

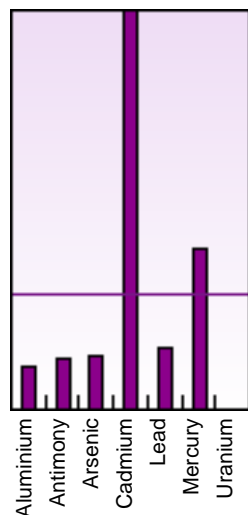
Hair Tissue Mineral Analysis



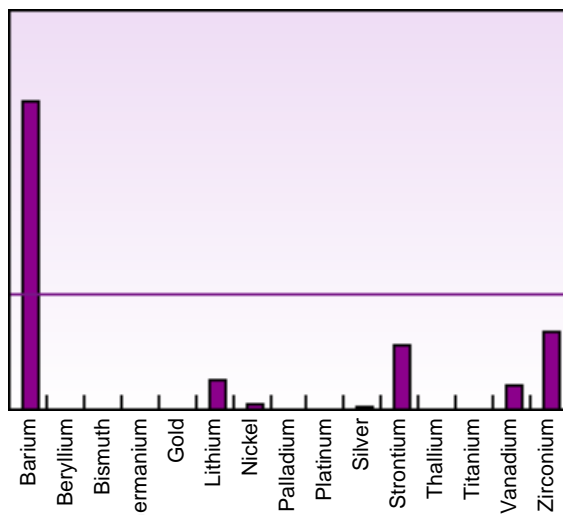
mediscan@mediscan.net.au
ABN: 4584 2507 179

Patient	EXAMPLE
DOB	01-Feb-1974
Address	
Doctor	
Collection Date	10-Jan-2018
Report Date	30-Jan-2018

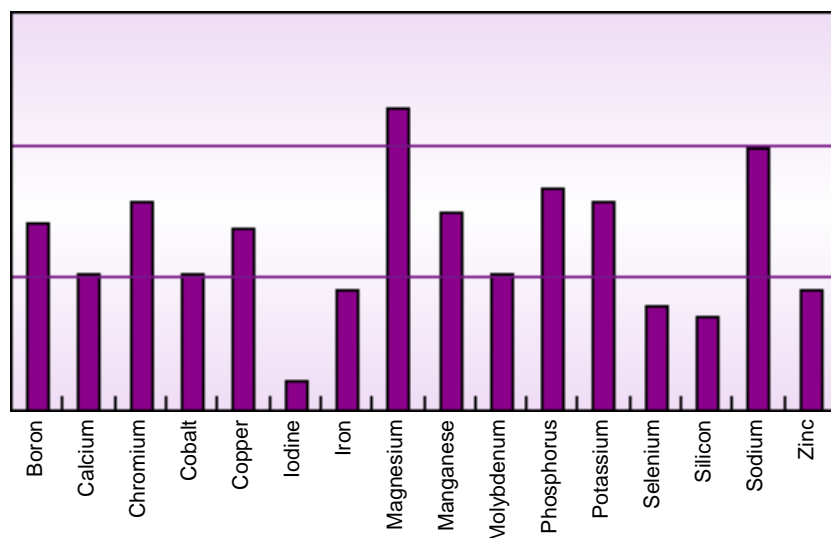
Toxic Elements



Other Elements



Minerals



Results expressed in parts per million (ppm)
Reference ranges and results © 2008-2018 Mediscan

	Result	Reference
Aluminium	4.46	0 - 12
Antimony	0.091	0 - 0.2
Arsenic	0.096	0 - 0.2
Cadmium	0.47	0 - 0.12
Lead	1.786	0 - 3.3
Mercury	1.4	0 - 1.0
Uranium	< 0.02	0 - 0.2

Barium	8.07	0 - 3.0
Beryllium	< 0.001	0 - 0.1
Bismuth	< 0.005	0 - 0.5
Germanium	< 0.002	0 - 0.4
Gold	< 0.005	0 - 0.3
Lithium	0.05	0 - 0.2
Nickel	0.03	0 - 0.8
Palladium	< 0.005	0 - 0.12
Platinum	< 0.001	0 - 0.6
Silver	0.03	0 - 1.2
Strontium	3.9	0 - 7.0
Thallium	< 0.001	0 - 0.2
Titanium	< 0.05	0 - 10
Vanadium	0.04	0 - 0.2
Zirconium	0.34	0 - 0.5

Boron	1.61	0.3 - 3.5
Calcium	348	300 - 1800
Chromium	0.19	0.04 - 0.3
Cobalt	0.008	0.002 - 0.3
Copper	16.14	10 - 27
Iodine	0.07	0.3 - 3.5
Iron	5.4	6 - 14
Magnesium	156.7	20 - 100
Manganese	0.23	0.07 - 0.4
Molybdenum	0.03	0.02 - 0.3
Phosphorus	158	115 - 180
Potassium	116.9	10 - 200
Selenium	0.47	0.6 - 1.6
Silicon	49.4	70 - 550
Sodium	486.9	20 - 500
Zinc	131	145 - 220

