HERBAL EXTRACT COMPANY

THE NATUROPATH'S GUIDE

HEAVY METAL TOXICITY

An overview of the current treatments for one of modern society's major health problems, with a focus on chelation therapy.

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GREEN TEA
(Camellia sinensis)

HEAVY METAL TOXICITY

While some metals are essential for health there are others that can cause serious toxic manifestations.

In a world of increasing heavy metal exposure chelation therapy is an important tool in fighting heavy metal storage disorders yet a lack of larger clinical trials means there is controversy over its clinical therapeutic benefits.

Employing combination therapy with more than one chelating agent, and prescribing antioxidants such as those found in herbal medicine, is now considered a crucial recommendation during chelation therapy.

Condition Overview

Heavy metals are defined as naturally occurring metallic elements that have a relatively high density compared to water. However, in medical usage they are loosely defined and include all toxic metals. Despite the increasing concern associated with environmental contamination, heavy metal toxicity is an uncommon diagnosis in mainstream medicine. Yet chronic accumulation may not achieve acute toxicity thresholds while still contributing to adverse health effects.

Toxicity depends on several factors including the dose, route of exposure and chemical species, as well as the age, gender, genetics and the nutritional status of exposed individuals, with most acute presentations involving industrial exposure. Chronic low-level intakes have damaging effects on all living beings since there is no good mechanism for their elimination.

Arsenic (As), cadmium (Cd), lead (Pb) and mercury (Hg) rank among the priority metals of public health significance and are considered systemic toxicants even at lower levels of exposure. They are known to induce multiple organ damage, including cardiovascular diseases, developmental abnormalities, neurologic and neurobehavioral disorders, diabetes, hearing loss, haematologic and immunologic disorders and various types of cancer.

Common Symptoms

While manifestations of toxicity vary among the many toxic metals a classic presentation of chronic metal exposure includes:

- anaemia.
- fingernail or toenail discoloration (Mee's lines which usually appear as white stripes running horizontally across the nails).
- subtle neurologic findings.

Lead toxicity is relatively common so any combination of the symptoms below should prompt a search for lead toxicity:

- gastrointestinal complaints.
- neurologic dysfunction.
- anaemia.

These findings should prompt suspicion of heavy metal toxicity regardless of the chief complaint.

Risk Factors

The main pathways of heavy metal exposure include:

- ingestion
- inhalation
- dermal contact

Exposure to toxic metals may result from:

- contaminated food, air, water and/or dust
- living near a hazardous waste site or manufacturing plant that releases metal contaminants
- overexposure to metal-containing pesticides, paints or cosmetics
- improper disposal or clean-up of toxic metal-containing items (such as a broken thermometer).

Children are particularly susceptible to lead exposure and pregnant women risk toxic exposure to the developing foetus.

How To Get The Correct Diagnosis

Diagnosing metal toxicities is complex because the symptoms are nonspecific and the symptoms of many, especially chronic toxicities, may resemble other diseases. The following need to be considered:

- History of exposure – a critical aspect of diagnosing heavy metal toxicity
- Careful analysis of dietary, environmental, lifestyle and occupational exposure history – one of the most important tools.
- Specific laboratory testing for metals should only be undertaken when the likelihood of toxicity is significant based on a history and/or symptoms consistent with excessive exposure. Tests include blood and urine testing, hair and nail analysis and less commonly X-ray fluorescence.

Conventional Treatment & Prevention

- The most important therapeutic strategy in many cases of metal toxicity is to remove the source of contamination.
- Intravenous chelation therapy has been the mainstay treatment against metal toxicity. Chelators enhance the elimination of metals from the body and are most often used in cases of acute intoxications. The efficacy of chelation therapy in chronic metal intoxication is less clear. Ethylenediaminetetraacetic acid (EDTA), a synthetic amino acid, and 2,3-Dimercaprol are some of the common chelating agents used for lead or arsenic poisoning, although serious side effects have been reported due to the loss of essential metals and minerals from the body.
- A new trend is to use two structurally different chelators. Two prescribed drugs will act through different mechanisms of action, thus resulting in additional effect, or sometimes they may support each other's mode of action leading to synergism.
- Routine chelation of patients with heavy metal exposure is not recommended and the decision to chelate should be made in conjunction with a medical toxicologist or local poison control centre.

