

INTRODUCTION

THE FOLLOWING REPORT SHOULD NOT BE CONSIDERED AS DIAGNOSTIC, BUT RATHER AS A SCREENING TOOL THAT PROVIDES AN ADDITIONAL SOURCE OF INFORMATION. THIS REPORT SHOULD ONLY BE USED IN CONJUNCTION WITH OTHER LABORATORY TESTS, HISTORY, PHYSICAL EXAMINATION AND THE CLINICAL EXPERTISE OF THE ATTENDING DOCTOR.

TEST RESULTS WERE OBTAINED BY A LICENSED* CLINICAL LABORATORY ADHERING TO TESTING PROCEDURES THAT COMPLY WITH GOVERNMENTAL PROTOCOL AND STANDARDS ESTABLISHED BY TRACE ELEMENTS, INC., U.S.A. THE FOLLOWING INTERPRETATION IS BASED UPON INTERNATIONAL DATA AND DEFINED BY EXTENSIVE CLINICAL RESEARCH CONDUCTED BY DAVID L. WATTS, PH.D.

This analysis including levels, ratios, ranges and recommendations are based upon the sample and sampling technique meeting the following requirements:

- ** Sample obtained from the mid-parietal to the occipital region of scalp.
- ** Sample is proximal portion of hair length (first 1" to 2" of hair closest to scalp).
- ** Sufficient sample weight (minimum of 80 mg.)
- ** High grade stainless steel sampling scissors.
- ** Untreated virgin hair (no recent perms, bleaching, or coloring agents).

* Clinical Laboratory License

U.S. Department of Health and Human Services, State of Texas Department of Health,
Clinical Laboratories Improvement Act, 1988 No. 45-D0481787

METABOLIC TYPE

SLOW METABOLISM, TYPE #1

This patient is classified as a SLOW METABOLIZER TYPE # 1. Generally speaking, the Slow Metabolizer is experiencing the following endocrine and CNS activity. However, in those cases involving endocrine replacement therapy, such as; thyroid, insulin, adrenal steroids (anti-inflammatory drugs), etc., as well as endocrine antagonists and in extreme cases of surgical removal of a gland, tissue mineral patterns can be significantly affected. In these cases, the following reported indications of endocrine status should not be considered as representative of endocrine activity. Additional clinical tests and patient history should be taken into consideration.

Para-Sympathetic Nervous System Dominance

Parathyroid Activity Increased

Thyroid Activity Decreased

Hypochlorhydria

Physical Characteristics May Include:

Fatigue

Low Body Temperature

Low Blood Pressure

Tissue Alkalinity

Pancreatic Activity Increased

Adrenal Medullary Insufficiency

Orthostatic Hypotension

Pear-Shaped Body Structure

Cold Extremities

There are several sub-classifications of each metabolic type, ranging from Type #1 to Type #4. This is taken into consideration on their supplement and dietary recommendations. The extent to which the patient is manifesting these metabolic characteristics depends upon the degree and chronicity of the mineral patterns.

RE-EVALUATION

A re-evaluation is suggested at three months from the beginning of implementation of the TEI supplement program. However, if major symptomatic changes occur (other than from toxic metal removal), a retest can be submitted sooner.

TRENDS

The following trends may or may not be manifesting in the patient at this time. Each trend that is listed is a result of research including statistical and clinical observations. This trend analysis is advanced merely for the consideration of the health professional, and should not be considered an assessment of

a medical condition. Further investigation may be indicated based upon your own clinical evaluation.

*** SPECIAL NOTE ***

It must be emphasized that the following are only trends of potential health conditions. Realistically, the probability for each trend's occurrence is based upon the degree and duration of the specific mineral imbalance. Since this analysis is not capable of determining either the previous degree of imbalance and/or previous duration, the trend analysis should only be used as an indicator to the health-care professional of potential manifestation's, particularly if the biochemical imbalance continues.

TENDENCY	1	2	3	4	5	6	7	8
BRADYCARDIA								
CALCULUS								
DEPRESSION								
DERMATITIS								
FATIGUE								
HYPOGLYCEMIA								
ANEMIA								
HYPERTENSION								
ALLERGIES								
MENSTRUAL CRAMPS								
ARTERIOSCLEROSIS								
JOINT STIFFNESS								
GASTRITIS								

COMMENTS

ALLERGIES AND COPPER:

The mineral copper is a constituent of the enzyme histaminase and the protein ceruloplasmin, both of which have the ability to destroy histamine. Zinc is required for the storage of histamine. Since the patient's zinc level is low to copper, or the tissue copper level is elevated, a low serum histamine may be present. This may result in histamine depletion if chronic. Low histamine levels have been found in the serum of patients who suffer from allergies to foods and inhalants.

