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# HAIR TISSUE MINERAL ANALYSIS

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## **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 ability to determine the stage of stress <sup>(42)</sup> and the oxidation rate <sup>(43)</sup> 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.

### **OXIDATION RATE**

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.

#### **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.

#### **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.

- ▶ Your hair tissue mineral analysis indicates a significantly slow oxidation rate.

## STRESS AND ITS EFFECT ON HUMAN ENERGY AND HEALTH

Stress is the response of the body to any physical or emotional stimulus and may be both harmful or beneficial, depending upon the type and intensity of the stressor. For example, exercise places stress upon the bones and muscles and keeps them strong. Stress that is controlled and limited also serves a very useful purpose by driving us to lead more productive and creative lives. However, constant stress, such as financial worries, job-related pressures, family issues, etc., will have a negative effect on your health and result in the depletion of essential energy producing trace minerals and vitamins. Without these energy producing minerals and vitamins the ability to cope with stress decreases and a cycle of declining health begins. Excessive stress is often associated with many health related issues and may also lead to the premature aging of the body.

The body reacts to stress by mobilizing all of its available energy. If adequate levels of energy can be mobilized to overcome the stress, health and well-being are restored. However, if the body cannot produce enough energy to overcome the stress, the body automatically reacts to it with a general adaptation syndrome consisting of three distinct stages. Hans Selye, M.D., identified these stages as the *alarm stage*, the *resistance stage* and the *exhaustion stage*.<sup>(11,42,51)</sup> The *Stress Theory of Disease* states that the body passes through these three stages as it comes under prolonged stress. Each stage has a particular biochemistry and specific conditions. Understanding the stage of stress can assist in guiding its correction from a less healthy and lower energy stage of stress to a more healthy and higher energy stage.

### Alarm Stage

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

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 is 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.

### Exhaustion Stage

The exhaustion stage of stress occurs when the body has exhausted its energy levels in an attempt to contain the stress. In this stage, the body no longer has the necessary energy reserves to resist or contain the stress and is now in a holding pattern to prevent a further decline in health. Symptoms may include fatigue, depression, apathy, despair, constipation, dry skin and hair, adrenal exhaustion and at times less than optimal thyroid activity. This is the most common stage of stress among adults today.

- ▶ Your hair tissue mineral analysis indicates your body is presently in the *resistance stage* of stress.

## **ENERGY PRODUCTION AND YOUR GLANDULAR SYSTEM**

The adrenal and thyroid glands are the main energy-producing organs in the body. They work together to release simple sugars from the liver and then process them into energy. These glands need to be functioning at optimal levels to have the maximum amount of energy possible.

The adrenal and thyroid glands also determine the rate of metabolism or oxidation rate. If both of these glands are underactive, an individual will generally be in a state of slow oxidation. A slow oxidizer will have a lowered rate of metabolism and normally will experience fatigue or a lack of energy. If the adrenal and thyroid glands are overactive, an individual will generally be in a state of fast oxidation and experience an abundance of energy, but only for limited amounts of time. If one of the glands is underactive and the other overactive then an individual will be in a state of mixed oxidation and at times may experience both a lack of energy and then a burst of energy.

The adrenal glands are also responsible for providing extra *energy* when needed. In an emergency situation, it is the adrenal glands that release the hormone adrenaline which generates a sudden increase in energy.

Finally, adrenal hormones are required for maintaining normal blood pressure and blood sugar, combating inflammation, carbohydrate metabolism and to activate the body's response to stress. The adrenal glands are also the sole source of female hormones after natural or surgically-induced menopause (20).

- ▶ Your hair tissue mineral analysis indicates a pattern of diminished cellular adrenal glandular activity. This may be due to chronic stress, toxic metals, nutrient deficiencies, fear or other stress related factors. Diminished adrenal gland activity may contribute to symptoms of fatigue, exhaustion, depression, mood swings and PMS or menopausal symptoms in women.

Weak adrenal gland activity 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.