Herbal extracts provide the benefits of natural chelation properties, and antioxidant benefits, and have been shown to potentiate the efficacy of chelating agents.

INTERVENTION	Lead poisoning (mild to moderate)	Cadmium detoxification	Iron overload	Hepato-protective	Antioxidant	Chelation therapy adjuvant
Alfalfa			✓	✓		
Arjuna		✓		✓	✓	
Bacopa				✓	✓	
Garlic	✓			✓	✓	
Gotu Kola					✓	✓
Green Tea			✓		✓	✓
Reishi				✓	✓	
Sage				✓	✓	
Siberian Ginseng		✓		✓	✓	
Herbal Liver Support				✓		
St Mary's Thistle	✓		✓	✓	✓	
Turmeric				✓	✓	

Natural Therapies For Treatment & Prevention

Heavy metals may induce oxidative stress so this provides a strong rationale for including antioxidants during chelation therapy. Herbal extracts provide the benefits of natural chelation properties and antioxidants and have been shown to potentiate the efficacy of chelating agents. According to traditional claims herbal medicine is also safer. Natural antidotes can act as chelating agents which not only help to remove the toxic effects of metals and minerals without causing any side effects but also protect against the loss of essential elements from the body. It is not possible to completely avoid exposure to toxic metals. It is, however, possible to reduce metal toxicity risk through lifestyle choices that diminish the probability of harmful heavy metal uptake such as dietary measures that may promote the safe metabolism or excretion of ingested heavy metals. If a specific diagnosis cannot be made a general approach to metal toxicity may be beneficial. Ensuring that the body's general intrinsic detoxification pathways are functioning optimally may help avoid heavy metal accumulation and toxicity. Since many toxic metals mimic nutritionally essential metals they compete for the same transport mechanisms for absorption from the intestines and uptake into cells. Therefore adequate intake of essential trace minerals may reduce toxic metal uptake. For example, nutritional zinc or iron deficiency can increase cadmium absorption, and lead absorption from the gut appears to be blocked by calcium, iron and zinc.

Potential Treatment Plans

Understanding that oxidative stress can be partially implicated in toxicity of metals, a therapeutic strategy to increase the antioxidant capacity of cells may fortify long term effective treatment. This may be accomplished by either reducing the possibility of a metal interacting with critical biomolecules and inducing oxidative damage, or by bolstering the cells antioxidant defences through endogenous supplementation of antioxidant molecules.

Chelation of heavy metals can be a long and arduous process that requires a commitment by the patient in terms of treatment compliance and financial resources. While oral chelation is much less expensive than intravenous forms it still often requires a prolonged course of treatment and serial diagnostic testing to monitor progress for a successful outcome. It is incumbent on the practitioner to understand the process, have patience and fully explain the entire scope of the problem and process to the patient at the outset.

Along with herbal support a specialised chelation detox program would include advice on detoxifying the environment, nutritional support, foods to enjoy more, foods to reduce or eliminate, food preparation, cooking and storage tips and progress tracking.

