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The Klinghardt Neurotoxin Elimination Protocol

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Approved by:

American Academy of Neural Therapy and Institute of

Neurobiology (Bellevue, WA, USA) Institute for

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This lecture was presented by Dietrich Klinghardt M.D., Ph.D. at the Jean Piaget Department at the University of Geneva, Switzerland Oct.2002 to physicians and dentists from Europe, Israel, several Arab countries and Asia

What are Neurotoxins?

Neurotoxins are substances attracted to the mammalian nervous system. They are absorbed by nerve endings and travel inside the neuron to the cell body. On their way they disrupt vital functions of the nerve cell, such as axonal transport of nutrients, mitochondrial respiration and proper DNA transcription. The body is constantly trying to eliminate neurotoxins via the available exit routes: the liver, kidney, skin and exhaled air. Detox mechanisms include acetylation, sulfation, glucuronidation, oxidation and others. The liver is most important in these processes. Here most elimination products are expelled with the bile into the small intestine and should leave the body via the digestive tract. However, because of the lipophilic/neurotropic nature of the neurotoxins, most are reabsorbed by the abundant nerve endings of the enteric nervous system (ENS) in the intestinal wall. The ENS has more neurons than the spinal chord. From the moment of mucosal uptake the toxins can potentially take 4 different paths:

1. neuronal uptake and via axonal transport to the spinal chord (sympathetic neurons) or brainstem (parasympathetics) – from here back to the brain.
2. Venous uptake and via the portal vein back to the liver

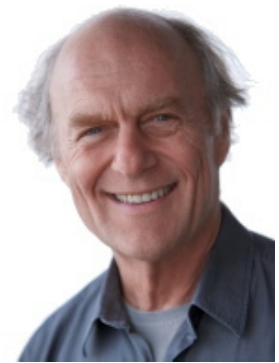
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3. Lymphatic uptake and via the thoracic duct to the subclavian vein
4. Uptake by bowel bacteria and tissues of the intestinal tract

Here is an incomplete list of common neurotoxins in order of importance:

- (i) Heavy metals: such as mercury, lead, cadmium and aluminium.
- (ii) Biotoxins: such as tetanus toxin, botulinum toxin (botox), ascaridin (from intestinal parasites), unspecified toxins from streptococci, staphylococci, lyme disease, clamydia, tuberculosis, fungal toxins and toxins produced by viruses. Biotoxins are minute molecules (200-1000 kilodaltons) containing nitrogen and sulfur. They belong to a group of chemical messengers which microorganisms use to control the host's immune system, host behaviour and the host's eating habits.
- (iii) Xenobiotics (man-made environmental toxins): such as dioxin, formaldehyde, insecticides, wood preservatives, PCBs etc.
- (iv) Food Preservatives, excitotoxins and cosmetics: such as aspartame (diet sweeteners) food colourings, flouride, methyl-and propyl-paraben, etc.

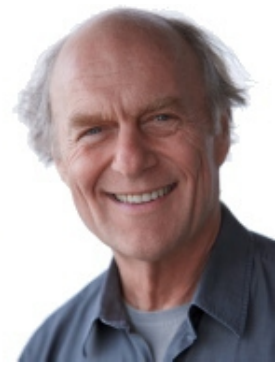
I have found that mercury in its different chemical forms has a synergistic amplifying effect with all other neurotoxins. When mercury is removed, the body starts to more effectively eliminate all other neurotoxins, even if they are not addressed.

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What are the symptoms?

Any illness can be caused by, or contributed to, or exaggerated by neurotoxins. Fatigue, depression, insomnia, memory loss and blunting of the senses are common early symptoms (see list of mercury related symptoms on the following pages).

How is the diagnosis established?