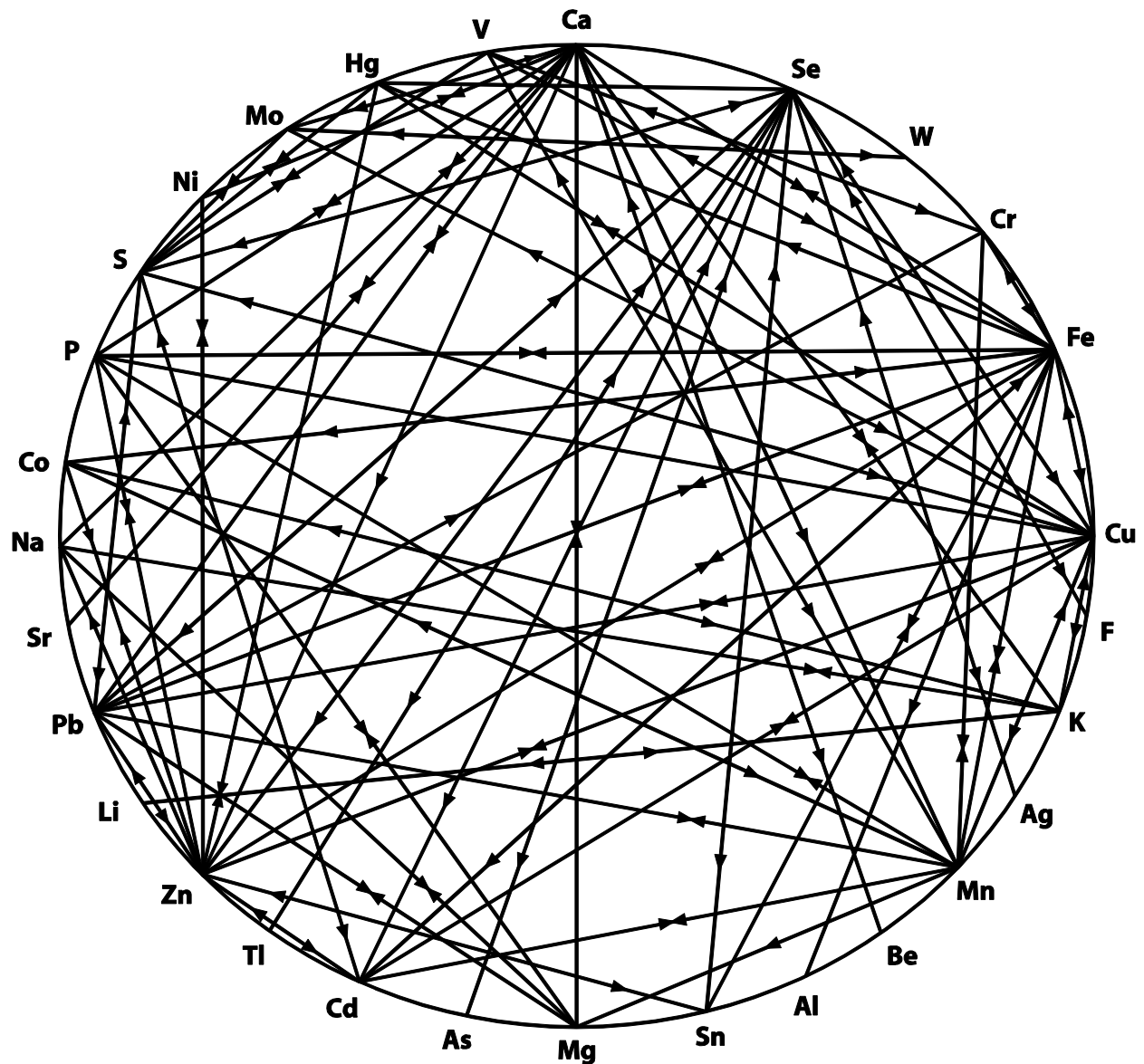
	Result
Significant Pb effect (Mn,Cr,Fe high)	No
Overt or hidden copper overload	No
B > 3.5	No
Zn/Cu < 6	No
Ca > 1800	No
Hg > 4	No
Ca/K > 10	No
Na/K < 2.5	No
Mo < 0.02	No
Cu/Mo > 625	No
K < 10	No
Ba > 2.6	Yes

Ratio	Result	Ideal
Na/K	4.16	2.5
Ca/K	2.97	10
Zn/Cu	8.11	10
Cu/Mo	538	115
Na/Mg	3.1	4.5

