



Hair Tissue Mineral Analysis

Client: Mr T. Oxines

Age: 35

Gender: Man

Type of hair: head

Therapist: Dr S. Mart

Date of analysis: 3-3-2021

Report number: # 987654

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Information in this report is intended as information to the treating therapist and not primarily as an official diagnosis. A consumer version can be made by printing chapter 0-3 for the client.

Treatments are not aimed at depriving the client of regular care.

1 Introduction

A hair tissue mineral analysis (HTMA) is a screening test that measures the levels of twenty minerals and toxic metals present in a sample of hair. Minerals are the 'spark plugs' of life and play many important health related roles within the human body. Providing a 'window into the cells', hair makes an excellent biopsy material and reveals a clear record of mineral metabolism. Hair, like all other body tissues, contains minerals that are deposited as the hair grows. Although the hair is dead, the minerals remain as the hair continues to grow. The minerals and toxic metals are locked inside the hair during the growth stage as the body uses it for the storage and elimination of minerals.

A hair tissue mineral analysis reflects long term metabolic activity as it measures an average of mineral accumulation over a three-month period of time. This is often an advantage as the test results are not influenced by day-to-day variations in body chemistry due to stress, diet or other factors. Creating a blueprint of one's individual biochemistry, a hair tissue mineral analysis can assist in identifying mineral patterns which may be associated with

- Stress,
- Metabolic rate,
- Glucose-insulin metabolism,
- Cell potential (cell permeability),
- Inflammation and immune health,
- Digestion and intestinal health,
- Liver and kidney stress,
- Biochemical energy production and
- Disturbances in adrenal and thyroid activity.

It thus provides essential information for a good total diagnosis and about tendencies that take place in the body that can lead to disease or already do so in the long term. The uniqueness of the HTMA is that the patterns from the analysis are correlated to various health parameters, creating an important part of a "system diagnosis".

It is important to understand that the test provides information about processes and trends towards what Prof. Antonovsky once mentioned the 'ease - disease continuum' (literally: ease - discomfort continuum), with which he wanted to indicate that there is not a black and white boundary between 'healthy' and 'sick' but a continuous line whose extremes are 'severe ill' and 'completely healthy'.

Somewhere along this line, the body crosses a boundary where disturbances also acquire a visible (= structural) character (= the specific field of activity of regular diagnostics). We then speak in a clinical sense of a "disease". If you are in front of this line, you are generally "not sick" in the eyes of conventional medicine. The hair analysis can only be properly interpreted by the professional therapist in relation to a complete medical history and additional laboratory or regular clinical examination where necessary.

In addition to the mineral status of the body, the report mainly provides a summary of the state of the regulatory systems, i.e. the autonomic nervous system, the glucose-insulin metabolism and the hormones (especially the adrenal glands and thyroid) and the intestinal metabolism.

An abnormal function (for example of the adrenal glands) has only three variants, it is normal, too fast or too slow. In our modern times, many complaints and disorders are stress-related, but it should be noted that stress has a much broader meaning than that which is usually associated with it (= psychological stress).

This also means that the description of the hair analyzes has only limited variation. Multiple reports from different people will show a great deal of similarity, as almost everyone has to deal with a disturbance in the stress system and metabolism. The effect of these disturbances on the metabolism, in terms of a disturbance of the mineral balance, is very different individually, although certain frequently occurring patterns are recognizable there too. How it manifests itself in complaints or disorders can be very different from person to person, depending on the constitution ("the dike breaks through where the weakest spots are"). The intervention is also geared to the results of the hair mineral analysis.

Important:

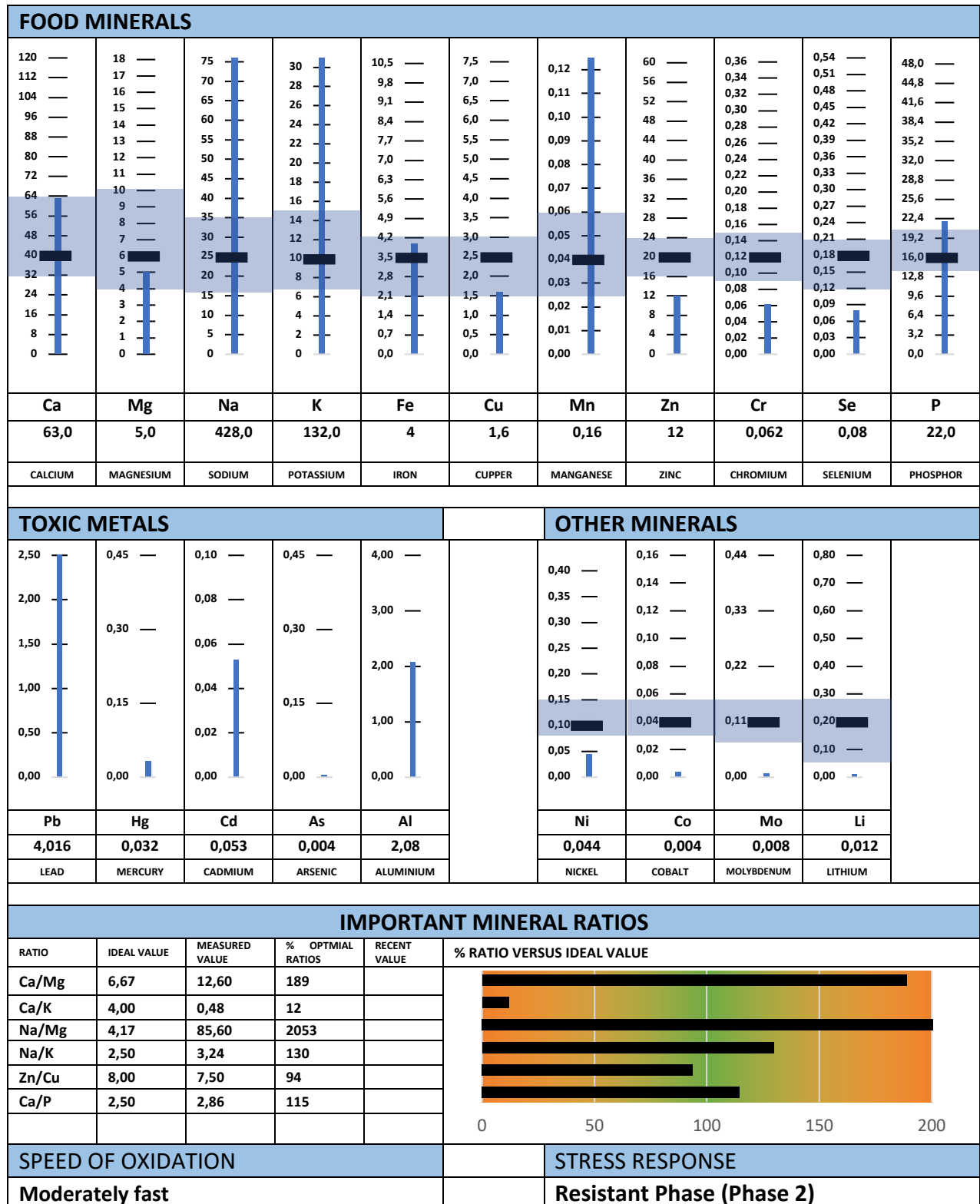
What can you expect from a treatment based on this (and possibly additional) research. It is important that you understand that the treatment is at no point aimed at suppressing complaints quickly and briefly. The treatment is aimed at a sustainable restoration of a healthy balance in the total body, whereby work is done on a cure of the disease or stopping the progress of destructive disease processes. This takes time. In some cases, it can take more than a year to reach a stable, healthy end situation. Of course, you must be able to observe a clear improvement in complaints and condition during that period. We repeat the hair analysis every three months in order to be able to determine the progress objectively and to adjust and adjust the therapy based on the current state of affairs.

2 Laboratory Analysis

The accuracy and reliability of the test results and interpretation is based directly upon the laboratory receiving a properly collected hair sample that is clean and free from external contaminants. It is difficult for the laboratory to make a determination as to whether the sample was taken properly. Accordingly, the laboratory assumes no responsibility for results from an improperly submitted hair sample.

- Test results - The ideal values for minerals are indicated by the dark gray bands, i.e. calcium 40 mgs%, magnesium 6 mgs%, sodium 25 mgs%, potassium 10 mgs%, etc. *Your mineral values are printed directly above the name of each mineral. The black rectangle blocks represent a bar graph showing where your values lie in relation to the ideal values. Significant mineral ratios and your oxidation rate are located at the bottom of the graph.*
- Reference ranges (blue shaded area) indicated on the graph of test results represent statistical 'ideal' levels. These reference ranges should not be considered as absolute in considering mineral excesses, deficiencies or toxic levels of elements.
- The results of the hair tissue mineral analysis are reported in milligrams percent (mg%) or milligrams per 100 grams of hair.
- Test results were obtained using sophisticated ICP-MS instrumentation and procedures in a clinical laboratory environment with government regulatory standards in the USA (Dept. Of Health and Human Services, Clinical Laboratory Improvement Act) and in the Netherlands.

