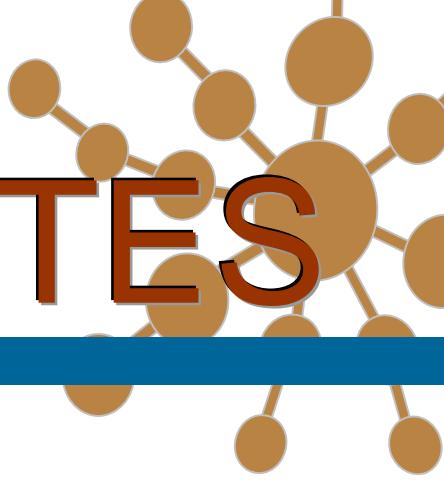


**TRACE ELEMENTS**

# **NEWS UPDATES**



**JANUARY – OCTOBER 2011**

## **Hair Mineral Levels in Autistic Children**

In this study, the assessment of nutritional and heavy metals was performed on children diagnosed with autism as compared to controls. The affected groups were graded based upon low, medium and high functioning autism. Results showed that hair copper concentrations could be correlated with the degree of severity, in that the higher the copper burdens, the more severe the autism. Levels of lead and mercury were also found higher in the affected group and increased with the degree of severity. Whereas, selenium and magnesium were significantly different in the low functioning group of children compared to others in the affected group as well as controls. Priya, L, Geetha, A. Level of Trace Elements (Copper, Zinc, Magnesium and Selenium) and Toxic Elements (Lead and Mercury) in the Hair and Nail of Children with Autism. Biol.Trace Elem.Res. 2010.

Comment: Autism is related to nutritional imbalances and heavy metal accumulation, either of which can affect neurological functioning. Contributing factors to the development of autism are multi-causal, many of which can be assessed through hair tissue mineral analysis. Therefore, the approach to therapy should be addressed and individualized based upon the individual child and not a general therapy for an entire group of affected children.

---

## **Heart Disease Cannot be Cured Says Bill Clinton's Cardiologist**

In 2004 Bill Clinton underwent quadruple by-pass surgery. Last year the former President underwent another procedure to unblock coronary arteries using stents. Fortunately, he did not have a heart attack but he had been suffering chest pains for several days. Apparently, even though he was on medications and his cholesterol levels were all good he still experienced coronary artery blockage. This led his cardiologist as well as other well-known cardiologists in the country to say that even though there are excellent treatments for coronary artery disease there is no cure for this condition.

---

## **Continued Questions and Concerns about Vitamin D. Again and Again and Again**

There is almost not a day that goes by that I am not asked questions about vitamin D, even though our reports state if vitamin D supplementation is necessary or not for that particular individual. Patient's who show a low blood vitamin D level think they should take extra vitamin D even though they fall into a Slow Metabolic pattern. This is certainly not the case by any means. In fact, there seems to be a movement to make vitamin D the magic bullet that cures just about everything. Even the normal blood ranges for vitamin D have been proposed to be arbitrarily raised with no substantive evidence for doing so.



In some circles it has been suggested to double and even quadruple the normal level of vitamin D from the present ranges with little regard for individual metabolic circumstances. Since these artificially raised "normal" levels are extremely difficult to attain, many practitioners and organizations are now recommending mega dosages of vitamin D with seemingly little regard for the long-term risks and complications this can cause.

Recently the Institute of Medicine (IOM) released a statement suggesting that raising the normal range for vitamin D as well as suggesting long-term high intake of vitamin D is not warranted at this time. Further their report stated that after reviewing hundreds of studies and reports of the beneficial effect of vitamin D playing a protective role against cancer, heart disease, diabetes and autoimmune disease, the studies are conflicting and provide mixed results. Apparently, there is not enough evidence to confirm that vitamin D has these effects. Other studies confirm this report by the IOM. An assessment of data from the Third National Health and Nutritional Examination Survey (NHANES III) came to similar conclusions, and also discussed the adverse effects of high blood vitamin D levels on mortality rates. Apparently, cancer mortality did not correlate with serum vitamin D levels in a total population studied. However, in some the higher vitamin D levels were related to a higher cancer mortality rate compared to those with lower vitamin D levels. Freedman, DM et al. Serum 25-hydroxyvitamin D and cancer mortality in the NHANES III study. *Cancer Res.* Nov. 1, 2010.

These conflicting reports and studies can be explained based upon hair tissue mineral analysis (HTMA) studies. The proper recommendations for vitamin D intake and supplementation can also be better applied and explained through HTMA studies.

#### Slow Metabolism:

We have found that the higher the tissue levels of calcium, the less stored vitamin D will be converted to the active form. In the Slow Metabolic Type, the tissue level of calcium is elevated, which is contributed by a relative dominance of the parathyroid. This can be termed primary hyperparathyroidism or subclinical hyperparathyroidism. This type of hyperparathyroidism resulting in excess tissue calcium concentrations reduces the formation of active vitamin D. This is why oftentimes Slow Metabolic Types will show low normal active vitamin D levels. Unfortunately, raising active vitamin D in the blood to higher levels is difficult, even with mega-dosing of vitamin D through supplements. However, when the subclinical hyperparathyroidism is brought under control, the blood level of active vitamin D will increase, even without vitamin D supplementation. Forcing an increase in blood vitamin D levels with pharmacological amounts of vitamin D is similar to forcing the reduction of cholesterol levels with medications and expecting it to prevent cardiovascular disease. As we can see from the previous discussion, this does little good and may actually cause harm in the long-term. For example, Vitamin D can further exacerbate parathyroid expression, contributing to cellular autoimmune conditions, soft tissue calcifications, renal stone formation, osteoarthritis, osteoporosis and CVD. In some cases, a deficiency of vitamin D can cause secondary hyper-parathyroidism leading to rickets and osteopmalacia, conditions that respond readily to vitamin D supplementation. This condition is rare compared to the incidence of primary hyperparathyroidism. For more information on the impact of hyperparathyroidism and vitamin D you might want to visit the following website, <http://www.parathyroid.com>. This is an interesting website I found recently of the Norman Parathyroid Center at Tampa General Hospital. This website will provide extensive information related to parathyroid disorders as well as their view regarding vitamin D levels. Their information actually supports the findings I have discussed previously based upon our HTMA test results.

