

## NEWS UPDATES - FOR THE HEALTHCARE PROFESSIONAL

January - December 2004

### **The Ketogenic Diet and Metabolic Types**

The "ketogenic diet", or high fat diet has been used for controlling epilepsy in children since the 1920's. The diet has long been considered an alternative therapy but now is considered an accepted form of treatment in children and adults with epilepsy.

Fast Metabolic Types and High Fat Diets: Children with epilepsy usually show a Sympathetic hair tissue mineral pattern or a Fast Metabolic Type. The fast metabolic types are recommended to consume a higher fat intake compared to Slow Metabolic Types. The purpose of the increased fat intake for the Fast Metabolic types serves a number of purposes. First the cheeses, butter, sour cream and other dairy products contain both calcium and vitamin D, nutrients that are lacking in Fast Metabolic Types. Typically the cellular glycolytic activity is elevated with sympathetic dominance and contributes to more than adequate amounts of pyruvic acid production. However, there is an inadequate ability to convert the pyruvate into energy in the TCA cycle of energy production due to a lack of acetyl coenzyme A. Fats and ketones are sources of this enzyme.

The ketogenic diet is based upon a ratio of fat to proteins and carbohydrates of 4:1. When this ratio of food intake is maintained it will result in the formation of ketones. Ketone bodies are used as a major fuel source for brain cells. Ketones increase the energy reserves in neurological cells by affecting the ATP/ADP enzyme ratio in the mitochondria contributing to an antiseizure effect.

Since ketones raise the acetyl-coenzyme A production by 16 times the TCA energy production is greatly enhanced. Ketones may also protect neurons from free-radical damage. VanItallie, et al concludes that conditions such as Parkinson's and Alzheimer's disease may respond favorably to a ketogenic diet. Other conditions seen with a Fast Metabolic HTMA mineral pattern and that also have responded favorably to a high fat diet, are; Parkinson's Disease, A.L.S., Multiple Sclerosis Type I, Huntington's Disease, Diabetes Type I, Cardiovascular Disease, Arthritis (rheumatoid), Malignancies, A.D.H.D., Cystic Fibrosis, Hyperthyroidism, Cushing's Disease, Neuropsychological Disorders, Myesthenia Gravis, Mitochondrial disorders. Wilder, RM. The Effect of Ketonemia On The Course Of Epilepsy. Mayo Clin.Bul. 1921. Peterman, MG. The Ketogenic Diet In The Treatment of Epilepsy. Am.J.Dis.Child. 1924. VanItallie, TB, Nufert, TH. Ketones: Metabolism's Ugly Duckling. Nutr. Rev. 61, 10 2003.

## **Uric Acid: An Immune Stimulant**

Researchers have found that when cells are injured or dying they release uric acid. It is now thought that the release of uric acid triggers immune cells to respond. Instead of the body simply responding to invading organisms it is now believed that the immune system responds after cellular injury caused by microbes rather than just their presence. Apparently uric acid levels have to reach a peak, forming crystals before immune stimulation occurs. Immunology. Sci.News 16, 164 2003.

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## **Neurological Disease and Children: Hair Mineral Patterns**

Hair tissue mineral analysis (HTMA) was performed on group of 153 children with neurological disorders including hyperactivity, loss of consciousness and epileptic type seizures of unknown etiology compared to a control group. The affected group showed a significant increase in hair lead levels as well as a significant reduction in hair magnesium levels. Lech, T. Lead, Copper, Zinc, and Magnesium Content in Hair of Children and Young People with Some Neurological Disease. Biol.Trace Elem.Res. 85, 2002.

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## **Statins Do Not Improve Bone Density**

Not long ago it was proposed that statins that are used to lower cholesterol might also be taken to improve bone density and prevent osteoporosis. However, a study from the Women's Health Initiative Observational Study involving over 93,000 postmenopausal women reported that statin use does not improve fracture risk or bone density. It was therefore concluded that evidence from this study does not warrant the use of statins to prevent or treat osteoporosis. Statin Use, Clinical Fracture, and Bone Density in Postmenopausal Women: Results from the Women's Health Initiative Observational Study. J.A.M.A.290, 10, 2003.

