



# InterClinical Laboratories Practitioner Newsletter

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## 2013 SEMINAR SERIES UPDATE

In this Newsletter, we focus on chronic back and nerve pain with a study on magnesium. We review an old versatile favourite - Ginger and its contribution to our digestive health. Also in this Newsletter, we are finalising our series on Additional Elements; with Nickel. If you wish to see any previous Additional Element articles, please visit our website and click on the 'Newsletter/Publications' tab, or contact us for past editions.

Our Running on Empty: Burn out, stress and fatigue - Adrenals Seminar Series has been a huge success! Our very own Mr Zac Bobrov and renowned athlete and Sports Health Practitioner Mr Gary Moller have been to Perth, Brisbane, Auckland and Melbourne for our Hair Tissue Mineral Analysis Seminar Series. This July will see them in Adelaide and finally Sydney to wrap up this very practical and useful Seminar Series.

When we asked for practitioner feedback on what would best support your practice the comments were a resounding 'teach us how to fully utilize the HTMA test!' This full day seminar and interactive workshop highlights the many ways that Hair Tissue Mineral Analysis can impact your practice and diversify

patient protocols. An impressive aspect of the seminars so far have been the practitioner interaction during the workshops; with decades of clinical experience amongst all the delegates, bringing unique views and newly trained skills to working through cases together brings a cohesive element to learning. Here are just a few of the positive testimonials we received from the seminars so far:

*"Great to have such an experienced practitioner, with "real people" case studies."*

*"Loved the seminar content and knowledge of presenters, would happily do a 2-day seminar"*

*"Fantastic info, because 90% of my clients have adrenal fatigue."*

**Register now for our final seminars in Adelaide and Sydney this July!** For further information about this Seminar Series, please see the enclosed Seminar Information and Registration form, or you can register through our website; under the 'Events' tab.

We wish you a happy and healthy winter.  
Yours in health,  
*The Team at InterClinical Laboratories.*

## Practitioner Clinical Updates

### GINGER: the herb with a lot to give

According to the University of Maryland the medicinal uses of Ginger are many: Today, health care professionals may recommend ginger to help prevent or treat nausea and vomiting from motion sickness, pregnancy, and cancer chemotherapy. It is also used as a digestive aid for mild stomach upset, to reduce pain of osteoarthritis, and may even be used in heart disease. Some studies suggest that Ginger may be effective in reducing symptoms of motion sickness. Ginger has shown effective results for nausea and vomiting in pregnant women when used for short periods. Use of ginger has also shown to be beneficial in chemotherapy nausea. Ginger is a culinary herb; a strong aromatic that when smelt delivers a powerful pavlovic response. There is a married relationship between ginger and digestion but its varied action on musculoskeletal symptoms is gaining further ground in clinical science.

**Comment:** Ginger has a rich and vibrant history of use, dating back to the 9th and 10th Centuries. Ginger has been used worldwide traditionally to treat the common cold, fever, gastrointestinal complications, motion sickness, and as an anti-inflammatory for osteoarthritis and to support digestive function. Naturopaths deem Ginger as a warming carminative. Delivery methods of Ginger are varied such as tea, tincture, encapsulation, powders used orally and topically.



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Hair Tissue Mineral  
Analysis Pathology

