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LABORATORY NO.:

1765070

PROFILE NO.:

2

SAMPLE TYPE:

SCALP

PATIENT: DODDI, VIHAAN

AGE: 8

SEX: M

METABOLIC TYPE:

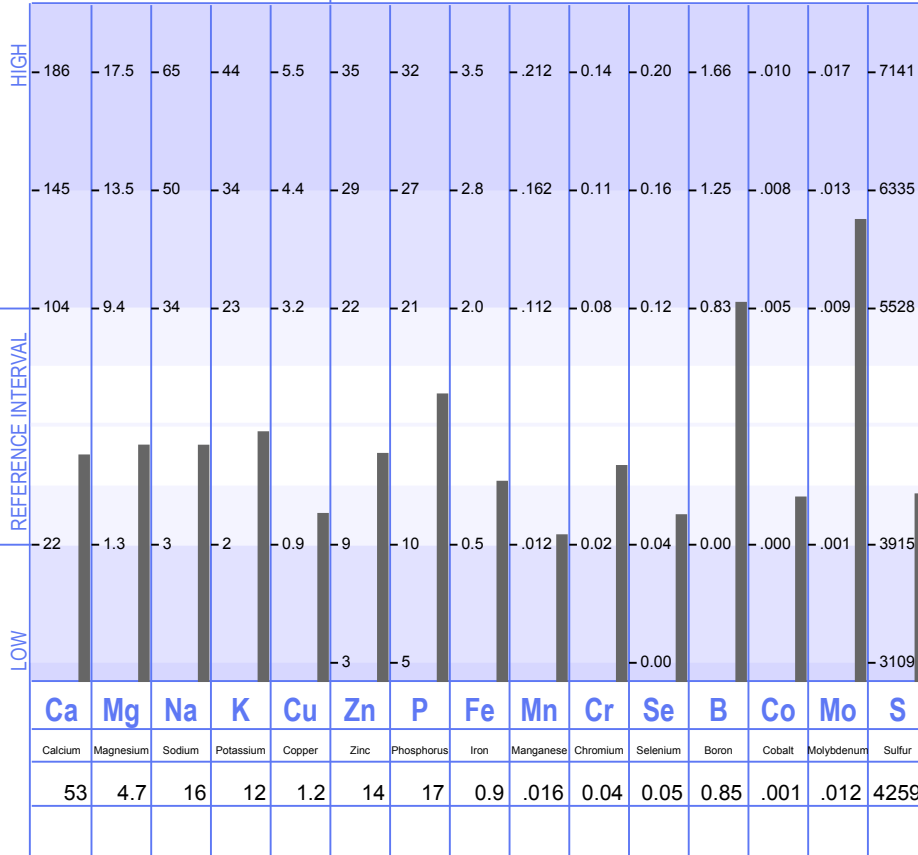
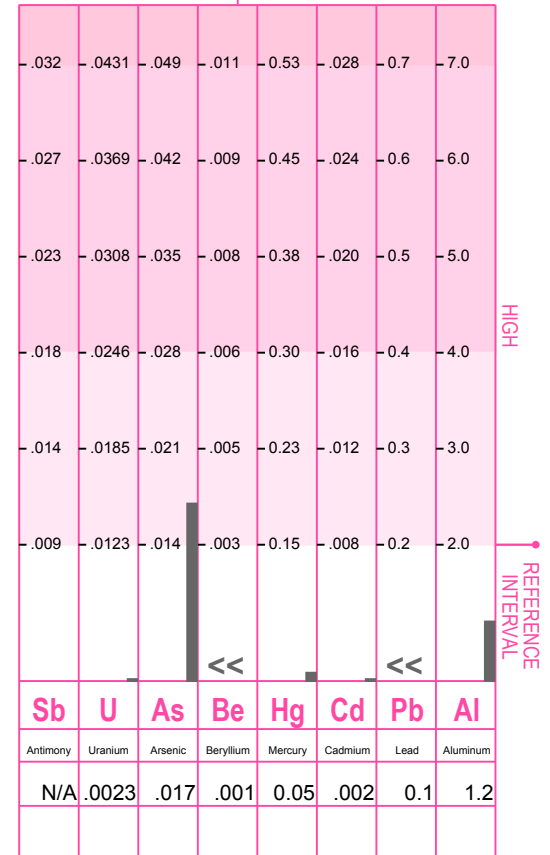
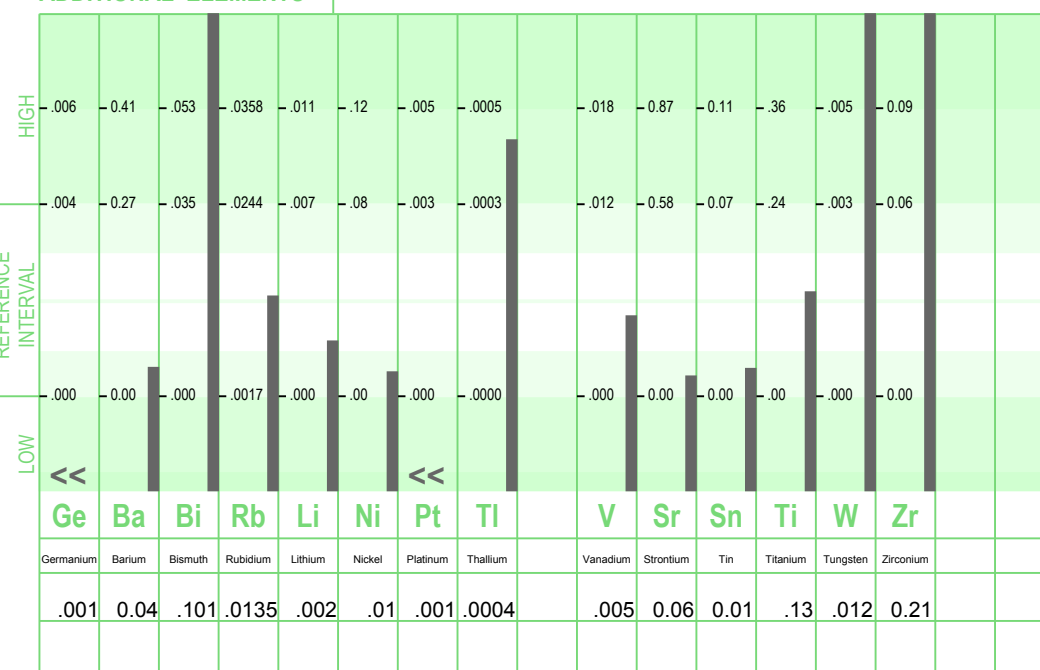
SLOW 1