- ▶ Your hair tissue mineral analysis indicates a cellular thyroid effect that is outside the optimal range. This may possibly contribute to fatigue, weight gain, dry skin, brittle hair, depression, a tendency for infections, low body temperature, low blood pressure and low blood sugar. Common causes of thyroid activity outside the optimal range include the presence of mercury, copper and chlorine toxicity, impaired adrenal activity, nutrient deficiencies and chronic stress.

## **SPECIAL METABOLIC PATTERNS**

### **Copper Imbalance**

A copper imbalance is so common and so important that it is identified as a major pattern on a hair tissue mineral analysis. Many of the most prevalent metabolic dysfunctions of our time are related in some way to a copper imbalance. A copper imbalance is often associated with fatigue, emotional sensitivity, depression, mood swings, anxiety, insomnia, skin conditions, yeast infections and many other disorders. See additional comments under "Nutrient Mineral Patterns".

## DIETARY PATTERNS

### Sugar and Carbohydrate Tolerance

The excessive intake of carbohydrates in the diet is often associated with the development of many health conditions including hypoglycemia, diabetes, digestive difficulties, yeast infections, fatigue, depression and others. Excessive carbohydrates may also upset the balance between calcium and phosphorus and between calcium and magnesium. (3,7,11,15,18,33,37,44,48,49,54,55)

- ▶ Your hair tissue mineral analysis indicates significantly impaired sugar and carbohydrate tolerance.

### Protein Synthesis

Adequate protein synthesis is vitally important for the regeneration of all body tissues. This requires proper digestion, absorption and utilization of proteins. It also requires adequate levels of zinc and other micro-nutrients. Protein synthesis is influenced by the amount and type of protein consumed in the diet and by one's eating habits.

- ▶ Your hair tissue mineral analysis indicates impaired protein synthesis at this time.

### 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.

- ▶ Your hair tissue mineral analysis indicates impaired digestion.

## NERVOUS SYSTEM PATTERNS

### Autonomic State

The autonomic nervous system regulates many functions in the body and consists of the sympathetic and parasympathetic branches. The sympathetic branch activates the brain, muscles and the thyroid and adrenal glands which enable the body to respond to stress. During the day, one primarily uses the sympathetic nervous system which is associated with expending energy and is catabolic, breaking down body tissues. (20) One is in a more sympathetic state when physically or mentally active.

The sympathetic branch of the nervous system is balanced by the parasympathetic branch which is associated with the nurturing and regeneration of body tissues. The parasympathetic branch also enhances digestion and the elimination of toxins. This branch is restful, conserving of energy and is anabolic or builds up new tissue. Healing requires that one spend sufficient time in a parasympathetic state to permit proper digestion, elimination of toxins and rebuilding of the body. (20,52) One is more parasympathetic when sleeping, resting or relaxing.

The vast majority of individuals today have either overactive sympathetic nervous systems or they have exhausted the sympathetic system from overusing it. These individuals often shift into an *unhealthy parasympathetic state* in which the body is exhausted and now is attempting to permit some degree of healing and regeneration. A high

percentage of slow oxidizers fall into this category. Maintaining a proper balance between the sympathetic and parasympathetic branches is critical to your health. This allows you to conduct all the necessary functions of daily life and at the same time provide for the regeneration of the body.

Dr. Melvin Page, DDS studied the balance between calcium and phosphorus in serum and its relationship to the balance between the sympathetic and parasympathetic nervous systems. (33) The mineral balance between calcium and phosphorus reflects an average autonomic state over the past several months.

- ▶ Your hair tissue mineral analysis indicates your body is predominantly in a *parasympathetic state*. This is often due to the exhaustion of the sympathetic nervous system, which causes the body to shift to an **unhealthy parasympathetic state** to allow for some degree of healing and regeneration. General causes for this state include nutrient deficiencies, toxic metal excesses, excessive activity or mental patterns such as worrying, fears, anger or resentments.

To balance the autonomic nervous system, additional rest is required and it is important not to push yourself or work too hard as these activities stimulate the sympathetic nervous system.

## **ORGAN AND SYSTEMS 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.

- ▶ Your hair tissue mineral analysis suggests an impaired immune system that may limit the body's ability to remain in a healthy state. This may contribute to fatigue and acute, chronic or recurrent viral, bacterial or fungal infections.