#### Fast Metabolism:

On the other hand, the Fast Metabolic Type does in fact have low HTMA calcium levels and also an increased need for vitamin D. However, this group makes up only about twenty-five percent of the population in comparison to Slow Metabolic Types. Vitamin D therapy however, in the Fast Metabolic Group will have beneficial effects of reducing or preventing certain types of cancers, heart disease as well as reducing excessive humoral auto-immune conditions.

As stated by Toner et al, "Future research should seek to clarify if and for whom there may be an increased risk for cancer at particular sites with high 25(OH)D concentrations, and the concentrations at which this risk increases. The health status, life stage, adiposity, estrogen exposure and nutritional status of study participants should be taken into account. Continued investigation is necessary to ensure that vitamin D recommendations are appropriately targeted to individuals who stand to benefit most, while protecting vulnerable subgroups from risk of overexposure." Toner, CD, et al. The Vitamin D and Cancer Conundrum: Aiming at a moving target. *J.Am.Diet.Assoc.* 110,10, 2010.



## Elevated Uranium and Radon Gas in Drinking Water

We have frequently found that individuals having exceedingly high HTMA uranium levels also have high uranium in their drinking water. When high HTMA uranium is found we recommend that individuals also have their home tested for the possibility of high radon gas levels as the two are often found coexisting. Recently, a client informed us about one of her patients who's entire family showed elevated HTMA uranium. The family's water was tested and uranium was found to exceed the EPA limits. Interestingly, they had their water tested for radon gas also and levels were well above allowable levels. I have not had reports of water radon gas levels before, but it may be wise for individuals who have high uranium in their water to have their municipalities test for radon gas as well. Special water treatment is necessary to address the radon gas beyond what is necessary for addressing elevated uranium levels.

HTMA is a good indicator of exposure to uranium and without these tests many individuals would unknowingly be exposed to not only heavy metals such as uranium and other metals, but radon gas as well. Kehagia, K, et al. Hair Analysis as an Indicator of Exposure to Uranium. Radial.Prot. Dosimetry. Nov. 2010.

---

## Magnesium Deficiency and Hydrochloric Acid Inhibitors

Proton pump inhibitors (PPI's) are a group of drugs that inhibit gastric acid production. They are commonly used prescription medications whose trade names include Nexium, Prevacid, Zegerid, Protonix and are also available as over-the-counter products (OTC) including Prilosec OTC, Prevacid 24 HR and Zegerid OTC. Over the last several years, low serum magnesium levels have been found in patients who were long-term users of PPI's. Patients were experiencing a number of symptoms, such as muscle cramps, tetany, cardiac arrhythmia, vertigo, convulsions and seizures. There have also been reports of an increase in hip fractures in patients using PPI's over long periods. Studies of these patients show low serum magnesium as well as low serum calcium, which responded to magnesium therapy and discontinuation of the PPI. Kuipers, MT, et al. Hypomagnesaemia due to the use of proton pump inhibitors – a review. J.O.M. 67, 5, 2009. Wright, MJ, et al. Proton pump-inhibiting drugs, calcium homeostasis, and bone health. Nutr.Rev. 66,2, 2008. Cundy, T., et al. Severe hypomagnesaemia in long-term users of proton-pump inhibitors. Clin.Endocrinol. 692, 2008.

Comment: Many medications can impact nutritional status. Unfortunately, the use of these prescribed and OTC PPI's are widespread. Magnesium is such an important mineral that an induced deficiency can have far reaching consequence. Not only are the symptoms noted above associated with magnesium deficiency, but death could also occur from an induced magnesium deficiency due to the adverse effect of magnesium deficit on the cardiovascular system and the myocardium itself. Magnesium deficiency can increase the potency and toxicity of commonly used drugs such as digitalis. Uses of these PPI's are supposed to be limited to no more than three 14-day periods in one year. Yet most cases are reported to have been taking PPI's for a year or more and were also found to be magnesium deficient after hospitalization. The FDA has issued a safety alert for consumers, gastroenterology and family practitioners on the adverse affects of PPI use causing hypomagnesemia that can be obtained on the web at <http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm245275.htm>. They state that healthcare professionals should consider obtaining serum magnesium levels prior to initiation of prescription PPI treatment in patients on these drugs for long periods of time and should also consider obtaining magnesium levels periodically in these patients during therapy.

As a sidenote, it is estimated that over 60 percent of the U.S. population does not meet the US RDA for magnesium. Therefore, HTMA can be a useful tool for assessing magnesium status as well as to monitor long-term effects of medications on patient mineral status.

---