Hair Tissue Mineral Analysis Report

8th February 2018

Example

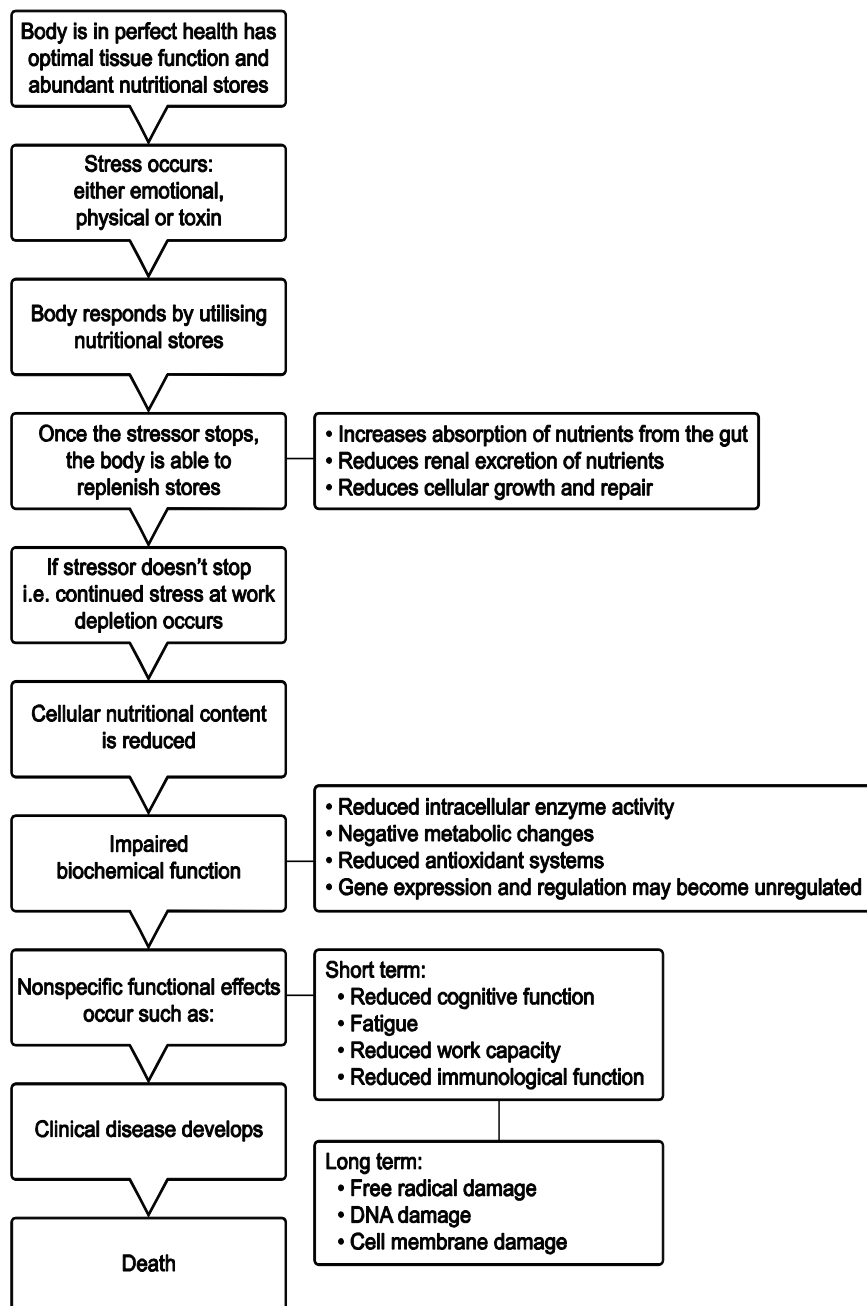


Hair Analysis and Toxic Metal Detoxification Overview

The hair tissue mineral analysis (HTMA) is a snapshot of what the body is dealing with, prior to hair collection. A HTMA is a test; it is not a diagnosis and should only be used as an information-gathering tool for the practitioner.

Reading the results of a HTMA is not as simple as looking at the graphs as every mineral interacts with multiple other minerals; this is why professional interpretation of HTMA is required. During interpretation the major mineral and trace mineral profiles are evaluated against the toxic mineral profile. Present symptoms, previous supplementation, medications and environmental exposure are also considered before explanation and supplementation is recommended.

Dis-ease Progression Chart



This diagram explains dis-ease progression:

Toxic minerals interfere with beneficial minerals, blocking their availability to cells. This can result in nutrient deficiencies and development of cellular dysfunction or disease.

BioTrace uses two methods to remove toxic elements:

1. *Antagonism*: by ionic trace minerals (e.g. Zinc) and macro minerals (e.g. Calcium, Sodium).

2. *Chelation*: by HMD and other living source nutritional products. HMD is a clinically trialled natural chelator containing chlorella and cilantro; it removes toxic metals sparing beneficial minerals.

Why are Ionic minerals best?

Ionic minerals are charged ionic particles. They are the form found in food and are highly bioavailable. Ionic minerals are considered the safest as the body has the ability to accept or reject ionic minerals.

Colloidal minerals are insoluble mineral particles, suspended in liquid and significantly larger than ionic minerals. If you were to enlarge both a Magnesium ion and a colloidal Mg particle to a 1mm radius, the colloidal Mg particle would have the radius of 1 square km or 1,000,000,000,000,000,000,000,000 times the size of the Mg ion. The body prefers ionic minerals over colloidal minerals.