Iron chelation	St Mary's Thistle	Alfalfa
Cadmium detoxification	Siberian Ginseng	Arjuna
Brain protection	Bacopa	Turmeric
Treatment for mild to moderate lead poising	Garlic	Green Tea
Adjuvant during chelation therapy	Gotu Kola	Reishi
Hepato-protective	Herbal Liver Support	Sage

Herbal Support Could Include:

HERB NAME	DESCRIPTION	ACTIONS
Alfalfa *(Medicago sativa)* 	Alfalfa demonstrated high iron chelating activity in vitro and could be a candidate for the treatment of iron overload. ***INDICATIONS*** Iron overload, arthritis, high cholesterol, diabetes, peptic ulcers, indigestion, menopausal symptoms.	Antioxidant Tonic Cardio Tonic Detoxifier Anti-inflammatory Hepatoprotective Antidiabetic Antirheumatic Anticancer Bactericidal Antifungal Diuretic Emmenagogue Oestrogenic

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Arjuna *(Terminalia arjuna)* 	Arjuna preclinical studies indicate that it has hepatoprotective and antioxidative effects against cadmium. ***INDICATIONS*** Chronic cardio-vascular diseases, including chronic, stable angina, mild congestive heart failure, weakness of the heart, hypercholesterolemia, hypertension and metabolic syndrome, adjuvant during chemotherapy, antioxidant therapy in diabetes, gastric ulceration, difficulty in urination, general detoxification, leukorrhea anaemia, cirrhosis, externally to improve wound healing.	Cardioprotective Heart Tonic Hypotensive Hypolipidaemic Inotropic Antioxidant Anti-inflammatory Cytoprotective Antiulcer Apoptosis Inducing Antidiabetic Antibacterial Antiviral Vulnerary Astringent Febrifuge Demulcent Expectorant Astringent Demulcent Styptic Antidysenteric Urinary Astringent

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Bacopa *(Bacopa monnieri)* 	Bacopa is an antioxidant with in vivo and in vitro studies indicating several modes of action that may protect the brain against oxidative damage including the binding and detoxification of metal ions, free radical scavenging and increasing antioxidant activity. ***INDICATIONS*** Improving concentration, mental performance and memory, nervous disorders, insomnia, anxiety, epilepsy, irritable bowel syndrome. Traditionally used in Ayurvedic medicine to treat conditions such as fever, inflammation, pain, asthma, epilepsy and memory decline.	Antioxidant Hepatoprotective Cognition Enhancing Nervine Tonic Neuroprotective Mild Sedative Mild Anticonvulsant Anxiolytic Adaptogenic Antidepressant Antiulcer Anti-inflammatory
Garlic *(Allium sativum)* 	Garlic is an antioxidant which may prevent metal-induced oxidative stress. Garlic can be recommended for the treatment of mild-to-moderate lead poisoning a 2012 double blinded clinical human study concluded. ***INDICATIONS*** Metal induced oxidative stress, mild to moderate lead poisoning, cardiovascular disease, atherosclerosis, elevated cholesterol levels, hypertension, common infections such as the common cold, flu and athlete's foot, respiratory tract infections, catarrhal conditions, diabetes, higher than normal blood glucose levels, protective effects against cancer, poor peripheral circulation.	Antioxidant Hepatoprotective Anti-inflammatory Antimicrobial Antioxidant Immunomodulatory Nephroprotective Antimicrobial Chemopreventative Hypolipidaemic Anticancer Antithrombotic

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Gotu Kola *(Centella asiatica)* 	Gotu kola supplementation during chelation could be recommended for achieving optimum effects of chelation therapy according to in vivo studies. ***INDICATIONS*** Age related cognitive decline, blood purifier, high blood pressure, traditionally used for depression, memory enhancement, promoting longevity, revitalising the nerves and brain cells, emotional disorders, wound healing, various skin conditions such as leprosy, lupus, varicose ulcers, eczema, psoriasis, diarrhoea, fever, amenorrhea, diseases of the female genitourinary tract.	Antioxidant Anti-inflammatory Sedative Anxiolytic Antidepressant Antiepileptic Antinociceptive Radioprotective
Green Tea *(Camellia sinensis)* 	Green tea constituents have antioxidant activity which act as oxidation reducing agents and chelate metal ions. ***INDICATIONS*** Chelation therapy adjuvant especially iron, general antioxidant and anti-inflammatory therapy, cancer therapy adjuvant, cancer prevention, cardiovascular protection, hypertension, weight loss, diabetes, gingivitis, genital warts, infections, influenza, allergic rhinitis, ulcerative colitis, dementia, cognitive impairment, sunburn protection and skin aging, liver disease, depression, renal disease, osteoporosis.	Antioxidant Anti-inflammatory Anticarcinogenic Antimutagenic Chemoprotective Antiproliferative Antifibrotic Cardioprotective Antihyperlipidaemic Antiarteriosclerotic Antiplatelet Thermogenic Antimicrobial Antibacterial Antifungal Antiviral Hypoglycemic Hypo-cholesterolemic