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## **Thyroid Stimulating Hormone (TSH) May Cause Osteoporosis**

TSH produced by the pituitary is a major regulator of thyroid hormone production, once thought to be its' only function. Now researchers have found that TSH also affects bone remodeling. Animals with a lack of TSH receptors were found to develop brittle bones, even when thyroid function was normal. Apparently elevated TSH levels cause the osteoclasts and osteoblasts to behave abnormally and contribute to osteoporosis. Bad news for bones. Thwarted hormone leads to skeletal decay. Sci.News 164, 2003.

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## **The Effects of Long-Term Nutritional Deficiencies and Disease Not Considered**

National nutritional recommendations and policies are based primarily on preventing short-latency or short-term deficiency disease. Examples of short-term nutritional disease include

vitamin C deficiency and scurvy, niacin deficiency and beriberi, iodine deficiency and goiter, and vitamin D deficiency and rickets. It is now recognized that the long-term, inadequate intake of many nutrients lead to several major chronic diseases in industrialized nations and takes years to manifest. Nutritional requirements necessary to prevent these chronic disease conditions are higher than the requirements necessary to prevent the effects of short-term deficiency conditions. Therefore, Heaney concluded, "recommendations based solely on preventing the index diseases are no longer biologically defensible." Heaney, R.P. Long-Latency deficiency disease: insights from calcium and vitamin D. *Am.J.Clin.Nutr.* 78, 2003.

It is well known that nutritional deficiencies begin to develop long before signs and symptoms manifests. This is true of nutritional imbalances as well. The use of HTMA can greatly aid the clinician in recognizing long-term nutritional imbalances and impending deficiencies of nutrients that lead to chronic disease.

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**Personal Metabolomics as a Next Generation Nutritional Assessment German, JB, et al. *Am. Soc. For Nutr. Sci. J. Nutr.* 133, 2003.**

This article published in the *Journal of Nutrition* was presented at a symposium of Experimental Biology on improving human nutrition through genomics, proteomics and biotechnologies, and was related to nutritional research related to the future of diet and health. The paper addresses concerns that all humans are not the same in respect to their response to diet. Some individuals may gain weight on a particular diet and others may lose weight on the same diet. This emphasizes the need to approach nutritional needs of individuals based upon their genetic and metabolic needs rather than try to place everyone under one simplistic umbrella. In quoting the authors, "it is clear that diversity of the human population is a nutritional reality. Once this diversity is realized, it becomes imperative that the problems of metabolic regulation, and their causes and interventions, will need to be personalized in order to be addressed and finally solved," it is obvious that individual metabolic assessment and a targeted nutritional approach is much more important than generalized nutritional recommendations. HTMA is one such tool that is being used for this very purpose today.

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**Magnesium and Insulin**

Supplementation of magnesium has been shown to improve insulin sensitivity and bring about better metabolic control of Type 2 diabetes in patients with magnesium deficiency. Other studies have also found that magnesium supplementation improved the lipid profile in patients with diabetes. Rodriguez-Moran, M, et al. Oral Magnesium Supplementation Improves Insulin Sensitivity and Metabolic Control in Type 2 Diabetic Subjects: A Randomized Double-Blind Controlled Trial. *Diab. Care.* 26,4, 2003. Lal, J., et al. Effect of Oral Magnesium Supplementation on the Lipid Profile and Blood Glucose of Patients with Type 2 Diabetes Mellitus. *J. Assoc. Phys. India.* 51, 2003.

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## **Postmenopausal Osteoporosis Caused by Hormonal Imbalance Rather Than Lifestyle Factors**

A study was performed on a group of postmenopausal women compared to a control group of the same age. Assessments included lifestyle factors such as occupation, smoking habits, physical activity, blood pressure, etc. Insulin-like growth factor-1 (IGF-1), vitamin D, parathyroid hormone (PTH), and blood lipids were determined in both groups. Lifestyle factors were essentially similar in both groups. The group with osteoporosis had a lower body weight and body mass index (BMI) compared to the control group. Vitamin D metabolites and IGF-1 were lower, and PTH was higher in the osteoporosis group. The study concluded that postmenopausal osteoporosis is more related to hormonal imbalances than to lifestyle factors. Landin-Wilhelmsen, K, et al. Postmenopausal Osteoporosis is More Related to Hormonal Aberrations Than to Lifestyle Factors. Clin. Endocrinol. 51, 4, 1999.

