HAIR ELEMENTS

Patient: **Number 259** *Practitioner:*

Sample Date : 09/11/2006 *Lab Ref No:*
Date Of Report: 20/11/2006 *Patients DOB:* 11/11/1941

IWDL

POTENTIALLY TOXIC ELEMENTS

TOXIC ELEMENTS	RESULT µg/g	REFERENCE RANGE	PERCENTILE (68th / 95th)
Aluminum	1.4	< 7.0	
Antimony	0.011	< 0.050	
Arsenic	0.083	< 0.060	
Beryllium	< 0.01	< 0.020	
Bismuth	0.006	< 0.10	
Cadmium	0.012	< 0.10	
Lead	0.29	< 1.0	
Mercury	0.18	< 1.1	
Platinum	< 0.003	< 0.005	
Thallium	< 0.001	< 0.010	
Thorium	< 0.001	< 0.005	
Uranium	0.007	< 0.060	
Nickel	0.04	< 0.40	
Silver	0.04	< 0.15	
Tin	0.02	< 0.30	
Titanium	0.30	< 1.0	
Total Toxic Representation			

ESSENTIAL AND OTHER ELEMENTS

ELEMENTS	RESULT µg/g	REFERENCE RANGE	PERCENTILE (2.5th / 16th / 50th / 84th / 97.5th)
Calcium	288	300- 1200	
Magnesium	18	35- 120	
Sodium	46	12- 90	
Potassium	12	8- 38	
Copper	15	12- 35	
Zinc	190	140- 220	
Manganese	0.05	0.15- 0.65	
Chromium	0.38	0.20- 0.40	
Vanadium	0.028	0.018- 0.065	
Molybdenum	0.012	0.028- 0.056	
Boron	1.4	0.30- 2.0	
Iodine	0.34	0.25- 1.3	
Lithium	< 0.004	0.007- 0.023	
Phosphorus	215	160- 250	
Selenium	1.3	0.95- 1.7	
Strontium	0.46	0.50- 7.6	
Sulfur	47900	44500- 52000	
Barium	0.19	0.26- 3.0	
Cobalt	0.002	0.013- 0.050	
Iron	4.8	5.4- 14	
Germanium	0.032	0.045- 0.065	
Rubidium	0.014	0.007- 0.096	
Zirconium	0.022	0.020- 0.42	

SPECIMEN DATA

COMMENTS:

Date Collected: **11/9/2006**
Date Received: **11/15/2006**
Date Completed: **11/18/2006**

Methodology: **ICP-MS**

Sample Size: **0.201 g**
Sample Type: **Head**
Hair Color:
Treatment:
Shampoo:

V06.99

RATIOS

ELEMENTS	RATIOS	EXPECTED RANGE
Ca/Mg	16	4- 30
Ca/P	1.34	1- 12
Na/K	3.83	0.5- 10
Zn/Cu	12.7	4- 20
Zn/Cd	> 999	> 800

HAIR ELEMENTS

PATIENT: Number 259
SEX: Female
AGE: 67

POTENTIALLY TOXIC ELEMENTS

TOXIC ELEMENTS	RESULT µg/g	REFERENCE RANGE
Aluminum	**0.8**	< 7.0
Antimony	**< 0.01**	< 0.050
Arsenic	**0.072**	< 0.060
Barium	**0.14**	< 2.0
Beryllium	**< 0.01**	< 0.020
Bismuth	**0.004**	< 2.0
Cadmium	**0.040**	< 0.050
Lead	**0.18**	< 0.60
Mercury	**0.72**	< 0.80
Platinum	**< 0.003**	< 0.005
Thallium	**< 0.001**	< 0.002
Thorium	**< 0.001**	< 0.002
Uranium	**0.004**	< 0.060
Nickel	**0.05**	< 0.30
Silver	**2.7**	< 0.15
Tin	**0.06**	< 0.30
Titanium	**0.41**	< 0.70
Total Toxic Representation		

