

## **DETOXIFICATION AGENTS FOR MERCURY AND OTHER METALS**

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### ABSTRACT

**Purpose:** Heavy metal toxicity of the nervous system, the endocrine system, the connective tissue and elements of the immune system has been recognized as a major factor in chronic pain and chronic illness. The bi-digital O-ring test (BDORT) has emerged as one of the very few tools suited ideally to non-invasively detect heavy metals in various compartments of the body, specify their chemical form (i.e.: Hg-Chloride, Methyl-Hg, Dimethyl-Hg, etc.) and their concentration and to determine the most suitable detoxification agent. To assist the practitioner to select the correct substance, for a particular patient it is important to be familiar with the most commonly used detoxification-agents and to keep samples of them in the office for testing.

Overview of available detoxifying agents: In Germany and most western countries, the complexing agent DMPS (di-mercapto-propane-sulphonic acid) has found most widespread use in the treatment of Hg toxicity. In the USA the orphan drug DMSA or Meso-2,3-dimercaptosuccinic acid (Chemet) has FDA approval and is readily available. The chelating agent D-Penicillamine (3-mercapto-D-valine) is a potent intracellular Hg detoxifier. EDTA has been used for lead toxicity but has probably no value in the treatment of Hg toxicity. Desferoximine (DFO) is the preferred detox agent for aluminum, iron and copper. The sulphhydryl-group containing amino acids such as N-Acetyl-cysteine sulphur containing amino acid methionine produces increased fecal lead excretion. Closely related compounds are alpha-lipoic acid and potentially all SH – groups containing nutritional substances. Amongst natural SH-substances garlic and European bear-garlic have been shown to increase urinary Hg excretion while protecting the kidneys and the red-cells from oxidative damage. Interesting are also various forms of algae that can bind toxic metals with their mucopolysaccharide membrane. *Chlorella pyrenoidosa* has the most documented dramatic metal binding properties and increases the fecal elimination of virtually all toxic metals. Claims by manufacturers of other products (spirulina, blue green algae) are not substantiated. The work of James Woods at UW demonstrated that porphyrin-ring structures are used in nature to shuttle metals through the blood and other tissues. Algae also contain porphyrin-ring structures (ie. chlorophyll). A commercial product named “porphyrazyme” shows promise in the course of a Hg, Cd and Pb-detox program. The latest addition to the arsenal of detoxifying agents for Hg, Al and Pb is Chinese parsley (cilantro) used in Asian and South-American cuisine for centuries, which was discovered by Yoshiaki Omura, M.D., ScD of New York. Cilantro appears to have its main action on cell wall, as well as intracellularly. This author believes that the most likely action is that one of the aromatic substances found in cilantro has a direct action on the cell wall, possibly displacing Hg, Al and Pb molecules that have docked as a ligand onto receptor sites. Last, but not least, vitamin C has been found effective in a number of studies. The chief effect is its action as an electron donor: mercury is SH-bound to

proteins as a positively charged ion outside and inside the body's cells. Vitamin C reduces the metal ion back to its original metallic form. Metallic mercury rapidly becomes a gas moving freely through tissues enhancing its chance for excretion. Some practitioners have also used the principle of competitive inhibition at the receptor sites by loading a patient with "good" metals, such as calcium, copper, manganese, magnesium, etc. Bad metals can often be displaced from their respective binding sites and can be more easily eliminated using the agents discussed here. A cautionary note on zinc and selenium: zinc potentiates the toxic effects of mercury in the brain, selenium forms difficult-to-mobilize complexes with Hg in the tissue. However, lack of either mineral also worsens the patient's condition.

**Conclusion:** A large number of detoxifying agents are available today. The practitioner needs to be familiar with their appropriate use and safe treatment protocols. Using the BDORT, decisions can be made accurately and quickly. During the course of a detoxification program, different agents may be required at different times or may have to be used in combination with each other. Y. Omura found that Chinese parsley is neutralized by Vitamin C and garlic. Therefore, these agents should be used in tandem rather than simultaneously. Patients can also develop allergic (usually mild) reactions to the agents used requiring the use of another substance or a therapeutic pause.

