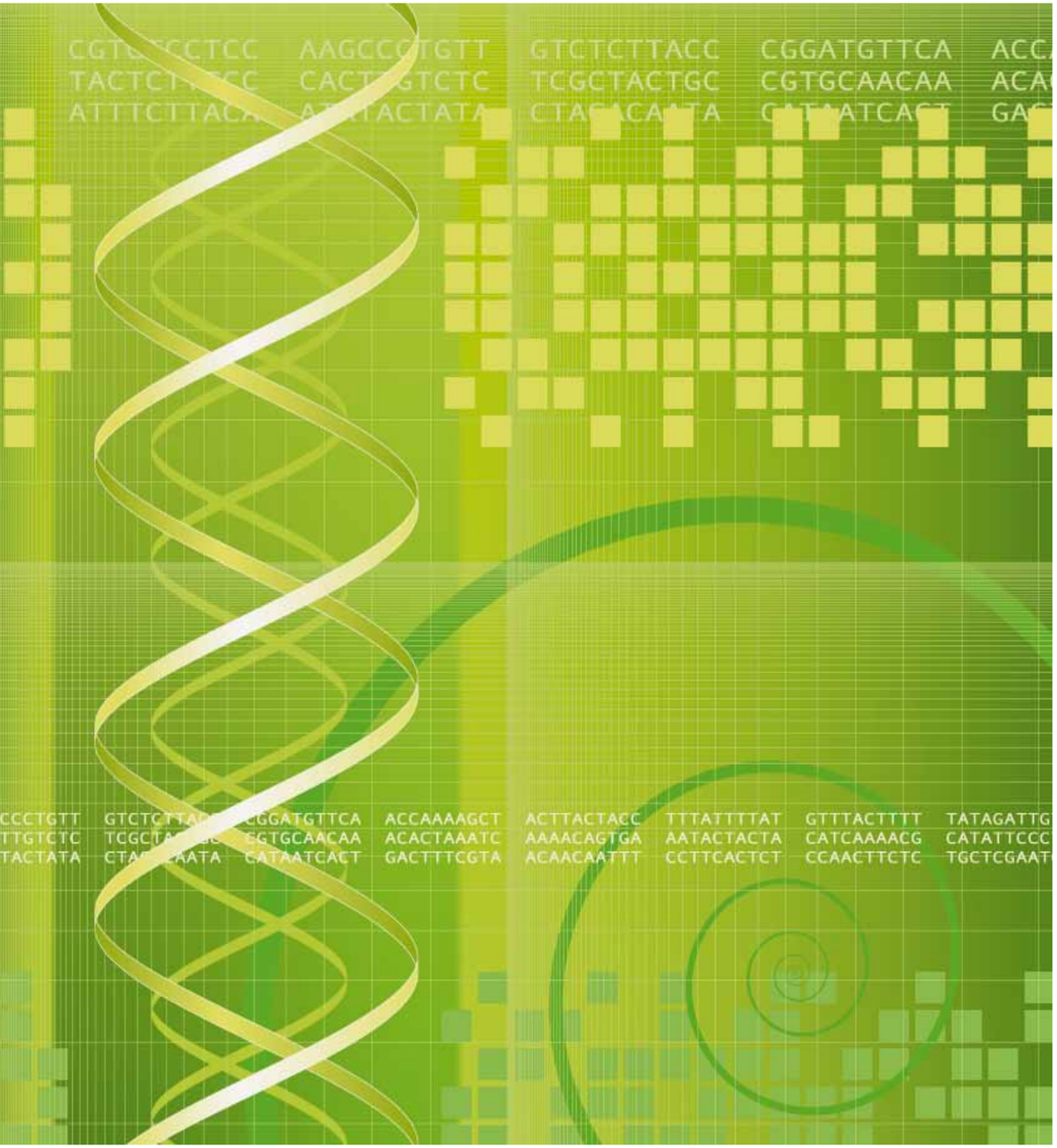
Food Allergy Testing

	Material	Method	Cost €
ImuPro100 Food Antigen Profile (IgG)	3ml Serum		**€ 160**
ImuPro300 Food Antigen Profile (IgG)	3ml Serum		**€ 300**