REQUESTED BY: VALENTINI, S

ACCOUNT NO.: 2216

DATE:

7/06/2023

NUTRITIONAL ELEMENTS**TOXIC ELEMENTS****ADDITIONAL ELEMENTS**

<<: Below Calibration Limit; Value Given Is Calibration Limit

"QNS": Sample Size Was Inadequate For Analysis.

"N/A": Currently Not Available

Ideal Levels And Interpretation Have Been Based On Hair Samples Obtained From The Mid-Parietal To The Occipital Region Of The Scalp.

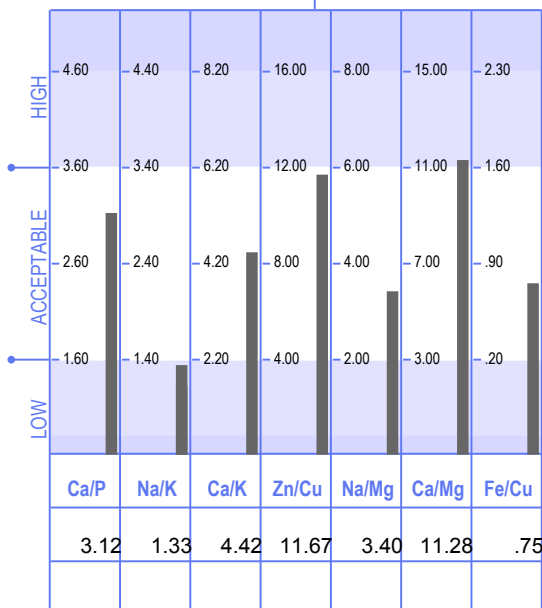
Laboratory Analysis Provided by Trace Elements, Inc.
Dallas, Texas USA an H.H.S. Licensed Clinical
Laboratory. No. 45 D0481787