Comment: This study emphasizes what we have always stressed, that the cause of osteoporosis should be viewed as a metabolic disorder rather than a simple calcium deficiency. Individualized assessment and targeted treatment is necessary to correct the many underlying factors that can contribute to bone loss.

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## **Weight Gain and Parathyroid Hormone (PTH) Excess**

It is known that an increase in free intracellular calcium in adipocytes reduces the lipolytic response to catecholamines. In other words excess calcium has an effect of blunting the fat-burning enzymes in fat cells, thus contributing to weight gain or an inability to lose weight. PTH increases calcium concentrations in fat cells. Therefore, a reduction in PTH can lead to weight loss, as well as improved insulin sensitivity. McCarty, MF, Thomas, CA. PTH Excess May Promote Weight Gain by Impeding Catecholamine-Induced Lipolysis-Implications For the Impact of Calcium, Vitamin D, and Alcohol on Body Weight. Med. Hypoth. 61, 5-6, 2003.

Comment: This response would be expected from viewing HTMA studies. PTH, calcium and insulin not only reduce the ability of the body to burn fat, but also blunt the metabolic rate due to their individual and combined effect of antagonizing the thyroid. PTH raises soft tissue calcium concentrations and contributes to decreased insulin sensitivity. Most people with hyperinsulinism and/or increased PTH would also suffer from hypothyroidism. Most individuals with elevated PTH and insulin levels fall into the Parasympathetic Slow I metabolic category. Reducing excess tissue calcium, PTH and insulin would lead to an increase in the metabolic rate due to improved thyroid expression, which would in turn affect glucose disposal, improve insulin control and contribute to weight loss.

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## **Diabetes Mellitus and The Endocrine System**

The physiology and pathology of diabetes mellitus is complex and poorly understood. However, it appears that the endocrine system including the hypothalamus, pituitary, thyroid, parathyroid, gonads and vitamin D metabolism are all involved. It is known that individuals with increased parathyroid activity have alterations in carbohydrate metabolism and insulin resistance. Studies

have been reported that when parathyroidectomy was performed on patients with severe, unstable diabetes mellitus, blood glucose stabilized and improved in 77% of the patients who underwent parathyroid surgery. Alrefai, H, et al. The Endocrine System in Diabetes Mellitus. Endocrine. 18,2, 2002. Richards, ML, Thompson, NW. Diabetes Mellitus with Hyperparathyroidism: Another Indication for Parathyroidectomy? Surgery, 126,6, 1999. Gerl, H, et al. Improvement of Diabetes Mellitus After Excision of a Parathyroid Adenoma. Wien Klin Wochenschr. 110,23, 1998.

Comment: We can see that diabetes and weight control are certainly related. We can also see that both conditions are related to multi-causal factors involving the entire neuro-endocrine system. Through HTMA we can recognize these multiple involvements and the associated nutritional imbalances.

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### **Infections and Obesity**

Researchers at the University of Wisconsin in Madison analyzed the blood of almost 200 individuals for antibodies to the adenovirus (AD-36), a virus known to cause obesity in animal models. Forty-five of the participants were lean and the other 154 were obese. Antibodies to the AD-36 virus were not found in any of the lean individuals, but approximately fifteen percent of the obese individuals were positive. How the virus contributes to obesity is unknown, but data from animal studies show that obesity associated with the virus is not associated with any apparent increase in food intake. Fat Is An Infectious Issue, Say Researchers. Lancet, 349, 1997.

Comment: This is not difficult to understand when viewing results from HTMA studies. Over the years we have found that viruses have multiple effects within the body and can easily contribute to weight gain. A viral infection produces a sedation of the metabolic rate through a number of mechanisms. First, viruses initiate a cellular immune response. If prolonged then the thymus becomes dominant causing a suppression of adrenal and thyroid expression. Viruses also increase the retention of the mineral copper and cause a loss of the mineral zinc. This has multiple effects, such as an increase in the tissue concentration of calcium. As mentioned in previous discussions, as tissue calcium concentrations increase, the ability to burn fat then decreases. In addition, calcium also suppresses thyroid expression, reduces the metabolic rate and enhances viral activity. Viruses also increase vitamin D activity, further contributing to the retention of calcium and increasing the requirement for vitamin A. Viruses would tend to produce peripheral fat deposition contributing to the pear-shaped body type.