## USING THE BI-DIGITAL O-RING TEST (BDORT) TO DETECT DYSFUNCTION IN THE AUTONOMIC NERVOUS SYSTEM

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### ABSTRACT

**Purpose:** Very few tools are available today to determine dysfunction of the autonomic nervous system (ANS). In osteopathic Medicine palpatory evaluation of ANS mediated skin and tissue changes is utilized. In the 1930's, the Internist Arthur Coca, MD, used a simple pulse test to determine if a patient had eaten something he was allergic to (elevated heart rate). In the 1950's Reinhold Voll, MD, developed in Germany electrodermal measurements of ANS (EAV) - the physiologist Irvin Korr PhD used more simple skin conductance measurements in the 1960's. Since then thermography has gained some popularity. The neurologist Philip Low promotes the use of objective clinical tools, such as testing the patient's heart rate and blood pressure before and after stressing the patient in some way. In recent years, the use of 'heart rate variability' has emerged as the most reliable tool to assess the functional status of the ANS. The author attempted to gather evidence that the BDORT developed by Yoshiaki Omura M.D., ScD of New York may be an additional (and maybe ideal) tool to evaluate the ANS.

**Physiological background:** The autonomic nervous system (ANS) orchestrates proper functioning of the organism. The sympathetic component (SNS) controls the delivery of oxygen and nutrients to virtually every organ, including the brain and every structure of the musculo-skeletal system. In addition, the SNS is responsible for such varied tasks as controlling body temperature, muscle tone, activity of osteoblasts, sexual arousal, activity of the thymus gland and circulating immune cells and others. The parasympathetics (PSNS) control glandular activity throughout the body, secretions in the lining of the intestines, many regenerative functions (such as activity of fibroblasts and various immune cells, hormone production), the vocal chords, several muscles of mastication and swallowing, and appears to stimulate the secretion of those neuro-modulators that are responsible for our emotions. Recently, several publications have demonstrated that dysfunction of the ANS is common and can be responsible for many varied illnesses such as high blood pressure, kidney failure, angina, hormone dysfunction, bowel dysfunction, chronic pain and many more. Dysfunction in the ANS can be caused by toxicity of the brainstem and/or the autonomic ganglia, infections and nutrient deficiencies, by scar tissue and mechanical compression of ANS fiber or ganglia. It can also be caused by unresolved emotional problems since the regulating center of the ANS, the hypothalamus, is in constant communication with the limbic system via the limbic hypothalamic axis.

**Method:** This author has adopted the criteria outlined by the originator of the BDORT, Yoshiaki Omura, M.D., ScD and used the test.

1. To examine the most important ANS ganglia for dysfunction. The location of the ganglion can be confirmed by using the BDORT resonance phenomenon (RP) with dilution of acetylcholine (10). The exam is done by manually squeezing the ganglion slightly against neighboring bone. A dysfunctional ganglion will cause the O-ring to weaken.
2. To detect the underlying cause (toxicity, infection, active scars). This was done by using the RP with different noxious agents (mercury, bacterial dilutions, etc) and
3. To determine the most effective treatment (by using the RP with different medications)

**Results:** The diagnostic results were compared with HRV, thermography and EAV.

There was a high level of congruity between the different methods. EAV and BDORT are the only methods to determine the underlying pathology and guide treatment. BDORT had the highest inter-examiner reliability. Treatment results were often dramatic.

**Conclusion:** The results suggest that:

1. The change in muscle strength observed when performing BDORT is itself caused by ANS mediated changes in the muscle spindles of the involved finger and forearm muscles.
2. The BDORT is the ideal tool to detect ANS dysfunction to diagnose the underlying pathology to predict and find the effective treatment.
3. Treating the ANS rather than the disease can lead to the most effective treatment of the patient's condition.