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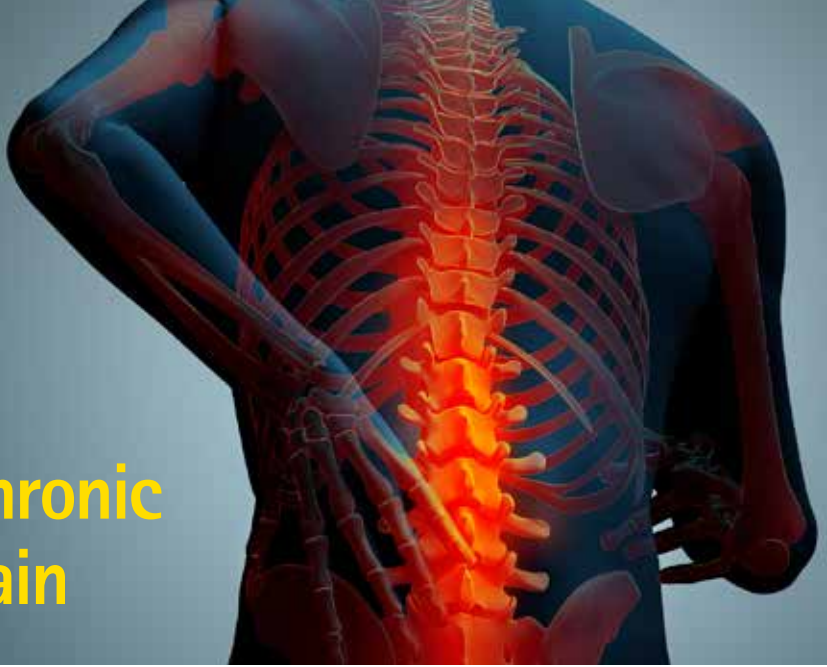
Nutritional, Herbal and  
Natural Medicines

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Practitioner Education

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Research and  
Development



## Magnesium for chronic back and nerve pain

Magnesium supplementation may reduce pain and improve mobility in people who have chronic lower back and nerve pain, a study reports.

In the current study, scientists evaluated the potential effects of magnesium for reducing chronic back pain. They enrolled 80 subjects who suffered from chronic lower back and nerve pain, all of whom received traditional treatment such as physical therapy, antidepressants, and pain relievers. In addition, half of the participants received magnesium through an intravenous (IV) infusion for two weeks and magnesium capsules taken by mouth for four weeks, while the other half received placebo during those six weeks.

The research team concluded that receiving magnesium through IV for two weeks and taking magnesium capsules by mouth for four weeks may help reduce pain and improve mobility in people with chronic low back and nerve pain. However, more studies are needed before firm conclusions can be made.

**Comment:** This study highlights effective use of magnesium for various musculoskeletal problems. Magnesium is the fourth most abundant cation in the human body. Approximately 25gms are present in an average adult. Half is contained in the bones, the other half found in soft tissues. The highest concentration is found in the skeletal muscles. Magnesium deficiency may cause a range of symptoms such as anxiety, muscle tremors and memory loss. Ionic Calcium phosphate also plays role in muscular activity, initiating muscle contraction and is essential for healthy nerve function. Copper, either too much or too little can affect the central nervous system. Cases have shown that patients who suffer from neurological disorders such as MS and Parkinson's disease usually have a Copper deficiency in the Hair Tissue Mineral Analysis report. Tissue mineral analysis of the hair is one of the most valuable laboratory tools for evaluating mineral status when assessed according to its physiological range with other nutritional factors.

## The Impact of Lead

Lead (Pb) is arguably the most notable toxic heavy metal and has been present throughout civilization. The ancient Egyptians used it as a cooling plaster for skin conditions and cosmetics. Lead was commonly added to paints, a practice that only stopped in recent history. In fact, it is speculated that Vincent Van Gogh was poisoned by lead from extensive contact with his paints and could possibly have contributed to his mental decline. Some practices of using lead is still found today, such as water pipes and within urban infrastructure. While lead was finally removed from house paints, the danger of contamination from buildings that used lead paint remain. Other sources of lead are soil, pottery, lead crystal containers, cosmetics, pesticides, metal polish, glass production, industry, smelters, battery manufacturing and electroplating. Some hair dyes that blacken the hair contain lead acetate.

Early signs of lead exposure can be subtle; such as fatigue, abdominal discomfort, vertigo, headaches, joint

pains, poor coordination and memory impairment. Chronic symptoms that can develop include anorexia, colic, muscle weakness and peripheral neuropathies, long term memory loss, psychomotor dysfunction, emotional instability and hostility. Moderate levels of lead can contribute to immune suppression, kidney disorders, arthritis, hypertension and still births.