7/06/2023

CURRENT TEST RESULTS

PREVIOUS TEST RESULTS

SIGNIFICANT RATIOS



TOXIC RATIOS



ADDITIONAL RATIOS

RATIO	CALCULATED VALUE		EXPECTED
	Current	Previous	
Ca/Sr	883.33		263/1
Cr/V	8.00		8/1
Cu/Mo	100.00		356/1
Fe/Co	900.00		615/1
K/Co	12000.00		6350/1
K/Li	6000.00		6350/1
Mg/B	5.53		21/1
S/Cu	3549.17		2668/1
Se/Tl	125.00		370/1
Se/Sn	5.00		3.2/1
Zn/Sn	1400.00		624/1

LEVELS

All mineral levels are reported in milligrams percent (milligrams per one-hundred grams of hair). One milligram percent (mg%) is equal to ten parts per million (ppm).

NUTRITIONAL ELEMENTS

Extensively studied, the nutrient elements have been well defined and are considered essential for many biological functions in the human body. They play key roles in such metabolic processes as muscular activity, endocrine function, reproduction, skeletal integrity and overall development.

TOXIC ELEMENTS

The toxic elements or "heavy metals" are well-known for their interference upon normal biochemical function. They are commonly found in the environment and therefore are present to some degree, in all biological systems. However, these metals clearly pose a concern for toxicity when accumulation occurs to excess.

ADDITIONAL ELEMENTS

These elements are considered as possibly essential by the human body. Additional studies are being conducted to better define their requirements and amounts needed.

RATIOS

A calculated comparison of two elements to each other is called a ratio. To calculate a ratio value, the first mineral level is divided by the second mineral level.

EXAMPLE: A sodium (Na) test level of 24 mg% divided by a potassium (K) level of 10 mg% equals a Na/K ratio of 2.4 to 1.

SIGNIFICANT RATIOS

If the synergistic relationship (or ratio) between certain minerals in the body is disturbed, studies show that normal biological functions and metabolic activity can be adversely affected. Even at extremely low concentrations, the synergistic and/or antagonistic relationships between minerals still exist, which can indirectly affect metabolism.

TOXIC RATIOS

It is important to note that individuals with elevated toxic levels may not always exhibit clinical symptoms associated with those particular toxic minerals. However, research has shown that toxic minerals can also produce an antagonistic effect on various essential minerals eventually leading to disturbances in their metabolic utilization.

ADDITIONAL RATIOS

These ratios are being reported solely for the purpose of gathering research data. This information will then be used to help the attending health-care professional in evaluating their impact upon health.

REFERENCE INTERVALS

Generally, reference intervals should be considered as guidelines for comparison with the reported test values. These reference intervals have been statistically established from studying an international population of "healthy" individuals.

Important Note: The reference intervals should not be considered as absolute limits for determining deficiency, toxicity or acceptance.

INTRODUCTION TO HAIR TISSUE MINERAL ANALYSIS (HTMA)

Hair is used for mineral testing because of its very nature. Hair is formed from clusters of specialized cells that make up the hair follicle. During the growth phase, the hair is exposed to the internal environment, such as blood, lymph, and extra-cellular fluids. As the hair continues to grow and reaches the skin's surface, its outer layers harden, locking in the metabolic products accumulated during the formation period. This biological process provides a blueprint and lasting record of mineral status and nutritional and metabolic activity during this time.

The precise analytical method of determining the levels of minerals in the hair is a highly sophisticated technique. However, when performed to exacting standards and interpreted correctly, it may be used as a screening aid for determining mineral deficiencies, excesses, and imbalances. HTMA provides you and your health care professional with an economical and sensitive indicator of the long-term effects of diet, stress, toxic metal exposure, and their impact on your mineral balance, which is difficult to obtain through other clinical tests.

It is important for the attending healthcare professional to determine your mineral status as minerals are absolutely critical for life and abundant health. They are involved in and are necessary for cellular metabolism, structural support, nerve conduction, muscular activity, immune functions, anti-oxidant and endocrine activity, enzyme functions, water and acid/alkaline balance, and even DNA function.