3 Results



Summary

Adrenal Glands

- The mineral analysis indicates a pattern of increased cellular adrenal glandular activity.

Thyroid

- An overloaded HPA-axis function may contribute greatly to the accumulation of heavy metals as normal detoxification mechanisms become impaired. The mineral profile is an indication of a situation of a disturbed thyroid metabolism. In this case rather in an overactive form.

Specific personality profiles

- ADRENAL STRESS - HIGH SODIUM.
- THREE HIGH OR STILTED.

Sugar and carbohydrate tolerance

- Your body indicates an imbalanced glucose (sugar) metabolism. This is visible in the high Ca/Mg ratio.

Protein synthesis

- Your body indicates a decreased protein synthesis at this moment. This is visible in your high Phosphor and low Zinc value. Please note: When pubic hair is used in the analysis, this value usually is too high.

Digestion

- Your body shows an impaired digestion at this time. This is visible in your high Phosphor and low Zinc value. Please note: When pubic hair is used in the analysis, this value usually is too high.

Immune status

- The analysis indicates an impaired immune system that may limit the body's ability to remain in a healthy state. This is caused by a low Zinc value, a high Na/K ratio.

Liver and kidney stress

- The analysis indicates a trend for liver and kidney stress. This may contribute to impaired toxic metal elimination, impaired immune system, carbohydrate intolerance, fluid imbalances and other conditions that may affect liver and kidney function.

Inflammation

- Your hair tissue mineral analysis currently indicates the presence of an inflammatory tendency as is shown in a high Na/Mg ratio, (inflammation processes), high Na/K ratio, (predominance of the pro-inflammatory hormones (represented by Na) the anti-inflammatory hormones (represented by K),

Cell wall permeability

- The analysis indicates slightly increased cell permeability.

The 4 macro-minerals

- Calcium: Your Calcium level is good.
- Magnesium: Your Magnesium level is good.
- Sodium: An elevated sodium level is often associated with the storage of sodium in body tissue as a result of the alarm phase of stress.

- Potassium: Your Potassium level is elevated. This is often associated with the deposition of potassium in tissue as a result of the alarm phase response to stress.

Nutrient mineral patterns

- Iron: Your iron content is in the right range. Your iron level is too high. An excess of iron or poisoning can also develop and contribute to liver and vascular diseases, dementia and behavioral problems.
- Copper: Your hair copper level is within an optimal range. As you are a fast oxidizer, it is known that despite the hair reading, your body has bio-unavailable Copper and therefore needs extra Copper supplementation.
- Manganese: An elevated manganese level indicates manganese poisoning, or an elimination of excess manganese from the tissues.
- A low zinc level can be due to any number of reasons; including an over consumption of sugars and simple carbohydrates, an acute stress situation, infection and/or the release of toxic metals, particularly copper.
- Chromium: A low chromium content means a large fluctuation in blood sugar levels, a strong need for sugar or starch.
- Selenium: A low selenium level may contribute to impaired detoxification and thyroid gland activity.
- Phosphor: Note: Pubic hair samples often show elevated phosphorus readings. This is a characteristic of pubic hair.

Heavy metals and toxic elements

- *Manganese*: Your high manganese value indicates an excess of manganese in the tissues, or manganese poisoning.
- *Mercury*: Your hair analysis shows that Mercury is present in the tissues at this time.
- *Lead*: Your hair analysis shows that Aluminum is present in the tissues at this time.
- *Aluminium*: Your hair analysis shows that Aluminum is present in the tissues at this time.
- *Cadmium*: Your hair analysis shows that cadmium is present in the tissues at this point.

Chapter 4 Some definitions and background of the Interpretation of your test results

The interpretation of your hair tissue mineral analysis depends upon developing a 'metabolic blueprint' of how the body is responding to stress. The term 'stress' has wrongly taken on too much a negative weight in our everyday language. We often understand psychological pressure and tension. That is too limited. Stress is everything that causes a disturbance in us and therefore requires a reaction from the body and / or the psyche. More important than stress is our adaptability and the time we take to recover.

The ability to determine the stage of stress and the oxidation rate from a hair tissue mineral analysis makes it possible to assess the likelihood of many conditions and guide correction based upon your metabolic imbalances. A thorough interpretation of the tests results also requires the identification of mineral levels, ratios and metabolic patterns.

Metabolic patterns:

A metabolic pattern is a combination of mineral levels and/or mineral ratios that reveal how the body is responding to stress. Identifying metabolic patterns simplify the interpretation as the science of mineral balancing is almost always aimed at improving major metabolic patterns and not a single mineral. A general rule is that metabolic patterns are the most important factors to consider when interpreting a hair tissue mineral analysis, followed by mineral ratios and mineral levels. Ratios represent mineral relationships and balances in the body.

The influence of stress on our energy and health:

The body responds to stress by mobilizing all available energy. However, when the body is unable to produce enough energy to cope with stress, the body automatically responds to it in a general pattern consisting of 3 different stages.

We speak of the (1) Alarm phase, (2) the Adaptation or Resistance phase and (3) the Depletion phase respectively. Understanding these stages is an important tool in correcting the less healthy state with a low energy level to a healthier state with a higher energy level.

Hormone functions:

Our hormone glands work closely with the autonomic nervous system to deal with stress well. The adrenal glands and the thyroid gland have the most important role here. The adrenal glands because they produce the stress hormones and the thyroid gland because it is responsible for the energy management. That is why the report also gives explicit attention to this.

Biologically useful or not:

For a proper understanding of HMA, it is important to emphasize that we distinguish between minerals in a biologically useful or unusable form. A high score of a certain mineral in the HMA report does not always mean that there is just too much of that mineral in the body and that you should therefore take less of it. That is much more complicated.

For example, a too high calcium value in the hair indicates an excess of a biologically useless calcium and at the same time a shortage of biologically usable calcium. In that case, for example, you do indeed need extra calcium (supplement) and the body will excrete the unusable calcium in response. With this form of calcium, you can think for example of Calcium deposits in the connective tissue of the vessels (arteriosclerosis).

INTERPRETATION OF THE ANALYSIS RESULTS

5 Speed of Oxidation

The term 'oxidation rate' refers to the 'burning' of foods in the body or how the body converts the foods you eat to energy. There are three types of oxidation rates, slow oxidation, fast oxidation and mixed oxidation. There are varying degrees of each oxidation rate and ideally it would be best to have either a slightly slow or slightly fast oxidation rate.

Slow Oxidation

A slow oxidizer is an individual who metabolizes food at a rate slower than that required for the production of optimal energy levels to adequately perform basic body functions. In slow oxidation the activity of both the adrenal and thyroid glands is less than optimal. Slow oxidizers often experience some degree of fatigue, lack of energy, sugar cravings, low blood sugar levels, constipation, weight gain, dry skin and depression.

Mixed Oxidation

A mixed oxidizer is an individual who metabolizes food at a rate that fluctuates between slow and fast oxidation. There are two types of mixed oxidation - slow/mixed oxidation and fast/mixed oxidation. Mixed oxidation is normally a transitory state of oxidation and is moving toward a state of slow or fast oxidation. Mixed oxidizers often experience a combination of symptoms associated with both fast and slow oxidation.

Fast Oxidation

A fast oxidizer is an individual who metabolizes food at a rate faster than ideally required for the production of optimal energy levels to adequately perform basic body functions. Although this results in higher energy levels, the energy generated is temporary and is dissipated rather quickly. Fast oxidation is generally characterized by excessive activity of the adrenal and thyroid glands. Fast oxidizers often experience some degree of anxiety, irritability, elevated blood sugar levels, elevated blood pressure, oily skin and a tendency for frequent bowel movements.

Sympathetic dominance. A common situation found in slow oxidizers is of great importance and called sympathetic dominance. It is an imbalance of the autonomic nervous system.

In this common situation, the person is still attempting to use the sympathetic nervous system all the time. However, the body is exhausted and can no longer respond strongly. As a result, the person stays tired and often ill, because excessive sympathetic stimulation blocks or inhibits the activity of the immune system, digestive system, elimination system and other vital organs and systems needed for recovery of health.