Mineral Deficiencies

Below are the minerals appearing deficient or low on Example's Hair Tissue Mineral Analysis (HTMA):

Calcium (Ca)

Functions

- **Ca** is an essential mineral required for the function of numerous intracellular and extracellular processes including muscle contraction, nerve conduction, beating of the heart, hormone release, blood coagulation, energy production and maintenance of immune function
- Ca is regulated by the parathyroid hormone (PTH), calcitonin and vitamin D
- It is involved in bone and teeth mineralisation
- It plays a role in intracellular signalling and is involved in the regulation of many enzymes responsible for fat digestion and protein metabolism
- Ca absorption is impaired in achlorhydria (low stomach acid), intestinal inflammation and many malabsorptive disorders
- Ca deficiency may lead to muscle pain and spasms, bone pain, osteoporosis and increased risk of fractures, tooth decay, altered heart rate, and ambulatory developmental delay in children

Deficiency: May indicate low dietary Calcium, low stomach acid and/or Vitamin D deficiency. Serum Vitamin D testing is recommended. Ca is blocked by *Aluminium* (very high on Example's HTMA) and Fluoride, and balanced by Magnesium, Phosphorous, Boron and Molybdenum

Dietary Sources

Unpasteurised milk, dairy products, fish with bones (salmon and sardines), tofu, broccoli, collard greens, mustard greens, bok choy, and black strap molasses

Recommended Ca Supplement: [BIO Coral Cal-Mag](#)

Companion supplements if appropriate: [BIO Phyto D3](#)

Cobalt (Co)

Functions

- Co controls the synthesis of vitamin B12 by the intestinal flora; thus, the production of red blood cells
- It is involved in the regulation of the autonomic nervous system (ortho and parasympathetic), which explains its effect on digestion and vasodilatory action on the peripheral circulation

Deficiency: Co is needed for Iron, Zinc and B vitamin absorption. Low Co generally means low B12, and symptoms of low B12 can often result in low energy, nervous system conditions and poor detoxification. Co is commonly blocked by *Mercury* and *Lead*. Low Co increases homocysteine which corks/blocks the detox system not allowing *Mercury* to leave the body. A B12 blood test is recommended when low Co is present

Dietary Sources

Chicken, cheese, seafood, legumes and whole-grain cereals, egg yolk, fish, liver, cabbage and root vegetables

Recommended Co supplement: [PRL Max B](#)

Iodine (I)

Functions

- Adequate amounts of **Iodine** are essential for thyroid function especially the synthesis of thyroid hormones. Thyroid hormones increase the resting or basal metabolic rate of the whole organism and have stimulatory effects on the heart, skeletal muscle, liver and kidney
- These hormones are required for normal growth and development, particularly of the nervous system
- Thyroid hormones enhance lipolysis and the utilisation of carbohydrate
- Iodine is very important for the endocrine system, specifically the reproductive sex organs
- People with toxic metal accumulation often will have a build up of other toxins such as pesticides and xenobiotics within the body. Natural Iodine may bind to these toxins and help remove them from the body
- It is essential to drink chlorine and fluorine free water to reduce Iodine antagonism

Deficiency: Iodine is blocked by *Aluminium*. Soils are often low in Iodine so there is a reduced opportunity for natural absorption from food

Dietary Sources

Edible algae are the top source, followed by seafood and fish, iodised sea salt and eggs

Recommended Iodine Supplement: QNL XenoStat

Iron (Fe)

Functions

- Fe is a key mineral involved in oxygen transport and is the central atom in haemoglobin
- Fe is involved in respiratory function: it is a component of the haemoglobin in red blood cells where it plays a major role in the binding and transport of oxygen from the lungs to the organs
- Fe participates in the formation of myoglobin, the main muscle protein
- Fe is essential for energy production/electron transport in the Krebs energy cycle
- Fe is involved in the synthesis of the hormones adrenalin, noradrenaline and dopamine
- Fe is required for detoxification pathways and protection against free radicals
- Fe is involved in purine metabolism – the breakdown of certain amino acids and proteins in the body

Deficiency: Fe deficiency primarily presents as fatigue that isn't alleviated by rest or sleep. HTMA measures ferritin in peripheral tissue not the venous haemoglobin, thus standard blood tests and HTMA results may not agree. However, a person returning a blood haemoglobin or ferritin result in the normal range may be Fe deficient on a cellular level due to the presence of mineral antagonists such as Copper, *Aluminium*, *Mercury* or *Lead*. If Fe is low on HTMA, it is recommended that blood tests are also undertaken to give your practitioner more information

Dietary Sources

Fe is found in red meat, white meat, organ meats, seafood, fish, egg yolk, dried fruits and legumes (lentils)

Recommendation: Serum Fe should be tested before supplementing due to the risk of Fe toxicity with supplementation

Molybdenum (Mo)

Functions

- It is involved in protein metabolism (nitrogen fixation) and cell division
- It participates in the establishment of minerals (prevention of dental caries)
- An important mineral in detoxification and balancing Copper, Iron and Sulphur

Deficiency: A major antagonist for Mo is Copper. Zinc is both an antagonist and synergist for Mo. Deficiency symptoms may be associated with Copper toxicity and dental decay

Dietary Sources

Meats including organ meats: pork, lamb, beef liver; sunflower seeds; legumes (beans/peas); grains including buckwheat, oats, barley, wheat-germ, sorghum

