**Benefits of an InterClinical Hair Tissue Mineral Analysis**

Reliable clinical data on over 35 nutrient and toxic minerals, and over 26 significant mineral ratios.

- Fully licensed and accredited laboratory facilities.
- Safe, specialised, scientific, non-invasive pathology test.
- Valuable health information often not revealed in standard blood and urine tests.
- Excellent means of identifying potential nutrient mineral deficiencies and excesses.
- Useful indicator of toxic mineral exposure.
- Personalised interpretive test report that assesses your current mineral status, highlights areas of concern and recommends dietary changes and supplements for improved health.

**Ordering a hair analysis**

We encourage you to ask your doctor or health care adviser for a Hair Tissue Mineral Analysis from InterClinical Laboratories; alternatively you can contact us directly for an HTMA submittal kit.

Test results are normally available within 10-14 days from the date we receive your hair sample.

**Available from:**

InterClinical Laboratories Pty Limited
PO Box 6474 Alexandria NSW 2015 Australia
Ph: 02 9693 2888 Fax: 02 9693 1888
Email: lab@interclinical.com.au
www.interclinical.com.au

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**Sample of nutrient and toxic mineral chart**

**NUTRITIONAL ELEMENTS**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Low Reference</th>
<th>High Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca</td>
<td>2.2 - 2.8</td>
<td>0.2 - 1.8</td>
</tr>
<tr>
<td>Mg</td>
<td>0.6 - 1.1</td>
<td>0.04 - 0.2</td>
</tr>
<tr>
<td>Na</td>
<td>0.3 - 0.6</td>
<td>0.03 - 0.1</td>
</tr>
<tr>
<td>K</td>
<td>0.1 - 0.2</td>
<td>0.01 - 0.03</td>
</tr>
<tr>
<td>Cu</td>
<td>0.005 - 0.01</td>
<td>0.0003 - 0.001</td>
</tr>
<tr>
<td>Zn</td>
<td>0.01 - 0.05</td>
<td>0.005 - 0.01</td>
</tr>
<tr>
<td>Mn</td>
<td>0.005 - 0.02</td>
<td>0.0003 - 0.001</td>
</tr>
<tr>
<td>Fe</td>
<td>0.005 - 0.01</td>
<td>0.0003 - 0.001</td>
</tr>
<tr>
<td>Cr</td>
<td>0.005 - 0.01</td>
<td>0.0003 - 0.001</td>
</tr>
<tr>
<td>Se</td>
<td>0.005 - 0.01</td>
<td>0.0003 - 0.001</td>
</tr>
<tr>
<td>B</td>
<td>0.005 - 0.01</td>
<td>0.0003 - 0.001</td>
</tr>
<tr>
<td>Co</td>
<td>0.005 - 0.01</td>
<td>0.0003 - 0.001</td>
</tr>
<tr>
<td>Mo</td>
<td>0.005 - 0.01</td>
<td>0.0003 - 0.001</td>
</tr>
<tr>
<td>S</td>
<td>0.005 - 0.01</td>
<td>0.0003 - 0.001</td>
</tr>
</tbody>
</table>

**TOXIC ELEMENTS**

<table>
<thead>
<tr>
<th>Element</th>
<th>Low Reference</th>
<th>High Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sb</td>
<td>0.0005 - 0.001</td>
<td>0.0001 - 0.0003</td>
</tr>
<tr>
<td>U</td>
<td>0.0005 - 0.01</td>
<td>0.0001 - 0.001</td>
</tr>
<tr>
<td>As</td>
<td>0.0005 - 0.01</td>
<td>0.0001 - 0.001</td>
</tr>
<tr>
<td>Be</td>
<td>0.0005 - 0.01</td>
<td>0.0001 - 0.001</td>
</tr>
<tr>
<td>Hg</td>
<td>0.0005 - 0.01</td>
<td>0.0001 - 0.001</td>
</tr>
<tr>
<td>Cd</td>
<td>0.0005 - 0.01</td>
<td>0.0001 - 0.001</td>
</tr>
<tr>
<td>Pb</td>
<td>0.0005 - 0.01</td>
<td>0.0001 - 0.001</td>
</tr>
<tr>
<td>Al</td>
<td>0.0005 - 0.01</td>
<td>0.0001 - 0.001</td>
</tr>
</tbody>
</table>

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**InterClinical Laboratories**

Leaders in nutritional pathology
What is Hair Tissue Mineral Analysis?

Hair Tissue Mineral Analysis (HTMA) is an analytical test that measures the mineral composition of hair. It is regarded by many doctors, naturopaths and nutritional therapists as one of the most valuable screening tools for measuring your body’s mineral status. Hair Tissue Mineral Analysis is a non-intrusive health screening tool for measuring your body’s mineral status. This data can highlight potential health problems and help you to treat them through a nutritional program designed to meet your individual health needs.

Why biopsy hair tissue?

Hair is a body tissue made up of mostly dead, keratinised cells fused together. The shaft of the hair is the portion that projects from the skin surface. The root of the hair, below the skin surface, contains living matrix cells from which the hair grows. Matrix cells depend on the blood supply for nourishment and growth. As they grow and divide, minerals are keratinised into the growing hair shaft, creating a permanent record of metabolic activity and exposure to toxic elements. Mineral concentrations in the hair can provide a reliable indicator of mineral stores in the whole body. If your health, diet or environment has created a mineral imbalance or toxic mineral excess, it will be recorded in the hair shaft. Research has shown that hair mineral levels reflect stored mineral levels in other body tissues.

Why test for minerals?