Temporary fast oxidizers or slow oxidizers under stress

These are fast oxidizers that have other imbalances on the hair analysis graph that indicate their condition is not a true fast oxidizer state but rather a temporary one due to the presence of toxic metals or some other physical, emotional or spiritual stress condition. The analysis indicates a true fast oxidizer, in fact the person is a temporary fast oxidizer. Signs if this include the person is older than about 10 and the person has significant health problems, usually including some slow oxidizer symptoms. Symptoms of both fast and slow oxidation may be present because this a stalled transaction state between fast and slow oxidation. For example, one can be anxious at times, yet depressed and tired at other times, another combination is high blood pressure (a fast oxidizer tendency) and hypothyroidism (a slow oxidizer tendency)

- **The HTMA analysis shows that your body has a moderately fast oxidation rate.**

6 Stress

Stress is the body's response to any physical or emotional stimulus or event and can be both beneficial and harmful, depending on the type and intensity of the stressor (= stress inducing factor). The body responds to stress by mobilizing all available energy. When enough energy can be released to overcome the stress, health and well-being are restored. Crucially, we must strive for a balance in the stress response so that it works for us rather than against us. The stress physiologist Dr. Hans Selye still assumed that at some point the body can no longer respond and so he came up with his "General Adaptation Syndrome" that consisted of 3 phases when the stress lasts longer. He called these phases: the alarm phase, the adaptation or resistance phase and the exhaustion phase. However, modern insights in stress physiology have shown that it is a bit more nuanced.

Allostasis and Allostatic Load

Allostasis is a name for all processes that occur for achieving a new internal equilibrium (homeostasis) through physiological or behavioral changes. This can be accomplished by altering the hormones of the HPA-axis, autonomic nervous system, cytokines, or a number of other systems. For stress, this means that stress reactions are triggered when a certain balance is disturbed to return to this balance, or to establish a new balance, in which the human being can live well and without stress.

The effort the body has to do to regain balance during stress is called allostasis load (AL). With a small stress experience, the allostasis load is small and the stress reactions are mild. If the allostasis load is high, the stress reactions are also stronger. If the allostasis load becomes too great, so that reaching homeostasis takes too much energy, takes too long, or is not possible, then stress persists for a long time, with all negative consequences for health.

It is extremely rare for one of the crucial hormones to actually run out, even during the most prolonged stress period. It's not so much the stress response that gets exhausted; but that the stress response itself, when activated sufficiently, can cause a lot of damage. When it comes down to it, an adequate stress response is still possible, but the price the body pays for it is too high. This leads to the consumption of reserves, accelerated wear, damage and disease. In the scientific literature this is called the "glucocorticoid cascade hypothesis". In addition to an "overdrive state", however, an "underdrive state" of the stress system can also arise. This effect is just as debilitating as an "overdrive".

Prof. Bruce McEwen, a prominent stress scientist, has illustrated Allostasis Tax using "the metaphor of the salmon". In the spring, the salmon migrate to the water where it once hatched to produce offspring there. Because this is usually upstream where waterfalls and rapids have to be taken, this is an enormous physical achievement. After mating, the salmon dies. McEwen emphasizes that the salmon dies from long-term overproduction of stress hormones and the damage that this has done to the body. The great thing about this metaphor is that you can see that a high level of performance and even a high subjective experience of energy and vitality does not necessarily equate to good recovery and good health.

The 3 phases of stress response:

Alarm Stage (phase 1): The alarm stage of stress is considered an early stage of stress in which the body has adequate energy to fight back against the stress. It is often associated with activation of the sympathetic nervous system, a fast oxidation rate, higher blood pressure and blood sugar, higher body temperature and more frequent bowel movements. The body reacts to acute stress by releasing hormones produced by the adrenal glands which mobilize the body's energy to meet and overcome the stress.

Resistance Stage (phase 2): The resistance stage of stress occurs as the body attempts to adapt to the stress when it can no longer maintain an alarm stage. This stage of stress is best described as an endless battle, with the body attempting to contain the stress as it's unable to eliminate it. The resistance stage of adaptation can go on for a long period of time in an effort to limit or minimize the stress. The body still has some energy reserves available to resist stress, though less than in the alarm stage. Crucial in this phase is the question of whether there are sufficient recovery times and recovery quality. If that is the case, the balance can be kept for a long time.

Exhaustion phase (phase 3): This phase can best be compared to an overcompensation for stress by the body. So there does not have to be any feeling of fatigue or even exhaustion. Cortisol production can also be good, for example. This is because cortisol production is primarily controlled by the brain, central nervous system and tissue-specific regulatory mechanisms. Burnout is therefore primarily an HPA-axis dysregulation. In this phase, however, there is structurally insufficient recovery, the balance in the stress response has been lost and the body consumes its reserves. A foundation is laid for accelerated aging and the development of chronic diseases. Over time, symptoms may include fatigue, depression, apathy, feelings of despair, constipation, dry skin and hair, and an often under-functioning thyroid gland.

- **The HTMA analysis shows that the stress system of your body is currently in the Resistance Phase (phase 2).**

7 Energy production and hormone glands

The adrenal glands and thyroid are the body's main energy-regulating glands. They work closely together to convert glucose into energy. These two glands must function at an optimal level in order to deliver maximum energy production. Together they determine the level of the oxidation rate, or the burning rate of the body. In addition, the adrenal glands are also responsible for the release of extra energy when needed (stress). In an alarm situation, the adrenal hormones cause a sudden increase in energy (to be able to deal with the threat). Furthermore, the adrenal glands play an important role in maintaining correct blood pressure, correct blood glucose level, counteracting inflammation, correct carbohydrate metabolism and activating the body in situations of stress. Also, the adrenal glands are the only source of female hormones after menopause (natural or artificial).

The analysis can demonstrate this overload through different profiles:

1. Low Na and / or low K value
2. Double low ratio patterns
3. Low Na/K ratio
4. All 4 Low pattern
5. Low oxidation rate
6. All 4 High pattern
7. Very high Ca value
8. Step Up or Step down pattern
9. Low Phosphor value

- The mineral analysis indicates a pattern of increased cellular adrenal glandular activity. This may be due to stress, toxic metals, fear, nutrient deficiencies, or other stress related factors. It may also contribute to anxiety, irritability, allergies, hyperactivity and elevated blood pressure.

An overloaded HPA-axis function may also contribute greatly to the accumulation of heavy metals as normal detoxification mechanisms become impaired. The body may compensate for adrenal weakness by retaining excessive amounts of copper, iron, manganese, aluminum, chromium, lead, cadmium, arsenic and other toxic metals.

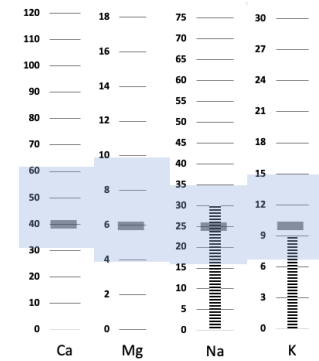
- The mineral profile is an indication of a situation of a disturbed thyroid metabolism. In this case rather in an overactive form. This may contribute to irritability, hyperactive behavior, muscle cramps, anxiety, nervousness, paranoia, excessive hunger, reactive hypoglycemia, high blood pressure or heart disease (adults).

8 Special Metabolic Patterns

8.1 The 4 most important ratios

A. THE SODIUM / POTASSIUM RATIO, OR VITALITY RATIO.

- An ideal ratio is about 2.2-2.7. A good range is between **about 2 and about 5 or 6**. **Your value is: 3,24**
- An important indicator of vitality. Dr. Eck called it the vitality ratio. A ratio less than about 2 indicates decreased vitality, and vitality is lower if the ratio is lower. A ratio above about 15 can also indicate reduced vitality, although not as bad as a low ratio.
- Very close relationship with the sodium-potassium pump mechanism and the electrical potential of the cells regulated by these values.
- Sodium is normally present extracellularly, while Potassium is normally present intracellularly. When the ratio between these 2 minerals is out of balance, this means that there are major physiological problems in the cells.
- This ratio is linked to adrenal function and the balance between aldosterone (mineral corticoid) and cortisone (glucocorticoid) secretion.



Interpretation and symptoms:

- *Vitality indicator.* A major vitality indicator. Dr. Eck called it the vitality ratio. A ratio less than about 2 indicates lowered vitality, and vitality is lower if the ratio is lower than this. A ratio above about 15 may also indicate reduced vitality, though not as bad as a low ratio.
- *Causes for imbalance.* This is the first ratio to react to stressors of every kind. This can be physical, nutritional, emotional, mental or other.
- *Sympathetic/parasympathetic balance* in the body. A higher ratio indicates a more sympathetic state, while a low ratio indicates a more parasympathetic or burnout state.
- *A secondary sympathetic dominance indicator.* A ratio above 6 is a secondary indicator for sympathetic dominance pattern. This is a mental tendency to push oneself hard.
- *Directional indicator* regarding change in the oxidation rate. Like a turn signal light on a car, a high ratio tends to indicate a person is moving toward a faster oxidation rate. A ratio below 2.5 indicates a tendency toward a slower oxidation rate.
- *Inflammatory versus anti-inflammatory states.* A high ratio is a tendency for more pain and inflammation. A low ratio indicates less ability to mount an inflammatory response. Carbohydrate tolerance. A low ratio is a marker for impaired carbohydrate tolerance that is not primarily or only diet-related, but instead a metabolic imbalance.
- *Charging or discharging state.* A ratio between about 2.5 and 6 indicates a 'charging state' in which the cells are more electrically charged. A low ratio, and possibly a very high ratio, indicates 'discharging' electrically, perhaps with a lower cell membrane potential. Types of stress. A high ratio is associated with more acute stress, anger or fright. A low ratio is associated with more chronic stress conditions such as long-term fears, chronic infections, chronic degenerative diseases such as diabetes, cancer, heart disease, kidney or liver diseases, and simmering or hidden negative emotions.
- *Estrogen/progesterone balance* to some degree. Sodium is more associated with estrogen. Potassium is more associated with progesterone. Thus, a higher ratio can indicate estrogen dominance. However, most women are estrogen dominant regardless of the ratio. Some doctors

use the zinc/copper ratio to assess hormone balance, but I don't find this too accurate. Zinc/copper balance to a degree. Zinc raises potassium and lowers sodium. Copper raises sodium and lowers potassium.

