InterClinical Laboratories
Newsletter

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Clinical Updates for the Health Professional

In this edition of our newsletter, we want to address an area that many of you have expressed an interest in; nutritional and toxic element levels in children's health. Children are wonderful patients as their systems are often less complicated (due to fewer years for illnesses to occur) and because of this, they often respond more quickly to natural treatments. Whilst mineral balancing and heavy metal removal may not be the cure-all to a child's condition, it is essential in the reduction of many symptoms and also provides them with a strong foundation for their future health.

In the second part of this newsletter, we continue with our additional elements series, with Part 6: Thallium.

As we wind down another successful year of seminars, we extend our warmest thanks to all the practitioners who attended our 'Autoimmune Conditions in Clinic' seminar across Australia. We were proud to have such enthusiastic participants, coupled with our extraordinary guest presenter Reine DuBois, of the Byron Bay Integrative Hospital IMedicine.

So many of you gave us fantastic feedback, which encourages us not only to maintain but also to improve on the lectures we deliver to you.

If you missed out, there is still a chance to get in for the seminar presentation in Auckland, New Zealand on the 18th and 19th August. For details, please call us, or visit our website and click on the 'events' tab.

Yours in health,

The Team at InterClinical Laboratories.

Children's Health, Nutrients and Toxins

Hair Tissue Mineral Analysis and Children

Many practitioners who work with children are finding Hair Tissue Mineral Analysis (HTMA) to be extremely useful in the treatment of their clients. In certain behavioural issues in children, some mineral deficiencies have been identified, and this may guide practitioners to potential mineral supplementation. In addition to nutritional deficiencies, there is frequently a case for heavy metal toxicity in these children, and HTMA will also help to identify this. The following clinical updates are focussed on the mineral patterns in children with neurological disorders.

Red-Cell Trace Minerals in Children with Autism

Measurement of trace minerals via red-cell testing has confirmed some earlier reports of the importance of the potent antioxidant selenium for children with autism. A cross-sectional investigation of 20 children with autism and 15 controls showed a significantly lower level of selenium and zinc amongst the test group along with higher levels of cobalt and vanadium. This investigation shows the significance of oxidative stress in autism and the potential benefits of mineral therapy.

Jory, J and McGinnis, W.R. Red-Cell Trace Minerals in Children with Autism, American Journal of Biochemistry and Biotechnology 4 (2): 101-104, 2008

Iron deficiency and Attention Deficit Hyperactivity Disorder (ADHD)

A test for iron status was conducted on fifty-three children with ADHD and twenty-sever controls in an age group for four to fourteen years. Test results found that ferritin levels were lower I children with ADHD than in controls. As iron deficiency is known to product abnormal dopaminergic neurotransmission, a deficiency may possibly contribute to the development of ADHD.

Iron Deficiency in Children With Attention-Deficit/Hyperactive Disorder. JAMA Abstracts. 293,5,2005.

Neurological Disease and Children: Hair Mineral Patterns

Hair tissue mineral analysis (HTMA) was performed on a group of 153 children with neurological disorders including hyperactivity, loss of consciousness and epileptic type seizures of unknown aetiology 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.

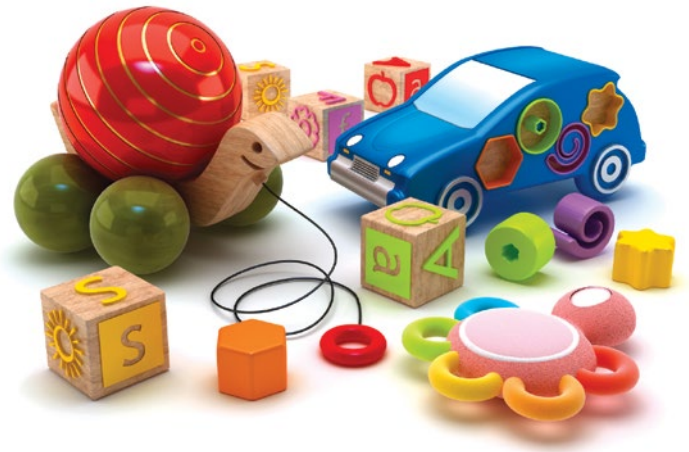
Lech, T. Lead, Copper, Zinc and Magnesium Content in Hair of Children and Young People with Some Neurological Disease. Biol. Trace Elem. Res. 85,2002.

