






























4070375

Clinical Notes: Thyroxine

## ENVIRONMENTAL ANALYSIS

HAIR	Result	Range	Units	
<b>Hair Mineral Analysis</b>			ppm	
<b>Hair Description</b>	BROWN/GREY			
<b>Nutrient Mineral Levels</b>			ppm	
Chromium (hair)	0.04	0.02 - 0.21	ppm	
Copper (hair)	15.4	10.0 - 41.0	ppm	
Iron (Hair)	7.9	4.6 - 17.7	ppm	
Manganese (hair)	0.13	0.05 - 0.92	ppm	
Selenium (hair)	1.02	0.40 - 1.70	ppm	
Zinc (hair)	159	150 - 272	ppm	
Calcium (Hair)	403	220 - 1600	ppm	
Magnesium (hair)	32.6	20.0 - 130.0	ppm	
<b>Toxic Mineral Levels</b>			ppm	
Aluminium (hair)	1.17	< 8.00	ppm	
Arsenic (hair)	0.01	< 0.20	ppm	
Cadmium (hair)	0.00	< 0.20	ppm	
Lead (hair)	0.05	< 3.00	ppm	
Mercury (Hair)	0.57	< 0.60	ppm	
Nickel (hair)	0.11	< 1.00	ppm	
Silver, Hair	0.00	< 1.00	ppm	
Tin, Hair	0.05	< 0.70	ppm	
<b>Hair Mineral Ratios</b>			ppm	
Calcium/Copper Ratio	26.1	5.5 - 292.0	RATIO	
Calcium/Iron Ratio	51.2	16.1 - 293.0	RATIO	
Calcium/Magnesium Ratio	12.3	4.9 - 26.1	RATIO	
Calcium/Zinc Ratio	2.5	0.9 - 11.3	RATIO	
Iron/Copper Ratio	0.5	0.1 - 2.5	RATIO	
Iron/Manganese Ratio	62.3	5.5 - 195.0	RATIO	
Zinc/Chromium Ratio	4324 *H	383 - 2254	RATIO	
Zinc/Copper Ratio	10.3	8.2 - 13.2	RATIO	
Zinc/Iron Ratio	20.2	10.4 - 45.4	RATIO	
Zinc/Magnesium Ratio	4.87	1.09 - 12.40	RATIO	
Zinc/Manganese Ratio	1259	142 - 3542	RATIO	

(\*) Result outside normal reference range

(H) Result is above upper limit of reference range



**JENNIFER LAWRENCE**  
**07-Jan-1982**      **Female**

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-.ASHLEIGH VAN NIEROP  
BIOSOUL NATUROPATHY  
5 OZONE TERRACE  
KALAMUNDA WA 6076

LAB ID : 4070375  
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#### Hair Minerals Analysis Comments

The measured hair analysis results never reveal exactly how much to supplement when a level is abnormal. What we are measuring is the tissue (hair) saturation of each particular mineral.

When nutritionally essential elements are low or deficient, the Reference Daily Intake (RDI) levels provide guidance for supplementation. The RDI's for elements or minerals are the daily intakes recommended for essential body functions.

ELEMENT	RDI**
Calcium	1000 milligrams***
Chromium	120 micrograms
Copper	2 milligrams
Magnesium	400 milligrams
Manganese	2 milligrams
Selenium	70 micrograms
Zinc	15 Milligrams

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### Nutrient Minerals Comment

#### 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. Jejunum 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 ZINC LEVEL:

Deficiency may result in poor wound healing, poor sense of smell and taste, hypochlorhydria, night blindness, and immune dysfunction. Pregnant women, cancer and burn patients are at high risk for zinc deficiency, causing fatigue, poor growth, menstrual problem and sexual maturity problems. Deficiency causes are malnutrition and malabsorption.

Zinc is necessary for spermatogenesis, protein synthesis and degradation, haeme synthesis, CO<sub>2</sub> transport, metabolism, RNA polymerases and the cytosol component of SOD. Because it has a fixed outer electron valence of +2 it can inhibit many iron based free radical reactions by displacing iron from its binding site. Zinc can also be toxic at high levels.

#### Sources:

Meats, crustaceans, nuts, seeds, leafy and root vegetables.

#### Therapeutic Considerations:

Recommended Daily Intake: 15mg, however keep in mind that only 20-30% of zinc ingested is absorbed, therefore suggest doses of 50mg/day and Vitamin B6 is needed for utilization.

Competition with Calcium, Iron and Copper can significantly impair absorption, as can high phytate foods and folic acid supplementation.

#### LOW/LOW NORMAL MAGNESIUM LEVEL:

Low hair magnesium has been linked with hypoglycemia, and in certain circumstances schizophrenia, depression, hypertension and increased cardiac risk. Deficiency results in muscle weakness/spasm.

Magnesium is necessary for RNA/DNA synthesis, protein synthesis, ATP synthesis via both glycolysis and Krebs Cycle, muscle contraction and nerve conduction, and cAMP production.

Because it has a fixed outer electron valence of +2 it can inhibit many iron based free radical generating reactions by displacing iron from its binding site. Magnesium has been shown to be helpful in preventing heart disease.

#### Therapeutic Considerations:

Recommended Daily Intake: 400mg. About 30-60% of dietary forms are absorbed via small intestine. Stool fats decrease absorption, as do phytate and fibre. Vitamin D mildly



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increases absorption. Taurine deficiency causes urinary wasting.

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#### Toxic Hair Metals Comment

##### 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.

Tests ordered: HAIR,GOG103

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(H) Result is above upper limit of reference range