### **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.

- ▶ Your hair tissue mineral 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**

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.

An elevated sodium/potassium ratio is often associated with a tendency for inflammation. Acute inflammation generally causes an increase in adrenal activity and thus a rise in the secretion of the hormone aldosterone. Aldosterone is a pro-inflammatory hormone. Cortisol and cortisone 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.<sup>(20)</sup>

- ▶ Your hair tissue mineral analysis currently does not indicate the presence of an inflammatory tendency.

### **Cell Permeability**

Cell permeability refers to the ability of substances to move into or out of the cell by crossing the cell membrane. Some substances are able to cross the membrane very easily and the membrane is said to be very permeable to these substances. Additionally, other substances move across with increased difficulty and others are excluded completely. In the latter case the cell membrane is impermeable to these substances. The correct degree of cell permeability is very important to maintaining excellent health. "Sodium and potassium tend to increase the cell's exchanges and the entrance of water-soluble toxins. Calcium and magnesium tend to reverse this situation."<sup>(27)</sup>

- ▶ Your hair tissue mineral analysis indicates significantly decreased cell permeability. This impairs the entrance of hormones, glucose and other substances into the cells. It also impairs the elimination of toxic substances from the cells. This may contribute to reduced adrenal gland activity, thyroid imbalance, cellular nutrient deficiencies, cellular toxicity and often symptoms of chronic low cellular glucose or insulin resistance.

## **METABOLIC TRENDS**

Mineral research by Dr. Paul C. Eck and others indicates that certain patterns on a hair tissue mineral analysis may often be associated with a particular health condition.<sup>(7,11,51)</sup> We refer to these mineral patterns as metabolic trends. Metabolic trends are not intended to be diagnostic in nature and they do not necessarily indicate that such a trend is currently present. Metabolic trends often indicate that if your present mineral levels, ratios and patterns continue as they are for a long enough period of time, it is possible you may develop these conditions. Your hair tissue mineral analysis indicates tendencies for the following metabolic trends.

### **Adrenal Insufficiency**

This is the reduced activity or response of the adrenal glands and is often associated with chronic stress or nutritional deficiencies. A slow or slow-mixed oxidation rate is closely associated with reduced cellular gland activity.

### **Anemia**

Anemia is a reduction in the number of red blood cells per cubic millimeter, in the quantity of hemoglobin or in the volume of red blood cells.



**Depression**

This is a condition often associated with a dejected mood, insomnia, fatigue, guilt feelings or preoccupations.

**Fatigue**

Fatigue is a loss of energy or the power to respond to the environment. Symptoms may include reduced muscular strength, stamina or endurance, impaired cognition and a reduced emotional response. Fatigue is often associated with a slow or slow-mixed oxidation rate.

**Glucose Intolerance**

Glucose tolerance is the ability of the body to metabolize glucose, a form of sugar. Sugar intolerance occurs when ingested sugar causes an excessive increase in blood sugar and often excessive insulin secretion.

**Hypothyroidism**

Hypothyroidism is a reduced level of thyroid activity and is often associated with chronic stress and nutritional deficiencies.

**Kidney Stress**

The kidneys regulate the composition of the blood by removing wastes and toxic substances. Kidney dysfunctions due to excessive stress may involve improper filtering of the blood, resulting in a variety of possible health conditions.

**Liver Stress**

The liver performs over 500 functions, ranging from amino acid synthesis and glycogen storage to detoxification. Excessive stress on the liver may hinder the performance of various liver functions.

**ELECTROLYTE PATTERNS**

**Calcium**

Calcium is mainly found in the bones and teeth, but is also required for the nervous system and for muscle contraction and relaxation. It is a primary extra-cellular element.

- ▶ Your calcium level is within a good range. For clinical assessment however, it must be considered in relation to all the other minerals. Hidden toxic metals, nutrient deficiencies or prescribed medications can affect hair calcium readings. For this reason, calcium supplementation may be recommended.