PERCENTILE: 68th, 95th

ESSENTIAL AND OTHER ELEMENTS

ELEMENTS	RESULT µg/g	REFERENCE RANGE
Calcium	**367**	300- 1200
Magnesium	**19**	35- 120
Sodium	**49**	20- 250
Potassium	**15**	8- 75
Copper	**15**	11- 37
Zinc	**210**	140- 220
Manganese	**0.06**	0.08- 0.60
Chromium	**0.38**	0.40- 0.65
Vanadium	**0.029**	0.018- 0.065
Molybdenum	**0.030**	0.020- 0.050
Boron	**1.4**	0.25- 1.5
Iodine	**0.28**	0.25- 1.8
Lithium	**0.008**	0.007- 0.020
Phosphorus	**189**	150- 220
Selenium	**1.1**	0.55- 1.1
Strontium	**0.49**	0.50- 7.6
Sulfur	**50500**	44000- 50000
Cobalt	**0.003**	0.005- 0.040
Iron	**16**	7.0- 16
Germanium	**0.036**	0.030- 0.040
Rubidium	**0.018**	0.007- 0.096
Zirconium	**0.025**	0.020- 0.42

PERCENTILE: 2.5th, 16th, 50th, 84th, 97.5th

SPECIMEN DATA

COMMENTS:

Date Collected:
Date Received: **12/22/2008**
Date Completed: **12/27/2008**
Client Reference:
Methodology: **ICP-MS**

Sample Size: **0.203 g**
Sample Type: **Head**
Hair Color:
Treatment:
Shampoo: **Aloe Vera Organic**

V010.08

RATIOS

ELEMENTS	RATIOS	EXPECTED RANGE
Ca/Mg	**19.3**	4- 30
Ca/P	**1.94**	1- 12
Na/K	**3.27**	0.5- 10
Zn/Cu	**14**	4- 20
Zn/Cd	**> 999**	> 800

Health history for hair test 259

Female; 68 year old; mother to one daughter; university educated; non smoker.

Has both of Andy Cutler's books.

1) Current Symptoms

Fatigue, electrical and light sensitivity, frequent bad headaches, irritation of peripheral nerves along the limbs and in the abdomen, poor memory and inability to think properly, disrupted sleep, digestive disturbance, aches and pains, eyes tire quickly when reading. Low temp on waking, 10 day average - 36.11 C.

History

I was born in Chile in 1941 and spend a happy childhood living there and in Honduras, United States, Venezuela, Britain, Argentina, Paraguay and Switzerland. So many changes were stressful and it was noticeable that I had more minor illnesses than my contemporaries though I was otherwise healthy. This pattern continued in my adult life until 1990 or so.

With hindsight I can say that I developed a mild case of ME/CFS (Chronic Fatigue Syndrome) from the age of 20 onwards. This meant I had slight "boom and bust" energy with and underlying fatigue, low moods at times and unnecessary anxiety.

I became hypoglycaemic in pregnancy in 1967 and have been ever since. I managed it by sensible eating but occasionally go "hypo" even after a meal or at night.

In 1985 after immunisations for going to Ethiopia and buying a new mattress which was off gassing chemicals, my ME/CFS became much worse and I developed MCS (Multiple Chemical Sensitivity). In 1987 a 6 hour glucose tolerance test showed I had poor absorption of glucose. The same year I had a head-on collision in my car and suffered a bad whiplash injury.

In 1990 I realised I had ME/CFS and starting trying to improve my health by taking supplements and not over-tiring myself. This helped a bit.

In 1999 I had homeopathic treatment for various infections (including brucella melitensis and herpes zoster) I had fever symptoms for a few years but was very fatigued.

Peripheral nerve discomfort has improved since taking up meditation and meditating in a group sometimes causes the discomfort to cease for a few hours.

Gradually my headaches become very bad, very frequent and felt 'poisonous'. So in 2004&5 I had many mercury amalgams filings replaced with composite followed by some chelation (see below) with mixed results. I had some good periods but they never lasted.