Bacterial infections on the other hand have almost the opposite metabolic effect of viruses. A bacterial infection produces a humoral immune response which when prolonged suppresses the thymus and accelerates the metabolic rate. Copper retention is reduced as is tissue calcium concentrations and its co-factors such as vitamin D. As a result, adrenal and thyroid activity is increased. This particular metabolic manifestation results in central adipose deposition contributing to the apple-shape body structure.

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## **High Protein Diets and Weight Loss**

High-protein low-carbohydrate diets are beneficial for helping with weight loss. High protein enhances weight loss due to higher loss of body fat and reduced loss of lean body mass. Protein increases thermogenesis, improves glycemic control as well as increase satiety. Dietary Protein Impact on Glycemic Control During Weight Loss. Layman, D, Baum, JI. The J. of Nutr. 134 ,4, 2004.

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## **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. Vitamin D and Multiple Sclerosis. Sci. News. 165,5 2004.

Comment: 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. For further information see TEI Newsletter; Multiple Sclerosis True Or False. Vol.6,1, 1993.

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

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## **Fructose, Weight Gain, Diabetes**

Fructose is preferentially metabolized to lipids in the liver and is known to contribute to insulin resistance and therefore, may contribute to Metabolic Syndrome X. High fructose diets have been shown to produce hypertension in animals while reducing the production of leptin and

insulin. Fructose, Weight Gain, And The Insulin Resistance Syndrome. Elliott, S., et al. Am.J.Clin.Nutr. 76,5, 2002

Comment: The metabolic effect of fructose in humans is unclear. However, HTMA studies may shed light on how high fructose intake can be detrimental for some individuals and not for others. Typically, we recommend the avoidance of fructose in Fast Metabolic Types. The reason for this is that fructose is well known to antagonize the mineral copper that is typically low in sympathetic types. Sympathetic types have the "apple-shaped" body structure indicating increased central adipose deposition, which is associated with high adrenal hormone (cortisol) production. It is also associated with increased thyroid activity contributing to an accelerated metabolic rate. Both the adrenal cortical steroids and the thyroid hormones have an antagonistic effect upon insulin production. Copper deficiency is associated with this metabolic pattern and in fact can help lower an accelerated metabolic rate by the minerals' effect upon thyroid and adrenal function, calcium retention, and vitamin D metabolism. Fructose can exaggerate a copper deficiency contributing to increased adrenal and thyroid activity resulting in insulin resistance and can contribute to central obesity due to increased levels of active cortisol.

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### **Iron and Diabetes**

Excess iron is known to cause diabetes and is a common finding of hemochromatosis, a condition of iron overload. The accumulation of excess iron in the body contributes to extensive free radical production that damages lipids, cellular membranes, proteins and even nucleic acids. Eventually, as iron builds up within the tissues it is thought to produce insulin resistance. Excess accumulation within the pancreas can cause islet cell damage and eventually leads to decreased insulin production. A recent study reported by Jiang, et al, found that higher iron stores in women were associated with an increased risk for developing diabetes. Iron stores were based upon elevated ferritin and a lower ratio of transferrin receptors to ferritin. Body Iron Stores In Relation To Risk Of Type 2 Diabetes In Apparently Healthy Women. Jiang, R, et el. JAMA 291,6, 2004

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### **Hair Zinc-Copper levels and Susceptibility to Myocardial Infarction**

A study was performed on patients hospitalized 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, "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. Detection Of Potentially Myocardial Infarction Susceptible Individuals In Indian Population: A Mathematical Model Based On Copper And Zinc Status. Taneja, SK, et al. Biol.Trace Elem. Res. 75, 2000.

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## **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. Regression of Dietary Copper Restriction-Induced Cardiomyopathy by Copper Repletion in Mice. Elsherif, L, et al. The J. of Nutr. 134,4, 2004.

