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Si la copie que vous recevez n'est pas dans la langue de votre choix, veuillez s.v.p. nous en aviser.*

## Literature Review

*I dedicate this newsletter to professionals who are interested to widen  
their scope of connection between Chemistry and Metabolism.*

*Dr. George M. Tamari*

### **Metal concentration in the serum and hair of patients with titanium alloy spinal implants.**

Several studies have demonstrated that metal debris are present in the tissues surrounding titanium alloy spinal implants, However, few studies suggest that metals dissolve, circulate in the body fluid, and accumulate in remote organs. **CONCLUSION:** Approximately one third of patients with titanium alloy spinal implants exhibited abnormal serum and hair metal concentrations at a mean time of mean 5.1 years after surgery. ***Titanium or aluminum may travel to distant organs after dissolution of metals from the spinal implants.***

Kasal Y, Iida R, Uchida A, *Spine* 203;28:1320-1326

**Hair loss in psychopharmacology.** Medication-induced alopecia is an occasional side effect of many psycho-pharmaceuticals. Most of the mood stabilizers and antidepressant drugs can lead to this condition. Some antipsychotic and anti-anxiety agents induce alopecia. Hair loss is also related to hypothyroidism, which can be induced by lithium and other agents. Alopecia might not be reported by some people, but physicians should be aware of this potential problem which may contribute to noncompliance. Lithium causes hair loss in 12-19% of long-term users. Valproic acid and/or divalproex

precipitates alopecia in up to 12% of patients in a dose-dependent relationship. Incidences up to 28% are observed with high valproate concentration exposure. These pharmaceuticals also can change hair color and structure. Hair loss is less common with other mood stabilizers. Discontinuation of the medication or dose reduction almost always leads to complete hair regrowth.

Mecke Y, Sheng H, Khan T, Lippmann S. *Ann Clin Psychiatry* 2000;12:35-42

**Eating attitudes and habitual calcium intake in peripubertal girls are associated with initial bone mineral content and its change over 2 years** This 2-years prospective study examined associations among bone minerals acquisition and physical, maturational and lifestyle variables during the pubertal transition in healthy girls. It is concluded that habitual calcium intake may influence bone mineral acquisition.

Barr SI, Petit MA, Vigna YM, Prior JC *J Bone Miner Res* 2001;16:940-947

**Abnormalities in hair trace elements as indicators of aberrant behavior.** There are long-standing viewpoints that impulsive and violent behavior may stem from brain dysfunction or damage secondary to head

*Continued on pg. 2*

injury, disease, or toxic chemical substances. This research has aimed to examine the relationship between potentially toxic metals and aberrant behavior, especially violent activity, through the nonintrusive technique of hair analysis for trace elements. In an initial study, phase I, it was not possible to replicate findings of others who reported high levels of lead, cadmium, and copper in violent offenders. However, high levels of manganese were found in prison versus control groups. In phase II, the possibility of artifactual results arising from prison cooking utensils was controlled for by sampling early after incarceration. Phase III was included to substantiate the initial post hoc findings in an additional jailed population. In both latter phases, significantly elevated manganese levels were found in the hair of violent subjects. A review of the effects of manganese at deficient toxic levels does not provide a simple answer as to why manganese levels are elevated in the hair of individuals who have been incarcerated for violent behavior. This study does not implicate the prison environment or soaps and shampoos used in California prison. Other factors, such as alcohol, dietary, or psychological factors, might influence manganese levels in hair, or any of these might function in combination with mild manganese toxicity to contribute to aberrant behavior.

Gottschalk LA, Rebello T, Buchsbaum MS, Tucker HG, Hodges EL. *Comp Psychiatry* 1991;32:229-237

**An analysis of old maternal and fetal hair lead levels.** Lead contamination of the environment is an important public health consideration. There is evidence of declining blood levels in Britain, however, there is still concern about chronic exposure of the fetus and young children to low levels of lead and the effect that this has on neurodevelopment. Hair lead levels have been found to correlate well with body lead contamination. This study is the first to document the level of hair lead in pregnant women and their babies from an urban British population. There was no evidence of toxic maternal lead levels and the fetus is protected by the placental barrier.