In November 2008 I had a NAET treatment for minerals including mercury. I had a very strong reaction similar to the reaction I had had immediately after my first amalgam removal - a very poisonous headache, aches and pains, especially behind the knees, stiffness and general tiredness.

Chelation Regimes

a) 3 x Humet R (fulvic acid) after each amalgam removal session for 30 days.
b) ndf plus (nano detox factors containing chlorella in nano form plus milk thistle and a few other ingredients.
4 x 4 week episodes, Nov 2005 - Dec 2006, each time reducing the maximum dose targeted but each time stopping because of negative reactions
Aug 2006 had urine test using high does of ndf to provoke excretion
November 2006 had hair test and the result was interpreted as low mercury, so it was decided not to continue.
c) unwitting chelation
I have now learned that magnesium and other citrates will weakly chelate

mercury. Since before my first amalgam removal I was taking everyday and to continued to take up till recently the following:
Solgar: Clacium magnesium plus boron
Calcium as carbonate, gluconated and citrate 1000mg
Magnesium as carbonate, citrate and gluconate 400mg

2) Dental History
1943 aged 2, bit the end of thermometer and swallowed it
1948-1970 nearly every tooth had fillings, some were not amalgam.
1955 approx 6, some braces and wires fitted but not very extensive

3) Dental Work in place
4 wisdom teeth extracted - 1965
4 pre-molars extracted 1955/6
2 molars in upper jaw extracted 1997/2002

Root canal work:
One incisor (with a crown) upper jaw
One molar (with a crown) lower jaw

Amalgam removal
Dec 2004 majority of amalgams removed
June 2005 a few amalgams removed
Sept 2005 final amalgams removed

4) Mother's dental work
Mother's dental state not known, probably at lease some amalgam fillings.

5) Vaccines
1941 born Santiago, Chile. No immunisations.
1941-1959 spend in Chile, Honduras, United States, Venezuela, Britain, Argentina, Paraguay and Switzerland
1945 aged 3, 1st vaccinations for small pox, renewed throughout childhood and after. Also possibly typhoid injections - I remember one aged 11, (1953) but that was the last.
1958 aged 16, Polio immunisation using American form not the British
1985 aged 43, 7 different immunisations fro a holiday trip to Ethiopia including HepB, Malaria, tetanus.
1997 aged 55, tetanus booster

6) Supplements
Vitamins and minerals taken over 3 months proceeding Jan 09 hair test. NB similar quantities of vitamins were taken over several years previously or even longer. Mineral supplementation with trace elements was not so consistent or frequent.
a) Multi-vitamins and minerals
Nature's Best: Multi-Max Advance (for over 50s) includes among other things:
B vitamins -see b below
Selenium 200 ug, Iodine 1.5, Chromium 200 ug.
Zinc - see d below
b) Extra B
Nature's Best Multi-B Complex
with a above total of B vits mostly 4-6 times RDA
Niacin total 40 mg
including Chlorine bitartrate, Imoitol and PABA 15mg of each.
c) Vit C with bioflavanoids 1 g
d) Extra Zinc total per day 30 mg
e) Efalex Fish oil 2 g
6) Calcium, Magnesium and Boron (Solgar)
Calcium as carbonate, gluconate and citrate 1000mg
Magnesium as oxide, citrate and gluconate 400mg
Boron as citrate 3mg
NB I have been taking for several years and from before mercury amalgam removal.