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## **Alcohol Induced Liver Toxicity Improved with Dietary Saturated Fat**

Animals fed a saturated fat diet were found to be protected from experimentally induced alcoholic liver disease. As dietary saturated fat increased in the diet, liver pathology and oxidative stress were progressively reduced. Although ethanol metabolism was not changed, dietary saturated fat decreased liver triglyceride, PUFA, total FFA, as well as improved liver membrane resistance to oxidative stress. Dietary Saturated Fat Reduces Alcoholic Hepatotoxicity in Rats by Altering Fatty Acid Metabolism and Membrane Composition. Ronis, MJJ, et al. The J. of Nutr. 134,4, 2004

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## **Magnesium Deficiency and Diabetes Risk**

Researchers at Harvard University performed studies on the effect of magnesium intake and diabetes. They found a significant inverse association between dietary magnesium intake and diabetes risk. Double-blind placebo-controlled trials of patients with type 2 diabetes found that oral magnesium supplementation improved insulin sensitivity and metabolic glucose control. Based upon this study and many others the following conclusion was reached; "It's important for health professionals to recognize that magnesium may be a factor affecting diabetes risk, and they should, at least, assess magnesium intake (perform magnesium tests) to make sure their patients are getting the recommended level." Researchers Examine Effects Of Dietary Magnesium On Type 2 Diabetes Risk. Mitka, M. JAMA 291, 9, 2004.

Through HTMA studies we have found that magnesium requirements are increased in both type 1 and type 2 diabetes conditions. Individuals with other types of diabetes such as gestational diabetes, and iron-induced diabetes also have an increase in magnesium requirements as well as magnesium co-factors, such as vitamin B6, vitamin E, zinc, chromium, etc.

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## **Subclinical Hypothyroidism**

Overt hypothyroidism affects 1 to 4 percent of the population, but the prevalence of subclinical hypothyroidism affects 5 to 10 percent of the population. Subclinical hypothyroidism is defined as a symptom-free or minimally symptomatic state, characterized by abnormally elevated serum levels of TSH (thyroid stimulating hormone) with normal serum concentrations of free thyroxine. It is caused by the same disorders of the thyroid gland as those that cause overt hypothyroidism including autoimmune thyroiditis, use of antithyroid drugs, etc. Patients with subclinical hypothyroidism have higher total cholesterol, LDL, triglyceride, apo B levels, LDL/HDL ratio compared to control groups. Lipid Profile Alterations in Subclinical Hypothyroidism. Cabral, MD, et al. The Endocrinol. 14,3 2004.

Comment: From the above report we can see that subclinical hypothyroidism is a very prevalent condition that can lead to a number of metabolic consequences, particularly coronary heart disease and is often overlooked in most patients. The widespread recommendation for the use of cholesterol-lowering statin drugs seems to be aimed at treating the symptoms related to the potential development of atherosclerosis rather than treatment of the individual. Determining and treating this common condition could reduce the incidence of atherosclerosis by correcting the underlying cause or mechanism instead of resorting to symptomatic treatment with the use of statin drugs.

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## **Obesity, An Endocrine Problem**

A paper by Kikkoris, et al discussed the development of obesity being related to endocrine abnormalities. They discuss some endocrine diseases that include obesity as one of their clinical manifestations, such as Hypothyroidism, Cushing's Disease, Testosterone and Growth Hormone deficiency, Polycystic Ovarian Syndrome, Insulinoma, Hypothalamic lesions and genetic syndromes. However, milder endocrine disorders may also contribute to obesity in many people. For example, T3 levels are usually elevated in obese individuals, total testosterone and SHBG levels are usually low in men, estrogen levels are elevated in women, norepinephrine levels are elevated and epinephrine levels are low, aldosterone is elevated as well as parathyroid hormone levels. Obesity and Endocrine Disease. Kokkoris, P, et al. Endocrinol. Metab Clin. North Am. 32,4, 2003.

Comment: Obesity, while it is typically viewed as an issue of diet, exercise and overeating, it is obvious that there are other underlying neuroendocrine factors associated with this growing problem. Assessment of the individual and targeting their individual neuroendocrine and nutritional imbalances is necessary in bringing this epidemic under control rather than just emphasizing a diet for the masses.

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## **Zinc Supplementation Helps Children With Severe Pneumonia**

Pneumonia is a major cause of death in children less than five years of age. A double-blind placebo-controlled clinical trial of 270 children found that zinc supplementation in the amount of 20 milligrams per day resulted in accelerated recovery from pneumonia. The mineral zinc also

helped to reduce antimicrobial resistance and decreased multiple antibiotic exposure as well as reduce complications and deaths. Brooks, et al. Zinc for severe pneumonia in very young children: Double-Blind Placebo-Controlled Trial. *Lancet*, 363, 2004.

