InterClinical Laboratories
Newsletter

Volume 15 | Number 1
January/February 2011

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Welcome to our first newsletter for 2011!

We welcome back our practitioners and clients after the festive season, and we hope you are all happy and healthy.

This year we have an exciting seminar series, entitled ***Toxins in the 21st Century*** *– How to Treat, Protect and Chelate using Natural Medicines*. This seminar will run across May, June and August of this year, and details can be found at the back of this newsletter and on our website.

In addition to this, InterClinical Laboratories is involved in a number of Seminars, Expo's and Conferences throughout the year. For all the information about where we will be and about our own seminar series, please visit our website.

In other exciting news, we have launched a new product; Acai Premium Fresh. It is available in capsule or sachet form and we believe it is the freshest acai product on the market, meaning that all of its nutritive properties are retained. This product is now available for clinical or private purchase.

In this issue, we continue our in-depth look at the Additional Elements on our HTMA reports. As we discussed in our last issue, we know that all mineral elements have the potential for cause and effect in the body. Whereas some minerals are considered toxic to our systems in any quantity (heavy metals) other nutritional elements can also become toxic once their levels become too high. The Additional Element minerals on our HTMA reports have a close relationship with our Nutritional Elements and can therefore give us some great clues as to what may be happening within the patient's body. At high doses, these Additional Elements have the potential to become toxic.

The focus in this newsletter is on bismuth, germanium and zirconium. We discuss where they come from, how they are relevant to biological function in the body and their significance in the HTMA. We also discuss how they may or may not be toxic and how they are absorbed and excreted. Other newsletters this year will continue to cover other Additional Elements, and our past newsletters are always available to download from our website.

All of us here at InterClinical Laboratories wish you a busy and successful year of practice.

BISMUTH, GERMANIUM and ZIRCONIUM
Part Two of HTMA and the Lesser Known Trace Minerals

83
Bi
Bismuth
208.9804

Bismuth

Chemical Structure
Bismuth is a white, crystalline, brittle metal with a pinkish tinge. It has a high electrical resistance, and has the highest Hall Effect of any metal (that is, the greatest increase in electrical resistance when placed in a magnetic field). Bismuth is stable to oxygen and water and all bismuth salts form insoluble compounds when placed into water. The abundance of bismuth in the Earth's crust is estimated to be about 0.2 parts per million, making it a relatively rare element.[1] This places bismuth in the bottom quarter of the elements according to their abundance in the earth. Bismuth is seldom found in its elemental state (as a pure metal) in the earth, its compounds are generally found along with ores of other metals, such as lead, silver, gold, and cobalt.

Sources
The most important ores of bismuth are bismuthimite (Bi2 S3) and bismite (Bi2O3). Bismuth occurs naturally as the metal itself and is found as crystals in the sulphide ores of nickel, cobalt, silver and tin. Bismuth is mainly produced as a by-product from lead and copper smelting. Industry makes use of bismuth compounds as catalysts in manufacturing synthetic fibres and rubbers and is sometimes used in the production of shotguns, fishing sinkers, low melting solders and fusible alloys.[2] Bismuth has also been used in pharmaceutical medications such as antacids, in cancer treatment and in H. pylori eradication therapy.

Bismuth is not known to come specifically from any food source. Its main route of entry into the body is from environmental sources.

continued overleaf

Absorption and Excretion
Bismuth absorption routes are via ingestion, skin and inhalation. Excretion is via the kidneys and the liver.[3]

Functions and Applications
Bismuth oxychloride is used extensively in cosmetics, Bismuth subnitrate and subcarbonate are used in medicine.

Toxicity and Excess
Inhalation of toxic doses of bismuth may cause irritation, foul breath, metallic taste and gingivitis. Other symptoms of toxicity may include loss of weight (and appetite), albuminuria, diarhhoea, skin reactions, headache, fever, depression and a black line on the gums (deposition of bismuth sulphide).[4] Long term toxicity may lead to kidney and liver damage, anaemia, ulcerative stomatitis and dermatitis. - Lenntech

Analysis in HTMA
Bismuth is analysed in HTMA and measured as an additional element. Low levels in a HTMA may not be of clinical significance. The presence of elevated levels of bismuth in HTMA may correlate with previous exposure from an external or environmental source which may be of some clinical significance.

32
Ge
Germanium
72.64

Germanium

Chemical structure
Pure germanium is a hard, lustrous, grey-white, brittle metalloid. It has a diamond like crystalline structure and it is similar in chemical and physical properties to silicon and tin.[1] Despite its metallic appearance, it is not considered a metal, but a metalloid that is part of the carbon family of elements. This means that in some ways it is like a metal, for instance, its metallic appearance. In other significant ways it is more like a non-metal, as it is not as good a conductor of electricity as true metals are. Germanium is stable in air and water, and is unaffected by alkalis and acids, except nitric acid. It also has the unusual property that, like water, it expands as it freezes. Germanium has five naturally occurring isotopes ranging in atomic mass number from 70 to 76.