ANEMIA AND EXCESS COPPER RELATIVE TO IRON:

Copper in excess amounts can contribute to iron deficiency anemia, by interfering with iron absorption and decreasing the metabolic activity of iron. A low iron to copper ratio indicates a trend toward anemia.

ARTERIOSCLEROSIS AND MAGNESIUM DEFICIENCY:

Studies have found that dietary magnesium intake is frequently found to be low in individuals with blood sugar disturbances and arteriosclerosis compared to control groups not having these conditions.

Magnesium deficiency relative to calcium indicates poor calcium metabolism. This patient's pattern indicates that a tendency exists for calcium deposition into the soft tissues including the arteries.

CALCULUS FORMATION:

When the calcium to magnesium ratio is high, a relative magnesium deficiency exists. Magnesium is important for normal calcium metabolism. A magnesium deficiency relative to calcium may cause calcium to precipitate out of solution contributing to calcium deposition in the urinary tract and gall bladder. Vitamin B-6 along with magnesium aids in preventing calculus formation as a result of calcinosis.

CARDIOVASCULAR IRREGULARITIES:

An imbalance between the normal calcium to magnesium relationship can lead to cardiac irregularities such as arrhythmia, bradycardia, or tachycardia. This is especially true if potassium metabolism is disturbed leading to ECG abnormalities.

CHOLESTASIS AND ELEVATED COPPER:

The patient's test results reveal an excess tissue copper level. A history of mononucleosis or hepatitis is frequently noted with this HTMA pattern. Since the mineral copper is normally eliminated via the liver, extrahepatic obstruction (cholestasis) may be present.

DEPRESSION AND HYPOTHYROIDISM:

An elevation of calcium relative to potassium is associated with hypothyroidism. Depression is often seen when a concomitant hypothyroid condition exists.

FATIGUE:

High calcium to potassium is associated with an underactive thyroid. Fatigue is often a common complaint associated with low thyroid function.

GASTRITIS:

High sodium relative to potassium has been associated with a gastritis-like condition.

HYPERTENSION AND BARIUM:

High levels of barium in water supplies have been associated with high blood pressure and cardiovascular disease.

HYPOADRENIA:

Low tissue sodium and potassium relative to calcium and magnesium is associated with adrenal insufficiency. This may result in low blood pressure, postural hypotension, and fatigue.

HYPOADRENIA AND EXCESS TISSUE COPPER

Adrenal steroid production effects the regulation of copper excretion. Excess tissue copper levels indicate an adrenal insufficiency, especially in the slow metabolizer. Adrenal insufficiency and hypothyroidism frequently occur simultaneously; therefore, evaluation of thyroid function may be appropriate. Copper toxicity may not be due to excessive exposure, but rather to chronic low exposure and buildup resulting from an inability of elimination.

HYPOGLYCEMIA AND SLOW METABOLISM:

Slow metabolizers are prone to hypoglycemia. This is due to the increased glycogen storage of glucose stimulated by the release of insulin. Other contributing factors are adrenal insufficiency and low thyroid function.

Hypoglycemia can be contributed to in the slow metabolizer by factors other than eating refined carbohydrates or sugar. Dairy products, juices and foods high in fat may also produce hypoglycemic symptoms.

HYPOTHYROID:

High calcium relative to potassium indicates a tendency toward a low thyroid function. It has been found that an elevated TSH, even when circulating T-3 and T-4 are normal, is an early indication of hypothyroidism.

HYPOTHYROIDISM AND COPPER:

The mineral copper appears to have a suppressing effect upon the thyroid gland. Excess copper can cause a potassium loss and elevation of tissue calcium.

JOINT STIFFNESS AND HIGH COPPER:

The mineral copper is antagonistic to vitamin C. This mechanism is related to increased oxidation of ascorbic acid in the presence of excess copper. Vitamin C is necessary for collagen synthesis. This pattern (high HTMA copper), may be related to a relative, subclinical vitamin C deficiency. This could further be related to poor collagen formation, joint instability and loss of normal range of motion.

JOINT STIFFNESS, ELEVATED COPPER AND CALCIUM:

Excess copper increases soft tissue deposition of calcium through a number of endocrine effects. If calcium deposition occurs within the joints, eventually a decrease in joint mobility can ensue.