To view a complete report, please contact us or visit www.microtrace.de

DETOXIFICATION- AND ANTIOXIDATIVE

GENETIC TESTING ENZYME SYSTEMS



GENETIC TESTING ENZYME SYSTEMS

Needed Material:
2 ml EDTA-Blood or 5 drops whole blood
on filter paper or gum swab

Genetic Testing of Detoxification- and Antioxidative Enzyme Systems

		Method	Cost €
Glutathione –S-Transferase M1	GSTM1	PCR	**€ 58**
Glutathione –S-Transferase T1	GSTT1	PCR	**€ 58**
Glutathione –S-Transferase P1	GSTP1	PCR	**€ 58**
Glutathione –S-Transferase M3	GSTM3	PCR	**€ 58**
Superoxide dismutase 1	MnSOD 1	PCR	**€ 58**
Superoxide dismutase 2	Cu/ZnSOD2	PCR	**€ 58**
Apo-E Gene-	E2, E3 & E4	PCR	**€ 66**
Cytochrome P450 1A1	CYP1A1	PCR	**€ 58**
Phase-I-Enzyme			
N-Acetyltransferase 2	NAT2		**€ 164**
Phase-II-Enzyme			

ORGANIC ENVIRON-MENTAL TOXINS

IMPORTANT INFORMATION

FORMALDEHYDE: In view of its widespread use, toxicity and volatility, exposure to formaldehyde is a significant consideration for human health. It is found in textiles, furniture, resins, wood panels, permanent adhesives used for installing plywood or carpet, and is used as a desinfectant and biocide. It is released from cigarette smoke. Formaldehyde is highly toxic to humans, regardless of method of intake. It is an irritant, causes oxidative stress and considered carcinogenic.

Xylol or Xylene are used as solvents in the rubber, printing and leather industrie and are common components of paint, ink, adhesives and cleaning agents.

SOLVENTS (aromatic, chlorinated or nonchlorinated are used in a variety of products such as paints, plastic products, etc. Benzol is known as a carcinogenic. Chlorinated solvents such as polychlorinated biphenyls (PCBs) are easily stored in fatty tissue and can be detected years after exposure.

PCP - Pentachlorphenol is used as a herbicide, pesticide, fungicide, algaecide and disinfectant, and have been used widely as a wood preservative. Contact with PCP (particularly in the form of vapor) can irritate the skin, eyes, and mouth. Long-term exposure to low levels such as those that occur in the workplace can cause damage to the liver, kidneys, blood, and nervous system. Finally exposure to PCP is also associated with carcinogenic, renal, and neurological effects. The U.S. Environmental Protection Agency Toxicity Class classifies PCP in group B2 (as a probable human carcinogen).

Organic Environmental Toxins

	Material	Method	Cost €
DDT (Dichlorodiphenyltrichloroethan) (tested is DDT and DDE)	Heparin Blood	GC	**€ 158**
Formiat (Metabolit from Formaldehyde)	30ml Urine, pH3-4	enzym.	**€ 27**
PCP (Pentachlorphenol) wood preservative	4ml Serum or 30ml Urine	GC-MS	**€ 79**
Insecticide Pyrethroid Metabolite C12Ca, m-PBA, Br2Ca	30ml Urine		**€ 236**
Hexachlorcyclohexan (Lindan)	10ml Heparin Blood	GC-MS	**€ 79**
Methylhippursäuren-Metabolit from Xylol	30ml Urine	HPLC	**€ 32**
Solvents - Aromatic Hydrocarbons Benzol Ethylbenzol Toluol	5ml EDTA Blood	GC-MS	**€ 79**
Solvents - Chlorinated Hydrocarbons Dichlormethan Tetrachlorethylen Tetrachlormethan Trichlorethylen Trichlorethan	5ml EDTA Blood	GC	**€ 36**
Nonchlorinated Hydrocarbons 1-Butanol, 2-Butanol, i-Butanol, Ethanol Ethylacetat, Isobutylacetate, Methanol Methylethylketone, Methylisobutylketone 1-Propanol + 2-Propanol	5ml EDTA Blood	GC	**€ 36**

