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Le bulletin Anamol de l'édition d'automne 2004 sera disponible en anglais et en français. Si la copie que vous recevez n'est pas dans la langue de votre choix, veuillez s.v.p. nous en aviser.

Guide for employing Hair Mineral Analysis in your every-day routine

Dr. George M. Tamari, Ph.D.

As a major provider of hair analytical services Anamol Laboratories is devoted, not only to providing accurate and fast service, but to ensure that health practitioners have the most up-to-date and effective information, which will enable them to make optimum recommendations for their patients.

- * Numerous recent studies reveal that people who are exposed to toxic environments will absorb more of toxic elements when they are deficient in essential nutritional minerals, such as calcium, magnesium zinc, copper and manganese¹. When essential minerals are below optimum concentration, toxic elements will fill the empty spaces left by them.
- * The most frequently occurring toxic elements are lead, cadmium and mercury. They are - chemically speaking - bivalent cations, as are the most deficient minerals, e.g. calcium, magnesium, manganese, copper and zinc. Consequently, when supplementing the bivalent essential elements, one should be aware that, because of their antagonistic nature, they will remove/substitute the toxic elements. Ascorbic acid is useful in detoxification; MSM and legumes are a good source of sulfur (*sulfur-containing amino acids*). Sulfur has a strong affinity to certain toxic elements and helps to remove them from the system.
- * Elements, which appear in the analysis on the low side, should be supplemented by taking into consideration their antagonism toward each

other (*consult the Interaction Chart supplied by Anamol Laboratories*). When supplementing antagonistic minerals, it is recommended that patients be advised to ingest them in 2-3 hours interval to allow proper absorption. It is important to remember that the absorption of selenium is aided by vitamin E and zinc by vitamin B6.

- * When elevated zinc levels are reported, it is necessary to pay attention to the quantity supplemented. Excluding the possibility of a high intake of zinc, the elevated levels may indicate *chronic zinc deficiency*. This suggestion is based on the research done by Dr. Jeffrey Bland², in which he concluded that "after [taking] 24 mg. of oral zinc per day for three months, the clinical symptoms of the patients were alleviated, their hair zinc levels had gone down within normal range and their serum zinc levels had gone up into normal range."

How to prevent nutritionally induced copper deficiency anemia?

- * When supplementing zinc, the level of copper should be taken into account. Zinc is antagonistic to copper, therefore, if copper is on the low side, zinc should be supplemented in a ratio of 14:1 zinc:copper, so that the deficiency of copper is not further exacerbated. An additional quantity of copper (2-3 mg) should be taken at different times of day. Copper has

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many important functions in the body. One of them is oxidizing the bi-valent iron, which is absorbed only in its reduced form. To turn it into a bio-available form, it has to be oxidized. This is done by a copper containing protein, called ceruloplasmin.

- * *Occasionally, when there is a copper deficiency, the iron in the blood may appear at a normal or even elevated concentration; In these cases the iron in the hemoglobin is deficient and all the symptoms characterizing anemia are present! After copper supplementation the iron hemoglobin is normalized, as is the previously elevated blood iron and the symptoms of anemia will disappear. This situation is called: *nutritionally copper deficiency induced-anemia.**

The unique advantage of hair mineral analysis (HMA) is the easy detection of the two forms of metabolic acidosis at a very early stage.

The first form, **metabolic-lactic acidosis (MALA)** is metabolic acidosis caused by the production of *lactic acid*. It is produced by different stress factors, such as direct deficiency of essential mineral(s) or vitamins required for energy production (via Krebs' Cycle); or indirect deficiency from emotional/psychological distress. Instead of the expected CO₂ and H₂O, the end product of metabolism will be lactic acid which is the result of fermentation. It is important to note that instead of the expected 100% energy produced by oxidative phosphorylation, energy gained by fermentation provides only 21% energy from the same calorie intake. This energy deficit has far-reaching consequences in many anabolic and catabolic activities. *This energy deficit will especially be expressed as impairment in cognitive and immunological functions of the body.*

Additionally, the deficiencies of vitamin(s) and/or mineral(s) can cause dysfunction in cellular respiration in different tissues. This can express itself in different pathologies and can be associated not only with mitochondrial cytopathies (e.g.: adult Leigh's syndrome) and neurodegenerative disorders (eg; Parkinson's), but also accelerated aging.

Increased levels of lactic acid (lactic acidosis) lowers intracellular pH. In order to neutralize this acidity, calcium (Ca) is drawn from the blood. The blood is well buffered to keep the Ca level between 9-11 mg%. When the blood's Ca level sinks below 9 mg%, the parathyroid gland (PG) is activated to produce parathyroid hormone (PTH). PTH will transfer Ca as a result from bones and teeth to the soft tissues and mitochondria, and stabilize the blood Ca as a result. If this process continues, it will produce hyperactivity of the PG and more Ca (and later magnesium) will be transferred to the soft tissues and the mitochondria. As the blood level of Ca is stabilized very efficiently, blood levels of Ca will not reflect the increased rate of Ca loss from bones and teeth. Lactic acid analysis of the blood may reveal the reason behind the increased PG activity. However, this abnormal metabolic activity will be reflected in HMA by **elevated** levels of both calcium and magnesium. The detrimental effect of this osteoclastic activity of the PTH indicated by the presence of metabolic acidosis, is well described by Wachtman et al³. They state that “the increased incidence of osteoporosis may represent, in part, the *result of a life long utilization of the buffering capacity of the basic salts of bone for the constant assault against pH homeostasis. The loss of as little as 2 meq of calcium per day would, over a decade, assuming a total body content of 1 kg, account for a 15% loss of inorganic bone mass in an average individual*”.