Sources
Germanium ores are rare in the environment and it is retrieved as a by-product of zinc and copper-zinc-lead ores where it is found as a trace element. The main ore of germanium is germanite, which contains about 7% germanium.[2] Germanium also occurs in significant quantities in carbon-based materials, such as coal (though not all coal contains germanium). Germanium is a relatively inactive element; it does not dissolve in water and does not react with oxygen at room temperature. In the environment it is less abundant than either tin or lead.
The typical daily dietary intake of germanium is 0.4 to 1.5 mg. There are natural traces of germanium in foods which include; garlic, Shiitake mushrooms, onions, bran, whole wheat flour, vegetables, meats, dairy products, leguminous seeds, Chlorella and the herbs Aloe Vera, Comfrey and Ginseng.

Absorption and Excretion
From the environment the main absorption route into the body is via inhalation of the gas. Germanium is distributed throughout the body tissues, particularly the kidney and the thyroid. Limited data on germanium metabolism suggests that organic germanium is thought not to accumulate to the same extent as inorganic compounds.[3] Germanium is largely excreted in the urine, some biliary and faecal excretion may also occur.

Functions and Applications
The estimated daily intake of approximately 1mg could be beneficial to health, although this has not been proven scientifically. Germanium is not necessary to human health, however, its presence in the body has been shown to stimulate metabolism. Studies indicate it may also plays a role in the function of the immune system,[4] immuno-enhancement, oxygen enrichment, free radical scavenging, analgesia and heavy metal detoxification.[5] Germanium in its organic form is not considered carcinogenic. Studies have shown that the organic germanium (Germanium-132, or Ge-Oxy 132) appears to inhibit cancer development and, in the form of the organic compound, Spirogermanium, to destroy cancer cells.[6,7] Germanium compounds have no mutagenic activity and may, under certain conditions, inhibit the mutagenic activity of other substances[8]. It has also been suggested that germanium can interact with silicon in bone metabolism.[9]

In commercial industry, germanium is an important semiconductor material used in transistors and integrated circuits. Germanium is doped with arsenic, gallium, indium, antimony or phosphorus where it is used as a transistor element in thousands of electronic applications.[10] Its major end uses are fibre-optic systems, infrared optics, wide angle lenses, as an alloying agent and as a phosphor in fluorescent lamps. Germanium is also used as a polymer catalyst to speed up or slow down reactions for use in the production of plastics.

Toxicity and Excess
Little is know concerning the biological functions of germanium and it is not considered to be essential to the health of plants or animals. Germanium is not considered an essential element and its acute toxicity is low.[11] Studies have shown that germanium based products may present as a human health hazard. Germanium toxicity in humans has generally been shown to occur following consumption of inorganic germanium as a food supplement. Some organic forms of germanium are less toxic than inorganic forms and excess intake of inorganic germanium has been reported to adversely affect kidney function.[12,13,14] Other adverse effects that have been shown are anemia, diarrhoea, skin rash, muscle weakness, and peripheral neuropathy.[15] Toxicological studies document germanium's rapid absorption and elimination from the body, and its safety. The adverse toxic effects of inorganic germanium compounds usually occurs in higher doses and is progressive with cumulative doses of greater than 20gm.[16]

Analysis in HTMA
Clinical significance cannot be placed on a low HTMA level at this time.[17] A high or elevated level in a HTMA report may be of some clinical significance and may correlate with previous exposure from an external or environmental source. High dosage of supplemental intake containing organic germanium compounds may also contribute to increased tissue levels of

40

Zr

Zirconium

91.224

Zirconium

Chemical Structure

Zirconium is a very strong, hard and lustrous silver-gray transitional metal. Its chemical and physical properties are similar to those of titanium.[1] As a transitional mineral, zirconium is positioned directly below titanium and forms both inorganic and organometallic compounds such as zirconium dioxide (ZrO2) and zirconium dichloride (ZrCl4). Zirconium is extremely resistant to heat and corrosion, is lighter than steel and its hardness is similar to copper. In nature, zirconium occurs as five stable isotopes (Zr90, Zr91, Zr92, Zr94 and Zr96).[2] One physical property of special significance with Zirconium is that it is transparent to neutrons making it useful in nuclear fission reactions.[3]

Sources

Zirconium is not found in nature as a free metal as it is naturally present in a number of minerals and occurs widely in the earth's crust. It does not generally occur in concentrated deposits. The mineral zircon, zirconium orthosilicate (ZrSiO4) that is found in alluvial deposits in streambeds, ocean beaches, or old lake beds is the only commercial source of zirconium.[4] Zirconium is not a rare element in the environment, as its most common mineral, zircon, is more abundant than copper, zinc and lead. Zirconium is generally not considered to be a major contaminant of ground water.

There is very little evidence to show that foods in the diet contain Zirconium and is a source of external contamination into the body.