Many factors can affect mineral nutrition, such as; food preparation, dietary habits, genetic and metabolic disorders, disease, medications, stress, environmental factors, and exposure to heavy metals. Rarely does a single nutrient deficiency exist in a person today. Multiple nutritional imbalances, however, are quite common, contributing to an increased incidence of adverse health conditions. It is estimated that mild and sub-clinical nutritional imbalances are up to ten times more common than nutritional deficiency alone.

The laboratory test results and the following comprehensive report should not be construed as diagnostic. This analysis is provided only as an additional source of information to the attending doctor.

Test results were obtained by a licensed clinical laboratory adhering to analytical procedures that comply with governmental protocol and standards established by Trace Elements, Inc. U.S.A. The interpretive data based upon these results is defined by research conducted by David L. Watts, Ph.D.

UNDERSTANDING THE GRAPHICS

NUTRITIONAL ELEMENTS

This section of the cover page graphically displays the test results for each reported nutritional element and how they compare to the established population reference range. Values above or below the reference range indicate a deviation from "normal." The more significant the variation, the greater the possibility of a deficiency or excess.

TOXIC ELEMENTS

The toxic elements section displays the results for each reported toxic element. It is preferable that all levels be as low as possible and within the lower white section. Any test result that falls within the upper dark red areas should be considered statistically significant but not necessarily clinically significant. Further investigation is then warranted to determine the possibility of actual clinical significance.

ADDITIONAL ELEMENTS

This section displays the results of additional elements for which there is limited documentation. These elements may be necessary for biochemical function and may adversely affect

biochemical function. Further study will help to reveal their role, interrelationships, and eventually their proper therapeutic application or treatment.

SIGNIFICANT RATIOS

The significant ratios section displays the important nutritional mineral relationships. This section consists of calculated values based on the respective elements. Mineral relationships (balance) are as meaningful, if not more so than the individual mineral levels. The ratios reflect the critical balance that must be constantly maintained between the minerals in the body.

TOXIC RATIOS

This section displays the relationships between critical nutritional elements and toxic metals. Each toxic metal ratio result should be in the white area of the graph, and the higher, the better. Toxic ratios that fall within the darker red area may indicate an interference of that toxic metal upon the utilization of the nutritional element.

ADDITIONAL RATIOS

The additional ratios section provides calculated results on some additional mineral relationships. At this time, there is limited research and documentation regarding these ratios.

METABOLIC TYPE

This section of the report will discuss the metabolic profile based on research by Dr. D. L. Watts. Each classification is established by evaluating the tissue mineral results and determining the degree to which the minerals may be associated with a stimulating and/or inhibiting effect upon the main "energy-producing" endocrine glands. These glands regulate nutrient absorption, excretion, metabolic utilization, and incorporation into the body's tissues: the skin, organs, bone, hair, and nails. How efficiently each nutrient is utilized depends mainly upon the proper functioning of the endocrine glands.

SLOW METABOLISM (TYPE #1)

- ** Parasympathetic Dominant
- ** Tendency Toward Decreased Thyroid Function (reduced secretion of hormones)
- ** Tendency Toward Decreased Adrenal Function (reduced secretion of hormones)

The profile obtained from the test results is indicative of a slow metabolic (Type #1) pattern. A slow metabolic rate is associated with low or diminished energy production on a cellular level. This is often due to a decrease in the body's efficiency in utilizing many of the nutrients found in the foods that are consumed, or it may be a result of an improper diet that does not provide the necessary nutrients, to begin with. For a child, whatever the reason, an inability to obtain or utilize the proper nutrients at optimum efficiency can oftentimes contribute to symptoms such as fatigue and cold hands and feet.

It should be noted that even though the child may not be overweight at this time, he can still have a lowered metabolic rate, as overweight and underweight tendencies may not always be reflective of cellular metabolism, especially in children.