Recommended Mo supplement: BIO Elemental MultiTrace no Copper

Selenium (Se)

Functions

- Various studies on this major antioxidant have shown its protective and preventive role in many diseases
- **Se** is a coenzyme for glutathione synthesis, which protects the cell membrane and the nucleus against oxidation when under attack by free radicals
- It protects against the toxic effects of heavy metals (*Arsenic*), alcohol, tobacco smoke and various atmospheric pollutants
- Combined with Vitamin E, Se induces the formation of antibodies and prevents oxidative damage to chromosomes. Thus, together they *boost immunity* by enhancing the activation and proliferation of B lymphocytes and by strengthening the functioning of T cells

- Se protects the cardiovascular system by controlling optimum amount of red blood cells, standardising platelet aggregation and accelerating fat metabolism. It is also a regulatory agent in blood pressure and heart rate

Deficiency: Arsenic and Mercury are major antagonists for Se. Adequate Se levels are needed to help detoxify all toxic metals

Dietary Sources

Brazil nuts, eggs, mushrooms, red meat, chicken, whole grains (oat bran, oats, wheat bran & germ, rye flour, brown rice), mustard powder, sesame seeds & tahini, and all fish

Recommended Se Supplement: BIO Elemental MultiTrace no Copper

Silicon (Si)

Functions

- The presence of **Si** is necessary for the biosynthesis of collagen, elastin and hyaluronic acid. Therefore, Si plays an important role in connective tissue health, specifically cartilage, bone, skin, hair, and nails
- Si is needed for the synthesis of all membranes in the body including the fascia, meninges, periosteum, and intestinal support membranes
- Si is important for the cerebellum, a part of the brain associated with maintaining balance in the body and mind
- A low Si state creates a situation where there is insufficient storage for other minerals

Deficiency: Si is depleted by Aluminium and is required to help antagonise Aluminium out of cells

Dietary Sources

Horsetail herb, whole-grains (oats, brown rice, barley, millet, corn, rye), flaxseeds, black tea, banana, raisins, vegetables (green beans, carrot, cucumber (skin), chickweed, alfalfa, artichoke, red beets, asparagus, potatoes, stems of green vegetables), and kelp

Recommended Si Supplement: PRL Greens capsules or powder

Zinc (Zn)

Functions

- Zn is the cofactor of more than 200 enzymatic reactions, such as detoxification and antioxidant activity, immune and digestive functions, and neurotransmitter and hormone synthesis. It is required for cellular respiration, cell division and in many metabolism processes of carbohydrates, proteins, and nucleic acids
- Zn is essential in several cell-duplication processes:
 - Fertility: participates in the formation of sperm
 - Growth: in the synthesis of growth hormone
 - Immunity: essential for the proper functioning of the immune system (thymus)
 - Anti-inflammatory: Zn is the main anti-inflammatory mineral in our body
 - Healing: role in the renewal of the skin, hair and nails
 - Insulin: Zn is required for insulin production and secretion therefore helping improve glucose uptake and blood sugar regulation
- Zn is generally deficient in soils and is heavily *antagonised by all toxic metals*

Deficiency: Zinc antagonises Mercury. Symptoms that may arise from mobilising Mercury are:

- Muscle tremors, muscle weakness, numbness and tingling in arms and legs
- Hyperactivity and inattention symptoms
- Fatigue or insomnia
- Neurological problems (memory loss, anxiety, depression, mood swings)
- Increased susceptibility to infection

Dietary Sources

Oysters are the food richest in Zn. It is also found in meat, fish and seafood, vegetables, legumes, whole grains, nuts and seeds, wheat germ, and egg yolk

Recommended **Zn** Supplement: [BIO Elemental Zinc](#) or [BIO Zinc Duo](#)

Mineral Excesses

Mineral excesses on HTMA indicate either over-supplementation or a blockade – meaning the mineral is biounavailable. This can happen due to other minerals or toxic metals blocking the absorption and utilisation of the mineral in question.

Below are the minerals appearing in excess or raised on Example's HTMA:

Magnesium (Mg)

Functions

- Mg is required for the activation and/or structure of more enzymes than any other mineral. Many Mg dependent enzymes cannot use a different mineral to replace Mg
- Regulation of cell membranes: permeability, muscle contraction, nerve impulse conduction and antagonism to Calcium
- Required for bone formation
- Detoxification: required for optimal liver activity
- Metabolic: required for energy production, glucose and fat metabolism, and for protein synthesis
- Immune: Mg operates at several levels in immune mechanisms such as inflammatory reactions, allergies and boosting white blood cells

Excess on HTMA: Usually indicates either supplementation with biounavailable Mg or antagonism (by toxic metals) affecting absorption of Mg. Mg is blocked by *Cadmium*, Copper, *Aluminium*, *Mercury* and Fluoride, and balanced by Calcium, Phosphorous, Silicon, Boron and Manganese

Dietary Sources

Green leafy vegetables (spinach, kale, and silver beet), vegetables (broccoli, corn, avocado), fruits (dried – apple, figs, apricots, dates, currants, raisins, sultanas, prunes; fresh – passion fruit, blackberry, raspberry, banana), nuts, seeds, tahini, whole-grains, dried seaweed, cocoa powder, and dark chocolate