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### **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 S.O.D., urinary copper, and urinary thiobarbituric acid-reactive substances were measured. Results found that ceruloplasmin activity, benzylamine oxidase, and S.O.D. 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. Long-Term High Copper Intake: Effects on Indexes of Copper Status, Antioxidant Status, and Immune Function in Young Men. *Am.J.Clin. Nutr.* 79,6, 2004.

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### **Hair Zinc Levels of Patients With Prostate Disorders**

Hair mineral tests were performed on healthy subjects and compared to results of a group of patients with benign prostate hypertrophy and a group with prostate cancer. Zinc levels in patients with carcinoma were significantly lower than found in those with hypertrophy, and normal controls. Ouyang, SY, Li, SL. Investigation of Trace Elements in Hair of Patients with Prostate Carcinoma, Benign Prostate Hypertrophy, and Normal Controls. *Junan Yi Ke Da Xue Bao.* 25,3, 2000.

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### **Hair Mineral Analysis For Assessing Human Exposure to Heavy Metals**

Hair samples were used in an assessment of heavy metal exposure of a human population living near an abandoned copper mine in Portugal. Two groups were tested, those living near the abandoned mine and a group living several miles from the site. High concentrations of cadmium, copper and arsenic were found in individuals living near the mine compared to those living further from the mine. *Sci.Tot. Environ.* 327, 2004.

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### **Hair Mineral Patterns of Individuals Living In Alkaline and Acid Regions**

Rosborg, et al, analyzed the concentration of 34 elements in the hair of females from an acid region in southern Sweden compared to mineral concentration found in women living in an alkaline region. Water mineral analysis was also performed in both regions. Many elements found in the water correlated with hair element concentrations. The author concluded that the

finding of an increased hair mineral ratio of selenium to mercury of individuals living in the alkaline districts might protect those individuals against the adverse effects of mercury. Rosborg, I, et al. Hair Element Concentrations in Females In One Acid and Once Alkaline Area in Southern Sweden. *Ambio*. 32,7, 2003.

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### **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.. Determination of Zn, Cu, Mg, and Mn in Hair of Cerebral Infarction by AAS. *Guang Pu Xue Guang Pu Fen Xi*. 3, 2002.

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### **Dietary Selenium Intake Reflected In Hair Mineral Analysis**

Studies of hair tissue mineral analysis (HTMA) were carried out on individuals living in high and low selenium areas of Punjab, India. Foods were also analyzed for selenium content. The studies include 80 men and 80 women. Results of the study showed that selenium intake in the high selenium areas was nine times the intake of those living in low selenium regions. Hair selenium content was ten times higher in those living in high selenium regions than in those from lower selenium regions. This study shows the direct relationship between diet and hair mineral content. Hira, CK, et al. Dietary Selenium Intake by Men and Women in High and Low Selenium Areas of Punjab. *Pub.Hlth. Nutr*. 7,1 2004.

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### **Mercury Sensitivity From Tattoo's Causing Systemic Dermatitis**

As stated in our laboratory reports, tattoos, especially red tattoo pigments may contain mercury. A case reported in *Lancet* involved a man with extensive tattooing who consumed a large amount of raw swordfish and alfonsino, both of which were high mercury-containing fish. The individual developed a pruritic skin eruption over his entire body within two days of consuming the fish. Patch tests revealed a positive reaction to mercury chloride. Mercury in the tattoos combined with high mercury intake from the consumed fish thereby producing the allergic reaction. It should be noted also that other tattoo pigments might contain cadmium, chromium and cobalt that can also be contact sensitizers and produce dermatological reactions. Tattoos can be a source of exposure to these elements and can be responsible for elevated HTMA levels. A Red Tattoo and a Swordfish Supper. Tsuruta, D, et al. *Lancet*, Vol. 364, 2004.