1. History of Exposure: (Did you ever have any amalgam fillings? A tick bite? etc)
2. Symptoms: (How is your short term memory? Do you have areas of numbness, strange sensations, etc)
3. Laboratory Testing: (Metals: hair, stool, serum, whole blood, urine analysis, xenobiotics: fatty tissue biopsy, urine)
4. Autonomic Response Testing: (Dr. Dietrich Klinghardt M.D., Ph.D.)
5. BioEnergetic Testing (EAV, kinesiology etc.)
6. Response to Therapeutic Trial
7. Functional Acuity Contrast Test (measure of Retinal Blood Flow)

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TREATMENT

Why would we want to treat anyone at all? Is it really needed? Can the body not eliminate these toxins naturally on its own?

Here is a short list of **independent risk factors** which can either cause accumulation of metals in an otherwise healthy body - or slow down, or inhibit the bodys own elimination processes.

- genetics
- occupational exposure to toxic material
- prior illnesses
- surgical operations
- medication or 'recreational' drug use
- emotional trauma, especially in early childhood
- social status
- high carbohydrate intake combined with protein malnutrition (especially in vegetarians)
- use of homeopathic mercury
- food allergies
- the patients electromagnetic environment (mobile phone use, home close to power lines etc)
- constipation
- compromise of head/neck lymphatic drainage (sinusitis, tonsil ectomy scars, poor dental occlusion)
- number of dental amalgam fillings over the patients life-time, number of the patients mothers amalgam fillings

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We will discuss here only those elimination agents, which are natural, safe and have also been shown to be as effective (or more effective) than the few available pharmaceuticals. Because these products cannot be patented and exploited for unethical personal gain, little attention has been given to them by European or North American medical researchers. Many of the best scientific studies on this topic are from Asian countries.

The basic program:

High protein, mineral, fatty acid and fluid intake

Rationale:

- proteins provide the important precursors to the endogenous metal detox and shuttle agents, such as coeruloplasmin, metallothioneine, glutathione and others. The branched-chain amino acids in cow and goat whey have valuable independent detox effects.
- Metals attach themselves only in places that are programmed for attachment of metal ions. Mineral deficiency provides the opportunity for toxic metals to attach themselves to vacant binding sites. A healthy mineral base is a prerequisite for all metal detox attempts (selenium, zinc, manganese, germanium, molybdenum etc.). Substituting minerals can detoxify the body by itself. Just as important are electrolytes (sodium, potassium, calcium, magnesium), which help to transport toxic waste across the extracellular space towards the lymphatic and venous vessels.

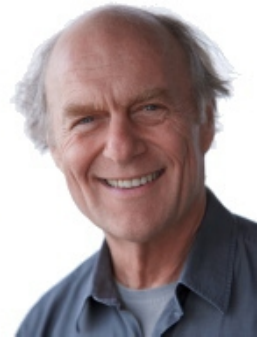
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- Lipids (made from fatty acids) make up 60-80 % of the central nervous system and need to be constantly replenished. Deficiency makes the nervous system vulnerable to the fat soluble metals, such as metallic mercury constantly escaping as odorless and invisible vapour evaporating from the amalgam fillings.
- Without enough fluid intake the kidneys may become contaminated with metals. The basal membranes swell up and the kidneys can no longer efficiently filtrate toxins. Adding a balanced electrolyte solution in small amounts to water helps to restore intra-and extracellular fluid balance

Cilantro (chinese parsley)

This kitchen herb is capable of mobilizing mercury, cadmium, lead and aluminum in both bones and the central nervous system. It is probably the only effective agent in mobilizing mercury stored in the intracellular space (attached to mitochondria, tubulin, liposomes etc) and in the nucleus of the cell (reversing DNA damage of mercury). Because cilantro mobilizes more toxins than it can carry out of the body, it may flood the connective tissue (where the nerves reside) with metals, that were previously stored in safer hiding places. This process is called re-toxification. It can easily be avoided by simultaneously giving an intestinal toxin-absorbing agent. Our definite choice is the algal organism chlorella. A recent animal study demonstrated rapid removal of aluminum from the skeleton superior to any known other detox agent.