The important and crucial first step is in recognizing metabolic - lactic acidosis (MALA) as one of the factors causing the impairment in energy production. In the literature we can find studies on lactic acidosis (MALA) caused by deficiency of one vitamin (e.g. thiamine⁴, coenzyme Q10⁵, or one mineral (e.g. iron⁶.) The single nutrient deficiency caused severe symptoms of lactic acidosis, which was corrected after supplementing the deficient vitamin or mineral. These examples draw attention to the fact that any disturbance in the Krebs' Cycle (deficiency of nutritional minerals, or the presence of toxic element(s), causing a relative deficiency of nutritional elements) can produce lactic acidosis, leading to unexplained shortness of breath, nausea, vomiting, abdominal/soft tissue pain and generalized loss of energy.

The second form of metabolic acidosis called **nutritionally induced metabolic acidosis** (MANI) is the result of consuming food that produced acid ash. Protein - rich in sulphur and phosphorus (sulphuric and phosphoric acid), soft drinks - rich in phosphoric acid, canned foods - buffered by phosphate buffer all contribute to the production of acidic end-products. The body's metabolism will react in a similar manner as it does to lactic acidosis (MALA); attempting to neutralize the acidosis by transferring Ca and Mg to the soft tissues and mitochondria. Again, due to the efficient buffering system, blood levels will not reflect the presence of MANI, but HTMA will display elevated levels of **calcium, magnesium and phosphorus**⁷.

The serious metabolic consequence of increased activity of the PG, in both MALA and MANI, is accelerated bone loss, ultimately leading to osteoporosis, dental carries, and pathological soft tissue calcification. The increased levels of calcium and magnesium deposited in the mitochondria will interfere with the normal function of the cell.

Neutralization of the acidic state of the metabolism is the first step in alleviating the symptoms of acidosis. This can be achieved by supplementing calcium, magnesium and vitamin D. Magnesium is antagonistic to calcium⁸ and it may help to remove excess calcium from the soft tissue and the cells. At the same time, magnesium triggers the thyroid gland to produce calcitonin⁹, which assists in re-deposition of calcium into the skeletal structure. The correction of any deficiencies in vitamins and/or mineral is essential. Absorption/digestive problems have to be dealt with.

In case of nutritionally induced metabolic acidosis (MANI) in addition to the above, changes in dietary habits is essential. The diet should be rich in vegetables and fruits (alkaline diet), lowered protein intake, no refined carbohydrates and avoidance of soft drinks. Three months, after implementing the dietary/lifestyle changes, a repeat HTMA should be done in order to monitor the mineral levels and revise the supplementation program accordingly.

No less important than the appropriate nutritional/dietary intervention is the search for the elimination or reduction of stress factors causing or contributing to MALA.

References:

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Dear Health Practitioner:

We greatly appreciate the time and effort you took to respond to our survey regarding our services. Your suggestions and comments have been very helpful.

The following suggestions were made and action has been taken to implement them wherever feasible:

- * Eliminate black from the front-page colours. This has been done.
- * Set up a comparative computer program to view consecutive HMA reports for the same patient. The program has been completed and it is available by request.
- * Provide two full reports with interpretation. This had been our practice in the past but a number of doctors complained about redundancy of patient information. The present report format consists of two result pages, one for the doctor's files and the other, together with interpretation of the results, is intended for the patient.
- * Re turnaround time: Some people are pleased with the rapidity of this while others complain that it is not fast enough. We would suggest, if results are needed more quickly, that you send samples by priority post and we will reply by e-mail.

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Please join us at these upcoming Seminars:

Hair Tissue Mineral Analysis In-Office Lab Tests Saliva Hormone Testing

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<p>JANUARY 15-16, 2005</p>	<p>The Best Western Hospitality Inn 135 Southland Drive SE Calgary, AB T2J 5X5 403-278-5050 or 877-278-5050 *Block of rooms \$109/night <i>Will expire 30 days prior to seminar</i></p>	<p>FEES Professionals \$259 Staff / Students \$135</p> <p>Pre-registration: 30 days prior to seminar Professionals \$179 Staff / Students \$ 95</p> <p>No Charge for previous "In-Office Lab Test" attendees bringing a new Healthcare Professional</p>	<p>Seminar Hours</p> <p><i>Day one:</i> 9:00 am - 5:00 pm</p> <p><i>Day two:</i> 9:00 am - 5:00 pm INCLUDES LUNCH ON BOTH DAYS</p>
<p>MARCH 19-20, 2005</p>	<p>Holiday Inn Hotel & Suites Toronto - Markham 7095 Woodbine Avenue Markham, ON L3R 1A3 905-474-0444 *Block of room \$112/night <i>Will expire 30 days prior to seminar</i></p>	<p>No Charge for previous "In-Office Lab Test" attendees bringing a new Healthcare Professional</p>	<p><i>Day two:</i> 9:00 am - 5:00 pm INCLUDES LUNCH ON BOTH DAYS</p>

* For those who are troubled by the misspelling of names, we urge that these be typed to avoid misinterpretation.

Please Note: A major function of Anamol is to assist new Health Practitioners acquire a better understanding of and knowledge about the use of HMA. We, therefore, provide seminars, workshops, newsletters, and consultations for anyone interested.

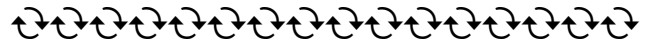
Phone consultations with Dr. George Tamari are available for all practitioners. As there is great demand for these, we would appreciate your setting up an appointment at least 24 hours beforehand. We also ask that you limit the duration of your consultation.

Our aim is to provide you with the best service possible. We welcome your continued input and we will print any new suggestions and comments in our Spring Newsletter.

Until then, have a most enjoyable fall and winter.

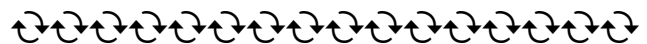
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