VETERINARY TESTS

METAL TESTING OF FUR

METAL TESTING OF FUR

Essential elements can be toxic, if oversupplied. Horses are more sensitive to selenium overexposure. Loss of fur is the first sign. Horses may also be lame, lose weight easily and have a dull coat. The horse's hooves may also be affected by selenium levels that are too high and may begin to crack and become brittle. If the condition is left untreated the hoof may begin to slough off, leaving the horse with essentially no hoof at all until new hoof can grow back.

Selenium toxicity is rare in cattle, but these animals are sensitive to selenium deficiency, which is widespread in countries such as Ireland. Molybdenum overexposure can disturb the copper metabolism, causing copper deficiency symptoms in farm animals. Generally, water and soil conditions are significant influences on farm animals' nutritional status.

SAMPLING PROCEDURE

Fur or nail and hoove testing provides a record of chronic metal exposure. Unlike blood, these tissues are an inert substance that consists of a fibrous protein and trace elements. As hair grows, nutrient and toxic elements are deposited from the blood stream into these tissues. Once a trace element has been incorporated, it remains fixed. To measure these values reliably and with good reproducibility, the following criteria must be met:

- Samples should not have been exposed to chemical treatment. Chemically treated samples will not provide reliable results.
- Do not mix different sample types (i.e. fur with nails).

Contact us, if you have questions.

Metal Testing of Fur (Cat, Dog, Bovine, Equine)	**Material**	**Methode**	**€ Cost**
Basic Profil (P9) Tested are: Boron, Calcium, Chromium, Cobalt, Copper, Germanium, Iodine, Iron,Lithium, Magnesium, Manganese, Molybdenum, Selenium, Strontium, Vanadium, Zinc, plus Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth Cadmium, Lead, Mercury, Nickel, Palladium, Platinum, Silver, Thallium, Tin, Titanium, Tungsten, Uranium, Zirkonium	0,5 gr Fur or 0,3gr Nails or Hooves. No manes.	ICP-MS	€ **85**

Extended Profile (P10)

This extended profile tests all metals as shown in the Basic Profile above, plus these additional metals.

Cesium, Cerium, Dysprosium, Erbium, Europium, Gallium, Lanthanum, Neodymium, Praesodymium, Rhenium, Rhodium, Ruthenium, Samarium, Tantalum, Tellurium, Thorium, Thullium, Ytterbium.	0,5gr Hair or 0,3gr Nail or Hooves. No manes.	ICP-MS	€ **110**

VETERINARY TESTS

WHOLE BLOOD / SERUM / PLASMA

WHOLE BLOOD / SERUM / PLASMA

Blood mineral analysis (whole blood, serum or plasma) is used to detect metal overexposure. The metal concentration found in blood is a direct reflection of the animal's metal exposure. Water, feed, medication even cosmetics can be the cause.

Zinc toxicosis has been reported in dogs. It is characterized by an intravascular hemolytic anemia, gastrointestinal upset from direct irritation, and, potentially, multi-organ failure. Common sources of zinc contamination include galvanized coating on iron and steel (cages and nails, metal nuts from transport cages, and fencing; automotive parts, batteries, fungicides, and topical medications. There have been reports of dogs that have ingested large amount of zinc oxide ointment, used to combat skin irritation. Other sources include calamine lotion, paints, and shampoos. Arsenic poisoning has been reported in dogs and cats. Toxicity occurs over a long term, such as when animals are exposed by eating grass that is regularly treated with herbicides. Symptoms of arsenic poisoning are vomiting, diarrhea, abdominal pain, lethargy, bloody feces, staggering and cold extremities. Hair/fur and blood metal analysis are used to diagnose chronic exposure.

