

Dr Test Doctor (Test Doctor) Test Clinic. 123 Test Street, Test Suburb Victoria 3125

Lab ID
Patient ID P000060
Ext ID 26114-0446

Test Patient

Sex: Female • 56yrs • 01-Jan-70
123 Home Street, Test Suburb VIC 3125

RECEIVED
24-Apr-26

Hair Mineral Analysis - Level 2

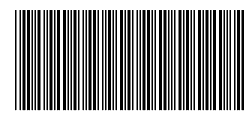
Specimen type - Hair

Collected

15-Apr-26

NUTRIENT MINERALS						
TEST	RESULT	H/L		REFERENCE	UNITS	
Chromium	510.00	H		(0.02-0.21)	ppm	
Cobalt	0.17			(<0.30)	ppm	
Copper	45.30	H		(10.0-41.0)	ppm	
Iodine	1.25			(0.05-5.00)	ppm	
Iron	7.71			(4.60-17.70)	ppm	
Manganese	0.66			(0.05-0.92)	ppm	
Molybdenum	0.24			(0.03-1.10)	ppm	
Selenium	0.54			(0.40-1.70)	ppm	
Vanadium	0.13			(0.01-0.20)	ppm	
Zinc	169			(150-272)	ppm	
Calcium	582			(220-1600)	ppm	
Magnesium	35.0			(20-130)	ppm	
Boron	0.38			(<0.84)	ppm	
Germanium	0.03			(<1.65)	ppm	
Lithium	0.11			(<0.30)	ppm	
Strontium	0.38	L		(0.65-6.90)	ppm	
Tungsten	0.000			(<0.01)	ppm	

NUTRIENT MINERAL RATIOS						
TEST	RESULT	H/L		REFERENCE	UNITS	
Calcium/Copper Ratio	1.0	L		(5.5-292.0)	ratio	
Calcium/Iron Ratio	75.5			(16.1-293.0)	ratio	
Calcium/Magnesium Ratio	16.6			(4.9-26.1)	ratio	
Calcium/Strontium Ratio	1531.6			(41.0-5517.0)	ratio	
Calcium/Zinc Ratio	3.4			(0.9-11.3)	ratio	
Iron/Copper Ratio	0.2			(0.1-2.5)	ratio	
Iron/Manganese Ratio	11.7			(5.5-195.0)	ratio	
Zinc/Chromium Ratio	0.3	L		(383.0-2254.0)	ratio	
Zinc/Copper Ratio	3.7	L		(8.2-13.2)	ratio	
Zinc/Iron Ratio	21.9			(10.4-45.4)	ratio	
Zinc/Magnesium Ratio	4.8			(1.1-12.4)	ratio	
Zinc/Manganese Ratio	256.1			(142.0-3542.0)	ratio	



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TOXIC METALS

TEST	RESULT	H/L	REFERENCE	UNITS
Aluminium	4.90		(<8.00)	ppm
Antimony	0.22		(<0.30)	ppm
Arsenic	0.33	H	(<0.20)	ppm
Barium	0.88		(<2.65)	ppm
Beryllium	<DL		(<0.10)	ppm
Bismuth	0.1		(<0.2)	ppm
Cadmium	<DL		(<0.20)	ppm
Lead	1.87		(<3.00)	ppm
Mercury	0.75	H	(<0.60)	ppm
Nickel	0.05		(<1.00)	ppm
Palladium	<DL		(<0.10)	ppm
Platinum	0.02		(<0.10)	ppm
Silver	<DL		(<1.00)	ppm
Thallium	<DL		(<0.01)	ppm
Tin	0.33		(<0.70)	ppm
Titanium	0.54		(<1.50)	ppm
Uranium	<DL		(<0.10)	ppm
Zirconium	0.000		(<0.50)	ppm

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Hair mineral analysis is a non-invasive test that provides an assessment of longer-term mineral status and environmental exposure. As hair grows, minerals and trace elements are incorporated into the hair shaft, allowing for retrospective evaluation of nutrient patterns and exposure to toxic elements over time.

Hair analysis differs from blood or urine testing in that it reflects tissue deposition and cumulative exposure, rather than acute circulating levels. This makes it particularly useful for identifying chronic exposure to heavy metals and longer-term trends in essential mineral balance.

Essential minerals such as calcium, magnesium, zinc, and selenium play critical roles in metabolic processes, enzyme function, and cellular regulation. Imbalances may reflect changes in dietary intake, absorption, metabolic demand, or broader physiological stress. In addition, the presence of toxic elements such as lead, mercury, or arsenic may indicate environmental or occupational exposure, which may contribute to physiological burden.