**Magnesium**

Magnesium is required for the bones and nervous system. It is also essential for over 600 vital enzymatic reactions in the body. It is a primary intra-cellular element. (44)

- ▶ A low magnesium level on a hair tissue mineral analysis is often due to an excessive excretion of magnesium in the urine as part of an alarm stage response to stress. Decreased magnesium on a hair tissue mineral analysis often associated with a fast oxidation rate.

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### Sodium

Sodium is an essential mineral for maintaining water balance and blood pressure in the body and is a primary extra-cellular element.

- ▶ A low sodium level on a hair tissue mineral analysis is often associated with reduced sodium retention due to impaired adrenal gland activity. This may contribute to symptoms of fatigue and low blood sugar. A low sodium level does not necessarily mean one is consuming too little salt.

### Potassium

Potassium is a primary intra-cellular element required for fluid balance, nerve activity and muscle activity.

- ▶ A low potassium level on a hair tissue mineral analysis is often associated with excessive excretion of potassium due to adrenal gland weakness and the exhaustion stage of stress. This may contribute to feelings of fatigue and low blood sugar.

## NUTRIENT MINERAL PATTERNS

### Iron

Iron is required for energy production, blood formation and antioxidant formation (catalase). An excess of iron or toxicity may also occur and contribute to liver and artery disease, dementia and behavioral difficulties (28).

- ▶ In most cases, a low iron level in the hair does not necessarily indicate a deficiency or lack of iron and often represents bio-unavailable iron. This means an excess of iron may be present in the liver or other organs, but is not revealed in the hair at this time. An iron imbalance is often associated with general fatigue.

### Copper

Copper is required for connective tissue health, women's fertility, cardiovascular health, blood formation, energy production, neurotransmitter activity and the immune system.

- ▶ Deficient hair copper levels are often associated with bio-unavailable copper. This means an excess of copper may be present in the body, but not in a usable state. This may contribute to symptoms of copper deficiency such as hormonal imbalances, anemia or headaches.

### Manganese

Manganese is required for sugar metabolism, tendon and ligament function, energy production, and thyroid activity.

- ▶ A low manganese level is often associated with a manganese deficiency in the diet, especially if one consumes refined foods or white sugar.

### Zinc

Zinc is required for over 50 functions including all protein synthesis, vision, digestion, prostate health, skin, hair

and nail health, and immune system activity.

- ▶ 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.

### **Chromium**

Chromium is required for sugar and carbohydrate tolerance and cholesterol metabolism.

- ▶ A low chromium level may contribute to blood sugar imbalances, cravings for sweets or starches, fatigue, elevated cholesterol, hypoglycemia or diabetes.

### **Selenium**

Selenium is required as an anti-oxidant nutrient to convert T4 to T3 and for detoxification of heavy metals and toxic chemicals.

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

### **Phosphorus**

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.

- ▶ A low hair tissue mineral phosphorus level indicates excessive protein catabolism or tissue breakdown. This may be due to improper diet with a low protein intake, inadequate protein quality, impaired digestion, imbalanced intestinal flora, intestinal infections such as candida albicans or other parasitic infections. Other considerations that may play a role in a low phosphorus level are a low zinc level or a hidden copper toxicity. These mineral imbalances can impair protein synthesis which requires a zinc dependent enzyme, RNA transferase. Improper eating habits that interfere with digestion may also contribute to your low phosphorus level at this time. 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.

## **TOXIC METALS AND CHEMICALS**

The presence of toxic metals and chemicals can potentially present a serious health hazard. (1, 11, 12, 13, 14, 15, 16, 19, 22, 29, 31, 39, 51). A serious problem today is that a large number of babies are born high in toxic metals due to toxicity in the mothers. A review of over 400 medical studies by the US Environmental Protection Agency revealed that hair tissue mineral analysis is a meaningful test to detect toxic metals (47).

Toxic metals can cause hundreds of symptoms and contribute to many serious health conditions. There are no safe levels of toxic metals and reducing the presence of toxic metals is a primary goal of your nutritional balancing program.