Recommendation: Supplementing with a bioavailable form of Mg such as that found in [BIO Coral Cal-Mag](#) will help bring Mg back to within an ideal range

Sodium (Na)

Functions

- Na is one of the key electrolytes in the body involved in fluid balance, regulation of blood pressure and cell membrane permeability
- The adrenal glands produce cortisol, a stress response hormone which prevents Na loss and promotes potassium excretion. Low or high Na can indicate adrenal fatigue due to chronic stress
- Involved in aldosterone secretion, thus affecting kidney function
- Helps maintain the acid alkaline balance (pH) of the blood
- Required for the production of hydrochloric acid (stomach acid), thus affects digestion
- Aids detoxification by keeping toxic substances in solution

Excess on HTMA: This can be from a diet high in salt or processed foods, or excessive adrenal gland activity characterised by chronic stress

Dietary Sources

Table salt, sea salt, Himalayan salt, all processed foods, sauces, and dressings

Recommendations: Decreasing refined and high Na foods while increase whole foods in the diet. Use relaxation techniques to decrease stress levels

Trace Elements

Some trace elements perform important functions and are essential co-factors for the absorption of many macro-minerals. Trace minerals can be difficult to get from the diet due to intensive farming with commercial fertilisers

devoid of trace minerals. Tap water contains some trace minerals but because of the loss of biodiversity in our waterways, water doesn't have the mineral content it used to.

We recommend Example mineralises his drinking water with BIO CMD (Concentrated Mineral Drops) which contains up to 72 trace elements obtained from the mineral-rich Dead Sea in Jordan.

Below are the trace elements appearing in excess on Example's HTMA:

Barium (Ba)

Sources

- Commonly seen in people after digestive or oral motor function investigations (Ba enema, Ba swallow)
- In soils and foods such as nuts, seaweed, fish, and some plants
- Tattoo ink contains some Ba based chemicals (providing colour)
- Occupational exposure – Ba is used in the manufacture of many items:
 - Alloys, lubricants, electrodes, for nickel-barium parts (ignition devices)
 - Dyes and finishes for the textile industry, pigments, inks and varnishes
 - Coloured and optical glass, ceramics, paints, paper, artificial marble, cloth, enamels, rubber, plastics
 - In the refining of Al
 - Pesticides
 - Water softeners, drilling fluids, corrosion inhibitors
 - Refining animal and vegetable oils
 - Sugar industry

Signs of Excess Ba

- Ba can be an indicator for the presence of xenoestrogens
- Interference with Potassium metabolism
- Long term exposure to Ba can cause cardiovascular problems
- Abdominal cramps
- Disruptive effect on the immune system

Mobilised Toxic Metals

Toxic metals can be harmful even in small amounts and have no known function in the body. If toxic metals enter the body and accumulate faster than the body can detoxify them, a gradual build-up will occur. Therefore, high-concentration exposure is not necessary to produce a state of toxicity as toxic metals accumulate in bodily tissues over time.

The accumulation of toxic metals can have adverse effects, even in small amounts. This is due to the manner of interaction within the body. Signs and symptoms may be nonspecific at first, and symptoms will be unique to the individual. Common symptoms may include digestive upsets, fatigue and/or a range of sensitivities. Long-term signs and symptoms of dysfunction or disease may develop. This will depend on the element concerned and the significance of the toxicity, as well as the mineral deficiencies and/or excesses exhibited by the individual.

Below are the toxic metals appearing elevated or mobilised on Example's HTMA:

Aluminium (Al)

Sources

- Tap water – city treatment plants produce drinking water that use Al sulphate to eliminate microorganisms and organic matter from water, this is left in our drinking water
- Kitchen utensils like pots or certain packaging (rolls of Al foil or trays) release Al food. Canned food and soda cans also contain Al
- Food additives – dyes (E173), anticoagulants (E520 - E521-E522-E523) used in food made from egg whites, in pastries (E541, E555), in dried food powder (milk, coffee and soup powders, refined industrial cheese (E554-E556-E559), and baking powder
- Table salt contains aluminium as an anti-caking agent. Processed foods containing table salt will also contain aluminium
- Cosmetics such as some toothpaste, anti-perspirant deodorant, concealer, eye-shadow, talc, and foundation may contain Al chloride

- Most vaccines contain Al hydroxide which is used as an adjuvant to stimulate an immune response to the vaccine
- Medications - many antacids contain Al hydroxide, such as Gaviscon
- Congenital exposure

Signs of Excess Al

- Symptoms can include: headaches, digestive tract dysbiosis, dry skin, hypoparathyroidism, kidney and liver dysfunction, neuromuscular and neurological disorders
- Al is toxic for the brain and can affect memory and cognition
- Al can interfere with the absorption of Calcium, Magnesium and Phosphorus. This may lead to potential bone metabolism issues
- Al toxicity may also lead to muscle aches, anaemia, digestive disorders, impaired liver function, and renal impairment
- Disruptive action on the immune system

Antimony (Sb)

