

## **Chelating Corner**

### **The Importance of Urine Protocols in Chelation Therapy**

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with

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Chelating therapies are not new, and acceptance varies from country to country. In my humble opinion, there are reasons for this:

1. If you speak Latin to the Chinese, expect miscommunication.
2. To receive medical acceptance, you must prove the therapy's effectiveness

#### **Point 1: International Communication**

When I met Dr. VanderSchaar, President of the *International Board of Clinical Metal Toxicology (IBCMT)*, we discussed international communication problems as they pertained to this medical specialty, called "*Chelation Therapy*". I, who had worked in the laboratory for most of my life, suddenly and unexpectedly sat with one of the pioneering chelationists, and he was interested in sharing knowledge. What an experience!

We found to have much in common, namely curiosity mixed with a dose of scepticism, and an analytical mind. Having both worked internationally, we could see how the various medical specialties misunderstood chelating treatment. Being aware that detoxification treatments are an accepted practice in occupational medicine, we found it interesting, if not amusing, that the term "chelating therapy" was, and still is generally frowned upon. When we replaced this term with "metal toxicology" for our European workshop agenda, we received accreditation from the medical authorities in the UK, Germany and the Netherlands. We were accepted, because we had communicated in the language of traditional medicine.

Now, physicians of various specialties join our meetings and are interested in "Metal Toxicology". We still teach EDTA chelating therapy as it applies to atherosclerosis and related diseases, but since the main focus is heavy metal detoxification, we also attract paediatricians, dermatologists, oncologists and other medical specialists.

This brings us to **Point 2: Proving the therapy's effectiveness- a multiphase program**

#### **Phase 1: Recognizing international differences**

We had to realize that not all countries provide the same chelating agents. Nearly all chelating agents are recognized in Germany, and the Netherlands. In Portugal, Malaysia or other countries, physicians have to be creative in receiving EDTA, DMSA and other needed pharmaceuticals. Even simple Vitamin C infusions might not be available.

#### **Phase 2: Broadening concepts**

We broadened the scope of practice and teaching. No longer do we limit our teaching to EDTA Chelating Therapy. Our focus is metal detoxification. We are concerned about *all* available chelating agents, including DMPS, the DTPAs, DMSA, and the naturally occurring chelating agents. Since it is our goal to provide physicians with useful treatment protocols, and to prove treatment success, we researched the effectiveness of various chelating agents.

#### **Phase 3: Setting up meaningful protocols**

During our research, we first established urine collection protocols, which are necessary to obtain meaningful data. In 2003, Dr. VanderSchaar's clinic provided patient samples and our laboratory got busy evaluating data. From these initial clinical trials, we learned how important it is to adjust urine collection time to the individual chelating agent's half-life. In 2004, we established some urine collection protocols. Thereafter, we included in our studies test samples from other clinics that followed our protocols. Since then, the data base expanded. We now have a truly international and thus broader database.

*Our current urine collection protocol proposes the following:*

- *A fluid intake of 3 cups of water during urine collection. After the collection period is completed, the patient is asked to drink sufficient water to “flush” the kidneys.*
- *We ask patients not to eat fish two days prior to chelating. Fish may contain significant amounts of mercury or arsenic, and oral chelating agent will first bind metals found in the gut.*
- *We don't let the patient drink tea, because it is rich in manganese.*
- *Patients are not allowed to smoke during chelation, because cigarette smoke contains arsenic, nickel, cadmium, beryllium and other metals.*

#### **Phase 4: Proving how Chelating Agents work**

A chelating agent has a binding capacity that can be mathematically determined. EDTA, for instance, has at least six pairs of unshared electrons that can bind to atoms or group of atoms carrying a positive charge. The two Nitrogen atoms (N), plus the four Oxygen atoms (O) from the carboxyl groups are known as “dentates”, or the “clawing teeth” which bind metals such as calcium, lead and other ionized metals. (See table 1)

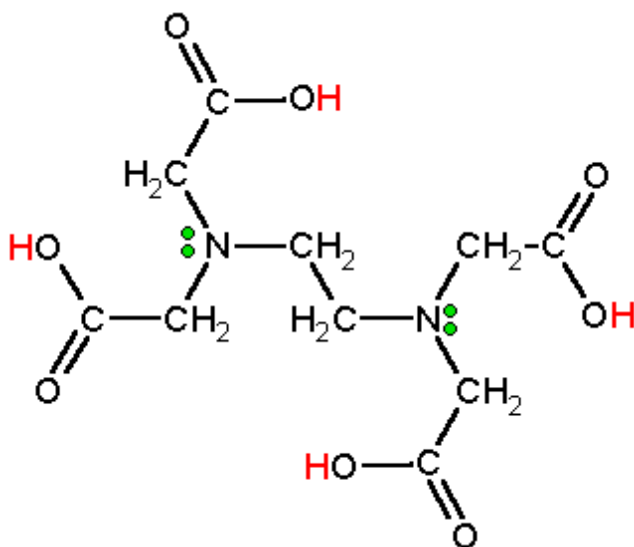


Table 1 EDTA (Ethylenediamine Tetra acetic Acid)