Seven different methods are used simultaneously in your recommended dietary, supplement and lifestyle program to assist in the reduction of toxic metals. These are 1) improve your energy level, 2) provide support for the organs

of elimination, 3) inhibit the sympathetic nervous system, 4) reduce exposure, 5) supplement with heavy metal antagonists, 6) supplement with natural heavy metal chelators and 7) recommend other natural detoxification methods.

The hair tissue mineral analysis does not test for toxic chemicals such as pesticides and solvents. However, enhancing energy production, inhibiting the sympathetic nervous system, assisting the organs of elimination and reducing exposure to all toxins greatly assists the removal of toxic chemicals from the body.

Hair tissue mineral analysis only detects metals present in the hair tissue. No test can detect all toxic metals, as some are hidden deep within other tissues or organs. The unique value of hair mineral tissue mineral analysis is not so much to detect toxic metals, but to guide the balancing of body chemistry to assure their safe and swift removal. When the seven methods above are combined, the metals will be removed without the need for synthetic chelators.

Toxic metals are often layered deep within body tissues. The recommended diet, supplement, lifestyle and detoxification program will slowly release layer after layer. Hidden metals will often be revealed on future mineral tests as they are eliminated through the hair, skin and through other routes.

- ▶ **Lead**  
Lead level in the hair tissue is elevated. Sources of lead include canned food, contaminated shellfish, exposure to solder and metals, soft water, hair dyes, old paints, contaminated air and soil. Lead toxicity may contribute to metabolic dysfunctions such as, osteoporosis, anemia, neuromuscular disorders, fatigue, fractures, autism, ADHD, hyperactivity and anti-social behavior.
- ▶ **Cadmium**  
Cadmium hair level is elevated. Sources of cadmium include junk food, tap water, cigarette and marijuana smoke, industrial exposure, contaminated shellfish and coffee drinking. Cadmium toxicity may contribute to symptoms of joint pain, kidney disease, hypertension, fatigue, cardiovascular disease and anti-social behavior.
- ▶ **Aluminum**  
Aluminum hair level is elevated. Sources of toxicity include beverages packaged in aluminum cans, food in aluminum containers, food wrapped in aluminum foil or cooked in aluminum cookware, anti-perspirants, antacids, table salt, foods prepared with water and mint teas. Aluminum toxicity may contribute to memory loss, dementia, fatigue, behavior difficulties and skin rashes.

## **DETOXIFICATION**

In addition to your dietary, lifestyle and supplement recommendations, sauna baths can be extremely helpful for heavy metal detoxification.<sup>(39, 52)</sup> Electric light infrared saunas have been found to provide the most beneficial results. Saunas are often more effective for heavy metal detoxification than steam baths, hot tubs or tub baths, by stimulating the skin, the largest organ of detoxification. They also help enhance circulation and oxygenation of the body. The best times for sauna baths are first thing in the morning or last thing at night.

## **GENERAL INFORMATION**

### **Balancing Body Chemistry**

Balancing body chemistry requires time. In many cases, vital minerals have been replaced in the body tissues with toxic metals such as lead, cadmium, mercury, aluminum and others. These toxic metals are often bound in the tissues and may not show up on your initial hair tissue mineral analysis. The process of corrective healing and rebuilding of body chemistry may require many months to even years depending on your condition at the beginning of the program. It is a well known fact that it often takes six months to replenish one mineral, such as iron (reserves) in an individual with iron deficiency anemia. Additional factors such as diet, lifestyle, stress and medications can all alter mineral levels and ratios and can affect the rate of improvement.

### **General Dietary Principles**

For the slow and slow-mixed oxidizer, general dietary principles to follow are:

- Higher amounts of low-fat protein foods - such as small fish, fowl, bean and grain combinations, eggs and lean meats.
- Lower dietary intake of fat.
- Moderate amounts of unrefined carbohydrates - such as whole grains and whole grain products, legumes (beans, peas, lentils), root vegetables (potatoes, yams, etc.), squash.
- Avoid or eat sparingly: fatty meats and foods high in fat content, organ meats (high purine content), and dairy products (high fat content).
- Eat plenty of vegetables with at least two of your meals per day.