The effect of lead on the nervous system have implicated it as a major contributor to hyperactivity, learning disabilities, behavioural disorders, attention deficit, seizures and decreased IQ. Lead displaces calcium, it can deposit anywhere in the body but has a particular affinity for bone. When testing for lead toxicity using a HTMA, determining calcium / lead ratios is crucial. Iron is also a lead antagonist, and lead/iron ratios should be optimal. When a reduction is found within these ratios then lead is considered a potential health hazard.

All references available at: [www.interclinical.com.au/newsletter.php](http://www.interclinical.com.au/newsletter.php)

Get to the root of your patients health problems more quickly...

# Part Ten of HTMA and the Lesser Known Trace Minerals

## Nickel

### Chemical Structure

28  
**Ni**  
Nickel  
58.6834

Nickel is silvery-white, hard, malleable, and ductile metal that takes on a high polish. It has a high melting point, is rust resistant, withstands low temperatures, is a good conductor of electricity, heat and has magnetic properties. As a transitional metal of the iron group, nickel has an atomic number of 28 on the periodic table of elements. Nickel

is an abundant metallic element and forms a variety of complex compounds as alloys, and most nickel compounds are blue or green in colour. Nickel dissolves slowly in dilute acids but, like iron, becomes passive when treated with nitric acid.<sup>1</sup> Naturally occurring nickel is composed of 5 stable isotopes; <sup>58</sup>Ni, <sup>60</sup>Ni, <sup>61</sup>Ni, <sup>62</sup>Ni and <sup>64</sup>Ni with <sup>58</sup>Ni being the most abundant.

### Sources

Nickel is a compound that occurs in the environment in relatively high levels. Most of the nickel found in the earth's crust is bound to iron and other mineral elements like sulphur and arsenic.<sup>2</sup> Nickel and nickel compounds are found in soils, water and plants. The nickel content in soil can be as low as 0.2ppm or as high as 450ppm in some clay and loamy soils.<sup>3</sup> In food stuffs, nickel is found in small amounts in pulses, oats, cereals, and nuts. Other food sources include beans, peas, whole grains, tea leaves and chocolate. Nickel plated objects such as jewellery, coins, dental or orthopaedic implants, batteries, soaps and margarines can be sources of internal and dermal exposure.<sup>4</sup>

Nickel uptake will increase when people eat large quantities of vegetables from polluted soils. Plants are known to accumulate nickel and as a result nickel uptake from vegetables will be significant.<sup>5</sup> Smokers have a higher nickel uptake through their lungs from cigarette smoking. Nickel can also be found in household products like detergents.

### Absorption and Excretion

Humans may be exposed to nickel by breathing air, drinking water, eating food or smoking cigarettes. Skin contact with nickel-contaminated soil or water may also result in nickel exposure. In small quantities nickel is essential, but when the uptake is too high it can be a danger to human health.<sup>4</sup> There is no established RDI (Recommended Daily Intake) for nickel, a daily dosage of 69-169µg is considered for dietary intake. The main cellular interactions with nickel include; synergists: Vit C and antagonists: calcium, iron, magnesium, zinc and phytates. Absorption of nickel takes place in the small intestine via a carrier-mediated mechanism but passive diffusion may also occur.<sup>5</sup> Most plasma nickel binds to albumin, nickelplasmin, histadine and macroglobulin and is widely distributed in tissue, with the highest levels stored in lungs, kidneys, bone, liver and some endocrine hormone producing tissue.<sup>6</sup> Insulin response is also increased after ingesting nickel which may be related to its activation of enzymes associated with the breakdown or utilization of glucose.<sup>7</sup> Nickel is also found in breast milk,

saliva, nails and hair. Ingested and absorbed nickel is excreted in the urine, sweat, bile and faeces.

