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Mercurialism, Part 3

Part 3 of a 3 Part Series on Mercurialism:

In February and March, we reviewed what mercury does to the human body and methods of testing for mercury poisoning. This month we will look at basic ways some practitioners use to remove mercury from the body.

While the body will rid itself of small amounts of mercury through natural processes, an individual who is suffering with symptoms of mercurialism will need to assist the body to remove a greater amount of mercury in a shorter time in order to reduce symptoms. This is accomplished with a chelating agent known as a chelator in a process called chelation. Chelation is the process of reversible binding of a ligand (the chelator to a metal ion (in this case, mercury) forming a metal complex known as the chelate. Once the ligand and metal bind, they are carried from the body, removing the metal in the process.

The term "true chelator" is generally reserved for complexes in which the metal ion is able to bind to two or more atoms of the chelating agent. This forms a strong bond which is generally ac-

cepted as more effective than a single bond. True chelators include DMSA (Meso-2,3-dimercaptosuccinic acid), DMPS (Sodium 2,3-dimercapto-1-propane sulfonate), and ALA (alpha Lipoic acid). Cilantro is commonly mistaken for a true chelator though it lacks a thiol group and therefore only binds to one atom. DMSA and ALA are both available over the counter, though it is highly recommended to undergo chelation under the guidance of a licensed practitioner.

Mercury amalgam dental fillings contain mercury. When DMPS, for example, was administered with and without amalgam restorations in subjects, two-thirds of the mercury excreted in the urine after DMPS administration originated from dental amalgams (Aposhian, 1998). It is plausible that chelating with amalgams in place actually draws the mercury out of the amalgam releasing it into the body and there was a positive linear correlation between the measure of amalgam surface and urinary Hg after the challenge test (Aposhian, 1998). It is not advisable to chelate with mercury amalgams present. Please consult with a licensed practitioner before beginning, and during, any chelation therapy.

Hg Mercury
Atomic Number: 80
Atomic Mass: 200

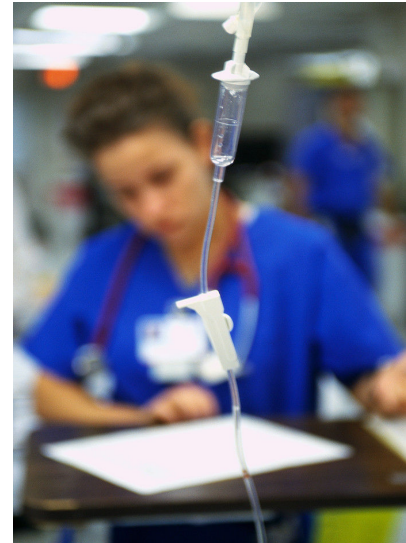
“There are many chelation protocols that vary from practitioner to practitioner.”

There are many chelation protocols that vary from practitioner to practitioner. Perhaps one of the best know in the Cutler protocol in which small doses of chelator are taken every three to four hours, or at the half-life of the chelating agent (Cutler, 1999). Other practitioners advocate for the bottle directions which, in the case of DMSA, was designed and tested for lead poisoning rather than mercury poisoning. Indeed, DMSA is only FDA (Food and Drug Administration) approved for lead poisoning though it is a favored mercury chelator by most practitioners as it chelates all metals and potentially some minerals as well.

DMSA

DMSA (Meso-2,3-dimercaptosuccinic acid) is also known as succimer and is available in oral form over the counter or through a practitioner. Some advocates for chelation say DMSA cannot cross the blood brain barrier (Fuchs et al, 1997). Indeed, Cutler (1999) has stated that only ALA can cross the blood brain barrier and his position is supported by Fuchs et al (1997). However, a study on lead poisoning found that DMSA can cross the blood-brain barrier, and thus is useful for extracting heavy metals from the brain as well as the body (Aasath et al, 1995). This is important as mercury does the most damage in the brain. However, Cutler (1999) recommends using DMSA to reduce body mercury stores before taking ALA to remove mercury from the brain.

DMSA contains two carboxylic acid



and two thiol groups, making it a true chelator. It occurs in two forms, though only the meso isomer is used as chelating agent. Side effects of DMSA, as with any chelator, may include exacerbation of the symptoms of mercury poisoning. This is largely due to the fact that mercury is being mobilized during the process and some invariably escapes the bond in a process called redistribution. This redistributed mercury can affect areas of the body not previously affected by mercury.

Standard dosage is 1500 mg a day in three doses of 500 mg. (Foreman et al, 2000). However, Cutler (1999) recommends starting with a dose as small as 25 mg. and taking it every 3-4 hours throughout the day and night to minimize redistribution effects. If symptoms become unbearable, chances are the dosage is too high and the symptoms may be alleviated by reducing the dosage (Cutler, 1999). Liver function testing should also be performed during chelation as DMSA can have negative effects on the liver (Cutler, 1999).

**“DMPS
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DMPS

DMPS (Sodium 2,3-dimercapto-1-propane sulfonate) “is a water-soluble chelating agent that can be given by mouth or systemically and has been used to treat metal intoxication since the 1960s in the former Soviet Union and since 1978 in Germany” (Aposhian, 1998). When a DMPS challenge test was used to study dental personnel occupationally exposed to mercury, the resulting urinary excretion of mercury was 88, 49, and 35 times greater after DMPS was administered (Aposhian, 1998).

DMPS is often administered intravenously, though this is the most dangerous form of administration as it is not reversible and can cause a cholinergic crisis or allergic reaction in those sensitive to sulfur. Oral administration every 8 hours is recommended by Cutler (1999) if one chooses to use DMPS. Like DMSA, DMPS appears unable to cross the blood-brain barrier to remove mercury from the brain where it often does the most harm (Fuchs et al, 1997).

ALA

ALA (alpha Lipoic acid) is a dietary supplement, first identified as an effective antioxidant when it was shown to prevent deficiency of vitamin C and vitamin E. Because ALA has two atoms (disulfide), it is an effective chelator for mercury. ALA does penetrate the blood-brain barrier (Cutler, 1999). Cutler (1999) recommends taking ALA in small doses (5 – 10 mg for example) every three hours (day and night) to maintain blood levels and avoid redistribution. It is also recommended to use DMSA or DMPS for several months or until tests reveal low mercury before beginning ALA therapy (Cutler, 1999). The reason for this is to allow mercury to move from the brain to the body for elimination. If there is too much mercury in the body, Cutler (1999) feels there is a greater chance of redistribution effects that could cause problems with brain neurotransmitters, resulting in severe depression, mood swings, and suicidal tendencies.



**“It is
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Summary

DMSA and ALA are generally regarded as safer than DMPS. It is important to note, however, that none of these agents have been FDA approved for mercury poisoning, nor have any drugs been FDA approved for mercury poisoning, which leaves poisoned individuals in a quandary. For this reason, it is advisable to consult with a health care provider or practitioner before proceeding. As mercury causes deranged mineral transport and chelating may deplete minerals, it is important to have a practitioner test mineral levels and recommend appropriate supplements during therapy.

In addition, your practitioner may know of other protocols, such as the combination DMSA, DMPS, glutathione, and vitamin C therapy that was studied and showed a 69% reduction of urine mercury by provocation analysis (Muran, 2006). As with any medical treatment it is advisable to do your own research in order to make informed decisions.

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