#### **Phase 5: Avoiding misleading results:**

By providing metals through food or drink, we are saturating EDTA's (or any chelating agent's) “clawing teeth”. We prevent the actual process of cell detoxification. For example, if the patient drank tea during the EDTA infusion process, the chelating agent will quickly bind manganese and other metals found in tea. If the patient smoked during this time,

EDTA will quickly bind the inhaled metals arsenic, cadmium and nickel. As a result, fewer “clawing teeth” are available for the actual cell detoxification. While urine excretion values are elevated, the results are *not* reflecting therapy success. Instead, they are simply the total sum of bound and excreted metals.

### Phase 6: Comparing Chelating Agents.

In Germany, we have a number of chelating agents available, but EDTA and DMPS were widely used. While it is known that chelating agents have different binding efficacies, the physicians utilizing these, had vague ideas about the true binding efficacy of either of these pharmaceuticals. Generally speaking, we had two groups of chelationists: those concerning themselves with amalgam used DMPS; the other treated vascular diseases with EDTA.

It was not well understood that each chelating agent has a specific affinity to bind certain metals. Few knew that EDTA does not bind mercury in any significant way.

By following urine collection protocols, we could document the differences in binding capacity. See Table 2. We consider this statistical evaluation a step in the right direction. We continuously update our database to further document how chelating treatment works.

Table 2: Binding efficacy of various chelating agents and combination treatments

		Al	As	Cd	Hg	Ni	Pb	Cu	Ca
N=550	Baseline	124	132	0.9	2.4	12	4	56	245
N=609	DMSA oral	<b>324</b>	<b>237</b>	1.3	24	16	75	303	269
N=263	Mg-EDTA+DMSA	207	89	<b>4,0</b>	11	<b>26</b>	86	154	<b>740</b>
N=184	DMPS	253	133	1.3	68	15	28	<b>1417</b>	268
N=505	Dmps+ZnDTPA	264	154	2.8	109	23	75	1435	289
N=206	DMPS+ZnDTPA+DMSA	263	210	2.8	<b>120</b>	17	<b>119</b>	1200	289

#### Explanation of data:

- We utilized the databank of Micro Trace Minerals , Germany
- We deleted data from test persons who had not followed protocols
- All test persons included are considered *nonexposed* by occupational medicine criteria.
- Test results include people who had received various numbers of chelating treatments, some had just started. Obviously, this influences data.
- Data is listed in mcg/g creatinine for all elements except Ca which is listed in mg/g creatinine
- Data represent a 95 Percentile
- N=number of test persons

#### Best Binding Capacity

- DMSA for Arsenic and Aluminum
- Mg-EDTA for Calcium, Cadmium and Nickel
- DMPS for Copper (while the combination treatment with DMPS and Zn DTPA shows a slightly higher test value, the major binding comes from DMPS)
- The combination treatment DMPS, Zn DTPA and DMSA shows the most significant binding of mercury and lead.

#### Summary of Data:

By establishing tighter urine collection protocols, we were able to prove the maximum binding capacity of some chelating agents. When we know the patient's toxic exposure problem, we can select the appropriate chelating agent and assure treatment success.

A big Thanks to all of those Clinical Metal Toxicologists (our translation from chelating therapist) who continue to help and participate.

If any of you have questions or suggestions for this column, please contact [ebb@microtrace.de](mailto:ebb@microtrace.de)

About the authors:

E.Blaurock-Busch, PhD, founded the German analytical laboratory service Micro Trace Minerals (MTM) in 1975. She now works exclusively at MTM, Germany and is advisor to the scientific board of IBCMT. She has written many articles and several books in English and German.

Peter VanderSchaar, MD, PhD is president of IBCMT (International Board of Clinical Metal Toxicology) and author of *The Textbook on Clinical Metal Toxicology*. He is a cardio-pulmonary surgeon who has pioneered chelating therapy for decades and is a commercial pilot. He continues to practice in the Netherlands, and enjoys flying and training pilots.