Dosage and application of cilantro tincture: give 2 drops 2 times /day in the beginning, taken just before a meal or 30 minutes after taking chlorella (cilantro causes the gallbladder to dump bile - containing the excreted neurotoxins - into the small intestine. The bile -release occurs naturally as we are eating and is much enhanced by cilantro. If no chlorella is taken, most neurotoxins are reabsorbed on the way down the small intestine by the abundant nerve endings of the enteric nervous system). Gradually increase dose to 10 drops 3 times/day for full benefit. During the initial phase of the detox cilantro should be given 1 week on, 2 –3 weeks off.

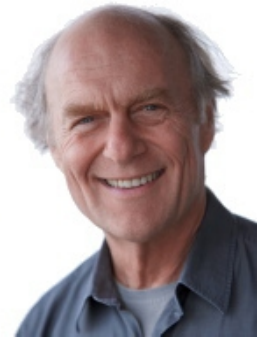
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Other ways of taking cilantro: rub 5 drops twice/day into ankles for mobilization of metals in all organs, joints and structures below the diaphragm, and into the wrists for organs, joints and structures above the diaphragm. The wrists have dense autonomic innervation (axonal uptake of cilantro) and are crossed by the main lymphatic channels (lymphatic uptake).

Cilantro tea: use 10 to 20 drops in cup of hot water. Sip slowly. Clears the brain quickly of many neurotoxins. Good for headaches and other acute symptoms (joint pains, angina, headache): rub 10 –15 drops into painful area. Often achieves almost instant pain relief.

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Chlorella:

Both *C.pyreneidosa* (better absorption of toxins, but harder to digest) and *C.vulgaris* (higher CGF content – see below, easier to digest, less metal absorbing capability) are available. Chlorella has multiple health inducing effects:

Antiviral (especially effective against the cytomegaly virus from the herpes family)

- **Toxin binding** (mucopolysaccharide membrane)
 - all known toxic metals, environmental toxins such as dioxin and others
- Repairs and activates the bodys **detoxification functions**:
- Dramatically increases reduced glutathion,
- Sporopollenin is as effective as cholestyramin in binding neurotoxins and more effective in binding toxic metals then any other natural substance found.
- Various peptides restore coeruloplasmin and metallothioneine,
- Lipids (12.4 %) alpha-and gamma-linoleic acid help to balance the increased intake of fish oil during our detox program and are necessary for a multitude of functions, including formation of ther peroxisomes.
- Methyl-coblolamine is food for the nervous system, restores damaged neurons and has ist own detoxifying efect.
- Chlorella growth factor helps the body detoxify itself in a yet not understood profound way. It appears that over millions of years chlorella has developed specific detoxifying proteins and peptides for every existing toxic metal.
- The porphyrins in chlorophyl have their own strong metal binding effect. Chlorophyll also activates the PPAR-receptor on the nucleus of the cell which is responsible for the transcription of Dna and coding the formation of the peroxisomes (see fish oil), opening of the cell wall (unknown mechanism) which is necessary for all detox procedures, normalizes insulin resistance and much more. Medical drugs that activate the PPAR receptor (such as pioglitazone) have been effective in the treatment of breast and prostate cancer.
- **Super nutrient**: 50-60% aminoacid content, ideal nutrient for vegetarians,

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methylcobolamin - the most easily absorbed and utilized form of B12, B6, minerals, chlorophyll, beta carotene etc.

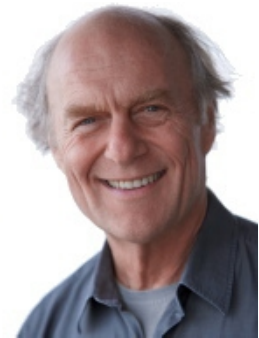
- **Immune system strengthening**
- **Restores bowel flora**
- **Digestive aid (bulking agent)**
- **Alkalinizing agent (important for patients with malignancies)**