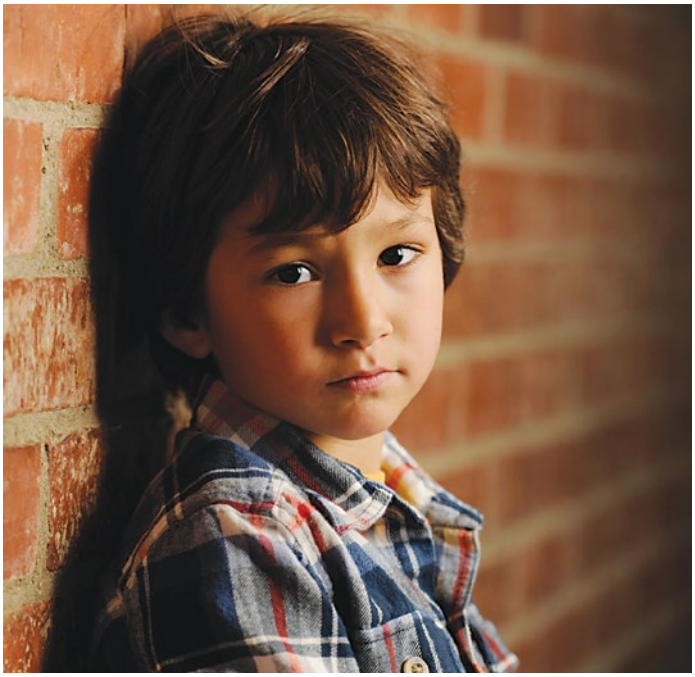
Lead Poisoning from Toys

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.

Brief Report: Lead Poisoning From Ingestion of a Toy Necklace – Oregon, 2003. MMWR 53, 2004.

Comment: With mass manufacture of cheap toys so common in our society, there is the potential for toxicity across many forms of children's toys. Lead paint has been described as having a sweet taste and so is often appealing to younger children. Considering that most toys end up in the mouth or in their food at some stage or other, it is essential to ensure that the toys given to children are toxin-free.





Children with ADHD – Dietary Influence and Nutritional Deficiencies

Studies have shown that many mineral deficiencies exist for children with ADHD. Mineral and vitamin deficiencies can lead to oxidative stress as well as altered neuronal plasticity. This can have a large impact on all children, but particularly those with ADHD. Mineral deficiencies to be aware of include zinc, magnesium, iron, selenium and calcium. Dopamine production is reliant on adequate levels of zinc and iron. Zinc and copper are closely related and often a zinc deficiency may be the result of high copper levels. This picture is common for children with behavioural disorders.

Environmental toxins and heavy metals are also a contributing factor for children with ADHD. Heavy metals like lead, aluminium, mercury and cadmium all compete with nutritional elements and are able to cause deficiencies. Environmental toxins (pesticides, herbicides, solvents, polychlorinated biphenyls – PCB's) also add to the toxic burden and impact a growing child's developing nervous system. In light of this, it is also important to consider the health of the mother's toxicity before any conception and also during pregnancy and lactation. It has been shown that environmental toxins can disrupt the expression of neurotransmitters and their receptors. These changes to the brain may in fact have consequences not only into young childhood but also into adolescence.

Chelation therapy may also be an option for seriously toxic children with behavioural disorders. Studies have shown that children with severe cases of ADHD and Autism have shown significant improvement in cognitive function and social interaction when chelated. Antioxidant foods and supplements should also be explored.

Pellow, J (et al), Complementary and Alternative Medical Therapies for Children with Attention-Deficit/Hyperactivity Disorder (ADHD), Alternative Medicine Review

Part Six of HTMA and the Lesser Known Trace Minerals

81

Tl

Thallium
204.3833

Thallium

Chemical Structure

Thallium (Tl) is a very soft, malleable, lustrous low-melting, silvery heavy metal that tarnishes in air to the bluish-gray oxide. Thallium is a member of the aluminum family, Group 13 (IIIA) on the periodic table. Thallium is also a member of the heavy metals, along with gold, platinum, and lead. In its appearance it resembles lead, it is very soft and melts easily. In the presence of water, the poisonous thallium hydroxide (TlOH) is formed. Thallium dissolves slowly in hydrochloric acid and dilute sulfuric acid and dissolves rapidly in nitric acid.

Sources

The main minerals containing thallium are crookesite ($TlCu_7Se_4$), hutchinsonite ($TlPbAs_5S_9$), and lorandite ($TlAsS_2$). Thallium also occurs in manganese nodules on the ocean floor. Commercially, the metal is recovered as a by-product of sulfuric acid production as thallium is also present in pyrites (iron sulfide). Thallium can also be obtained from the smelting of lead and zinc ores. Thallium is not a rare element; it is 10 times more abundant than silver.[1] As a mineral element, thallium is widely dispersed, mainly in potassium minerals such as sylvite and pollucite.

Although this metal is reasonably abundant in the Earth's crust at a concentration estimated to be about 0.7ppm (part per million).[2] It exists mostly in association with potassium minerals in clays, soils, and granites and, thus, is not generally considered to be commercially recoverable from those forms. The major source of commercial thallium is the trace amounts found in copper, lead, zinc, and other sulfide ores.[3]

Environment

Thallium occurs naturally in the environment in small amounts. Exposure to humans may occur via the substances used in rat poisons, electro-technical or chemical industries. Thallium is partially water-soluble and consequentially it can spread with groundwater when soils contain large amounts of the component. Thallium can also spread by adsorption on sludge. There are indications that thallium is fairly mobile within soils. There has been no significant contamination of the environment by thallium from industry, unlike that caused by its neighbors in the periodic table, mercury and lead.[4]