- *Dosing zinc and copper.* Dr. Eck used this ratio to decide how much zinc and copper a person needs. This is related, in part, to stress theory. A high sodium/potassium ratio is a need for more zinc relative to copper. A low sodium/potassium ratio requires some copper and less zinc because zinc tends to lower the sodium/potassium ratio.
- *Hidden copper indicators.* In both fast and slow oxidizers, a low sodium/potassium ratio is a prime indicator for hidden copper toxicity, bio unavailable copper and a need for copper supplementation, according to Dr. Eck's research.
- *Immune response.* A low, or a very high ratio may indicate an impaired immune response. Tissue catabolism or excessive protein breakdown. A low ratio, and possibly a very high ratio, indicates excessive tissue catabolism or breakdown, or impaired protein synthesis. In other words, the body is breaking down tissue faster than it is rebuilding it. This can lead to any health condition imaginable, depending on where the tissue is being lost.
- *Cannibalism.* A low ratio may indicate the body is beginning to digest its own tissues because it cannot metabolize proteins, carbohydrates and fats correctly. The body begins to consume its own tissues for energy.
- *A digestive indicator.* Dr. Eck found that a high ratio is often associated with more hydrochloric acid in the stomach and perhaps an over-acid condition of the stomach. This may have to do with the conversion of salt to hydrochloric acid. A low ratio often indicates reduced digestive enzymes, particularly low hydrochloric acid in the stomach.
- *Copper personality types.* A high ratio is associated with a more angry, aggressive personality style, generally. A low ratio is associated with feelings of frustration, resentment, hostility, lower energy levels and often depression.
- *Introversion and extroversion.* A high ratio is associated with extroversion. A low ratio is more associated with
- *An awareness indicator.* A low ratio, especially when the ratio is less than 1, is associated with reduced awareness. In these cases, a person is often unaware of hidden traumas or perhaps beliefs and motives that are driving him.
- *Babies* often tolerate a very low sodium/potassium ratio. The low ratio often signifies chronic stress, improper diet, infections, metal toxicity.
- *Signs and symptoms.* Those associated with a high Na/K ratio include pain, edema, hypertension, swelling, irritable bowel syndrome and all 'itis' conditions. Those associated with a low Na/K ratio include allergies, exhaustion, depression, chronic infections, cancer, diabetes, and liver, kidney, digestive and heart disease. Others are negative emotions.
- *Retracing.* On retests, the sodium/potassium ratio may decrease if the body eliminates toxic metals, or the 'amigos' (manganese, iron, aluminum, chromium and selenium). This is just uncovering a hidden low sodium/potassium ratio that was obscured on previous tests and is not a cause for concern. Old infections may flare up as this occurs.
- *Type of movement.* Force, speed and direction indicator. A high sodium/potassium ratio is forward-moving, speeding up, and becoming more effective. A low ratio is reversed. This means a person is slowing down, becoming less effective and starting to collapse into four lows. It can signal a resistance to change or stalled transition of some kind.

B. THE CALCIUM / MAGNESIUM RATIO, OR BLOOD SUGAR OR LIFESTYLE RATIO.

- An ideal ratio is about 6,67. A good range is between about 4 and 9.5. **Your value is: 12,60.**
- Calcium is necessary for the release of insulin from the pancreas. Magnesium prevents insulin release.

- Magnesium is necessary to keep Calcium in solution.
- Very high (> 16) or very low (<2.0) ratio is often associated with mental or emotional disturbances.

Interpretation and symptoms:

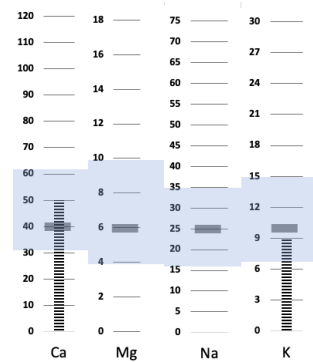
- *Whom:* A common imbalance in every group, including children and adults of both sexes. Causes for imbalance. On a first hair test, the cause is often too many carbohydrates in the diet. When the ratio is over 13.5, the cause is a lifestyle factor or attitude that is not helpful.
- *Physiology.* We are not sure why an imbalanced ratio is associated with imbalances in the diet or lifestyle. Dr. Eck taught that calcium and magnesium have to do with insulin regulation.
- *Spiritual defensiveness — a need for change pattern.* A ratio greater than 13.5, especially on an initial hair analysis, is a newer pattern that was not part of Dr. Eck's original work. In our experience, it often indicates a person is defending a lifestyle factor, such as a job or relationship, or an attitude that one needs to move away from to move ahead at full speed in one's life. The attitude that needs changing is usually anger, but it could be many others such as cynicism, rigidity, fear, negativity or another. When seen in children, the problem usually has to do with school or relationships with parents or siblings.
- *On retests,* elimination of bio unavailable calcium. During a nutritional balancing program, the body often eliminates bio unavailable calcium. This can elevate the calcium level and the calcium/magnesium ratio on hair mineral retests. This is not important.
- *Signs and symptoms* are typically not prominent with this pattern.
- *Charging.* A low Ca/Mg ratio may be a type of 'charging' pattern, similar to a high Na/K ratio. However, a ratio greater than about 25 may be a type of discharging pattern, similar to a low Na/K ratio.
- *Mineral loss.* A ratio below 2 or above about 60 may reflect deeper health imbalances such as a magnesium or calcium loss through the hair. It may be associated with high mercury.
- *Type of movement.* A very high ratio is the world pushing back, slowing movement. A slightly low ratio may be the opposite - having some wind at your back.

C. CALCIUM / KALIUM RATIO OR THYROID RATIO.

- An ideal ratio is about 4. A good range is about 2 to 6. **Your value is: 0,48.**
- Is called the thyroid ratio because Calcium and Potassium play a vital role in regulating thyroid activity.
- Does not always correlate with a blood thyroid test because a hair analysis is a "tissue" test. Often a blood test shows normal values, but a hair analysis shows thyroid dysfunction. Sometimes symptoms of hypothyroidism are very obvious, but a hair analysis will show a hyperactive thyroid ratio. If you want to correct this through nutrition, it is wise to follow the HMA advice.
- The thyroid gland is one of the important organs that determines the metabolic rate in the body. A hyperactive thyroid is often associated with a fast metabolism.
- When the thyroid (but also and adrenal) ratio is not good, the efficiency in energy production decreases.
- Symptoms of decreased thyroid gland activity: cold hands and feet, feeling cold, dry skin, dry hair, tiredness, barely shedding, tendency to gain weight, tendency to constipation.
- Symptoms of overactive thyroid activity: excessive sweating, hyperactivity, irritability, nervousness, infrequent stools or diarrhea during stress, greasy hair and skin.

Interpretation and symptoms:

- *Whom:* Toddlers often have a low ratio, while older children and adults usually have a high calcium/potassium ratio.
- *Thyroid effect* at a cellular and organism level. Dr. Eck believed that a ratio less than 4 indicates excessive thyroid glandular effect at a cellular level. A ratio above 4 is a trend for sluggish thyroid and perhaps adrenal effect at a cellular and perhaps total organism level. One reason for this is that thyroid activity regulates calcium, in part. Also, potassium sensitizes the tissues to thyroid hormone. In addition, high hair calcium is related to reduced cell permeability. This may alter thyroid hormonal effects.
- *Very different from serum or saliva hormone levels.* Blood and saliva hormone levels may not match the hair indicators.
- *Causes for imbalances.* Many factors ranging from stress and emotions to nutritional depletion, autonomic nervous system imbalances and the prevalence of iodine antagonists and toxic metals can affect this ratio. It is truly a whole systems ratio.
- *Signs and symptoms.* A low ratio is associated with irritability, aggressiveness, anxiety muscle tightness, cramps and other symptoms of low calcium and magnesium. A high ratio is associated with fatigue, depression, pushing oneself hard, hypoglycemia, cravings for sweets, copper toxicity, perhaps low blood pressure, and chronic stress conditions of many kinds.
- *Oxidation rate assessment.* This is one of the two ratios used to assess the oxidation rate.
- *Grave's disease.* Oddly, a high calcium/potassium ratio is present in all cases of Grave's disease that has ever been seen.
- *Psychologically,* A low ratio is more associated with extroversion, joy and happiness. A high ratio is more associated with fatigue, depression and even despair and suicidal thoughts.
- *Hidden copper.* A ratio greater than about 10 is an indicator of hidden copper toxicity. Trying too hard. A ratio greater than about 100 indicates a person is pushing himself very hard in a generally ineffective way. It is a severe efforting pattern with poor results.
- *Type of movement.* A low ratio often indicates effective, fast and perhaps aggressive, uncontrolled movement. A high ratio is slower, perhaps stalled movement, with reduced effectiveness and 'the brakes on' if a calcium shell is present, too.