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Dosage: start with 1 gram (=4 tabl) 3-4 times/day. This is the standard maintenance dosage for grown ups for the 6-24 months of active detox. During the more active phase of the detox (every 2-4 weeks for 1 week), whenever cilantro is given, the dose can be increased to 3 grams 3-4 times per day (1 week on, 2-4 weeks back down to the maintenance dosage). Take 30 minutes before the main meals and at bedtime. This way chlorella is exactly in that portion of the small intestine where the bile squirts into the gut at the beginning of the meal, carrying with it toxic metals and other toxic waste. These are bound by the chlorella cell wall and carried out via the digestive tract. When amalgam fillings are removed, the higher dose should be given for 2 days before and 2- 5 days after the procedure (the more fillings are removed, the longer the higher dose should be given). No cilantro should be given around the time of dental work. During this time we do not want to mobilize deeply stored metals in addition to the expected new exposure. If you take Vitamin C during your detox program, take it as far away from Chlorella as possible (best after meals).

Side effects: most side effects reflect the toxic effect of the mobilized metals which are shuttled through the organism. This problem is instantly avoided by significantly increasing the chlorella dosage, not by reducing it, which would worsen the problem (small chlorella doses mobilize more metals than are bound in the gut, large chlorella doses bind more toxins than are mobilized). Some people have problems digesting the cell membrane of chlorella. The enzyme cellulase resolves this problem. Cellulase is available in many health food stores in digestive enzyme products. Taking chlorella together with food also helps in some cases, even though it is less effective that way. *C.vulgaris* has a thinner cell wall and is better tolerated by people with digestive problems. Some manufacturers have created cell wall free chlorella extracts (NDF, PCA) which are very expensive, less effective - but easily absorbed.

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Chlorella growth factor

This is a heat extract from chlorella that concentrates certain peptides, proteins and other ingredients. The research on CGF shows that children develop no tooth decay and their dentition (maxillary-facial development) is near perfect. There are less illnesses and children grow earlier to a larger size with higher I.Q and are socially more skilled. There are case reports of patients with dramatic tumor remissions after taking CGF in higher amounts. In our experience, CGF makes the detox experience for the patient much easier, shorter and more effective.

Recommended dosage: 1 cap. CGF for each 20 tabl.chlorella

Garlic (*allium sativum*) and wild garlic (*allium ursinum*)

Garlic has been shown to protect the white and red blood cells from oxidative damage, caused by metals in the blood stream - on their way out – and also has its own valid detoxification functions. Garlic contains numerous sulphur components, including the most valuable sulph-hydryl groups which oxidize mercury, cadmium and lead and make these metals water soluble. This makes it easy for the organism to excrete these substances. Garlic also contains alliin which is enzymatically transformed into allicin, nature's most potent antimicrobial agent. Metal toxic patients almost always suffer from secondary infections, which are often responsible for part of the symptoms. Garlic also contains the most important mineral which protects from mercury toxicity, bio active selenium. Most selenium products are poorly absorbable and do not reach those body compartments in need for it. Garlic selenium is the most beneficial natural bioavailable source. Garlic is also protective for against heart disease and cancer.

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The half life of allicin (after crushing garlic) is less than 14 days. Most commercial garlic products have no allicin releasing potential left. This distinguishes freeze dried garlic from all other products. Bear garlic tincture is excellent for use in detox, but less effective as antimicrobial agent.

Dosage: 1-3 capsules freeze dried garlic after each meal. Start with 1 capsule after the main meal per day, slowly increase to the higher dosage. Initially the patient may experience die-off reactions (from killing pathogenic fungal or bacterial organisms). Use 5-10 drops bear-garlic on food at least 3 times per day.

