



Micro Trace Minerals Laboratory

30+ years of clinical & environmental
laboratory diagnostics

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DMSA (meso-2,3-DiMercapto Succinic Acid)

During February 1991, the US FDA (Federal Drug Administration) approved DMSA as an oral chelating agent for the detoxification of lead in children. It is safe and effective in removing toxins. There are few adverse reactions.ⁱ

DMSA binds with heavy metals and removes them via the digestive and the urinary tract. DMSA does, most likely, not cross the brain blood barrier, but does remove mercury, lead, aluminium, cadmium, arsenic, mercury and nickel. DMSA also binds copper and zinc, but to a lesser degree than DMPS or EDTA.

The bioavailability of oral DMSA is between 20 to 50%.ⁱⁱ Digestive function increases or decreases bioavailability.

Pregnant or lactating women and patients with kidney disorders should not be chelated. In case of an acute intoxication, chelation should only be administered after careful medical evaluation and consideration. Be careful with highly allergic patients, especially those allergic to sulphur.

Patients who are heavily intoxicated may show adverse reactions during the first few chelation treatments. The most common side effects noted are weakness during the day of chelation treatment, dull headaches and concentration difficulties. Some patients notice a slight decrease in vision ability, which will be gone the next day. Abdominal cramping may be experienced in patients with digestive problems. It is thus important to 'detox' the GI tract prior to oral chelation. Allergy reactions are rare, but can occur.

Recommended Dose:

Depending on exposure and patient constitution, 10 to 30mg/kg per body weight are recommended. Oral chelators are preferably taken on an empty stomach. If possible, the patient should not eat for two hours following intake.

Pre-Chelation Treatment Recommendations:

- Constipation must be treated prior to oral chelation
- Because oral chelators first detoxify the digestive tract, it is best to prepare the patient's GI tract using probiotics and a high roughage diet. If possible, start this program 2 weeks prior to chelation.
- Nutritional deficiencies should be addressed prior to the chelation treatment. A hair analysis will indicate if the body stores of essential elements are low.

Chelation Treatment:

1. Prechelation recommendation:

- Do not eat fish four days prior to chelation. Fish may contain considerable amounts of arsenic and mercury.

- Avoid smoking two days prior to chelation. Smoke contains nickel, cadmium, lead, beryllium and other metals. Inhaling these metals reduces the chelating agent's ability to detoxify body tissues.
- Stop taking nutritional supplements one day prior to chelation.

2. Pre Chelation Evaluation

- With highly sensitive patients, try low dose of 100mg first. While reaction rarely occur, providing a low dose at first. If a reaction occurs it would be within 2-4 hours after intake. This test should be performed in your practice.

3. Chelation treatment –(Option A- Night i.e. home treatment)

- Before oral intake of DMSA, patient should empty bladder. This would be the baseline urine.*
- If no reaction occurred (see under 2) , start the 1st oral chelation with approx 10-30mg/kg BW
- Patient wakes at 03:00AM and takes DMSA with 1 glass of water on empty stomach.
- Patient goes back to sleep.
- Around 07:00 in the morning, patient voids bladder and collects about 20ml in normal urine cup. This is the Provocation sample of the 4-hr urine collection.**
- Patient eats breakfast as usual.
- Patient must drink plenty of water for the remainder of the day.

Chelation treatment – Option B

- Before oral intake of DMSA, patient should empty bladder. This would be the baseline urine.*
- If no reaction occurred (see under 2) , start the 1st oral chelation with approx 10-30mg/kg BW
- Patient takes DMSA with one glass water (100ml) on empty stomach.
- After 2 hrs the patient could eat, for instance 1-2 boiled eggs with bread or cereal with milk or buttered toast and jam. Coffee or tea is not allowed.
- During the 4hr urine collection time, the patient may drink 1 more glass (100ml) of water. It is preferable that urine remains in the bladder for the duration of the 4-hr collection time.
- After 4 hrs, patient can void bladder while collecting 20ml of that urine in a normal collection cup. This is the Provocation sample for laboratory testing**.
- The patient should drink plenty of water for the remainder of the day and eat normal meals.

***Baseline Urine (optional, but recommended for first treatment):**

The baseline urine is to be collected prior to the first chelation treatment. Required are 10ml of urine for testing. The baseline urine may be taken as a first morning specimen or prior to treatment as outlined above.

****Provocation urine:**

This sample is only taken every 3-4 month. Another baseline urine is not necessary, unless medical or environmental conditions warrant another test. The laboratory needs 10ml of each urine sample for testing.

For proper sample submission, see Patient Submission Sheet.

Update Aug 2014 EBB

ⁱ Chilsholm JJ. Safety and Efficacy of Meso-2-3-Dimercaptosuccinic Acid (DMSA) in Children with Elevated Blood Lead Concentrations. Clin Tox 2000, Vol38, No 4, Pg 365-375

ⁱⁱ <http://pharmacycode.com/DMSA.html>