Sources

- Sb is used as a polymerisation catalyst for polyethylene terephthalate (PET). A major route of contamination is the presence of Sb in bottled water stored in plastic containers like PET. The concentration of Sb is relative to the time the water remained in the plastic container
- Food grown in contaminated soil
- Contaminated groundwater
- Occupational exposure e.g. glass or metal processing, battery manufacture, explosives, and pigments
- Used in the composition of many alloys, for greater 'hardness' and greater resistance to corrosion
- Sb is now used in place of Lead in many paints, therefore home decorating can be a source of exposure
- It is also used in textiles as a flame retardant, especially in furniture and children's clothing

Signs of Excess Sb

Chronic exposure to Sb can irritate your eyes, skin and lungs. Symptoms may include:

- Irritation of the upper airways
- Cardiovascular problems
- Digestive disorders
- Nervous disorders (headache)
- Disruptive action on the immune system

Arsenic (As)

Sources

- Naturally occurring in some foods, e.g. rice, seafood. Also found in drinking water, beer and table salt
- Insecticides, pesticides, fungicides
- Occupational exposure – glass and mirror manufacturing, wood preservatives (treated timber), paints, pigments, electronic devices, and alloys
- Commercial chicken feed, rat poison, and was contained in sheep dips until the 1980's
- Congenital exposure
- Cosmetics

Signs of Excess As

- Lowered levels of Boron, Selenium, Vitamin E, and B vitamins
- Weakness, drowsiness
- Abdominal pain, fluid loss
- Headaches, seizures, vertigo
- Muscle pain and spasms
- Liver dysfunction
- Dermatitis, hair loss
- Peripheral neuropathy

Cadmium (Cd)

Sources

- For non-smokers, the major source of Cd intake is food. This is due to the fact that Cd is present in trace amounts in food products. Cd that is present in the soil is easily absorbed by vegetables. Cd is a by product found in *superphosphate fertilisers*, so it can be found in the food chain. NZ has very high use of these fertilisers
- Cd is used mainly in:
 - Rechargeable nickel-cadmium batteries, solar cells
 - Electronic appliances
 - Plastic, glass, and ceramic as pigments
 - Artists' paints
 - Coatings of metals and alloys to make them resistant to corrosion
 - Burning plastics
 - Coal fired industry
 - Galvanised water pipes
 - Mining, smelting and refining
 - Paper mills
 - Exhaust fumes from automobiles

Signs of Excess Cd

- Fatigue is a key symptom, with trouble waking in the morning
- Difficulty concentrating
- Headaches
- Cd inhibits Magnesium and Zinc levels, as well as inhibiting glucose uptake
- Skin rashes
- Joint pain
- Liver/detoxification issues
- Muscle weakness
- Cd antagonises Calcium
- Disruptive action on the immune system

Lead (Pb)

Sources

- Contaminated dust and dirt is often how children are exposed to Pb
- Pb car batteries and other battery manufacture
- Mine and smelting industries
- Old water pipes and contaminated drinking water
- In the production of ceramics, glazes, PVC plastic, inks, ammunition, crystal, and fishing sinkers
- Cigarette smoke
- Food cans smouldered with Pb
- Pesticide residues
- Pb sheets used in the construction sector
- Some hair dyes (black)
- Previously used as a pigment in paints and an octane in gasoline (led to contaminated soil, water and air)
- Congenital exposure

Signs of Excess Pb

- Saturnism (lead poisoning) refers to people with all of the indications of Pb intoxication
- Pb replaces Calcium through enzyme binding sites, especially in bone
- Hinders activity of Magnesium, Vitamin B1 and Zinc
- Joint pain and inflammation
- Fatigue, insomnia
- Neurological disorders
 - Behavioural problems: hyperactivity, attention deficit disorder

- Effects on bone marrow and blood – Pb blocks several enzymes needed for haemoglobin synthesis
- Gastrointestinal problems
 - Constipation or diarrhoea
 - Metallic taste in the mouth
 - Abdominal pain or cramping
- Disrupts the immune system

Mercury (Hg)

Sources

- Dental amalgams*
- Preservative in vaccines (Thiomersal)
- Medications
 - Mercurochrome/Merbromin
 - Merthiolate – preservative in topical cream
 - Preparation H – haemorrhoid cream
 - Organomercurials – mercurial diuretics
- Congenital exposure
- Contaminated large fish and shellfish, contaminated drinking water
- Seeds and vegetables treated with mercurial fungicides, some fertilisers
- Used in the manufacture of paper, felt, chlorine, adhesives, fabric softeners, and waxes
- Gold industry
- Plastics
- Printing ink, some paints, tattoo ink
- Pesticides (organo-mercurial)
- Contact lens solution
- Neon lights, energy saving light bulbs
- Cosmetics (mascara, skin lightening agents)

*A person averaging eight amalgams in their mouth is intoxicated with 15 mcg Hg per day. In comparison, environmental Hg pollution and consumption of Hg-contaminated fish is only 2 mcg per day. In the mouth, a filling undergoes both mechanical abrasion and electrochemical corrosion. Hg is released mainly in the form of vapour and enters the body through breathing. When measuring the fumes coming out of a mouth with amalgam fillings, the value exceeds 480 times the accepted standard according to Ministry for the Environment NZ

