



## INTEGRATIVE MEDICINE

HAIR	Result	Range	Units	
<b>Hair Mineral Analysis</b>			ppm	
<b>Nutrient Mineral Levels</b>			ppm	
<b>Hair Description</b>	Brown			
<b>Chromium (hair)</b>	<b>0.06</b>	0.02 - 0.21	ppm	
<b>Copper (hair)</b>	<b>54.82 *H</b>	10.00 - 41.00	ppm	
<b>Iron (Hair)</b>	<b>6.08</b>	4.60 - 17.70	ppm	
<b>Manganese (hair)</b>	<b>0.19</b>	0.05 - 0.92	ppm	
<b>Selenium (hair)</b>	<b>0.41</b>	0.40 - 1.70	ppm	
<b>Zinc (hair)</b>	<b>90.00 *L</b>	99.00 - 450.00	ppm	
<b>Calcium (Hair)</b>	<b>1271.54</b>	220.00 - 1600.	ppm	
<b>Magnesium (hair)</b>	<b>63.02</b>	20.00 - 130.00	ppm	
<b>Toxic Mineral Levels</b>			ppm	
<b>Aluminium (hair)</b>	<b>7.46</b>	0.00 - 8.00	ppm	
<b>Arsenic (hair)</b>	<b>&lt;0.01</b>	0.00 - 0.20	ppm	
<b>Cadmium (hair)</b>	<b>0.01</b>	0.00 - 0.20	ppm	
<b>Lead (hair)</b>	<b>0.57</b>	0.00 - 3.00	ppm	
<b>Mercury (Hair)</b>	<b>0.06</b>	0.00 - 0.60	ppm	
<b>Nickel (hair)</b>	<b>0.32</b>	0.00 - 1.00	ppm	
<b>Silver, Hair</b>	<b>2.86 *H</b>	0.00 - 1.00	ppm	
<b>Tin, Hair</b>	<b>0.27</b>	0.00 - 0.70	ppm	
<b>Hair Mineral Ratios</b>			ppm	
<b>Calcium/Copper Ratio</b>	<b>23.19</b>	5.50 - 292.00	RATIO	
<b>Calcium/Iron Ratio</b>	<b>209.1</b>	16.1 - 293.0	RATIO	
<b>Calcium/Magnesium Ratio</b>	<b>20.2</b>	4.9 - 26.1	RATIO	
<b>Calcium/Strontium Ratio</b>	<b>1116.8</b>	40.7 - 5517.0	ppm	
<b>Calcium/Zinc Ratio</b>	<b>14.1 *H</b>	0.9 - 11.3	RATIO	
<b>Iron/Copper Ratio</b>	<b>0.1 *L</b>	0.1 - 2.5	RATIO	
<b>Iron/Manganese Ratio</b>	<b>32.0</b>	5.5 - 195.0	RATIO	
<b>Zinc/Chromium Ratio</b>	<b>1500.00</b>	383.00 - 2254.	RATIO	
<b>Zinc/Copper Ratio</b>	<b>1.6 *L</b>	8.2 - 13.2	RATIO	
<b>Zinc/Iron Ratio</b>	<b>14.8</b>	10.4 - 45.4	RATIO	
<b>Zinc/Magnesium Ratio</b>	<b>1.43</b>	1.09 - 12.40	RATIO	
<b>Zinc/Manganese Ratio</b>	<b>473.68</b>	142.00 - 3542.	RATIO	

(\*) Result outside normal reference range

(H) Result is above upper limit of reference rang (L) Result is below lower limit of reference range



Date of Birth: 08-Jan-1985  
Sex: M  
Collected: 31/Oct/2019  
Received: 31/Oct/2019  
INTERNATIONAL PATIENT 1000  
Lab id: 3640442 UR#:

International  
Psychology Centre 11-  
1 Wisma Laxton Jalan  
Desa KUALA LUMPUR  
MALAYSIA 58100 1000

## Nutrient Minerals Comment

**HIGH Copper (Hair):** - Unbound copper is known to be an even more reactive prooxidant than iron, especially in the presence of strong reducing agents such as ascorbate or homocysteine. High levels of copper can induce oxidative damage. Small amounts are required for CuZnSOD and ceruloplasmin.

Toxic levels cause nausea, behaviour problems, vomiting and diarrhoea (250mg CuSO<sub>4</sub>). Elevated levels of copper often reflect exposure to swimming pool water treated with algacide. Occasionally, elevated copper occurs from hair treatments, perm, dye, or bleach. If these conditions do not apply to your patient, then look for possible sources of copper in the environment that may be causing the elevated level.

## LOW Zinc (Hair) Comment:

Low levels of Zinc in hair have been reported in lung cancer. They have also been reported in children with Pica, anorexia, and poor growth.

Deficiency may result in poor wound healing, poor sense of smell and taste, hypochlorhydria, night blindness, and immune dysfunction.

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 be toxic at high levels.

Recommended Daily Intake: 15mg, however keep in mind that only 20-30% of zinc ingested is absorbed, therefore suggest doses of 50mg/day. Competition with Calcium, Iron and Copper can significantly impair absorption, as can high phytate foods and folic acid supplementation.

Dietary Sources include: Meats, crustaceans, nuts, seeds, leafy and root vegetables.



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## Toxic Hair Metals Comment

### ALUMINIUM (Al) :

Despite being a recognized neurotoxin, Al is used widely in everyday living

### COMMON SOURCES:

Oral Al bioavailability from water appears to be about 0.3%, so food is the primary common source. However, Al bioavailability from food has not been adequately determined.

Industrial and medicinal exposure and perhaps antiperspirant use, can significantly increase absorbed aluminium. Inhalation bioavailability of airborne Al particles appears to be about 1.5% in the industrial environment but may be considerably higher in the vicinity of bauxite mines.

Habitual underarm antiperspirant application may result in aluminium absorption. All intramuscularly injected Al, e.g. from vaccines, may be absorbed over time. Al distributes unequally to all tissues. Distribution and renal excretion appear to be enhanced by citrate. Brain uptake of Al may be mediated by Al-transferrin and Al-citrate complexes. Aluminium is deposited in bone tissue and elimination half-lives of several years have been reported. Al elimination is primarily renal with ~ 2% excreted through the bile.

Most ingested aluminum comes from food and drink, while additional amounts may come from pharmaceuticals. Whilst the gastrointestinal absorption of aluminium is fairly minimal, its absorption is typically decreased by the presence of dietary phosphates (from animal protein sources), but may be increased by the presence of citric or malic acids (carboxylic acids) present in foods or drink. Excretion of aluminum from the bloodstream is predominantly by urine.

Once in the body, aluminum binds to the iron-bearing protein transferrin in the bloodstream, together with citrate & malic acid. Once inside a cell, aluminium may bind to DNA, ATP, NADP, NADPH or phosphorylated proteins. Th

### 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