



Hair Mineral Analysis

Summary At A Glance

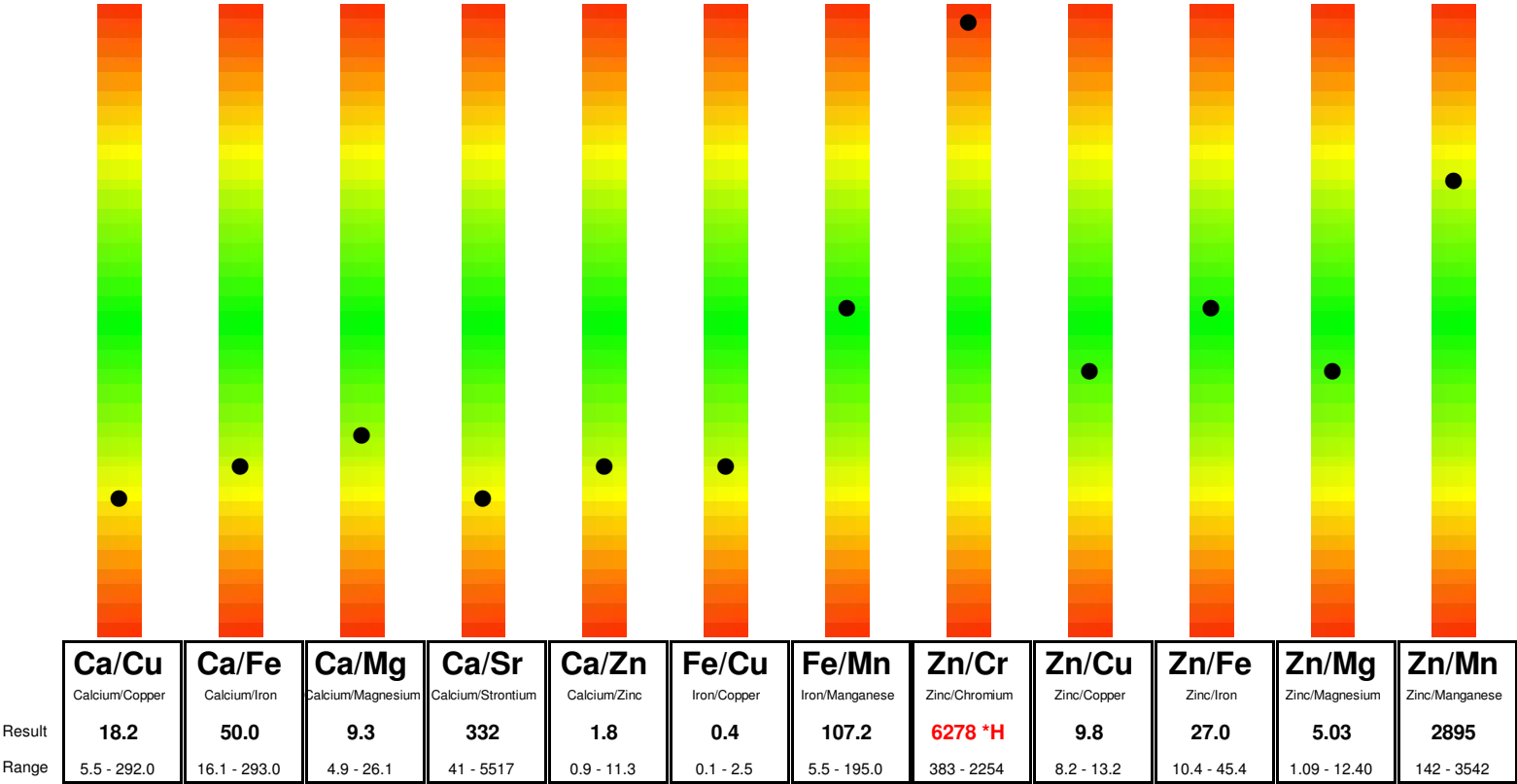
Essential Mineral Deficiency

Essential Mineral Excess

Toxic Elements

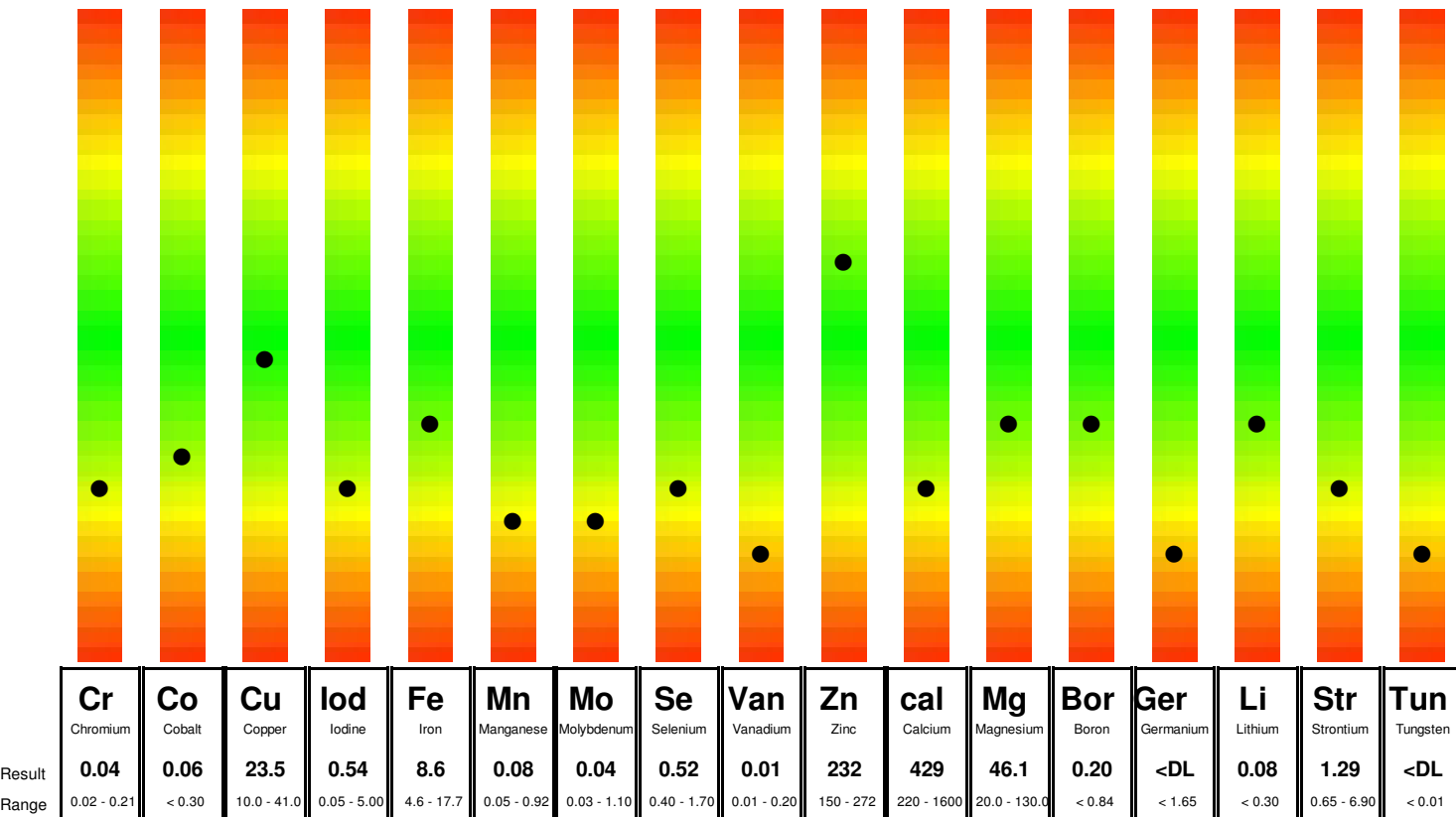
Mercury

Essential Mineral Ratios

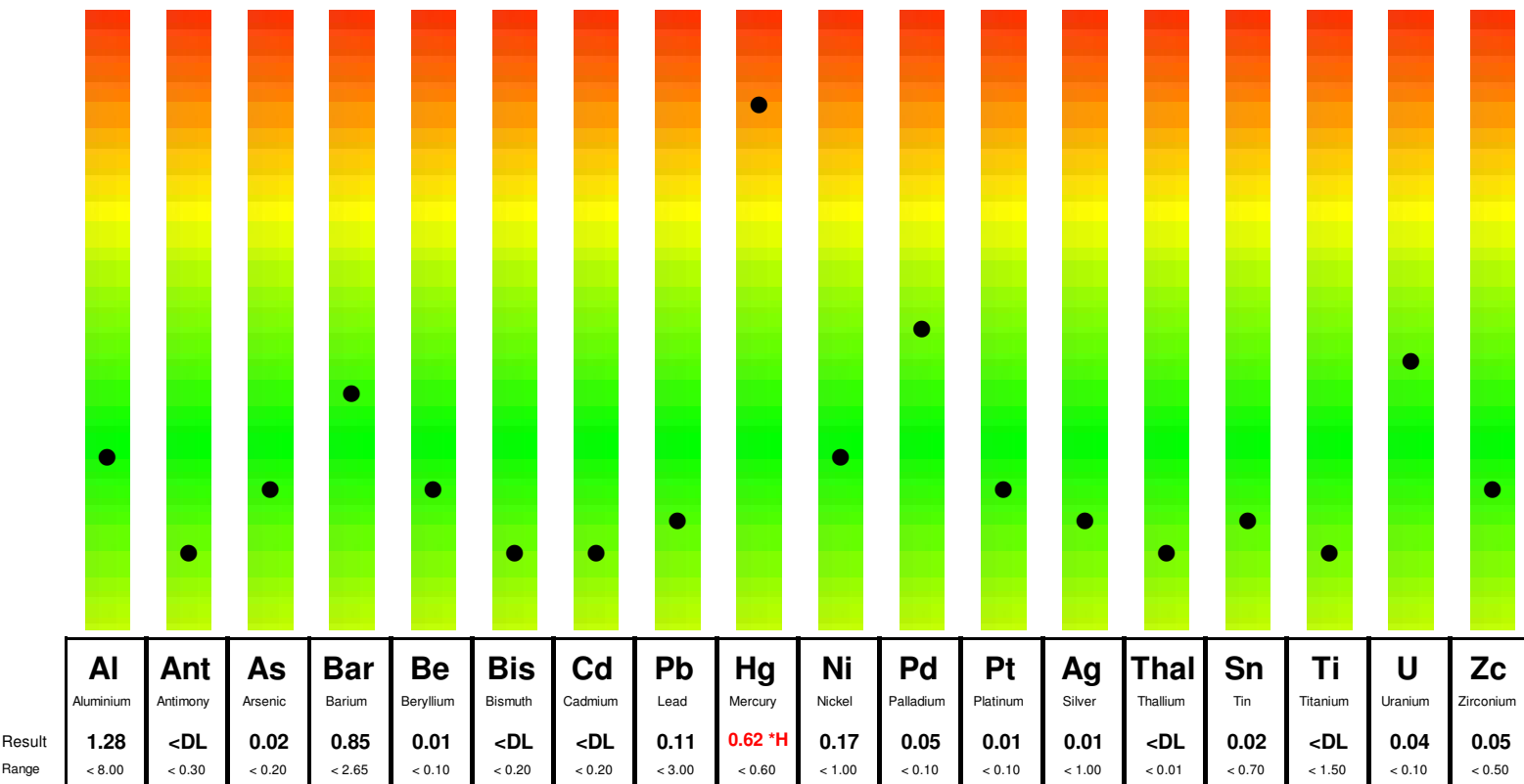




Essential Minerals



Toxic Elements





Laboratory Comments

LOW/LOW NORMAL CHROMIUM LEVEL:

Chromium is the key element in glucose utilisation potentiating normal insulin response via GTF form. Adult onset diabetics have significantly lower hair chromium levels.

Has influence on lipoprotein lipase. Therefore, it can raise HDL cholesterol. Hypo and hyper glycaemia improve with chromium supplementation. May be deficient in cardiovascular disease and prolonged stress.

Recommended Daily Intake: 120mcg. Jejenum is site of absorption, which is some 2% of dietary intake. The GTF form may be better absorbed. Amino Acids, oxalate and nicotinic acid act to improve absorption. Chromium lowers insulin need.

Dietary Sources: Organ meat, Brewer's Yeast, whole grains, cheese, mushrooms, prunes, nuts, asparagus.