NUTRIENT MINERAL LEVELS AND OTHER ELEMENTS

This section of the report may discuss those nutritional mineral levels that reveal moderate or significant deviations from normal. The light blue and light green areas of each graph section represent the reference interval for each element based on a statistical analysis of apparently healthy individuals. The following section, however, is based upon clinical data; therefore, an element that is moderately outside the reference interval may not be commented on unless determined to be

clinically significant.

NOTE:

For those elements whose levels are within the normal range, it should be noted that nutritional status is also dependent upon their critical balance with other essential nutrients. Therefore, if applicable, a discussion regarding their involvement in metabolism may be found in this report's ratio section(s).

MOLYBDENUM (Mo)

The current molybdenum level is moderately elevated. This pattern is often indicative of accumulation from normal dietary intake. Molybdenum is found in vegetables in varying amounts depending upon the molybdenum content of the soils in which the food was grown.

ADDITIONAL SOURCES OF MOLYBDENUM

Water	Mining
Milling	Lubricants
Paints	Fertilizers
Stainless Steel	Armor Plating

Excess molybdenum is known to antagonize copper metabolism. Therefore the copper/molybdenum ratio should be evaluated.

BISMUTH (Bi)

The bismuth level is elevated above the reference range. This element is relatively non-toxic and has no known biochemical function, although it is commonly found in low concentrations in the body.

High tissue levels may be found with the use of products containing bismuth, such as;

- * Cosmetics
- * Burn Ointments
- * Antiseptic Powders
- * Products used for G.I. disturbances (helicobacter pylori)
- * Wart Treatments
- * Hair Dyes

Other sources of exposure include;

Superconductors	Silvering of Mirrors
Dentistry	

THALLIUM (Tl)

The thallium level is above the established normal reference range. Although thallium is a naturally occurring element and is normally present in humans, at this time, there is no known biological function or significance of thallium in humans.

Sources of Thallium:

Thallium is found in semiconductors, thermometers, switches, relays, flares, rocket fuel, photoelectric cells, lamps, and lenses and is used in medical imaging (Cardiac Stress Tests). Industrial sources of thallium include the cement, smelting, and coal combustion industries.

TUNGSTEN (W)

The current level of tungsten is above the established reference range for this element. Currently, there are no known toxic effects of elevated tungsten.

Note: Tungsten at high levels is reported to have an antagonistic effect on molybdenum metabolism.

ZIRCONIUM (Zr)

The zirconium level is above the established reference range for this element. Excess accumulation of zirconium has not been well documented in humans. Some sources of zirconium may include antiperspirants that contain zirconium chlorohydrate. Zirconium is also considered a biocompatible element and may be found in some dental materials.

NUTRIENT MINERAL RATIOS

This section of the report will discuss those nutritional mineral ratios that reveal moderate or significant deviation from normal.

Continuing research indicates that metabolic dysfunction occurs not necessarily as a result of a deficiency or excess of a particular mineral level but more frequently from an abnormal balance (ratio) between the minerals. Due to this complex interrelationship between the minerals, it is extremely important that imbalances be determined. Once these imbalances are identified, corrective therapy may then be used to help re-establish a more normal biochemical balance.

NOTE: The "Nutritional Graphic" developed by researchers at Trace Elements, and presented on the cover of this report shows the antagonistic relationships between the significant nutrients, including the elements (arrows indicate antagonistic effect upon absorption and retention).

LOW SODIUM/POTASSIUM (Na/K) RATIO

When sodium is low relative to potassium, emotional mood swings, including depression, have been cited in greater frequency. A low sodium-to-potassium ratio may also be related to phobias, withdrawal, repression, and indecision.

MINERAL METABOLISM AND VITAMIN B6

A deficiency of or increased requirement for vitamin B6 (pyridoxine) leads to alterations in the metabolism, utilization, and balance between calcium and magnesium. Calcium retention will increase, and the excretion of magnesium will also increase when vitamin B6 is lacking. Therefore, an increased need for vitamin B6 may be indicated by this child's current HTMA pattern.

TOXIC METAL LEVELS

Hair is used as one of the tissues of choice by the Environmental Protection Agency in determining toxic metal exposure. A 1980 report from the E.P.A. stated that human hair could be effectively used for biological monitoring of the highest-priority toxic metals. This report confirmed the findings of other studies, which concluded that human hair might be a more appropriate tissue than blood or urine for studying community exposure to some trace metals.