PREMATURE AGING OF THE SKIN AND CALCIUM:

Excess calcium deposition into soft tissue can reduce the normal fluid content of cells. This can then produce dryness, thickening and wrinkling of the skin, which is related to signs of premature aging.

IMPORTANT NOTE ON TOXIC METAL ELIMINATION:

As toxic metals are mobilized from storage tissues for removal from the body, the patient may experience an exacerbation of his/her present symptoms or new symptoms associated with a particular mineral. If this occurs, or if the symptoms become too uncomfortable have the patient discontinue supplementation for three days, during which symptoms should be relieved. Have the patient then resume the program at one-third the recommended dosage, usually the PM portion, then gradually build up to twice per day and back to the full program. This may be done over a one to two-week period. If symptoms again arise, have the patient continue on only the PM portion for one week before increasing.

CONTRAINDICATIONS

It is suggested that additional supplementation and/or intake of the following nutrients and food substitutes should be avoided by the patient until re-evaluation.

VITAMIN B12

Both vitamin B12 and its constituent cobalt, antagonize thyroid activity and disrupt the sodium/potassium relationship. Vitamin B12 should therefore be avoided at this time, especially if the patient is experiencing hypo-thyroidism or taking a thyroid support.

VITAMIN D

Vitamin D and PABA are known to antagonize thyroid function and increase the absorption and retention of calcium. Excessive vitamin D supplementation can contribute to a loss of potassium and suppress thyroid expression. The patient should avoid sources of extra vitamin D and PABA, especially if a hypo-thyroid condition is present.

BORON

The element boron increases the retention of calcium by having an apparent estrogenic effect. At this time, supplementation of boron should not be considered until the biochemical pattern of this patient changes.

THYMUS

The thymus has an opposing effect on the adrenal glands. As long as an adrenal insufficiency is indicated, thymus supplementation should be avoided.

COD LIVER OIL

Cod liver oil will contribute to an adverse reduction in the metabolic rate, which can result in increased fatigue and depression. It is suggested that cod liver oil be avoided until the biochemical pattern improves.

DIETARY SUGGESTIONS

The following dietary suggestions are defined by several factors: the individual's metabolic type, mineral levels, mineral ratios, as well as the nutrient content of each food including protein, carbohydrate, fat, vitamins and minerals. Based upon these determinations, it may be suggested that foods be avoided or increased temporarily to aid in the improvement of the patient's chemistry.

GENERAL DIETARY PRINCIPLES FOR THE SLOW METABOLIZER:

A low protein, high carbohydrate, and high fat diet in addition to increased consumption of refined sugars and dairy products have a slowing-down effect upon metabolism and energy production.

- * EAT A HIGH PROTEIN FOOD AT EACH MEAL...Lean protein is recommended and which should constitute at least 40% of the total caloric value of each meal. Recommended sources are lean beef, fish and fowl. Other good sources of protein include bean and grain combinations and eggs. Increased protein intake is necessary in order to increase the metabolic rate and energy production.

- * INCREASE FREQUENCY OF MEALS...while decreasing the total caloric intake for each meal. This is suggested in order to sustain the level of nutrients necessary for energy production, and decrease blood sugar fluctuations.

- * EAT A MODERATE AMOUNT OF UNREFINED CARBOHYDRATES...Carbohydrate intake should not exceed 40% of total daily caloric intake. Excellent sources of unrefined carbohydrates include whole grain products, legumes and root vegetables.

- * AVOID ALL SUGARS AND REFINED CARBOHYDRATES...This includes white and brown sugar, honey, candy, soda pop, cake, pastries, alcohol and white bread.

- * AVOID HIGH PURINE PROTEIN...Sources of high purine protein include: liver, kidney, heart, sardines, and mackerel.

- * REDUCE INTAKE OF FATS AND OILS...Fats and oil include fried foods, cream, butter, salad dressings, mayonnaise, etc... Fat intake should not exceed 20% of the total daily caloric intake.

- * REDUCE OR AVOID MILK AND MILK PRODUCTS...such as cheese, yogurt, cream, etc...These foods should be reduced to no more than once every three to four days.

- * REDUCE FRUIT JUICE INTAKE...until the next evaluation. This includes orange juice, apple juice, grape juice and grapefruit juice. Vegetable juices are acceptable.

- * AVOID CALCIUM AND/OR VITAMIN D SUPPLEMENTS