Diet

Sources of dietary intakes of thallium are estimated to be about 0.005 mg/day.[5] It is considered that Brassicae vegetables are likely to be the main source of dietary exposure to thallium in food produced on contaminated land.[6] It has been suggested that food (particularly green vegetables) is probably the major source of thallium exposure.[7] The thallium concentration in food is generally very low, with concentrations in plants less than 0.1 mg/kg dry weight. However, the thallium content of food depends directly on the thallium concentrations in the soil, therefore food grown in thallium-contaminated soils can be a significant source of thallium exposure.[8]

Absorption and Excretion

The human body absorbs thallium very effectively, especially through the skin, the breathing organs and the digestive tract.8 Thallium poisoning is mainly caused by accidental uptake of rat poison, which contains large amounts of thallium sulphate. Consequently, stomach aches may appear and may cause damage to the nervous system.[9] Thallium is considered a cumulative poison that can cause adverse health effects and degenerative changes in many organs. The effects are the most severe in the nervous system. When a human survives thallium poisoning often consequences of disturbances of the nervous system, such as trembling, paralyses and behavioral changes may remain.[10] With unborn children, thallium poisoning may cause congenital disorders.[11]

Due to accumulation of thallium in the bodies of humans, chronic effects may occur, such as; tiredness, headaches, depressions, lack of appetite, leg pains, hair loss and disturbances of the sight.[12] Further effects that can be related to thallium poisoning are nerve pains and joint pains.[13] These are consequences of thallium uptake through food.

Functions and Applications

Thallium has no biological role or function and does not appear to be an essential element for life. It is considered very toxic and teratogenic, and contact of the metal with the skin is dangerous, and there is evidence that the vapour is both teratogenic and carcinogenic.[14] Thallium metal and its compounds are consumed in a wide variety of applications including; semiconductor material for selenium rectifiers, gamma radiation detection equipment, infrared radiation detection, transmission equipment, crystalline filters for light diffraction for acousto-optical measuring devices, in glass to increase its refractive index and density, in the synthesis of organic compounds, and in a high-density liquid for sink-float separation of minerals. In addition, research activity with thallium is ongoing to develop high-temperature superconducting materials for such applications as magnetic resonance imaging, storage of magnetic energy, magnetic propulsion, and electric power generation and transmission. Also, the use of radioactive thallium compounds for medical purposes in cardiovascular imaging to detect heart disease is increasing.

Toxicity and Excess

Both thallium and its compounds are highly toxic. The average oral lethal dose is estimated to range from 10 to 15 mg of thallium per kg of body weight.[15] Thallium is a suspected human carcinogen and should be handled with care.

Analysis in HTMA

Thallium is analysed and measured in HTMA as a trace mineral element. In HTMA, low levels below 0.0001ppm, may not be of any clinical significance. The presence of elevated levels above 0.090 ppm may correlate with previous exposure from an external source from contaminated food sources or the environment. Given that Thallium has a cumulative effect in the human body higher levels in HTMA may represent chronic exposure and may be of some clinical significance due the toxic effects of this mineral element in humans.

AUCKLAND, NEW ZEALAND – FINAL SEMINAR!

HAIR TISSUE MINERAL ANALYSIS – PRACTITIONER SEMINAR SERIES 2012

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Auckland: 18th & 19th August 2012 Mercure Auckland, 8 Customs St, Auckland Phone 9377 8920
Saturday: Primary Course, Sunday: Advanced Course

PRESENTED BY:

Zac Bobrov
Technical Director, InterClinical Laboratories

Reine DuBois
Dip ND, Dip HOM
Naturopath, Homeopath, Clinic Director and CEO of IMedicine

"Thanks again for a superb conference! **Sydney**
Reine Dubois was brilliant! **Adelaide**
Zac is in a class of his own. **Adelaide**
Wishing I was able to do this course long before now!" **Brisbane**

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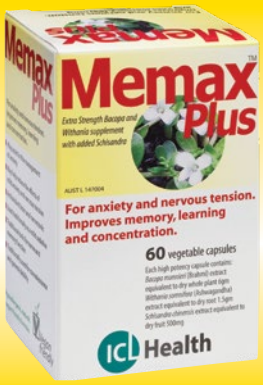

An Effective Tonic for the Mind

Recommened Memax Plus, a traditional memory and nerve tonic to help improve learning and concentration and relieve stress, nervous tension, and mild anxiety.

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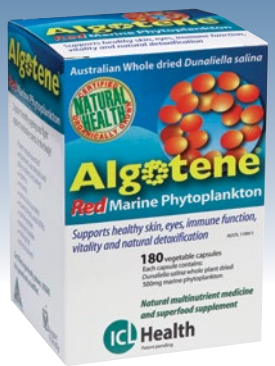

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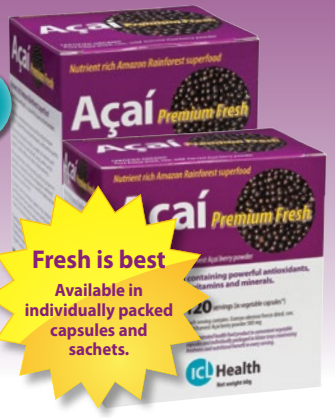

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