Both the supplement and dietary recommendations are important for the eventual success of your program. For a thorough explanation of the optimum diet for you, we recommend our personal diet plan - "An Eating Plan for Optimal Health" (Profile V), which is designed to aid in the balancing of your particular biochemical imbalances. This dietary concept provides three transition stages of dietary recommendations based upon metabolic (oxidation) rate, individual mineral readings and ratios and symptom based food recommendations. The eating plan provides two entry level stages (Introductory and Intermediate) of transition diets on your way to the final and third stage "Optimal Diet". This allows you to begin with a dietary transition level you feel comfortable with before moving on to the Optimal Diet. Our easy to follow plan also emphasizes the benefits of good eating habits and quality food selections.

### **Eating Habits**

- Eating habits are as important as what you eat.
- Eat regular meals, at set times during the day if possible.
- Allow time for meals, sit down to eat, refrain from eating on the run.
- Chew your food thoroughly, eat slowly and relax for at least 10 minutes after eating before returning to work or other activities.
- Food should be as fresh as possible and organically grown if possible. Simple food combinations can favorably assist digestion.

### **Lifestyle**

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A healthy lifestyle will significantly enhance the speed at which your body chemistry will return to a balanced state. An unhealthy lifestyle will definitely slow progress.

Important Elements Of Lifestyle Are:

**Sleep:** Getting plenty of sleep and rest is absolutely essential to obtain the best results possible from the program. Most healing takes place while you sleep. Sleep and rest allow your body to utilize the healthier foods and supplementary nutrients you are providing. We cannot emphasize enough the importance of getting proper amounts of sleep and rest. Eight to ten hours of sleep per night and a rest or nap of about 20 minutes per day will enhance the effectiveness of the nutrition program.

Individuals with adrenal insufficiency may find that the more they sleep, the worse they feel, especially upon arising. This occurs because their exhausted adrenal glands further slow down during sleep and upon awakening, the adrenal glands are functioning more slowly than when they went to bed. In these instances, it may be preferable to take short naps or rest periods several times a day if needed, no more than 20 minutes each, rather than sleep more hours at night.

Some people are reluctant to go to bed. By the end of the day, the adrenal glands finally become active, due to being 'whipped' all day. Such a person feels more alive in the evening (night people) and hence they are reluctant to go to bed. The solution to the above problem is to realize that the goal is to have normally functioning adrenal glands all day, without the need to 'whip up' the glands with coffee, exercise, mental stress or alcohol.

By enhancing body chemistry and obtaining adequate rest, reactivation of the adrenal glands may be accomplished over a period of time.

**Exercise:** Perform some type of gentle physical activity every day. Strenuous exercise is not necessary or recommended at this time. Light exercise such as walking, cycling, swimming, dancing, yoga, stretching or gardening are excellent forms of exercise. Preferably, exercise out of doors. Don't push any exercise to exhaustion.

### Medications

When beginning your supplement program, it is important that you do not stop taking any prescribed medications. However, as your metabolism improves, some medications may gradually be reduced. It is our recommendation to discuss this with your doctor or health-care professional before making any changes.

### How to Follow the Supplement Program

- The supplement program recommendations are based upon the results of your hair tissue mineral analysis. For optimal results, it is best to follow the program exactly as outlined. Do not combine the A.M., Noon and P.M. dosages.
- Supplements should be taken just prior to, during, or immediately after meals.
- If for any reason it is necessary to reduce the number of tablets, take the program twice, or even once per day, instead of three times per day.
- You may take extra dietary aids if needed to combat gas or bloating. Start with one additional tablet per meal and increase tablet count as necessary to help alleviate bloating. Consult your health care professional if gas or bloating continues.
- Supplements may be placed in zip-lock bags or in a vitamin chest to avoid having to open your supplement bottles every day.

### **What to Expect on the Program**

- Generally, most individuals will notice some degree of change within a few weeks of beginning the program. However, everyone is different and some respond faster than others.
- The program is designed to restore your body's energy system. For this reason many people will feel an increase in their energy levels. If this occurs, do not immediately increase your workload and obligations. It is preferable to conserve the newly found energy, like putting money away in the bank. Otherwise, you may slow your progress considerably.
- It is possible you may observe increased fatigue for a while. This is referred to as retracing and is discussed in the following section.
- Conditions will be addressed in their own order, not necessarily in a sequence which you may think is most important. For this reason, you may notice improvement in certain areas first, while others require more time for correction.