Black AP, Knight R, Batty J, Haswell SJ, Lindow SW. *BJOG* 2002; 109: 1295-1297

**Vanadium and the cardiovascular functions.** Inorganic and organic compounds of vanadium have been shown to exhibit a large range of insulinomimetic effects in the cardiovascular system, including stimulation of glucose transporter 4 (GLUT-4) translocation and glucose transport in adult cardiomyocytes. Furthermore, administration of vanadium compounds improves cardiac performance and smooth muscle contractility, and modulates blood pressure in various models of hypertension and insulin resistance. Vanadium compounds are potent inhibitors of protein tyrosine phosphatases. As a result, they promote an increase in protein tyrosine phosphorylation of several key components of the insulin signaling pathway, leading to the upregulation of phosphatidylinositol 3-kinase and protein kinase B, two enzymes involved in mediating GLUT-4 translocation and glucose transport. In addition, Vanadium has also been shown to activate p38 mitogen-activated protein kinase and increase Ca<sup>2+</sup> levels in several cell types. The ability of vanadium compounds to activate these signaling events may be responsible for their ability to modulate cardiovascular functions.

*Can J Physiol Pharmacol* 2004;82:833-839

#### **Mechanism of vanadium action: insulin-mimetic or insulin-enhancing agent?**

The demonstration that the trace element vanadium has insulin-like properties in isolated cells and tissues and in vivo has generated considerable enthusiasm for its potential therapeutic value in human diabetes. However, the mechanisms by which vanadium induces its metabolic effects in vivo remain poorly understood, and whether vanadium directly mimics or rather enhances insulin effects is considered in this review. It is clear that vanadium treatment results in the correction of several diabetes-related abnormalities in carbohydrate and lipid metabolism, and in gene expression. However, many of these in vivo insulin-like effects can be ascribed to the reversal of defects that are secondary to hypoglycemia. The observations that the glucose-lowering effect of

# Most Frequently Asked Questions...

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There are certain questions that come up again and again. I apologize for relating to them once more but I consider it essential to clarify what can be expected from hair mineral analysis (HMA),

***Q: Why don't we have more new research about hair mineral analysis?"***

**A:** Anamol laboratories is constantly searching for any relevant new information in the medical literature, or on the web. As new articles are available, we will publish them in our newsletter.

In the 60's and 70's, there was a keen interest to study the implications of minerals and trace elements in health and disease. Research grants were readily available and articles on this subject were published **even** in the most conservative of journals, such as **The Lancet**. The most outstanding publications appeared in July 31, 1982: ***"On Determining Trace Levels in Man: The uses of blood and Hair"*** by Dr. Martin Laker.

As more and more research funds were granted for pharmaceutical studies, less and less articles appeared in prereviewed Mainstream Medical journals. Companies producing food supplements have not stepped up to fill this void. The smaller manufacturers don't have the funds, while the larger ones don't feel the need. Maybe in the future, under pressure from a more health-oriented public, they will. As of today, articles that were published some years ago are still valid.

***Q: Is pubic hair a good source for HMA?***

**A:** The reference values were established on hair from the nape of the neck, taken close to the scalp and not longer than 2 inches or 5 cm. Head hair grows at a rate of 0.5—1 millimeter/day. Hair taken from this location will contain minerals absorbed from the blood circulation during the last 4-6 weeks. Hair longer than 5 cm will reflect a time period going back further in the past. Growth rate of pubic hair is much slower than that of head hair and therefore will reflect different time exposure and consequently will provide different analytical values, though the mineral

pattern may be similar. For this reason the use of pubic hair – being much less exposed compared to hair from the head – is limited to recheck the presence of toxic elements, whether toxicity in the hair from the head represents systemic levels or it is just external contamination.