Absorption and Excretion

Zirconium is considered ubiquitous, being present in nature in amounts higher than most trace elements.[5] It is taken up by plants from soil and water and accumulated in certain tissues. Retention is initially in soft tissues and then slowly into the bone.[6] Exposure to zirconium and zirconium compounds can occur via inhalation, ingestion, eye or skin contact. Zirconium can be taken into the gastro-intestinal system by eating food, drinking water, or breathing air and is not well absorbed into the body, with only about 0.2% of the amount ingested being absorbed into the bloodstream through the intestines.[7] It is not a major constituent of mineral bone and the amount deposited in the skeleton is assumed to remain on bone surfaces and not absorbed into the volume of the bone.[8]

Functions and Applications

Zirconium is very resistant to corrosion by acids, alkalis, seawater and other agents. For this reason it is used extensively by the chemical industry where corrosive agents are employed. The major uses of zirconium as zircon (ZrSiO4) are for commercial uses, and used in such articles as vacuum tubes, photo flashbulbs, as an hardening agent in alloys (especially in steel), in surgical appliances and instruments, glass for televisions, as natural gemstones for jewellery, lamp filaments, and in paper and packaging (as a surface coating).

Aluminium-zirconium compounds are frequently used in anti-perspirants[9]. Anhydrous aluminium zirconium tetrachlorohydrex has been used in antiperspirant deodorants to reduce under-arm wetness and to reduce body odour because it inhibits the bacterial breakdown of sweat. Zirconium has also been determined to be biocompatible and may be used in metal implants.[10]

Despite the presence and retention in biological systems being relatively high, zirconium has not yet been associated with any specific biological or metabolic function[11] and has not been recognized as an essential element.

Toxicity and Excess

The level of toxicity has been found to be moderately low both in histological and cytological studies[12] and the toxic effects induced by very high concentrations are nonspecific in nature. Zirconium and its salts generally have been shown to have low toxicity[13] and toxicity has not been described in humans.[14]

Zirconium is considered to be an eye, skin and respiratory irritant. Adverse health effects that can occur in humans form may result from direct acute or chronic exposure. From acute exposure, signs and symptoms of skin contact with zirconium compounds include small, reddish-brown papules in linear streaks on the abraded skin; the granulomas occurred after the application of deodorants containing sodium zirconium lactate or of cream containing zirconium oxide.[14] The signs and symptoms of chronic exposure to zirconium or its compounds may include the development of pulmonary granulomas.[16] Zirconium is considered to be one of the likely cause of pneumoconiosis.[17]

Of the six major radioactive zirconium isotopes, only one, Zirconium 93 (Zr93) has a half-life long enough to warrant potential concern with radioactivity. Zr93 is present in spent nuclear fuel and the wastes resulting from reprocessing this fuel. The low specific activity and low energy of its radiations limit the radioactive hazards of this isotope.[18]

Analysis in HTMA

Zirconium is analysed in HTMA and is measured as an additional element. Low levels in a HTMA may not be of clinical significance.[19] The presence of elevated levels of zirconium in HTMA may correlate with previous exposure from an external or environmental source. This may be of some clinical significance.

References are available at www. interclinical.com.au

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A COMPREHENSIVE OVERVIEW OF …

TOXINS IN THE 21ST CENTURY

How to Identify, Treat, Protect & Chelate using Natural Medicines

SEMINAR OUTLINE:

HTMA Primary Course (Saturday)
Introduction to HTMA in Clinical Practice
- Importance of mineral ratios
- Mineral synergists and antagonists
- Metabolic Typing
- Case studies

HTMA Advanced Course (Sunday)
Toxins in the 21st Century
- Heavy metals, PCBs, BPA, toxins in the home
- Foods, lifestyle and endogenous toxins
- How to treat and chelate toxins in the body
- Case studies

2010 Seminar testimonials

Thank you all. A magnificent, very informative and great value seminar.
(Valerie - Brisbane, QLD)

Absolutely satisfied beyond expectation. Thank you all very much.
(Mark - Melbourne, VIC)

A highly informative and precisely presented seminar in a professional and simplistic manner.
(Jade - Sydney, NSW)

SEMINAR DATES & VENUES:

Adelaide: 21st & 22nd May 2011
Melbourne: 28th & 29th May 2011
Perth: 11th & 12th June 2011

Sydney: 18th & 19th June 2011
Brisbane: 25th & 26th June 2011
Auckland: 6th & 7th August 2011

For full seminar program details and ticket prices, please phone InterClinical Laboratories or register on-line.
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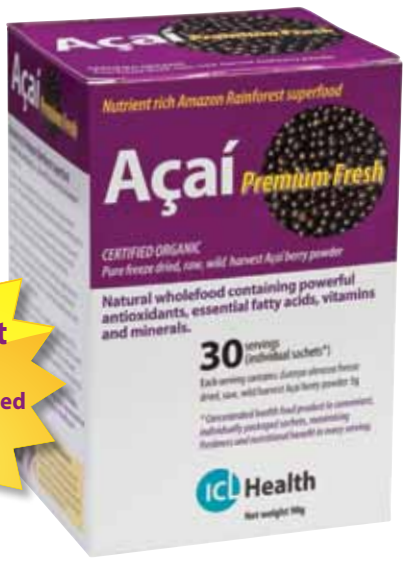

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