A heavy metal may be elevated in this HTMA, yet no known environmental exposure can be ascertained. This is not unusual, as exposure may have originated years earlier. Additionally, research has found that heavy metals can be inherited by the fetus during pregnancy. Heavy metals can be found in the body for years following the initial exposure and will remain in body tissues until removal is initiated. For example, the half-life of cadmium in some tissues will range from ten to thirty years.

ARSENIC (As)

This child's arsenic level of 0.017 mg% is elevated compared to the general population. This could be due to external contamination if there has been exposure to industrial coal burning, smelters, or refineries. Further tests should be done to confirm actual toxicity and rule out external contamination,

especially if symptoms similar to arsenic toxicity are present. Some symptoms of chronic arsenic toxicity include:

Dermatitis	Hyperpigmentation of the Skin
Neuropathy	Respiratory Tract Irritation
Anemia	Muscle Aches
Pigmentation of nails	Headaches
Drowsiness	Weakness
Confusion	Convulsions
Hypertension	

ACUTE TOXICITY SYMPTOMS OF ARSENIC

Nausea	Vomiting
Diarrhea	Abdominal Pain
Burning sensation in mouth and throat	

Hair tissue mineral studies have shown that arsenic antagonizes the absorption and retention of some nutrient minerals, such as iron and selenium. This antagonism may contribute to lower levels of these minerals in the body.

SOURCES OF ARSENIC

Arsenic has been found high in some seafood obtained from coastal waters, particularly shrimp, oysters, and mussels. Other sources include arsenic-rich soils, herbicides, arsenic-containing insect sprays, burning of arsenate-treated building materials in fireplaces, coal combustion, and smelters.

An additional confirmatory screening test using pubic hair, which is usually unexposed to the daily environment, is suggested. If the arsenic level is determined to be external contamination, it is still extremely important that continued exposure be minimized since arsenic is known to increase the risk for skin, lung, and liver cancers.

TOXIC METAL RETENTION AND NUTRITIONAL STATUS:

Every individual is constantly being exposed to sources of heavy metals. However, the main factor contributing to the absorption and retention of these metals in the body is influenced by one's own nutritional status. For instance, a lack of nutrients that will combat the accumulation of lead will then allow tissue lead levels to rise. This accumulation can occur even if lead exposure is minimal. Therefore, improving your nutritional status can help in reducing the toxic metal burden as well as reducing the adverse effects that toxic metal accumulation can produce in the body.

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 the symptoms become too uncomfortable, discontinue supplementation for three days, during which symptoms should be relieved. Then resume the program at one-third of the recommended dosage, usually the PM portion, gradually build up to twice per day and return 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.

NOTE:

At this time, further confirmation of toxic metal exposure using a blood test may or may not reveal an elevated level. This is due to the protective response of the body, in which following a toxic metal exposure, the element is sequestered from the blood and stored in various other tissues. Therefore, if the exposure is not ongoing or chronic, elevated blood levels may not be present.

TOXIC METAL RATIOS

ALL CURRENT TOXIC METAL RATIOS ARE WITHIN THE ACCEPTABLE RANGE

ADDITIONAL RATIOS

This section will discuss some of the relationships between other minerals, i.e., ratios that are not presented graphically in this report and have not yet been discussed. This information may provide further data for the healthcare provider in evaluating their potential impact on health.

LOW SELENIUM/ARSENIC RATIO (Se/As)

The expected range for the selenium-to-arsenic ratio is 5.7/1 or higher, however, the current ratio is {SeAsx}. Arsenic and selenium appear to have an antagonistic relationship in that arsenic can decrease the retention of selenium and its utilization. Excess arsenic can contribute to the disruption of DNA synthesis and repair as well as disrupting cellular respiration. Selenium has been shown to reduce the teratogenicity of arsenic

LOW SELENIUM/THALLIUM RATIO (Se/Tl)

The expected range for the selenium-to-thallium ratio is 400/1 or higher, however, the current ratio is {SeTl}. Selenium is known to interact with thallium and reduce its potential adverse effect on the body. Thallium is present in the environment due to coal combustion, smelting processes, and manufacturing. It is known to contaminate foods, particularly green leafy vegetables. Thallium is also used in medical procedures such as stress tests for the assessment of cardiovascular conditions. In cases of acute thallium exposure, treatment with Prussian blue and activated charcoal can be used to bind with it in the intestinal tract.