### **Healing and Retracing**

Healing reactions are symptoms that accompany changes in body chemistry as deep healing occurs. (11,17,24,27,51,52) Retracing is the process whereby the body goes back and revisits chronic conditions in order to heal them completely. These may include sites of infection or injuries. An inflammatory process may possibly occur for a few days or less.

Most people experience a half dozen or more low-grade chronic infections of which they are unaware. These may flare up or become painful as the healing process proceeds. Common sites are the eyes, ears, throat, sinuses, bladder and intestines. These types of symptoms will usually pass within a few days with supportive measures such as additional rest and sleep.

Reactions may also be due to the elimination of toxic metals. When an elimination occurs, toxic metals are first moved from storage tissues into the blood stream. They are then sent to the liver, kidneys, bowel and skin for removal from the body. During the time the toxic metals are present in the blood, one may experience symptoms such as a headache, fatigue, nausea, diarrhea, constipation or stomach pain.

These reactions are normal and part of the deep healing of the body. They usually pass within a day or two. It is best to temporarily stop your nutritional supplement program and rest more during these reactions.

### **Why Minerals May be Recommended Even if the Level is High**

Research has shown that replacement therapy, recommending those minerals that are deficient on the hair tissue mineral analysis, is often not an effective method of balancing body chemistry.

Instead, your supplement program takes into account the complex relationships between minerals and between minerals and vitamins. Therefore, it is common that a mineral that is low will not be recommended and that a mineral whose level is high will be recommended. This method is essential to the success of the program.

### **Retesting**

Retests are recommended in approximately three to four month intervals. Retesting is essential because as your body chemistry changes the diet and supplement program should be adjusted to meet your current needs. Otherwise, the program will no longer properly balance your body chemistry and your progress will cease. It is best not to remain on a supplement program more than six months without a retest.

# Joe Sample

## RECOMMENDED SUPPLEMENT PROGRAM

	A.M.	NOON	P.M.
<b>METABOLIC PAK</b>			
Megapan	2	2	2
<b>GLANDULARS</b>			
Endo-Dren	1	1	1
<b>CHELATED MINERALS</b>			
Paramin	1	1	1
Endo-Pan	1	1	1



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The following paragraphs are explanations as to why your supplements have been recommended.

**Megapan** is a specific multiple vitamin-mineral product designed to enhance one's rate of metabolism, or oxidation rate. The correction of the metabolic rate requires a combination of nutritional factors. Megapan stresses those nutrients which correlate well with those effecting one's metabolic rate.

**Endo-Dren** contains bovine adrenal nucleoprotein together with vital synergistic nutrients to aid in restoring normal adrenal response. Glandular products contain polypeptides, enzymes, and nucleoproteins which have been shown to enhance glandular function. This product is generally recommended for the slow and slow-mixed oxidizer.

**Paramin** is formulated to provide the necessary balance of calcium and magnesium. Paramin provides these essential elements in a very well absorbed form including calcium and magnesium citrate and chelate. This product also contains the supportive nutrient boron to further enhance the absorption and utilization of these essential minerals.

**Endo-Pan** is a specifically formulated product which contains zinc, pantothenic acid and cysteine. "Zinc is critical as an activator and constituent of many enzymes". Pantothenic acid "serves as part of coenzyme A, which is at the center of energy metabolism...it's chief importance stems from it's relationship to energy production (and) stress resistance...". -Kutsky. Endo-Pan is designed to support adrenal gland function and to enhance coenzyme-A activity which requires pantothenic acid, L-cysteine and zinc.

## GLOSSARY OF TERMS

The following glossary of terms are important to the comprehension of this interpretation. Please take the time to review these items and refer back to this list as often as needed.