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Herbal Liver Support 	The Herbal Extract Company Herbal Liver Support is a liver tonic containing powerful detoxification herbs for optimal liver function. ***INDICATIONS*** Hepatobiliary and digestive problems, excess consumption of processed foods, caffeine, drug and alcohol intake, indigestion, flatulence, constipation, irritable bowel syndrome, nausea, vomiting, abdominal pain, loss of appetite, to maintain cholesterol levels within the healthy range and improve HDL:LDL ratio	Contains six major hepatic herbs which work on Phase I and II detoxification Antioxidant Hepatoprotective Liver Tonic Cholagogue (stimulates gallbladder contactions) Choleretic (stimulates bile flow from the liver)
Reishi *(Ganoderma lucidum)* 	There is substantial preclinical data on its antioxidant effects and its ability to protect against liver and gastric injury. ***INDICATIONS*** Chronic fatigue, weakened immunity, anxiety, sleeplessness, or nervousness accompanied by adrenal weakness, chronic viral and bacterial infections, inflammation, liver and gastric injury, diabetes, convalescence, autoimmune disease, fibromyalgia, HIV/AIDs, as a relaxing adaptogen for anxiety or overstimulation in constipation predominant irritable bowel syndrome, adjunct therapy in cancer during chemotherapy and radiation, tonic for the elderly.	Immune Modulating and Enhancing Antitumoral Adaptogen Tonic Antioxidant Anti-inflammatory Hepatoprotective Antiviral Antibacterial Antiallergic Analgesic Hypotensive Cardiotonic Relaxing Nervine Expectorant Antitussive Anti-HIV

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Sage *(Salvia officinalis)* 	In vitro it can start up antioxidant protection expressed by increased content of glutathione. It positively affects cells against oxidative stress and may have hepatoprotective potential. ***INDICATIONS*** Loss of appetite, gastritis, flatulence, bloating, dyspepsia, intestinal cramping, strengthens cognition, improves memory, Alzheimer's disease, cancer prevention, cold sores, cold and flu infections, excessive perspiration and salivation, dysmenorrhoea, diarrhoea, galactorrhoea and sweats associated with menopause, to cease lactation, varicose veins, poor circulation, diabetes, imbalanced cholesterol, gargle for laryngitis, pharyngitis, stomatitis, gingivitis, glossitis, minor oral injuries, inflammation of the nasal mucosa, mouth ulcers, bleeding gums.	Antioxidant Hepatoprotective Bitter Pungent Carminative Astringent Antimicrobial Antispasmodic Anxiolytic Antidiabetic Anti-inflammatory
Siberian Ginseng *(Eleutherococcus senticosus)* 	In vivo it leads to a significant decrease of cadmium concentration in the blood and liver. ***INDICATIONS*** Cadmium detoxification, as a tonic in cases of decreased performance such as chronic fatigue syndrome, fatigue, sensation of weakness, exhaustion, tiredness, irritability, insomnia, mild depression and loss of concentration, As a prophylactic and restorative tonic for enhancement of mental and physical wellbeing, convalescence during recovery from acute or chronic disease, trauma, surgery and other stressful episodes, to increase the body's resistance to stressful exposures such as heat, cold, physical exhaustion, viruses (genital herpes), bacteria, chemicals, extreme working conditions, noise and pollution, adjunctive cancer treatment to increase the tolerance of patients to the adverse effects of chemotherapy and radiation therapy.	Adaptogen (modulates stress response) Immunomodulator Antioxidant Anti-inflammatory Hepatoprotective Antiviral Mild Stimulant Tonic Neuroprotective Antiallergic Cardioprotective Radioprotective