### Functions and Applications

The major use of nickel is in the preparation of alloys from industry. Nickel alloys are characterized by strength, ductility, and resistance to corrosion and heat. About 65 % of the nickel consumed in the Western World is used to make stainless steel. When nickel is added to stainless steels (a group of iron-based alloys containing chromium, carbon and other elements) their corrosion resistance and strength is considerably increased. Stainless steels containing nickel are therefore widely used in the chemical industry, consumer products (e.g. sinks, cooking utensils and cutlery), motor vehicles and construction.<sup>8</sup> Other uses include rechargeable batteries, jewellery, catalysts and other chemicals, coinage, foundry products, and electroplating.

In humans, nickel is considered to be an essential mineral and is involved in a number of enzymes. The enzyme urease is a nickel metalloenzyme and can be a major virulence factor against H. Pylori in the human gastric system.<sup>9</sup> Nickel also influences iron absorption and metabolism, oxygen transport and may be an essential component of the haemopoietic process.<sup>10</sup> Nickel is involved in the transmission of genetic code (DNA and RNA). It is also present in certain enzymes that metabolize sugar.<sup>11</sup> Deficiency may cause or be associated with abnormal bone growth, altered metabolism of calcium and B12, low blood glucose levels, increased blood pressure, low sperm count and decreased number of mobile sperm.<sup>12</sup>

### Toxicity and Excess

Nickel in trace amounts has shown to be essential in animals and humans. It can also be dangerous and toxic when the maximum tolerable amounts are exceeded. Acute nickel exposure is associated with a variety of clinical signs and symptoms which include; gastrointestinal disturbances (nausea, vomiting, abdominal discomfort and diarrhoea), visual disturbances, headache, giddiness, wheezing and cough.<sup>13</sup> Chronic inhalation of nickel and its compounds is associated with an increased risk of lung cancer, respiratory failure, asthma, bronchitis and pneumonitis.<sup>14</sup> Nickel and certain nickel compounds have been listed by the National Toxicology Program (NTP) as being reasonably anticipated to be carcinogens and is on the ACGIH Notice of Intended Changes as a Category A1, confirmed human carcinogen.<sup>15</sup>

### Analysis in HTMA

Nickel is measured as an additional element in a HTMA. As a trace element nickel has been shown to have some biological function and is considered as an essential mineral. Low levels of Nickel in a HTMA are considered to be 0.04 ppm or below and any reading above 0.04ppm up to 0.15ppm is considered to be in the high reference range and may be of more clinical significance. The levels in the body may correlate with previous exposure from various sources and may indicate residual build up over time if there has not been any recent acute exposure.

# RUNNING ON EMPTY: *Burnout, stress and fatigue*

## ADRENALS, THYROID AND IMPORTANT NUTRITIONAL ENDOCRINE RELATIONSHIPS

*Helping the tired patient and burnt out athlete regain their mojos*

### Advanced Hair Tissue Mineral Analysis Seminar and Workshop.

All physiological activity affects the endocrine system and thus has an impact on nutritional requirements. Having tested hundreds of thousands of patient's hair samples for Hair Tissue Mineral Analysis (HTMA), we have found that a large number of reports show a picture of weakened adrenals and thyroid function; resulting in a 'tired/burnt-out' patient.

#### SEMINAR OUTLINE:

- Overview of essential nutrients
- Heavy and toxic minerals
- Important mineral ratios and metabolic typing
- Better understanding the neuro-endocrine system
- Adrenal and thyroid function
- Improving stamina and athletic performance
- Real patient HTMA case studies
- Identifying and treating burn-out, fatigue and stress in the tired patient and/or athlete

#### PRESENTED BY:



**Zac Bobrov**  
Technical Director,  
InterClinical Laboratories



**Gary Moller** DipPhEd, PGDipRehab,  
PGDipSportMed (Otago), Nutritional Specialist  
Sports Health Practitioner  
and Nutritional Medicine  
Consultant.

#### SEMINAR DATES & VENUES:

**Adelaide** 21st July 2013 Crowne Plaza  
**Sydney** 28th July 2013 Vibe Hotel

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For more information, please contact:



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