***Q: Is information available about toxic elements?***

**A:** Yes. Anamol can provide a booklet containing information on sources, and symptoms caused the toxic element(s). Ask for it!

***Q: It would be helpful having a program enabling the health practitioner to compare reports of the same person done in different dates.***

**A:** This program is available and can be emailed to interested person.

***Q: Can the time interval between receiving the hair sample and mailing the report shortened?***

**A:** We, at Anamol appreciate the importance of fast turnover and for this reason we produced an email program that will provide the same color format than that of hard copy of the regular report

***Q: Beside the interpretation included in the report on hair analysis is available further support for practitioners?***

**A:** For having additional information all you have to do to call in and make appointment with Dr. Tamari. Please provide the report's Lab. Number.

Many of our customers use HMA as a baseline information routinely on every new patient. The analytical result will provide an opportunity for both the patient and the health professional to discuss the mineral status based on scientific facts; to detect the presence of certain patterns – revealing metabolic difficulties; to reveal the presence of toxic element(s). All this information supplies a good opportunity for patient's education and for suggestion of a good nutritional and supplementation program.

# Literature Review

*Cont'd*

vanadium depends on the presence of endogenous insulin whereas metabolic homeostasis in control animals appears not to be affected, suggest that vanadium does not act completely independently in vivo, but augments tissue sensitivity to low levels of plasma insulin. Another crucial consideration is one of dose-dependency in that insulin-like effects of vanadium in isolated cells are often demonstrated at high concentrations that are not normally achieved by chronic treatment in vivo and may induce toxic side effects. In addition, vanadium appears to be selective for specific actions of insulin in some tissues while failing to influence others. As the intracellular active forms of vanadium are not precisely defined, the site(s) of action of vanadium in metabolic and signal transduction pathways is still unknown. In this review, it is examined the evidence for and against the concept that vanadium is truly an insulin-mimetic agent at low concentrations in vivo. In considering the effects of vanadium on carbohydrate and lipid metabolism, it is concluded that vanadium acts globally, but selectively and by enhancing, rather than mimicking effects of insulin in vivo.

Cam MC, Brownsey RW, McNeill JH. *Can J Physiol Pharmacol* 2000;78:829-847

## Colored Email Reports

Since January 2002, our *Hair Analysis Reports* have been printed out in colors. With the growing requests for e-mail reporting, the importance of a colored first page became an issue. As a response to the wishes of the large number of Health Professionals, starting December 2005, we'll be able to provide you with **COLOURED FIRST PAGES** identical to our office copies.

If you want to receive your results by e-mail, please e-mail or fax us your email address.

**Please note:** We will send e-mail to doctors only. - No patient's e-mail addresses please.

## Its worth repeating

Though we have experienced considerable improvement during the past two years, there is still some measure of the same difficulties. Therefore we find necessary to reprint the information with some additional requests and suggestions:

- Write patient's name on the sample envelope.
- Results are printed on the language of the requisition form. Please indicate if the report wanted in any other language.
- Requests for free supply should be indicated on the bottom of the same form.
- We have to ask our new customers to send in a copy of your letterhead or business card, as Anamol Laboratories does not deal with the public.
- It is not necessary to issue an individual cheque to each sample in the same shipment.
- Please indicate form of payment by checking the appropriate space.
- Change of address or phone number should be highlighted.
- Please advise us if there is any change in your credit card number.

## Services:

- Educational Seminars
- Technical Literature
- Individual Consultation
- Dietary Survey
- Hair Tissue Mineral Analysis
- Urine Mineral Analysis
- Water Mineral Analysis

## Anamol Laboratories Ltd.



83 Citation Drive, Unit #9  
Concord Ontario, L4K 2Z6  
www.anamol.com  
anamol@bellnet.ca  
Tel. 905-660-1225  
1-888 254 4840  
FAX 905 660-1955

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