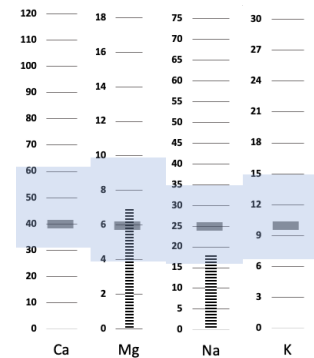


D. NATRIUM / MAGNESIUM RATIO OR ADRENAL RATIO.

- An ideal ratio is 4.17. A healthy range is roughly between 2 and 6.5. **Your value is: 85,60.**
- Also called adrenal ratio because it is directly related to adrenal function. Aldosterone regulates the "retention" of Na in the cell, the higher the Na value, the higher the aldosterone value.
- The Na / Mg ratio is also a measure of the energy output because the adrenal glands (in addition to the thyroid) determine the metabolic rate.
- The Na / Mg ratio is a tissue value; the blood values for adrenal hormones often do not match. The blood values are often normal, but this tissue test will show an abnormal adrenal function. However, the symptoms are consistent with the hair analysis.
- Symptoms often associated with under active adrenal glands: Allergies, depression, fatigue, poor stamina, hypoglycaemia, poor digestion (of fats and meat proteins, weight fluctuations).
- Symptoms often associated with overactive adrenal glands: Aggressiveness, impulsivity, diabetes, high blood pressure, high stamina, risk of inflammation.

Interpretation and symptoms:

- *Adrenal effect* at a cellular and organism level. A ratio above 4.17 is a trend for excessive adrenal and thyroid effects at a cellular level. A ratio less than 4.17 is a trend for reduced adrenal and perhaps thyroid effect at a cellular level.
- *Different from serum, urine or saliva adrenal hormone testing.* Hair analysis adrenal assessment will not always match the levels of cortisol and other hormones measured in serum, urine or saliva because the hair measures a cellular effect, not hormone levels.
- *Causes for imbalances.* Autonomic imbalance combined with nutritional deficiencies, toxic metal excess and too much stress on the body are primary causes. A whole systems ratio.
- *Signs and symptoms.* A high Na/Mg ratio is associated with anxiety, irritability, higher blood pressure and blood sugar, anger, irritability and acute conditions, A low Na/Mg ratio is associated with fatigue, perhaps lower blood sugar in most cases, low blood pressure, low body temperature, sweet cravings, salt craving and others symptoms of weak adrenal glands.
- *Oxidation rate assessment.* This ratio is part of the assessment of the oxidation rate.
- *Psychology.* A high ratio is more associated with extroversion, joy and aggressiveness. A low ratio is associated with apathy, lethargy, depression and despair.
- *Type of movement.* An elevated ratio is forceful, effective, powerful and could become uncontrolled. A low ratio is much slower, and less effective.



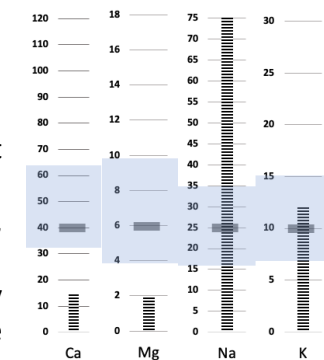
8.2 Special patterns and possible personality traits

ADRENAL STRESS - HIGH SODIUM.

Definition: A hair sodium level greater than about 100 mg%.

Interpretation and symptoms:

- *Whom:* Almost always either a true fast oxidizer or a temporary fast oxidizer. Often found in babies and children.
- *Causes.* Acute stress, an alarm reaction from any cause such as pain, illness, toxic metals, chemical poisoning or emotional issues.
- *Physiology.* High aldosterone secretion by the adrenal glands for any reason causes sodium retention by the kidneys. This is a possible kidney and liver stress pattern, as well as a hyperthyroid and hyper-adrenal pattern.
- *Rarely a sodium loss.* Very rarely this pattern occurs with a sodium loss into the hair tissue.
- This is not a case of fast oxidation and it corrects quickly on a nutritional balancing program.
- May be part of a *four highs* pattern. This pattern is a secondary alarm reaction and is discussed later in this report.
- *Signs and symptoms.* Anxiety, irritability, a volatile personality, high blood pressure, slightly higher blood sugar, tachycardia, ADD, ADHD, water retention or edema and other symptoms associated with overactive adrenal glands and perhaps hyperthyroidism.
- *Psychology.* Very acute stress is present, a fight-or-flight response.
- *Type of movement.* Strong, effective, and at times, uncontrolled forward movement.

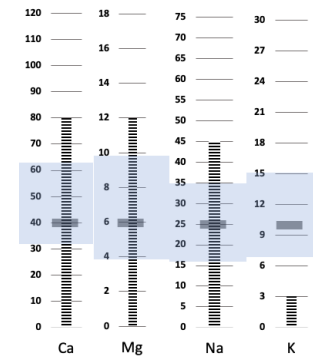


THREE HIGH OR STILTED.

Definition: Usually calcium and two of the other macro minerals are above the ideal levels. One, such as magnesium, or potassium, is low.

Interpretation and symptoms:

- *Whom:* Mostly adults, and perhaps more common in sensitive or delicate women, and at times in willful people.
- Levels somewhat *arbitrary*. The levels are not exact, but quite accurate in my experience.
- *Causes.* Intense stress in a slow oxidizer can produce this pattern. The cause of the stress can have to do with the lifestyle or with the presence of toxic metals in many cases. *Physiology.* This is an exhaustion stage of stress or slow oxidation state with an alarm reaction superimposed upon it. It may thus be called a secondary alarm reaction. Slow oxidation is indicated by the high calcium and magnesium levels. The secondary alarm reaction is indicated by the high sodium and potassium levels. This is something like a 'second wind' in athletics. The person is tired out but finds more energy to keep going.
- Often *inflammation* is part of the pattern.
- *Multiple secondary alarm reactions possible.* These would be the equivalent of a third or fourth wind in athletics. All must be slowly unwound to restore health.
- A *fast-to-slow oxidation transition pattern* that responds easily to nutritional balancing in most cases. This is the least intense and easiest from which to emerge of the stalled transition or resistance-to-change patterns. For instance, it is much easier to emerge from than four lows, step up or fast oxidation with a low sodium/potassium ratio. Even so, some people will remain in four highs for a year or more.
- *Visually.* It looks like walking on stilts. The combination of high calcium, magnesium, sodium and potassium levels appear like stilts on a calibrated graph from ARL. The feeling is a person walking on stilts. The person is unsteady and is careful about his balance.
- *Psychology.* Unstable, under a lot of stress, and perhaps stilted, which means puffed up, pumped up, or pompous. Also, the person is often somewhat delicate or unsteady emotionally. When the pattern persists, it may indicate a person who is delicate or sensitive and unconsciously keeps the oxidation rate balanced in order to feel better. This can be a subtle fear of 'falling down' into slow oxidation. They may become angry with a doctor if they start feeling worse due to falling out of four highs and into a slow oxidation pattern.
- *Changes rapidly.* This pattern can change quickly, sometimes in a matter of days or weeks. A 'soft landing' is the goal. When the pattern resolves into slow oxidation, one hopes the person will not experience too much fatigue and depression associated with slow oxidation.
- *Hidden four highs or slow oxidizer on crutches.* Some people with a simple slow oxidizer pattern actually have some four highs pattern present. Their sodium and potassium levels, while low, are still displaced upwards by the presence of toxic metals or some other stressor. Usually, one can only assess this on retests when the oxidation rate decreases significantly, even though the person is on a correct program. This tells us the previous test was a slow oxidizer under a lot of stress or a slow on crutches. Telltale signs of hidden four highs or slow on crutches may be a low phosphorus, a low sodium/potassium ratio and the presence of toxic metals.
- A *predictable change pattern.* Experience shows that four highs resolves to slow oxidation in almost all cases. This is very helpful to predict future symptoms and how to cope with them immediately.
- *Symptoms.* Slow oxidizer symptoms such as fatigue, depression and others are often mixed with 'alarm' symptoms such as anxiety, inflammation, fears or higher blood pressure.
- *Type of movement.* Floating, rough or uneven, delicately balanced, somewhat effective.