LOW/LOW NORMAL MOLYBDENUM LEVEL:

Deficiency has been linked to gout. Low levels in heavy meat eaters reflect digestive disorder, the need for digestive enzymes and dietary changes. Such patients should avoid pork, beef, whole grain and rather eat poultry, fish and other light proteins. Vegetarians should either add some meat to their diet or take molybdenum chelate with B-vitamins, which aid the absorption of molybdenum. 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 recommended daily intake is 0,15-0,5 mg/day, depending on age and status. Acute deficiency symptoms are unknown in humans. Excess intake of copper, zinc, and sulfates can depress Mo-update, causing disturbances in the uric acid cycle. Low molybdenum levels have been associated with impotency, increased cancer susceptibility, gout, dental caries, defects in the metabolism of sulfur-containing amino acids, and asthma.

LOW/LOW NORMAL MANGANESE LEVEL:

Depressed manganese levels in hair have commonly been associated with allergies.

It is key in mitochondrial SOD. cAMP and intracellular calcium levels are modified with manganese.

Deficiency results in abnormal arginase and Krebs Cycle conversion of pyruvate to oxaloacetate.

Also crucial for bone and connective tissue. Impaired glucose tolerance and lipid metabolism may occur.

Skin dryness, hair changes, allergies and behavioural problems have also been seen.

Recommended Daily Intake: 2.0mg. Iron competes with Manganese for absorption. Variable absorption rates, participation in urea formation with phytate, oxalate, calcium and phosphorus, perhaps complexing and impairing absorption.

Citrate and histidine enhance the absorption of manganese.

Dietary Sources: Whole Grains, nuts, dark green leafy vegetables, liver and kidney.

LOW/LOW NORMAL SELENIUM LEVEL:

Increased susceptibility to cardiovascular disease and diminished thyroid function are possible results of deficiency.

Impaired resistance to oxidative stress also occurs. Extremely low levels are associated with increased cancer risk and cardiomyopathy.

Unbound selenium is known to be a strong prooxidant with similar valences as oxygen. It is toxic at high levels. Small amounts are required for glutathione peroxidase.

Protects against hydrogen peroxides and lipid peroxides in the cytosol and mitochondria. Selenium is also involved in deiodination of T4 (thyroxine) to T3, whereas reverse T3 does not require Selenium (Wilson's Syndrome).

Sources:

Grains (soil dependent), seafood, organ meats, garlic, mushrooms. Vegetable sources may be better absorbed.

Therapeutic Considerations:

Recommended Daily Intake: 70mcg. Available in a number of forms and generally well absorbed from the duodenum.

Vitamins C, E Retinal and Reduced glutathione improve absorption. Heavy metals and phytates inhibit absorption.

MERCURY COMMENT:

Mercury is a well-known neuro-toxin that has no known human need. Circulating metals in blood 'feed' the hair root.

Therefore, hair reflects longterm or chronic exposure. Early symptoms of mercury overexposure include insomnia, dizziness, fatigue, drowsiness, weakness, depression, tremors loss of appetite, loss of memory, nervousness, headache, dermatitis, numbness, and tingling of lips and feet, emotional instability and kidney damage. Symptoms of acute toxicity: loss of teeth, extreme tremor, mental and emotional disorders, kidney failure.



Sources:

Chronic mercury ingestion may be a risk factor for cardiovascular disease. This increased risk has been proposed to be due to the promotion of lipid peroxidation by mercury. Elevated levels of mercury in hair have been associated with inducement of autoimmune diseases, multiple sclerosis.

Shellfish, large fish, dental amalgams, electrical relays, fungicides, mining, paints, explosives, batteries, mercurial diuretics, fungicides, fluorescent lamps, cosmetics, hair dyes, and petroleum products. Vaccines containing thimerosal are another source of exposure. Improper disposal of broken mercury thermometers and other apparatuses that use mercury including button cells and tube lights may also result in mercury exposure.

Physiological Interactions:

Accumulates in kidney, liver. Organic mercury has a ½ life of 2 months & binds to enzymes, proteins, and glutathione. MAO, catalase, P-450, and mitochondrial functions are affected.

Symptoms:

Headache, fine tremor, increased salivation, excitability, poor mental concentration, metallic taste, fatigue, anorexia, psychoses, hypertension with renal dysfunction.

Synergistic for Uptake/Retention: Selenium Deficiency.

Antagonistic for Uptake/Retention: Adequate Selenium.

Therapeutic Considerations:

Increased oral intake of cysteine and antioxidant intake, esp selenium and vitamin E can support mercury detoxification. Chelating agents such as DMPS or DMSA effectively bind mercury, resulting in an increased urinary excretion, a sign of the detoxification process.