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
St Mary's Thistle *(Silybum marianum)* 	St Mary's Thistle is an antioxidant herb which protects the liver from the deleterious effects of toxins and pollution. ***INDICATIONS*** Liver disease including toxic liver damage, chronic liver diseases, alcoholic liver disease, acute viral hepatitis, hepatitis C infection, preventing gallstones, gallbladder support, hypercholesterolemia (high cholesterol), chemotherapy support, exposure to conventional drugs and chemical pollutants, digestive disorders, dyspepsia, hangover, skin conditions involving liver dysfunction, to support breast milk production during breast feeding.	Hepatoprotective Hepatorestorative Choleretic Cholagogue Chelates Iron Antioxidant Anti-inflammatory Antifibrotic (inhibits or reduces the formation of excess fibrous connective tissue) Hypoglycaemic Galactagogue (appears to stimulate prolactin; possibly oestrogenic)

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Turmeric *(Curcuma longa)* 	Turmeric is hepatoprotective and antioxidant. Several animal studies have shown that turmeric can protect normal cells, tissues and organs against the damage caused by external insults including reducing arsenic and fluoride toxicity and induced hepatotoxicity. ***INDICATIONS*** Adjunctive cancer treatment, inflammatory conditions such as generalised chronic inflammation, arthritis, osteoarthritis, irritable bowel syndrome (IBS), inflammatory bowel disease, asthma, eczema, psoriasis, lupus nephritis, cardiovascular disease prophylaxis, dyspepsia, peptic ulcer, liver and gallbladder dysfunction such as hangover, jaundice and hepatitis, infections such as the common cold, menstrual disorders, adjunct in the treatment of hyperlipidaemia (abnormally elevated levels of any or all lipids and/or lipoproteins in the blood, adjunctive diabetes treatment, depression, Alzheimer's disease (still being investigated), topically for skin conditions and cancer associated lesions, sprains and strains, adjunct in periodontitis and gingivitis.	Anti-inflammatory Antioxidant Antiaging Memory Enhancing Neuroprotective Anticancer Anticarcinogenic Antiproliferative Immunomodulator Chemopreventive Antimutagenic Antiapoptotic Chemosensitisation Radioprotective Antimetastatic Antiarthritic Analgesic Antispasmodic Bitter Tonic Hepatoprotective Nephroprotective Antidiabetic Hypolipideamic Antiatherogenic Antidepressant Antiulcer Wound Healing Antimicrobial Antiviral Antifungal Larvicida/Insecticidal

Siberian Ginseng
(Eleutherococcus senticosus)

Conclusion

"When a flower doesn't bloom, you fix the environment in which it grows, not the flower" Alexander Den Heijer. In today's society we are exposed to a plethora of toxic elements due to indiscriminate human activities which have resulted in the accumulation of heavy metals in the environment. Prolonged exposure to these heavy metals may cause deleterious health effects in humans, animals, plants and the planet. It is therefore imperative that we adopt a policy of removing sources of toxic exposure where possible. Parallel to this adopting the general approach of an antioxidant rich diet, and supporting the cleansing organs with herbal extracts, will reduce the damage. It is important to become educated in order to make informed and conscious choices on a daily basis. Small changes to the daily routine – literally switching to safer- can add up to having a significant impact on the body's chemical burden. Heavy metal cleansing can be quite difficult to accomplish but the important thing to remember is that it can be done and the end result can be a feeling of optimum health and wellbeing.

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