Single element analysis can be performed from blood, serum or fur/nails.

Please contact us for specifics.

Whole Blood-Metal Analysis (P4)	**Material**	**Methode**	**€ Cost**
Tested are: Kupfer, Kobalt, Magnesium, Mangan, Molybdän, Selen, Vanadium sowie Aluminium, Antimon, Arsen, Beryllium, Blei, Kadmium, Mercury, Nickel, Platin, Silber, Thallium, Uran, Wismut, Zinn, Zirkon	5ml EDTA Blood in metal-free tubes	ICP-MS	€ **98**

Serum- or Plasma-Analysis (P18)	**Material**	**Methode**	**€ Cost**
Tested are: Calcium, Copper, Magnesium, Mangan, Molybdenum, Selen, Zinc. sowie Aluminium, Antimon, Beryllium, Blei, Cadmium, Gallium, Mercury, Nickel, Platin, Silber, Thallium, Uran, Wismut, Zinn	5ml Serum	ICP-MS	€ **93**

CHELATION

INFORMATION

TOXIC METALS AND ANTIDOTES. THE CHELATION THERAPY HANDBOOK. MTM PUBLISHING 2010

65 EURO plus shipping

This book contains practical information about the pharmacological and therapeutic use of the most common chelation agents used for detoxification treatment.
Protocols are listed.
The book is designed to help physicians differentiate between acute and chronic intoxications. It helps to identify toxicity symptoms, and through proper selection of the chelator of choice, allows successful treatment of metal-related diseases.

DMSA

(DiMercapto Succinic Acid)
During February 1991, the US FDA (Federal Drug Administration) approved DMSA as a chelating agent for lead in children. It is considered safe and effective in removing toxins. Members of the American College of Advanced Medicine (ACAM) have a long history of using this chelating agent to detoxify patients with heavy metal overexposure.

DMSA is a nontoxic oral chelating agent. It binds with heavy metals and removes them through the bloodstream and urinary tract. DMSA crosses the brain blood barrier removing mercury, lead, aluminium, cadmium, arsenic, mercury and nickel. It detoxifies hypothalamus and pituitary. DMSA also binds copper, iron, manganese, silver, tin and zinc.
The use of this oral chelator DMSA has no known side effects, however pregnant or lactating women and patients with kidney disorders should not be chelated. Be careful with highly allergic patients before DMSA is administered.

Patients who heavily detoxify may experience weakness during the first sessions of chelation. Most 'toxic' patients experience an 'emptiness in the head' and have difficulty concentrating.
Some notice a slight decrease in vision ability, which will be gone the next day.

Recommended Dose:
Depending on exposure and patient constitution, an adult may take between 10 and 30mg/kg body weight on an empty stomach and preferable not eat for two

DMPS

(2,3-dimercapto-1-propane sulfonic acid) is a powerful chelating agent, used to treat acute and chronic heavy metal intoxications. It easily binds mercury, copper, antimony, chromium and lead. A prescription item since 1996, it is available to MDs as an injectable or in oral form. Information: Dr. Ruprecht, Heyl Berlin, Germany, www.heyl-berlin.de

NAEDTA

(Disodium Ethylenediaminetetraacetic acid) strongly binds free calcium, iron (not hem iron), lead and other metals. It does not easily bind mercury, selenium and arsenic. It is used to treat hypercalcemia and cases of lead intoxication, and has been used widely for the treatment of atherosclerotic diseases. It is used as an infusion, and to prevent renal stress, the infusion time should not exceed 1g/hr. More information: www.ibcmt.com

GENTLE DETOXIFICATION - ORTHOMOLECULAR TREATMENT

Nutrients such as the antioxidant Vit.C , glutathion and selenium have the potential to either bind or replace toxic metals. For information and natural detoxification protocols, contact us.

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