HAIR MINERAL ANALYSIS
INTRODUCTION

by Dr. Lawrence Wilson, MD

Hair tissue mineral analysis or HTMA is a soft tissue mineral biopsy that uses hair as the sampling tissue. A biopsy is an analysis of a body tissue. Hair is considered a soft tissue, and hence hair analysis is a soft tissue biopsy.

The test measures the levels of 20 or more minerals in the hair with an accuracy of plus or minus about 3%. This is about the same level of accuracy as most blood tests, or a little better. However, for the best accuracy, especially of the water-soluble elements, the hair sample must not be washed at the hair testing laboratory.

As an aside, hair is extremely useful for testing many things besides minerals. These include drugs, toxic chemicals and DNA. These, however, are not the focus of this article. At times I have heard people say that hair is not helpful for testing the body, when in fact the very opposite is the truth. Hair is frequently used in forensic medicine, and in drug testing clinics. It is also used worldwide for biological monitoring of many animal species for toxic metals.

WHY MEASURE MINERALS?

A complete answer to this question could fill several volumes. Minerals are sometimes called the ‘sparkplugs’ of the body. They are needed for millions of enzymes as cofactors, facilitators, inhibitors and as part of the enzymes themselves. As a result, they have a great deal to do with the health of our bodies. By analyzing mineral imbalances in the body, one can learn a lot about the causes and correction of hundreds of common physical and mental health conditions.

A specific class of minerals, the toxic metals, are also extremely important today due to a nutritionally depleted food supply and the presence of environmental toxicity almost everywhere on planet earth. Studying toxic metals is thus very important today to monitor their spread and learn about their many damaging effects upon the bodies of human beings, animals, plants and other organisms.

Even more can be learned about human and animal health by studying the ratios of the major minerals in the body. This is a more complex area, but a very important and fruitful one. Finally, by studying more complex patterns of minerals in the body, one can learn even more about human health and disease.
WHY USE HAIR FOR MEASURING MINERALS?

Hair makes an excellent biopsy material for many reasons:

- Sampling is simple and non-invasive.
- Hair is a stable biopsy material that remains viable for years, if needed, and requires no special handling.
- Mineral levels in the hair are about ten times that of blood, making them easy to detect and measure accurately in the hair.
- Hair is a fairly rapidly growing tissue.
- The body often throws off toxic substances in the hair, since the hair will be cut off and lost to the body.
- Mineral levels are kept relatively constant in the blood even when pathology is present. Hair mineral values often vary by a factor of ten or much more, making measurement easier and providing a tremendous amount of accurate knowledge about the cells and the soft tissue of our bodies.
- Toxic metals are easier to detect in the hair than in the blood. They are not found in high concentrations in the blood except right after an acute exposure. However, most tend to accumulate in the soft tissues such as the hair, as the body tries to move them to locations where they will do less damage.
- Hair testing provides a long-term reading, while blood tests and urine tests provide a more instantaneous reading of the body. Both types of readings have value in some circumstances. For example, blood tests can vary from hour to hour, depending upon one’s diet, activities, the time of day and many other factors. This is beneficial in some instances, but is often less helpful when seeking an overall metabolic reading. These problems are not present with hair testing. At times, of course, an instantaneous reading such as the blood provides is needed, especially in emergencies, which is an area in which hair testing is not used.
- Finally, advancements in computer-controlled mass spectroscopy and other technologies have rendered the hair mineral biopsy an extremely cost-effective, accurate and reliable test when it is performed well.

WHAT MINERALS ARE TESTED?

HTMA provides a measure of the chemical elements deposited in the cells and between the cells of the hair. It provides a reading of the deposition of the mineral in the hair during the 3-4 months during which the hair grew. It does not measure the total body load of any mineral, as some claim.
At least 20 elements are measured, depending on the laboratory. The three classes of these elements are:

- **Macrominerals** include calcium, magnesium, sodium, potassium and phosphorus. Some labs also read sulfur.

- **Trace Minerals** include iron, zinc, copper, manganese, selenium, chromium, and some labs measure others.

- **Toxic Minerals** include lead, mercury, cadmium, arsenic, aluminum, and nickel. Some labs read others as well.