Findings should be interpreted in conjunction with clinical history, exposure assessment, and other laboratory investigations where appropriate.

This report provides an overview of mineral patterns and potential exposures to assist in guiding further clinical evaluation. Interpretation should focus on overall trends and patterns, rather than individual markers alone.

CHROMIUM ELEVATED:

About the element:

Chromium exists in different chemical forms. Trivalent chromium is a trace element present in foods and supplements and has been associated with carbohydrate, lipid, and protein metabolism, whereas hexavalent chromium is a toxic industrial form. The total of these 2 forms is measured.

Clinical significance of hair:

Hair chromium reflects longer-term exposure or intake. Elevated levels may be seen with supplementation or environmental/occupational exposure; interpretation depends in part on the likely chemical form and exposure context.

Suggested treatment considerations:

Review supplementation, occupational history, and environmental exposure. Where industrial exposure is possible, source identification and exposure reduction are the priority. Further assessment should be based on clinical context.

COPPER ELEVATED:

About the element:

Copper is an essential trace element involved in iron metabolism, antioxidant enzyme systems, connective tissue formation, energy production, and nervous system function.

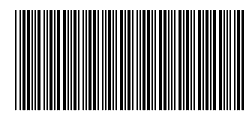
Clinical significance of hair:

Hair copper reflects longer-term tissue deposition and exposure rather than acute serum status. Elevated hair copper may be associated with increased intake, supplementation, altered biliary clearance, or broader trace element imbalance. Hair copper should not be interpreted as a direct surrogate for serum copper or caeruloplasmin.

Suggested treatment considerations:

Review supplementation, dietary intake, and possible environmental exposure. Consider assessment of copper balance in conjunction with zinc and, where clinically indicated, conventional copper studies. Management should be directed at the underlying cause rather than the hair result in isolation.

VANADIUM (V) LOW: The biological function of vanadium has not fully been substantiated, but there is evidence that it is essential for the growth of some animals. Vanadium may influence lipid metabolism, insulin function, and reduce caries formation in animals. Vanadium is poorly absorbed. **SOURCE:** All plant foods, especially soymeal and vegetable oils.



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LOW STRONTIUM LEVEL:

Strontium possesses physiological and chemical properties similar to calcium. Strontium is poorly absorbed by humans, and the intestinal uptake lies between 5-25%. Of that, about 99% is found in bone and teeth. People living in areas where high levels are found in the water supply, show higher tissue levels. The daily intake varies considerably from 1mg/day to 4.7mg/day, according to geography. Strontium can interfere with the calcium metabolism, leading to bone disorders, incl. rickets.

Therapeutic Considerations: Strontium may compete with the calcium absorption and storage in bone and teeth and when high hair strontium levels are followed by high hair calcium level, the need for an increased calcium supply is indicated. Algae and fibrous cellulose reduce strontium and calcium utilization.

Toxic Metals Comment

ARSENIC ELEVATED:

About the element:

Arsenic is a toxic metalloid with no known physiological role in humans. Exposure is most commonly derived from contaminated water, certain foods, supplements, and occupational or environmental sources.

Clinical significance of hair:

Hair arsenic reflects exposure over the period of hair growth and may be useful as an indicator of repeated or longer-term exposure rather than acute exposure. Elevated hair arsenic suggests ongoing, recent repeated, or past exposure, but interpretation should take into account possible external contamination and should not be used in isolation to define toxicity.

Suggested treatment considerations:

Investigate likely exposure sources, including drinking water, rice and seafood intake, supplements, traditional remedies, and occupational contact. Reduction or removal of the exposure source is the primary intervention. Where levels are significantly elevated or symptoms are present, confirmatory testing with an appropriate matrix such as urine speciation and further clinical assessment should be considered.

MERCURY ELEVATED:

About the element:

Mercury is a toxic metal with no physiological role. In clinical practice, the most relevant chronic exposure form is often methylmercury, commonly derived from seafood, although elemental and inorganic sources may also contribute depending on the exposure history.

Clinical significance of hair:

Hair mercury is one of the more established hair biomarkers and is particularly useful for assessing longer-term methylmercury exposure. Elevated hair mercury suggests increased chronic exposure, most commonly dietary, and should be interpreted with consideration of fish intake, occupational exposure, and external contamination.

Suggested treatment considerations:

Review seafood intake, especially large predatory fish, as well as occupational exposure and other possible mercury sources. Management should focus first on exposure reduction. Where levels are substantially elevated or there are compatible neurological or systemic symptoms, further clinical evaluation and confirmatory testing should be undertaken.

Methodology

Inductively Coupled Plasma Mass Spectrometry (ICP-MS)