COPPER UNBALANCE

Your body does not show a Copper unbalance, the results show the following:

Biological unavailable Copper present: No

Hidden Copper present: Yes

Copper Suppletion needed: Yes

Assessing the need for copper supplementation. A need for copper supplementation does not mean the entire body is low in copper. It just means that some is needed to balance the chemistry at a particular time. This is confusing, but it works well. Dr. Paul Eck researched this subject thoroughly, and we find that his methods work beautifully. Following are hair tissue mineral analysis indicators for a need for copper supplementation:

- 1) A fast oxidation rate.
- 2) A hair Na/K ratio less than about 2.0
- 3) A hair Ca/Mg that is less than about 3 is a secondary indicator and it only applies if the hair sodium/potassium ratio is less than 2.0.
- 4) Combinations: Fast oxidizers with a low sodium / potassium ratio require more copper than if only one of the above patterns is present. Even more copper is needed for a 'Step UP' pattern, which has all three of the above combinations.

9 Food diet patterns

Sugar and carbohydrate tolerance

The excessive intake of carbohydrates in the diet is often associated with the development of many health conditions including, glucose (sugar) metabolism, digestive difficulties, yeast infections, fatigue, depression and others. Excessive carbohydrates may also upset the balance between calcium and phosphorus and between calcium and magnesium.

Inasmuch as the release of insulin is promoted by calcium and inhibited by magnesium, the proper ratio of calcium to magnesium is critical for optimal insulin secretion, thus resulting in one's ability to properly metabolize sugars and simple carbohydrates.

The adrenal glands also play a major role in regulating carbohydrate metabolism in the body. A low sodium/potassium ratio is indicative of excessive glucocorticoid production. Potassium reflects glucocorticoid levels (regulates glucose metabolism), while sodium reflects mineralocorticoid levels (regulates salt and water balance). When the mineralocorticoid hormones get out of balance with the glucocorticoid hormones, an individual can also develop a sensitivity to the ingestion of sugars and simple carbohydrates.

Simply stated, one's inability to cope with stress is associated with a low sodium/potassium ratio. Being that a high potassium level relative to the sodium level represents an excess of sugar-raising hormones, a stress-induced sensitivity to the ingestion of sugar and simple carbohydrates occurs.

- **Your body indicates an imbalanced glucose (sugar) metabolism. This is visible in the high Ca/Mg ratio.**

Protein Synthesis

Adequate protein synthesis is vitally important for the regeneration of all body tissues. This requires proper digestion, absorption and utilization of proteins. Protein synthesis is influenced by the amount

and type of protein consumed in the diet and by one's eating habits. An elevated phosphorus level is indicative of rapid protein breakdown, while a low phosphorus level indicates inadequate protein synthesis. The mineral zinc must be singled out as particularly important for protein synthesis. It is required for the enzyme RNA transferase, a key step in protein synthesis. A low sodium/potassium ratio reveals significant information regarding the individual's capability of utilizing protein. The lower the sodium/potassium ratio, the less protein can be synthesized.

- **Your body indicates a decreased protein synthesis at this moment. This is visible in your high Phosphor and low Zinc value. Please note: When pubic hair is used in the analysis, this value usually is too high.**

Digestion

Excellent digestion is a key to improving one's health. If digestion is impaired, even the best diet will not supply the body with needed nutrients. Additionally, improperly digested food will ferment or putrefy in the intestines and produce extremely toxic chemicals that are then absorbed into the body. Proper digestion depends on one's diet, eating habits, energy levels, digestive enzymes, bowel flora and the condition of the intestines.

Phosphorus levels are highly indicative of one's ability to synthesize protein. The inability to synthesize protein frequently results in impaired digestion.

A low sodium/potassium ratio is indicative of an excessive stress situation, which will eventuate in a reduction in both hydrochloric acid and pancreatic digesting enzymes.

Extreme fast oxidation pattern is often associated with a tendency for excessive stomach acid secretion when under stress. This can result in poor digestion to some degree.

Zinc is required for all digestive enzyme production. It is also required to rebuild the fast-growing intestinal tissue, and for the production of bile and liver and pancreatic secretions.

Excessive tissue copper can result in poor digestion and poor motility of the bowel, hence resulting in food putrefaction resulting in gas and bloating often associated with poor digestion.

- **Your body shows an impaired digestion at this time. This is visible in your high Phosphor and low Zinc value. Please note: When pubic hair is used in the analysis, this value usually is too high.**

10 Organs and system patterns

Immune system activity

The immune system is a network of organs, cells and tissues that work together to provide the body's first line of defense against organisms, toxins and substances that invade our systems and cause disease. The immune system has many aspects including the health of the white blood cells, the digestive tract, cell membranes, antioxidant nutrients and the autonomic balance. Certain indicators on a hair tissue mineral analysis often reflect the overall condition of the immune system.

A low sodium/potassium ratio results in an impaired immune system response, due to one's inability to adequately synthesize protein.

A very high sodium/potassium ratio may indicate kidney stress and an imbalanced immune system. A high ratio may indicate autoimmune problems, or an overactive immune system.

A zinc deficiency, or loss, will impair immune system function. Zinc is involved in all protein synthesis and is required for the integrity of the skin and mucus membranes of the body, which are critical tissues in defending against infection.

Chronic over-activity of the adrenal glands in the "fast" oxidizer has a suppressive effect upon the thymus gland, thus impairing immune system function.

A copper imbalance often indicates impaired immune system function. Copper is required for energy production within the cells and mobilization of copper from the liver which is part of the normal infection-fighting mechanism of the body. The mineral itself is a fungicide and an anti-bacterial.

A low tissue zinc/copper ratio is frequently associated with an immune deficiency, due to excessive tissue copper displacing zinc, which is necessary for immune system function.

- **The analysis indicates an impaired immune system that may limit the body's ability to remain in a healthy state. This is caused by a low Zinc value, a high Na/K ratio.**

Liver and Kidney Stress

The liver is the largest gland in the body and performs a large number of functions that impact all body systems. Some of the functions performed by the liver include the filtering of harmful substances from the blood, the storage of vitamins and minerals and the maintenance of proper blood sugar levels. The liver is also responsible for the production of cholesterol and other vital substances.

The main function of the kidneys are to separate toxins and other waste products from the blood. They are also involved with the regulation of blood pressure and maintaining the balance of water, salts and electrolytes.

Both the liver and kidneys are very important organs of detoxification and are common sites of toxic metal accumulation.

Certain indicators on a hair tissue mineral analysis, i.e., sodium/potassium ratio, excess tissue copper, high levels of iron and manganese, or the presence of toxic metals, such as mercury, cadmium, arsenic and aluminum, often reflect the overall condition of the kidneys and liver.

- **The analysis indicates a trend for liver and kidney stress.** This may contribute to impaired toxic metal elimination, impaired immune system, carbohydrate intolerance, fluid imbalances and other conditions that may affect liver and kidney function. This is caused by an increased Manganese value, an increased Mercury value, an increased Cadmium value, an increased Aluminium value.

Inflammation

Inflammation is the body's normal reaction to an injury, disease, or the presence of a foreign substance. Inflammation is generally recognized by swelling, redness, heat, or possibly pain. If the body can overcome the causative factor, then the inflammation is reduced, and the inflammatory process terminates. However, if the inflammatory process continues, inflammation can become chronic.

Acute inflammation generally causes an increase in adrenal activity and thus a rise in the secretion of the hormone aldosterone (sodium). Aldosterone is a pro-inflammatory hormone. Cortisol and cortisone (potassium) are anti-inflammatory hormones because they diminish inflammation. The pro-inflammatory and anti-inflammatory hormones need to be in balance with each other for optimum health.

Certain indicators on a hair tissue mineral analysis often reflect inflammation and/or an inflammatory response in the body.

- An elevated sodium/potassium ratio, as determined by a hair analysis, is an excellent indicator of the predominance of the pro-inflammatory hormones (represented by sodium on a hair analysis chart) over the anti-inflammatory hormones (represented by potassium).
- A low sodium/potassium ratio, as determined by a hair analysis, is an excellent indicator of excessive protein catabolism (breakdown) which is frequently associated with an inflammatory condition. Degeneration of the joints causes inflammation and joint pain.
- A magnesium deficiency relative to a high sodium level, as indicated by an elevated sodium/magnesium ratio on a hair analysis, is often associated with an inflammatory process.
- Acute stress can result in an inflammatory reaction. Many factors can be the source of stress, such as a change in weather, change in diet, fatigue, toxic metal accumulation, emotional conflicts, etc.

- A low potassium level represents inadequate glucocorticoid (anti-inflammatory) activity, which often contributes to an inflammatory tendency.
- Copper, in excess, can result in a suppression of anti-inflammatory hormones. A deficiency of anti-inflammatory hormones is responsible for an inflammatory process.
- Excess iron is known to deposit in the joints, resulting in an inflammation of the joints.
- **Your hair tissue mineral analysis currently indicates the presence of an inflammatory tendency as is shown in a high Na/Mg ratio, (inflammation processes), high Na/K ratio, (predominance of the pro-inflammatory hormones (represented by Na) the anti-inflammatory hormones (represented by K),**

Cell wall permeability.