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Fish oil:

The fatty acid complexes EPA and DHA in fish oil make the red and white blood cells more flexible thus improving the microcirculation of the brain, heart and other tissues. All detoxification functions depend on optimal oxygen delivery and blood flow. EPA and DHA protect the brain from viral infections and are needed for the development of intelligence and eye-sight. The most vital cell organelle for detoxification is the peroxisome. These small structures are also responsible for the specific job each cell has: in the pineal gland the melatonin is produced in the peroxisome, in the neurons dopamine and norepinephrine, etc. It is here, where mercury and other toxic metal attach and disable the cell from doing its work. Other researchers have focussed on the mitochondria and other cellorganelles, which in our experience are damaged much later. The cell is constantly trying to make new peroxisomes to replace the damaged ones– for that task it needs an abundance of fatty acids, especially EPA and DHA. Until recently it was believed, that the body can manufacture its own EPA/DHA from other Omega 3 fatty acids such as fish oil. Today we know, that this process is slow and cannot keep up with the enormous demand for EPA/DHA our systems have in today's toxic environment. Fish oil is now considered an essential nutrient, even for vegetarians. Recent research also revealed, that the transformation humans underwent when apes became intelligent and turned into humans happened only in coastal regions, where the apes started to consume large amounts of fish. Why not benefit from that knowledge and consume more fish oil?

The fatty acids in fish oil are very sensitive to exposure to electromagnetic fields, temperature, light and various aspects of handling and processing. Trans fatty acids, long chain fatty acids, renegade fats and other oxydation products and contaminants are frequently found in most commercial products. Ideally, fish oil should be kept in an uninterrupted cooling chain until it ends up in the patients fridge. The fish -source should be mercury and contaminant free, which is becoming harder and harder. Fish oil should taste slightly fishy but not too much. If there is no fish taste, too much processing and manipulation has destroyed the vitality of the oil. If it tastes too fishy, oxydation products are

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present. I recommend to use the product recommended below (grade I), where meticulous care has been taken to comply with all the necessary parameters. The clinical results are outstanding.

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Dosage: 1 capsule Omega 3 taken 4 times/day during the active phase of treatment, 1 caps. twice/day for maintainance Best if taken together with chlorella

The VegiPearls contain half the amount of EPA/DHA. The vegetarian capsules eliminate even the most remote possibility of containing prions and make the idea of taking fish oil more easily acceptable for vegetarians. Recently a fatty acid receptor has been discovered on the tongue, joining the other more known taste receptors. If the capsules are chewed, the stomach and pancreas start to prepare the digestive tract in exactly the right way to prepare for maximum absorption. Children love chewing the VegiPearls.

To treat bipolar depression, post partum depression and other forms of mental disease, 2000 mg of EPA are needed/day (David Horrobin). For the modulation of malignancies, 120 mg of EPA 4 times/day are needed. The calculations can easily be done with the information given on the label.

Balanced electrolyte solution (Selectrolyte)

The autonomic nervous system in most toxic patients is dysfunctional. Electric messages in the organism are not received, are misunderstood or misinterpreted. Toxins cannot be shuttled through the extracellular space. Increased intake of natural ocean salt (celtic sea salt) – and avoidance of regular table salt - has been found to be very effective in resolving some of these problems. Most effective is a solution pioneered by the American chemist Ketkovsky. He created the formula for the most effective electrolyte replacement, which was further improved by Morin Labs, and is now called „selectrolyte“. I recommend this to all my patients and have observed, that every aspect of the detoxification process seems to be enhanced. 5 % of the population is sodium or chloride sensitive – the blood pressure goes up (easily reversible). In these patients the detox process takes longer and is more difficult.

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Dosage: 1 tsp in a cup of good water 1-3 times/day During times of greater stress the dosage can be temporarily increased to 1 tbsp 3 times/day

More aggressive approaches, such as i.v Glutathione, Vit.C, DMPS, CaEDTA and others have a place in reasonably healthy people but often worsen the condition in patients with advanced illness.

Most valuable is the addition of psychotherapeutic interventions such as applied psychoneurobiology (APN) and mental field therapy (MFT) to trigger the release of toxins from their hiding places.

Chlorella, cilantro, garlic-products and fatty acids vary greatly in quality and nutrient content, also in content of contaminants. I no longer recommend BioReurella and other products that have not undergone or passed our quality control screening process.

Heavy metal detox has to be done carefully and right!

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