DIETARY SUGGESTIONS

The following dietary suggestions are defined by several factors: the individual's mineral levels, ratios, and metabolic type, as well as the nutrient value of each food, including protein, carbohydrate, fat, and vitamin and mineral content. Based upon these determinations, it may be suggested that foods be avoided or increased temporarily to improve this child's biochemistry.

SLOW METABOLISM

Dietary habits may contribute to slow metabolism. For example, low protein, high carbohydrate, high fat intake, and the consumption of refined sugars and dairy products have an excessive slowing-down effect on metabolism and energy production.

GENERAL DIETARY GUIDELINES FOR THE SLOW METABOLIZER

* 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 fish, fowl, and lean beef. Other good sources of protein include bean and grain combinations and eggs. Increased protein intake is necessary to increase metabolic rate and energy production.

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

* EAT A MODERATE AMOUNT OF UNREFINED CARBOHYDRATES...Carbohydrate intake should be at most 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, mackerel, and salmon.

* REDUCE OR AVOID MILK AND MILK PRODUCTS...Due to high fat content and high levels of calcium, milk and milk products, including "low-fat" milk, should be reduced to no more than once every three to four days.

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

* AVOID CALCIUM AND VITAMIN D SUPPLEMENTS...unless recommended by a healthcare professional.

METHIONINE RICH FOODS

The following foods are a rich source of the essential amino acid methionine, which supplies sulfur to the cells for the activation of enzymes, and energy metabolism. Sulfur is also involved in the detoxification process. Toxic substances are combined with sulfur, converted to a nontoxic form, and then excreted. The following foods may be consumed liberally during the course of therapy:

Bass	Mackerel
Trout	Short Ribs
Cod	Perch
Turkey	Sirloin
Flounder	Pumpkin Seeds
Round Steak	

The above list of foods is also high in glutamic and aspartic acid. These amino acid proteins help to improve tissue alkalinity.

SPECIAL NOTE:

This report contains only a limited number of foods to avoid or increase the diet. FOR THOSE FOODS NOT SPECIFICALLY INCLUDED IN THIS SECTION, CONTINUED CONSUMPTION ON A MODERATE BASIS IS ACCEPTABLE UNLESS RECOMMENDED OTHERWISE BY THE ATTENDING HEALTHCARE PROFESSIONAL. Under some circumstances, dietary recommendations may list the same food item in the "TO EAT" and the "TO AVOID" categories simultaneously. In these rare cases, always follow the avoid recommendation.

CONCLUSION

This report can provide a unique insight into nutritional biochemistry. The recommendations are specifically designed according to metabolic type, mineral status, age, and sex. Additional recommendations may be based on other supporting clinical data as determined by the attending healthcare professional.

OBJECTIVE OF THE PROGRAM:

This program aims to re-establish a normal balance of body chemistry through individually designed dietary and supplement suggestions. Properly followed, this may then enhance the ability of the body to more efficiently utilize the nutrients that are consumed, resulting in improved energy production and health.

REMOVAL OF HEAVY METALS:

Re-establishing a homeostatic balance or equilibrium of body chemistry will enhance the body's ability to remove heavy metals naturally. The elimination of a heavy metal involves an intricate process of attachment of the metal to proteins, removal from storage areas, and transport to the eliminative organs for excretion. Improvement in one's nutritional balance will improve the capability of the body to perform these tasks and eliminate toxins more easily.

However, the mobilization and elimination of metals may cause temporary discomfort. For example, if an excess accumulation of iron or lead is contributing to arthritic symptoms, a temporary flare-up of the condition may occur from time to time. This discomfort can be expected until the removal of the excess metal is complete.

NO PART OF THIS INTERPRETIVE REPORT MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR ANY INFORMATION STORAGE OR RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING FROM TRACE ELEMENTS, INC., U.S.A.

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