Cell wall permeability refers to the ability of the cell to take up or excrete substances, whereby they must pass through the cell wall. The cell wall is the most important communication / transport system between the cell and its outside world.

- **The analysis indicates slightly increased cell permeability.** If foreign proteins enter the cells too easily, acute allergies may result. Hormones and glucose may also enter the cells too easily, contributing to a fast oxidation rate and reactive hypoglycemia.

11 The 4 macro minerals

Calcium: Calcium is found in every cell in the body. More than 90% is present in the bones and teeth. Calcium is regulated by the thyroid, parathyroid, adrenal and pituitary glands. Calcium plays a role in maintaining the acid-base balance. It is necessary for normal blood clotting, nerve conduction, muscle contraction and relaxation, cell division, heart rate, in the nervous system, muscle function and relaxation and the maintenance of bones and teeth. It is primarily an extracellular element.

Excellent quality bioavailable calcium is missing from most people's diets. The main food sources are raw and organic dairy products, carrots and carrot juice and some other vegetable sources such as nuts and seeds. However, if cow's milk is pasteurized and homogenized, the amount of available calcium drops sharply. As a result, most people don't get enough calcium from the milk, cheese and yogurt they consume.

- Your Calcium level is good. However, for a proper assessment, this level should be compared with all other minerals. Hidden toxic metals, nutrient deficiencies or drug use affect calcium levels. Calcium-containing supplements are therefore recommended.

Magnesium: Magnesium is needed in bones and the nervous system. It is essential in more than 600 different vital enzyme reactions in the body. It is primarily an intracellular element.

- Your Magnesium level is good. However, for a proper assessment, this level should be compared with all other minerals. Hidden toxic metals, nutrient deficiencies or medication can influence the Magnesium level. Magnesium-containing supplements are therefore recommended.

Sodium: Sodium is an essential mineral for the maintenance of proper fluid balance and blood pressure in the body. It is primarily an extracellular element.

- An elevated sodium level is often associated with the storage of sodium in body tissue as a result of the alarm phase of stress. This contributes to a feeling of fear and irritability. It does not mean that you are consuming too much salt.

Potassium: Potassium is primarily an intracellular element that is necessary for a good fluid balance, nervous system and muscle activity.

- Your Potassium level is elevated. This is often associated with the deposition of potassium in tissue as a result of the alarm phase response to stress. This can contribute to symptoms such as anxiety and irritability. An increased potassium level does not automatically mean that you have too much potassium in the body.

12 Nutrient Mineral Patterns

Iron: Iron is necessary for energy production, blood formation and the antioxidant effect (catalase). An excess of iron can contribute to liver and vein disorders, dementia or behavioral disorders.

- Your iron content is in the right range. For clinical assessment, however, it must be weighed against other minerals. Factors such as hidden toxic metals, deficiency of essential nutrients and prescription medication can influence the measured iron levels in the hair. Your iron level is too high. An excess of iron or poisoning can also develop and contribute to liver and vascular diseases, dementia and behavioral problems.

Copper: Copper plays an important role in tissue health, female fertility, cardiovascular health, blood formation, energy production, neurotransmitter activity and the immune system.

- Your hair copper level is within an optimal range. For clinical assessment however, it must be considered in relation to all the other minerals. Factors such as hidden toxic metals, nutrient deficiencies or prescribed medications may influence hair copper readings. As you are a fast oxidizer, it is known that despite the hair reading, your body has bio-unavailable Copper and therefore needs extra Copper supplementation.

Manganese: Manganese is necessary for sugar metabolism, good tendon and joint ligaments, energy production and adrenal function.

- An elevated manganese level indicates manganese poisoning, or an elimination of excess manganese from the tissues. (See 'Heavy Metals and Toxic Elements' later in this report for more information on this elevated manganese level).

Zinc: Zinc is found in small quantities in the body (about two grams) and is essential for over 50 functions including all protein synthesis, growth and development, male reproductive system, insulin production and secretion, vision, digestion, prostate health, skin, hair and nail health, and immune system activity.

- A low zinc level can be due to any number of reasons; including an over consumption of sugars and simple carbohydrates, an acute stress situation, infection and/or the release of toxic metals, particularly copper. Low zinc levels are often associated with mood swings, digestive disturbances, skin problems, vision problems, prostate problems in men and a reduced sense of taste and smell. Low zinc levels may also be a compensatory effort by the body to help balance the sodium/potassium ratio

Chromium: Chromium is necessary for sugar and carbohydrate tolerance and cholesterol metabolism.

- A low chromium content means a large fluctuation in blood sugar levels, a strong need for sugar or starch. It can lead to fatigue and high cholesterol.

Selenium: Selenium is required for thyroid function. Selenium is an essential component of the enzymes that convert Thyroxine (T4) to Triiodothyronine (T3). Selenium is also important in heavy metal detoxification and is also important in enhancing immune system function.

- A low selenium level may contribute to impaired detoxification and thyroid gland activity.

Phosphor: Phosphorus is an essential mineral that is involved in protein synthesis and energy production within the cells. All proteins contain phosphorus and thus are a significant source of organic phosphorus. The hair tissue mineral level of phosphorus is often associated with the adequacy of protein synthesis in the body. This depends on the diet, lifestyle, condition of the intestinal tract and liver and the levels of other nutritional minerals such as zinc and copper.

- Note: Pubic hair samples often show elevated phosphorus readings. This is a characteristic of pubic hair. It is one reason we do not recommend the use of pubic hair as a first choice for a hair analysis. If public hair was used for this test, this may be contributing to your high phosphorus level at this time. An elevated phosphorus level generally indicates some degree of excessive tissue breakdown or protein catabolism. This may occur as toxicities are being actively eliminated from the body. An adequate amount of high-quality dietary protein, digestive enzymes and healthful eating habits will all help to normalize the phosphorus level. Phosphorus is an important reading on your mineral analysis because adequate protein synthesis is necessary for the regeneration of all body tissues. Balancing the phosphorus level with dietary modifications, digestive enzymes and nutritional balancing is most important as adequate protein synthesis is important for the regeneration of all body tissues.

13 Toxic metals and toxic elements

Heavy metals pose a serious health threat. A serious problem nowadays is the large number of babies born with metal poisoning. No healthy values for heavy metals are known; lowering the presence is a spearhead of the nutritional balancing program. The HMA analysis does not test for toxic chemicals. However, when energy production can be increased, the sympathetic nervous system is brought into balance, and help is provided in the proper functioning of the organs that release toxins, the chemicals will also be removed. The HMA analysis shows the metals that are present in the hair. No single test can detect all toxic metals because some metals are stored deep in the body tissue. The analysis itself is not aimed at demonstrating these, but rather focuses on obtaining a balanced and safe removal, without the use of metal chelators. Toxic metals often lie deep in tissues, layer by layer. Our proposed program (diet, supplements, lifestyle and detox program) aims to remove these metals. Hidden metals often become visible in future HMA results as removal occurs through deposition in hair and skin.

Manganese: Manganese is an essential trace mineral that can become toxic when present in excess in the body. A high manganese level often indicates a deficiency, loss or unusable manganese in the tissues.

An excess of manganese can be deposited in the joints, blood vessels, brain and liver. High manganese levels are obtained by drinking water that contains a high manganese content. An increased manganese level can contribute to symptoms such as fatigue, emotional sensitivity, behavioral problems, dizziness, and decreased tendon and ligament flexibility.

Your high manganese value indicates an excess of manganese in the tissues, or manganese poisoning.

Mercury: The mercury value in the hair analysis has increased. Mercury can enter the body through the lungs, through food and water, and through direct physical contact. Because mercury affects multiple minerals in the body, it is often associated with various physical and emotional symptoms. Sources of mercury are contaminated fish and crustaceans, contact lens solutions, vaccinations, flu shots, amalgam fillings in the teeth, air and / or water pollution (rare). Mercury poisoning can cause symptoms of nervousness, irritability, immune system dysfunction, thyroid problems, autism, ADHD, hyperactivity and other behavioral problems.

Your hair analysis shows that Mercury is present in the tissues at this time.

Lead: Lead poisoning, at any age, is a major cause of illness today. Numerous metabolic dysfunctions are related to lead poisoning since lead in the body tissues affects every other mineral level in the body. Active lead excretion may be associated with temporary discomfort, however, these symptoms are transient. Sources of lead include: canned foods, ceramic glazes, lead water pipes, industrial waste, contaminated shellfish, exposure to solder and metals, soft water, hair dye, old paint, a contaminated air and soil.

Lead poisoning can contribute to metabolic disorders such as osteoporosis, anemia, neuromuscular disorders, fatigue, fractures, autism, ADHD, hyperactivity, and antisocial behavior.