Minerals are essential for growth, healing, vitality and wellbeing. They provide structural support in bones and teeth and are vital in the body’s acid-base balance, water balance, nerve conduction, muscle contractions and enzyme functions. Minerals participate in almost every metabolic process in the body – they are the true ‘spark-plugs’ of life.

Ideally we should get all the minerals we need from a balanced diet. Unfortunately this is rarely possible in today’s world. Modern farming techniques, fertilisers and depleted soils reduce the mineral content of foods. Environmental toxins, chemical food additives and stressful lifestyles also have a detrimental effect on our nutritional status. Consequently, we need to test and monitor our nutritional needs more than ever.

Minerals are also required to: spark-plug life processes (e.g., enzymes, hormones, cell energy), provide structural support (e.g., bones and teeth), maintain fluid balance and control the pH of body fluids. An adequate mineral supply is essential for normal growth, development and repair. Minerals are required for body functions, and are stored in hair, blood, organs, bones and teeth. Minerals are either essential or non-essential. Essential minerals (i.e. trace minerals) are needed in small quantities, whereas non-essential minerals are needed in larger quantities. There are 8 essential minerals that the body requires: calcium, phosphorus, magnesium, iron, zinc, copper, molybdenum and selenium. Non-essential minerals are found in the body in small quantities and are not normally essential to good health. However, they can be detrimental in larger quantities and can increase levels of toxic minerals. Non-essential minerals include: arsenic, cadmium, beryllium and lead. Arsenic is a known carcinogen and can cause cancer in humans. Cadmium is a nephrotoxin that damages kidneys. Beryllium is a respiratory toxin and can cause lung damage. Lead is a neurotoxin that damages the nervous system, especially in children. It can cause retardation, learning disabilities and other neurological problems. Over-exposure to any one of these non-essential minerals can be detrimental to health.

Why not test blood?

Measuring the mineral content of blood gives a good indication of the minerals being transported around the body. However, it can not accurately measure the minerals stored in tissue.

Very often, the body’s homeostatic mechanisms maintain proper mineral concentrations at the expense of tissue concentrations. Unfortunately, correct serum levels often mask both mineral excesses and deficiencies in tissue mineral concentrations.

For example:

- About 30-40 days after acute lead poisoning, elevated serum lead levels may be undetectable. This is because the body removes lead from the blood as a protective measure and deposits it into tissues such as the liver, bones, teeth and hair.
- Iron deficiency symptoms are present long before low serum iron levels are detected, because the body depletes stored iron in order to maintain normal serum iron levels.
- Note: HTMA should be used in conjunction with other appropriate pathology tests for the most comprehensive picture of a person’s health.

Causes of mineral imbalances

- Improper eating habits: Fad diets and diets high in refined carbohydrates, sugar, salt, alcohol and saturated fats can lead to mineral deficiencies and excesses. Even the mineral content of a healthy diet can be deficient if foods are grown on nutrient-poor agricultural lands. Fad diets may also cause deficiencies because there is no margin for error.
- Stress: Both physical and emotional stress can lead to mineral imbalances. B-complex vitamins, zinc and magnesium are lost in greater quantities when you are stressed; you also absorb less nutrients from your food. Sports people often have a higher requirement of certain nutrients.
- Medications: Many deplete the body’s store of nutrient minerals and can increase levels of toxic minerals. Medications such as diuretics, the oral contraceptive pill, antacids and aspirin can all cause vitamin and mineral deficiencies.
- Pollution: Toxic minerals such as lead, mercury and cadmium can interfere with mineral absorption and increase mineral excretion. They build up in our bodies from sources such as: air pollution, car exhaust, cigarette smoke, unfiltered water, dental amalgams, copper and aluminium cookware, hair dyes and antiperspirants. Toxins have also entered the food chain, contaminating some of our foods. It is almost impossible these days to avoid some exposure to toxic minerals.
- Genetic and individual factors: A predisposition towards certain mineral imbalances, deficiencies and excesses can be inherited from parents. Certain individuals can also inherit a higher requirement than normal for particular nutrients to maintain good health.
- Nutritional supplements: Supplements can also lead to mineral excesses and deficiencies. For example, excess calcium intake can cause phosphorus and magnesium deficiency. Continued magnesium deficiency increases sodium levels and eventually causes vitamin A deficiency.

For example:

- Acne
- Arthritis
- Atherosclerosis
- Cardiac conditions
- Dental problems
- Depression
- Diabetes
- Digestive problems
- Fatigue
- Hair loss and poor nails
- Headaches
- High blood pressure
- Homosexual imbalance
- Hypoglycaemia
- Infertility
- Insomnia
- Learning difficulties
- Macular degeneration
- Memory problems
- Migraines
- Mood swings
- Muscle cramps
- Osteoporosis
- PMS
- Prostate disease
- Skin problems
- Stress
- Thyroid disorders
- Wounds healing poorly

Reliable and user-friendly reports

InterClinical Laboratories produces HTMA reports in three different formats:

1. Results only
2. Interpretative
3. Comparative

Our advanced interpretative reports are the best of their kind. They consist of two parts: an educational report for the patient and a more technical report for the practitioner. All reports are easy to read, comprehensive and incorporate the latest developments in nutritional therapeutics.

Our detailed reports contain a wealth of clinical data which, interpreted correctly, can provide an indication of nutrient imbalances and mineral toxicity. Our reports are designed to shed light on the patient’s current health status, identify potential areas of concern and direct dietary and supplemental measures to improve patient health.

The laboratory is a fully accredited and certified clinical facility. Trace Elements Inc. is a US federally licensed clinical laboratory (License no. 45-DO481787).