InterClinical Laboratories

Newsletter

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Hair Tissue Mineral Analysis

Nutritional Products

Practitioner Education

Research and Development

CLINICAL UPDATES for the Health Care Professional

By Dr David L Watts, Director of Research

Dietary copper intake reflected in hair tissue mineral analysis

The long-term effects of copper intake were studied to determine the effects of copper status. Nine men were confined to a metabolic research unit for 18 days. They were fed a 3-day rotating menu providing an average of 1.6 milligrams of copper per day. The study continued under free-living conditions for 129 days with copper supplementation of 7 milligrams per day. Hair copper, plasma copper, ceruloplasmin activity, ceruloplasmin protein, plasma malondialdehyde, benzylamine oxidase activity, erythrocyte SOD, urinary copper and urinary thiobarbituric acid-reactive substances were measured. Results found that ceruloplasmin activity, benzylamine oxidase and SOD were significantly higher during the second period of the study. The second period shows that hair copper levels were significantly increased.

Turnlund JR., et al. (2004). Long-term high copper intake: effects on indexes of copper status, antioxidant status, and tmmune function in young men. Am J Clin Nutr *79, 6.*

Danger of toxic metals in soils underestimated

Heavy metals accumulating in soils from industrial pollution may be poisonous to living organisms. It was once thought that heavy metals could only be taken up by living organisms if they were suspended in or dissolved in water. However research is now showing that living organisms can actually pick up heavy metals and other pollutants from the soil itself allowing these hazardous materials to enter the food chain.

New Sci *Dec 2003.*

Hair zinc-copper levels and susceptibility to myocardial infarction

A study was performed on patients hospitalised for myocardial infarction (MI) and their descendants compared to a control group. Hair zinc levels were found to be higher and hair copper levels lower in the relatives of patients who suffered from MI compared to controls. Copper levels were higher in the urine of relatives as well. Conclusions of the study stated that: 'It is envisaged that the MI patients have an operational component of a genetic disorder or ionic imbalance at a young age that can be exploited in making a prediction of susceptibility to heart stroke in individuals before its onset and diagnosis in asymptomatic patients, particularly in genetic and epidemiological studies of MI.

Taneja SK, et al. (2000). Detection of potentially myocardial infarction susceptible individuals in Indian population: a mathematical model based on copper and zinc status. Biol Trace Elem Res *75.*

Hair mineral patterns in patients with cerebral infarction

Hair mineral patterns of forty-five patients with cerebral infarction were compared to 20 healthy controls. Results showed a significant difference in patients with cerebral infarct. Zinc, copper and magnesium were lower compared to the non-affected group and manganese levels were higher.

Zhao WX & Li Y (2002). Determination of Zn, Cu, Mg, and Mn in hair of cerebral infarction by AAS. Guang Pu Xue Guang Pu Fen Xi *3.*

Copper deficiency and cardiomyopathy

Copper deficiency is known to lead to cardiac hypertrophy in animal models and eventual heart failure. Copper is associated with several critical enzymes such as lysyl oxidase, which is involved in connective tissue metabolism, superoxide dismutase and cytochrome c oxidase, a critical component of the mitochondrial respiratory chain. Animal studies have shown that copper repletion results in regression of heart failure caused by copper deficiency with improvement of contractile function and B-adrenergic stimulation.

Elsherif L, et al. (2004). Regression of dietary copper restriction-induced cardiomyopathy by copper repletion in mice. J Nutr *134, 4.*

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We are updating our mailing and newsletter database. If you want to keep receiving our mail, please don't forget to complete and free-post the form enclosed with this newsletter.

Pressure treated wood a potential hazard for children

Pressure-treated lumber has been used in building materials for decades and had not been noted as an environmental problem until recently. However, over the last few decades it has been used extensively in building outdoor decks and playground equipment. Unfortunately, arsenic and other chemical compounds are used in the lumber as a deterrent for insects, fungus, etc. With approximately 40 million tons of arsenic used in pressure-treated lumber annually, its outdoor use has lead to large amounts of arsenic being released into the environment. Children playing on decks and playground equipment are becoming increasingly exposed to arsenic as the wood ages and compounds are released into the air and surrounding soil. Recent studies have estimated that a child could pick-up over 7 micrograms from arsenic-treated wood. As of December 2003, American chemical companies no longer have EPA approval to sell arsenic compounds for treating lumber used around homes. As a protective measure for existing treated wood, it is suggested that it be somewhat sealed through staining or painting.

Raloff (2004). Danger on Deck? J Sci News *165, 5.*

Vitamin D deficiency and multiple sclerosis

It is known that multiple sclerosis (MS) occurs more often in individuals living in areas far from the equator where less sunlight is available. It has also been found in other studies that people who develop MS are low or deficient in vitamin D. A large study involving over 187,000 women spanning a 20-year period has now been found to reinforce these earlier findings as more women developed MS in the low vitamin D group compared to those adequate in vitamin D intake.

(2004) Vitamin D and multiple sclerosis. Sci News *165, 5.*

Over the years our HTMA studies have shown that in one form of MS there is an increased need for vitamin D, and not only a deficiency of vitamin D but a calcium deficit as well. In fact, typically in groups diagnosed with MS, a corresponding copper deficiency is also present.

Watts D L, TEI Newsletter *6, 1.*