Your hair analysis shows that there is currently Lead in the tissues.

Aluminium: Aluminum is the third most abundant element and the most abundant metal in the Earth's crust. Individuals are naturally exposed to relatively large amounts of aluminum through food, water and air. Sources of aluminum are food and drinks packed in aluminum (cans, for example), aluminum foil that is used in cooking, or the use of aluminum cookware such as pans, deodorants, antacids, table salt, sometimes it is in baking powder and tea etc. Aluminum is mainly stored in the lungs, liver, thyroid, bones and brain. Aluminum poisoning can give rise to symptoms of memory loss, dementia, fatigue, behavioral problems and eczema.

Your hair analysis shows that Aluminum is present in the tissues at this time.

Cadmium: Cadmium is a highly toxic metal that is not known to have any necessary function in the body. Like other toxic metals, cadmium can bond so strongly that it requires an improvement in a person's body chemistry before it can be released from the kidneys, liver, and various other organs. Sources of cadmium are junk food, margarine, (in some areas) tap water, cigarette and marijuana smoke, exposure to industrial emissions, contaminated shellfish and drinking coffee. Cadmium poisoning can contribute to symptoms such as joint pain, kidney disease, high blood pressure, fatigue, cardiovascular disease and anti-social behavior.

Your hair analysis shows that cadmium is present in the tissues at this point.

14 General food diet information

Balancing your body takes time. In many cases, vital minerals will have to take the place of toxic metals such as lead, cadmium, mercury, aluminum and others. This process can take months, sometimes years, depending on the health condition at the start of the program. It is generally known that it often takes 6 months to completely rebalance 1 mineral such as iron, for example. Additional factors such as diet, lifestyle, stress and medication can influence mineral ratios and recovery.

General diet principles¹

Many people with rapid oxidation can live well with an increase in fat and oil intake. This is a source of a lot of energy that is quickly absorbed, providing the fast energy that rapid oxidation requires. Fats and oils can also provide acetates and fat soluble vitamins that are also needed for a fast metabolism. Most fast oxidizers can therefore use the following in a fat-containing meal:

nuts, seeds and nut butter

dairy fat: butter, creme fraiche, whipped cream or cheese

meat: lamb, duck, goose, beef

vegetable oils, mayonnaise, salad dressing

avocado, coconut

¹ Disclaimer: These general advices do not take into account any other analyzes (allergy, tolerances, insulin sensitivity, intestinal health, thyroid function, etc.).

Average amount of protein, including the meat mentioned above, from dairy products, and from high purine proteins such as organ meats (liver, heart), salmon, tuna, mackerel, herring, sardines. Shellfish and vegetables contain less purine protein.

Reduce carbohydrates (including fruit sugars) to a minimum. Also cut back on wheat and rye, unless fully matured. These grains contain phytate, which interferes with calcium, magnesium and zinc absorption. People with rapid oxidation often do not appear to react well to these grains.

Eat lots of vegetables, at least twice a day with meals.

Note: Depending on the condition of your heart you should reduce the absorption of fats!

Both the dietary supplement and diet program recommended are of great importance to the success of the program.

- The eating habit is just as important as the food itself. Take your time, and don't eat on the job.
- Eat regularly at set times.
- Chew well, eat slowly and wait 10 minutes before returning to work.
- Food should be as fresh as possible. Simple combinations instead of complex meals can aid digestion.

Lifestyle

A healthy lifestyle improves the speed of your recovery significantly. Important elements are:

- Sleep on average 7 hours a night. Research has shown that our body needs at least 30% of a day to recover. This recovery takes place mainly during the night for many people.
- Movement. Sufficient physical activity every day (walking, cycling, swimming, dancing, yoga, etc).

Medication

When you start your supplement program, it is important that you do not stop taking any medications while taking them. However, as your metabolism improves, various medications can be tapered off step by step. However, it is important that you do this after consulting your doctor.

How to follow the supplement program

The recommendations in the program are based on the HMA results. For best results, it is recommended to adhere to the program as advised. Do not mix morning, afternoon and evening prescriptions together.

- Supplements should be taken just before, during, or after a meal.
- If it is necessary to reduce the number of tablets per day, use the program twice or once a day, but keep the proportions the same.
- Heartburn support may be necessary in the event of bloating or gas formation. Do this in consultation with your therapist.
- Supplements can be stored in a sealed bag or special vitamin box to avoid opening your jars every day.

What can you expect

- In general, you will notice a change after 2-4 weeks after starting. Sometimes that is a deterioration and not an improvement. However, no one is the same and everyone reacts differently!
- The program is aimed at restoring your body energy. Many people will notice this too. If you notice this, don't immediately increase your work schedule or your social calendar pressure. It is better to use this amount of energy for further recovery and building.
- It is very possible that you will feel extra tired at first. This is characteristic of the new balance that your body is looking for. This reaction can also occur later, after you first felt better. We call this the self-healing capacity of the body that is restarted. Causes are inflammatory processes or the elimination of heavy metals through the blood to the organs and the skin. This can also be accompanied by headaches, diarrhea, constipation or stomach pain for several days. These reactions are normal as a result of the body's recovery.

Why minerals are advised when levels are high

Research has shown that replacement therapy (recommending minerals that are deficient according to the HMA) is not always an effective method in balancing your body. Instead, your supplement program takes into account the complex relationships and relationships that exist between minerals and between minerals / vitamins. It is therefore quite common that when a mineral that is deficient is not automatically advised, but that a mineral that is in surplus is advised. This approach is essential to the success of the program.

A repeat analysis

Doing a new Hair Mineral Analysis is advised after approx. 3 months. This new analysis is very important because the metabolic processes in your body will change as a result of your diet and the supplements. To accommodate these changes, it may be necessary to adjust the program to prevent progress from stopping. It is certainly not recommended to follow the program for more than 6 months without a new HMA.

15 Advised supplement program

Below is a supplement program that consists of balancing the mineral balance of the body. It sometimes happens that the client thinks this is quite a lot, also because of the costs. We do not advise you to run any part of the program as it will not work due to the dosages of different products. We recommend that you start, but with a lower dose per day. The client can then experience how the body reacts after a few weeks, and then decide, in consultation with you, to increase the dose per day.

	Morning	Noon	Evening
METABOLIC PAK			
Stress Pak	2	2	2
GLANDULARS			
Thym-Adren	1	1	1
VITAMINS			
Endo A-C	1	1	1
DIGESTION			
EnzAid	1	1	1
MINERAL CHELATES			
Paramin	1	1	1
Zinc	1	1	1
OTHER SUPPLEMENTS			
Fulvic Acid from Biomore	1 liter diluted fulvic acid drink per day		
Or:			
Renamide	1	1	1
Selenium	1	1	1

The following section explains why nutritional balancing supplements are recommended:

Stress Pak has been specially formulated to reduce the excessively fast oxidation rate. The product contains a special group of nutrients that calm the central nervous system and reduce overactive thyroid and adrenal activity. These nutrients are calcium, Vitamin A, Vitamin B12, choline, panthothenic acid, methionine, bioflavonoids, zinc, iodide and copper.

Thym-Adren contains thymus and adrenal nucleoproteins in combination with special nutrients. Bio-Thym has been developed to normalize adrenal activity. Excess activity is a characteristic of a rapid metabolic system and a mixed fast oxidation. The glandular supports the adrenal glands, while the thymus nucleoproteins have an antagonistic effect and slow adrenal release. With this, Thym-Adren regulates the adrenal glands instead of stimulating them.

Endo A-C contains vitamin A, vitamin C and bioflavonoids. Endo A-C is recommended to support the immune system.

Enz-Aid is a complete digestion support preparation for the digestion of starch, fats and proteins with the help of trypsin and chymotrypsin. Emphasis has been placed on the pancreas and liver enzymes.

Paramin is formulated to provide the necessary balance of calcium and magnesium. Macromin offers these essential components in a highly absorbable form such as calcium and magnesium citrate and chelate. This product contains the supporting nutrient Boron for better absorption and utilization of these essential minerals.

Zinc is necessary for the synthesis and release of insulin and to protect you from the negative effects of stress. Zinc is also necessary for the production and release of adrenal glucocorticoid hormones. An increase in these hormone levels improves the storage of potassium in the body.

Fulvic acid (Biomore) is a natural substance and part of the so-called 'Humic acids' (acids that are released during the composting of vegetable material). In its pure form it has great detox properties. Fulvic acid is easily tolerated by the body. It promotes the absorption of nutritional supplements and helps to remove heavy metals and other unwanted particles and compounds.

Renamide contains kidney nucleoproteins along with other specific synergistic nutrients. The product is recommended to further improve renal function and assist in the removal of toxic metals through the kidneys.

Selenium is often used for people with both fast and slow oxidation to aid in the detoxification of heavy metals, and in people with sympathetic dominant slow oxidation for normal thyroid hormone production and thyroid function.

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