**HOW IS HAIR MINERAL TESTING USED TODAY BY DOCTORS?**

Doctors tend to use the hair mineral test in one of four basic ways:

- A majority of physicians and other practitioners use hair mineral testing for the detection of high levels of toxic metals.

- A smaller number of doctors use the test also for the detection of low levels of trace minerals or electrolytes such as calcium, magnesium, sodium, potassium, phosphorus and sulfur. Most then practice replacement therapy to raise the levels of the trace minerals.

- An even smaller number of physicians follow the recommendations of Dr. David Watts and others, who use the test for some metabolic determinations such as the adequacy of the thyroid and adrenal glands, blood sugar tolerance, and patterns indicating infections, inflammation and a few other conditions.

- A smaller number of physicians follow the method of interpretation of Dr. Paul Eck, a pioneer in hair analysis interpretation. Dr. Watts worked for Dr. Eck, but has altered Dr. Eck’s method so that it is hardly recognizable. I studied with Dr. Eck for 14 years and most of this website is dedicated to teaching practitioners about Dr. Eck’s brilliant work.

The remainder of this article is concerned with the use of the hair mineral analysis according to the system of interpretation devised by Dr. Paul Eck.

**WHAT CAN A MINERAL ANALYSIS REVEAL?**

Analyzing hair tissue for chemical elements is quite different from testing blood, urine or feces, although all have great value in the right situation. Hair mineral analysis can reveal the following:

- **The metabolic type.** This is an important fact of body chemistry. It is most helpful to understand dozens of symptoms, and to guide the dietary and supplement recommendations. It also helps to understand many emotional and mental symptoms as well.

- **Energy and vitality level.** Energy is a common denominator of health. This means
that if one’s energy is low, hundreds of symptoms can occur. Restoring one’s biochemical or adaptive energy is a key to healing. This is one of the most basic healing principles. Hair analysis is fabulous to evaluate the reasons for lowered energy and vitality, and guiding exactly how to increase real energy production rather than just stimulate energy, as most healing program do.

- **Gland and organ insights.** Hair testing provides indirect and direct indicators for the cellular effect of the thyroid and adrenal hormones, and at times the ovarian hormones as well. It can also be used indirectly to assess the activity of the liver, kidneys, stomach, intestines and perhaps other organs as well.

- **Assessing carbohydrate tolerance.** Hair analysis can be used to quickly screen for hypoglycemia and, at times, diabetes, although a glucose tolerance test (GTT) should be done if one suspects diabetes. Hair testing can, however, usually guide a practitioner to correct Type 2 diabetes and some Type 1 diabetes without the need for most drugs. Mineral imbalances and chronic infections are often involved with these conditions.

- **Toxic metal assessment.** No method of testing can detect all the toxic metals in the body. Hair analysis is sometimes helpful, however, to assess the levels of the major toxic metals in the body. Other mineral levels and patterns on the test provide indicators of the presence of hidden toxic metals, an important subject that is beyond the scope of this article.

- **Reducing guesswork** in recommending diets, nutritional supplementation and detoxification methods. Many physicians are becoming aware of natural healing methods, but apply them in a haphazard manner that can make matters much worse.

- **Trends or tendencies** for over 60 common health conditions. This is a great benefit because it enables a practitioner to predict health problems that may arise in the future, and thus help prevent their occurrence. This is much less costly and more effective than waiting until a disease such as cancer or heart disease occurs.

This fact about hair mineral testing alone would save billions of dollars if it were used widely. It is a wise and easy way to screen for tendencies for diabetes, heart disease, chronic fatigue, cancer and many other serious conditions.

- **Monitoring Progress.** Hair analysis can help monitor a person’s healing progress. Symptom changes alone are often not a good way to know if a person is progressing on a healing program. However, the hair test will often detect subtle changes in body chemistry, which is another wonderful benefit of this test.

- **Stress patterns.** A properly performed hair mineral analysis is superb to assess the stage of stress and some 20 to 30 stress response patterns of the human body. This type of analysis and interpretation is based on the stress theory of disease, first put forth by Hans Selye, MD some 60 years ago and still not well accepted by the medical profession. However, it is most useful to help reverse many types of pathology that do not respond well to other methods of care, either traditional medical care or holistic health care.
- **Autonomic nervous system assessment.** A properly performed hair mineral test can assess many aspects of the functioning of the autonomic nervous system. This is critical imbalance today in thousands of people and leads to hundreds of symptoms from digestive disturbance and inability to eliminate toxic metals, to sleep disturbances, blood sugar problems and even cancers.