- **Adaptation** - Adaptations are the way the body alters itself, changing mineral and vitamin levels, body temperature, blood sugar levels, etc., to survive in the best way possible, given the circumstances. In mineral balancing nutrition programs, foods, vitamins and minerals are used to remove the need for adaptations. Sometimes, nutrients are also used to force the body to adapt in ways that will promote health, using nutrition to push the body in such a way that it moves back toward normal functioning.
- **Bio-Unavailability** - This is a particular type of mineral retention or non-utilization, due to lack of a releasing factor. Bio-unavailable minerals are generally elevated, unless the mineral is locked up in tissues other than hair. In this case, the level may be very low.
- **Compensation Principle** - The minerals on the chart compensate for and adapt to one another in order to maintain critical levels and ratios.
- **Dual Concept of Energy** - There are two aspects to the body's biochemical energy system, 1) the rate of energy production or oxidation rate and 2) the energy pathway or the steps involved in energy production. Both the rate and the functioning of all steps must be optimized to obtain maximum energy production.
- **External Stress** - Factors arising from outside our bodies, which affect our health, are called external stressors. They may include physical factors (heat, cold or noise), social pressures, financial or job stress, microorganisms such as bacteria, etc.
- **Internal Stress** - Internal stressors are those factors, which originate from inside the body, which cause stress. Nutritional imbalances can be the result of stress, but is also a cause of internal stress. This is hidden stress, which can cause both physical and emotional problems.
- **Metabolism** - Metabolism is the total of the chemical reactions taking place in the body. Metabolism is divided into two parts, anabolism and catabolism. Anabolism refers to those reactions which build up body tissues, while catabolism refers to reactions and processes which tear down body tissues.
- **Mineral Displacement** - One mineral can displace or replace another. Displacement causes an elevated reading of the mineral displaced.
- **Mineral Excretion** - A physiological effect of elimination of an unneeded mineral, that had been retained. Excretion elevates the mineral reading.
- **Mineral Loss** - A pathological loss of minerals through the hair can occur due to lack of a retaining factor. A mineral loss elevates the reading.

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- **Mineral Levels** - Refers to actual mineral levels reported on the graph.
- **Mineral Ratios** - A relationship consisting of one mineral level divided by a second mineral level.
- **Mineral Patterns** - A group of levels or ratios or some combination of the two. Slow and fast oxidation, for example, are mineral patterns defined by several ratios.
- **Minerals-Antagonistic** - Minerals which are inversely related. When the level of one mineral goes up, the other mineral level goes down. Minerals may be both synergistic and antagonistic under different conditions.
- **Minerals-Synergistic** - Minerals which are directly related. When the level of one mineral goes up, the level of the other mineral goes up also. Minerals may be both synergistic and antagonistic under different conditions.
- **Oxidation Rate** - The oxidation rate is the rate at which food is burned in the body. The oxidation rate is closely related to the metabolic rate, a term referring to the general rate of chemical reaction or metabolism in the body.

**Fast Oxidation** - The condition in which there is too rapid a release of energy in the biochemical pathway.

**Slow Oxidation** - Slower than normal release of energy in the biochemical pathway.

**Mixed Oxidation** - A transition or unstable state in which one of the glands, thyroid or adrenal, is overactive and the other underactive, causing an unstable release of energy.

- **Retracing** - The concept that as old mineral patterns are passed through on the way back to health, previous symptoms may return for a period of time.
- **System Principle** - The hair analysis graph must be viewed as a system - that is, all at once, for proper understanding. Trying to understand one reading without considering all the other readings, will only lead to confusion and misinterpretation.
- **Stages of Stress** - Dr. Hans Selye discovered that one's body passes through several well-defined stages as they come under more and more stress. He called these stages alarm, resistance and exhaustion.
- **Time Factor** - As ratios remain uncorrected over time, compensations and adaptations occur on many different levels. Time is required for correction, because these compensations and adaptations must be reversed, usually in reverse order called, retracing.
- **Toxic Metals** - Lead, mercury, cadmium, arsenic, aluminum and nickel. These may be found in the body, but have no known necessary function and can cause disease.
- **Toxic Metal Elimination** - An important goal and occurrence is the removal of toxic metals. Sometimes temporary symptoms may occur such as, a metallic taste, headache or skin rash as toxic metals are removed.

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