Signs of Excess Hg

- Inhibits glucose transfer and the production of insulin and can be a factor in hypoglycaemia and diabetes
- Inhibits Magnesium and Zinc levels
- Muscle tremors, muscle weakness, numbness and tingling in arms and legs
- Digestive problems
- Kidney problems
- Vision problems
- Hyperactivity and attention disorders in children
- Fatigue, insomnia
- Neurological problems (memory loss, anxiety, depression, mood swings)
- Endocrine dysfunction, thyroid and immune dysfunction

Significant Mineral Ratios

Ratio	MediScan Results	Explanation
Na:K ratio (vitality) Range = 1.4 – 6	4.16	Within range
Ca:K ratio (thyroid) Range = 2.2 – 6.2	2.97	Within range

Ca:Mg ratio (pancreas) Range = 3 – 11	2.22	Appears low and may indicate lowered production of insulin affecting blood sugar levels
Na:Mg ratio (adrenal) Range = 2 – 6.5	3.1	Within range
Ca:P ratio (nervous system/bone metabolism) Range = 1.6 – 3.6	2.20	Within range
Zn:Cu ratio (liver/histamine) Range = 4 – 12	8.11	Within range
Cu:Mo ratio (immune) Ideal = 115	538	Appears very high and may indicate lowered immune system function and energy production

Metabolic/Oxidation Rate

The oxidation rate is calculated by looking at the relationship between specific mineral ratios. Because the ratios can change with supplementation and targeted dietary changes, the oxidation rate may also change throughout the course of treatment.

Currently, results indicate Example is a:

Fast MIXED Oxidiser

The **Ca:K ratio** (related to thyroid function) and **Na:Mg ratio** (related to adrenal function) are both less than 4.0 indicating Example is a **fast-mixed oxidiser**. **Mixed oxidation** is usually a temporary state and can occur for a number of reasons including chronic nutrient depletion and/or toxicity. Mixed oxidisers are often in transit from fast to slow oxidation. The *fast-mixed oxidiser* profile is an indicator of physiological and emotional stress which may temporarily increase adrenal and thyroid gland function. It may also indicate an alarm response due to inflammatory allergic-type responses occurring. *Mixed oxidisers* generally do well when they increase their intake of good quality salt as it provides extra minerals such as Magnesium, Sodium, Potassium and Iodine to nourish the adrenals. **PRL Pink Salt** is a good option.

Dietary Suggestions for Example

- ↑ *Vegetables* (as suggested in food sources of deficient minerals) to help increase alkalinity of the body
- ↓ *Sugar*. Sugar increases body acidity and depletes nutrients, especially Magnesium
- ↑ *High quality protein* in the diet to help enhance liver detoxification pathways
- ↑ *Sulphur containing foods* such as *Brassic*as (cabbage, broccoli, cauliflower, brussel sprouts, bok choy) and *Alliums* (onions, shallots, garlic, leeks)
- ↓ *Table Salt and Processed Foods*. Instead use PRL Pink Salt to obtain electrolyte balancing minerals

Recommended Supplementation for Example (for approximately 3 months)

BIO EI MultiTrace no Copper: Provides trace minerals and higher doses of essential minerals (B, Se, Mn, Mo, Cr, Cu, Zn, Cl and Mg) for balanced mineral levels and natural detoxification processes. Take 1mL 2x daily in water

PRL Max B: For cobalt deficiency/ bio-available B vitamins. Take 2mL daily added to juice or water bottle and sipped throughout day*

BIO Coral Cal-Mag: Supplies easily absorbed and bioavailable Calcium, Magnesium and trace minerals. Helps maintain pH balance. Take 3 capsules daily

BIO EI Zinc: Provides essential Zinc for multiple functions such as HCL production, antioxidant activity, healing of digestive tract, and immune function. Take 1 ml once or twice daily in a little water or juice, after food

PRL Greens capsules or powder: For Phosphorous, Calcium and Silica and to help balance body pH. Take 2 caps daily with food or 1 Tbsp daily

QNL XenoStat: For iodine deficiency. Take 1-2 caps daily

**All liquids can be taken together in a little juice*

It is recommended to review this protocol with your natural health practitioner regularly to monitor your progress and ensure optimal results. This protocol is intended to build the body up nutritionally in preparation for detoxification of toxic metals.

Following nutritional balancing, we strongly recommend you commence a detoxification program under the guidance of your qualified practitioner.

Other supplementation: We do not recommend other supplementation while following this protocol. Discontinue taking any synthetic vitamin and antioxidant supplementation as they contain many synthetic "nutrients", fillers, binders and other toxic substances. These substances can cause mood disturbances in sensitive people. You are advised to follow the advice of your GP and continue to take all medications you have been prescribed

Disclaimer: The information and recommendations provided in this report are not intended to replace the advice of your GP or health care provider. No claims are made in this report to diagnose, treat, cure, or prevent any disease. If symptoms occur, please consult your health care provider to determine the best approach and appropriate modifications that may be required for you