- **Psychological/emotional illness assessment.** Among the most interesting use of the hair mineral analysis is the assessment of causes for mental and emotional symptoms such as depression, anxiety, panic attacks, ADD, ADHD, autism, schizophrenia, dementia, violence, bipolar disorder and several others. This is a fascinating area in which hair analysis has a contribution to make to medical and psychiatric science.

- **Other.** Other assessments are possible if one understands a hair analysis thoroughly. Some of these include movement patterns and other more subtle aspects of biochemistry, physiology, and possibly more esoteric sciences such as pleomorphism, biological transmutation of the elements and others.

**HOW ARE THE READINGS REPORTED?**

The mineral values are usually reported in three ways:

1. Milligrams per 100 grams, often written as mg%.

2. Micrograms per gram or ug/g. This gives numbers that are 10 times higher than milligrams per hundred grams or mg%. To convert the reading to mg%, simply move the decimal point one space to the left. For example, if calcium is reported as 1210 ug/g, it is the same as 121 mg%

3. Parts per million or ppm. The readings are the same as ug/g.

**WHAT DOES THE HAIR ANALYSIS MEASURE?**

The minerals listed above are the most important chemical elements used in the body. They are locked into the hair as it grows. One can assess:

- Levels of all the 20-40 or more minerals.

- Ratios between the minerals, of which there are four major ones and some 50-100 minor ones. This adds significant complexity and a great deal more information.

- Simple patterns consisting of combinations of the levels and/or ratios. I use some 20-25 of these, but there are probably more.

- Complex patterns consisting of combinations of simple patterns and various levels and ratios. I use about 10 of these, and more are being discovered almost weekly. They become very complex, at times.
- Changes over time of all these, and the rate of change in all parameters. This part of interpreting the test requires retests and comparisons between tests over time when a person has followed a nutritional balancing program.

- Physical or biochemical interpretation of all the above.

- Psychological or personality interpretation of the above.

- The way the body is responding to stress in its environment.

- Other levels of interpretation that have to do with movement patterns, for example. This means how a person moves or reacts to his biochemistry when in a particular pattern. This is actually very helpful information for both doctor and client.

The test is also useful to monitor overall health and changes in health status, no matter what therapy is being employed by the practitioner. The reason for this is that hair mineral analysis is not a therapeutic intervention, but simply a way to monitor the body at a very deep cellular level, and at even deeper levels, at times.

**DOCUMENTATION**

Mineral analysis by mass spectroscopy and related methods is a standard testing procedure used at laboratories and universities throughout the world. Hair mineral testing on human and animal populations has been carried out for over 80 years. Well over two million analyses have been performed. Several thousand papers and other research have been published on this method of biological monitoring. About 300 of these are listed by clicking on hair analysis references.

Regarding toxic metals, the United States Environmental Protection Agency published a 300-page study in August 1979. They reviewed over 400 journal articles on hair testing. The authors concluded that hair is a "meaningful and representative tissue for biological monitoring for most of the toxic metals".

Sadly, very few physicians are trained in hair tissue mineral analysis interpretation. The author, himself medically trained, was also very skeptical about its use. However, research and clinical experience with over 30,000 patients have dispelled any doubts as to its efficacy and significance for health care.

**SUMMARY**

Hair tissue mineral analysis has been available for about the past 80 years or so. It is widely used in biological monitoring of animal species throughout the world and is being used more and more for human metabolic assessment as well. When understood properly, it offers great potential to improve human and animal health at the deepest levels. It can also be used preventively and for prediction of illness.

For a Free Phone Consultation
Call Toll Free 800-381-2898
A short list of references and resources

Books

Kelley, W.D., One Answer to Cancer, 1980.
Leek, R., Hair Analysis, R. Leek, 1980.
Nickel, D., Nutritional Reference Manual, 700+ Quick Fixes, Analytical Research Labs, Phoenix, AZ.
Rogers, S., Detoxify or Die, Sand Key Company, 2002.

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