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### **Environmental Pollutants Reduce The Metabolic Rate**

Some people's metabolism slows down when they lose weight. However, for some this drop in metabolism is greater than normal. Researchers have termed this slow down "adaptive

thermogenesis." Research suggests that the biggest cause for adaptive thermogenesis is increased concentrations of pollutants in the blood such as organochlorines that are released from storage in fat cells. It is speculated that the pollutants interfere with the thyroid gland as well as act on the metabolism of individual cells and poison the mitochondria. A Toxic Side of Weight Loss. Sci.News. Vol. 166, 2004

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### **Lead Poisoning From Toys**

A young boy suffering from lead poisoning was found to have ingested a toy necklace obtained from a vending machine. The medallions were manufactured in India and distributed throughout the U.S. An environmental lab obtained other medallions from vending machines and found they contained over 38% lead. A recall was issued but the toys may still be present in vending machines particularly in the state of Oregon. Brief Report: Lead Poisoning From Ingestion of a Toy Necklace- Oregon, 2003. MMWR 53, 2004

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### **Insulin Suppresses The Thyroid and Reduces Thermogenesis**

The interactions between thyroid hormones, and adrenal activity on the regulation of energy expenditure was investigated in a group of young healthy males. Their findings showed that insulin reduced the thermogenic effects of thyroid and adrenal hormones thereby, reducing the metabolic rate. This metabolic reduction is due to insulin's antagonistic effect upon the stimulatory action of thyroid and adrenal hormones.

Other studies have also shown the antagonistic relationship between insulin, and the thyroid and adrenal hormones. It is therefore important to assess overall endocrine activity when treating individuals who may have a reduction in their metabolic rate. Doing so will aid in improving the resting metabolic rate, improve glucose control as well as aiding in weight loss. Thermogenic Effect of Thyroid Homones: Interactions with Epinephrine and Insulin. Piolino, V., et al. Am.J. Physiol. 259, 1990. Insulin Resistance in Pituitary, Thyroid and Adrenal Disease. Iitaka, M., et al. Nippon Rinsho 58, 2000 Unilateral Adrenalectomy Improves Insulin Resistance and Diabetes Mellitus in a Patient with ACTH-Independent Macronodular Adrenal Hyperplasia. Oguru, M., et al. Endocrin. J. 50, 2003

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### **Selenium Supplementation Supportive During Chemotherapy**

A study was performed to examine how selenium supplementation may influence oxidative stress in patients with ovarian cancer who were undergoing chemotherapy. Selenium was supplemented four times daily totaling 200 mcg. Hair and serum selenium levels were significantly higher in the control group. Also, oxidative stress was improved as indicated by significant increases of GSH-P in the RBC's after two and three months of selenium supplementation. Also, there was a significant increase of WBC's along with a significant reduction in hair loss, abdominal pain, loss of appetite, weakness and malaise. Selenium As An

Element In The Treatment of Ovarian Cancer In Women Receiving Chemotherapy. Sieja, K., et al. Gynecol. Oncol. 93, 2004

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### **Vitamin Supplementation Could Help 2 Billion Kids**

This was a recent headline in USA Today, 3/24/2004. The article states the critical importance of proper nutrients for children to reach their full physical and intellectual potential. Cutberto Garza, director of the Food and Nutrition program of the U. N. University stated "When a child needs iron or vitamin A or iodine, she needs it now. And if she doesn't get it, then you're going to pay for the rest of her life. But, if you meet that need, the positive outcomes are absolutely glorious."

The medical establishment has also completely reversed its policy of the last 20 years and is now encouraging all adults to take at least one multivitamin a day. This reverse in policy is made in light of the fact that insufficient nutrient intake increases risk factors for the development of chronic disease.

Comment: Isn't It interesting that in light of the above facts, codex is attempting to restrict access to many common nutritional supplements? <http://www.alliance-natural-health.org>

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### **Stomach Acid Suppression and Increased Risk of Pneumonia**

The normal acidity of the stomach via hydrochloric acid production acts as a natural protective barrier against bacteria and viruses. Apparently, chronic use of acid suppressing medications increases risk for pneumonia. Normally the gastric pH is below 4, an environment that kills most pathogens. However, the dispensing of antacids can interfere with this natural barrier and lead to increased colonization of ingested pathogens. Risk of Community-Acquired Pneumonia and Use of Gastric Acid-Suppressive Drugs. Laheij, RJF, et al. JAMA 292,16, 2004

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### **Inappropriate Medication Prescriptions During Pregnancy**

A review of medications prescribed to over 150,000 expectant mothers from 1996 to 2000, found that 64 percent were prescribed drugs. Forty percent of the expectant mothers were prescribed medications that had not been established as being safe during pregnancy. Five percent were prescribed drugs with a known associated risk during pregnancy. Pregnancy and Medications. JAMA 292,16, 2004

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