7) Additional Info
Feb 09 thyroid test results

Thyroid function
TSH 1.39 mIU/L (0.27 - 4.2)
FT4 16.6 pmol/l (12.0 - 22.0)
Total T4 nmol/L (59-154)
FT3 4.9 pmol/L (4.o-6.8)

Thyroid antibodies
Thyroglobulin Antibody < 0.9 IU/mL (0-4.9(negative))
Throid Peroxidase Antibodies 0.3 iU/mL (<9(Negative))

8) Location
1941-1959 spend in Chile, Honduras, United States, Venezuela, Britain, Argentina, Paraguay and Switzerland
1979-1995 Oxford, UK
1996-2009 Cambridge, UK

URINE TOXIC METALS

Patient: **Number 259** *Practitioner:* I W D L

Sample Date : 20/08/2006 *Lab Ref No:* Iw00135
Date Of Report: 29/08/2006 *Patients DOB:* 11/11/1941

POTENTIALLY TOXIC METALS

METALS	RESULT µg/g CREAT	REFERENCE RANGE	WITHIN REFERENCE RANGE	ELEVATED	VERY ELEVATED
Aluminum	**< dl**	< 35			
Antimony	**< dl**	< 1			
Arsenic	**43**	< 130			
Beryllium	**< dl**	< 0.5			
Bismuth	**< dl**	< 15			
Cadmium	**0.5**	< 2			
Lead	**8.3**	< 5			
Mercury	**4.8**	< 4			
Nickel	**6.2**	< 12			
Platinum	**< dl**	< 1			
Thallium	**0.2**	< 0.8			
Thorium	**< dl**	< 0.3			
Tin	**< dl**	< 10			
Tungsten	**< dl**	< 1			
Uranium	**< dl**	< 0.2			

CREATININE

	RESULT mg/dL	REFERENCE RANGE	2SD LOW	1SD LOW	MEAN	1SD HIGH	2SD HIGH
Creatinine	**18**	35- 225					

SPECIMEN DATA

Comments: **non-DDI container**
Date Collected: **8/20/2006** Method: **ICP-MS** Collection Period: **timed: 2.5 hours**
Date Received: **8/25/2006** <dl: **less than detection limit** Volume:
Date Completed: **8/28/2006** Provoking Agent: **NDF** Provocation: **POST PROVOCATIVE**

Toxic metals are reported as µg/g creatinine to account for urine dilution variations. **Reference ranges are representative of a healthy population under non-challenge or non-provoked conditions.** No safe reference levels for toxic metals have been established.

V10.00

INTRODUCTION

This analysis of urinary elements was performed by ICP-Mass Spectroscopy following acid digestion of the specimen. Urine element analysis is intended primarily for: diagnostic assessment of toxic element status, monitoring detoxification therapy, and identifying or quantifying renal wasting conditions. It is difficult and problematic to use urinary elements analysis to assess nutritional status or adequacy for essential elements. Blood, cell, and other elemental assimilation and retention parameters are better indicators of nutritional status.

1) 24 Hour Collections
"Essential and other" elements are reported as mg/24 h; mg element/urine volume (L) is equivalent to ppm. "Potentially Toxic Elements" are reported as µg/24 h; µg element/urine volume (L) is equivalent to ppb.

2) Timed Samples (< 24 hour collections)
All "Potentially Toxic Elements" are reported as µg/g creatinine; all other elements are reported as µg/mg creatinine. Normalization per creatinine reduces the potentially great margin of error which can be introduced by variation in the sample volume. It should be noted, however, that creatinine excretion can vary significantly within an individual over the course of a day.

If one intends to utilize urinary elements analysis to assess nutritional status or renal wasting of essential elements, it is recommended that unprovoked urine samples be collected for a complete 24 hour period. For provocation (challenge) tests for potentially toxic elements, shorter timed collections can be utilized, based upon the pharmacokinetics of the specific chelating agent. When using EDTA, DMPS or DMSA, urine collections up to 12 hours are sufficient to recover greater than 90% of the mobilized metals. Specifically, we recommend collection times of: 9 - 12 hours post intravenous EDTA, 6 hours post intravenous or oral DMPS and, 6 hours post oral bolus administration of DMSA. What ever collection time is selected by the physician, it is important to maintain consistency for subsequent testing for a given patient.

If an essential element is sufficiently abnormal per urine measurement, a descriptive text is included with the report. Because renal excretion is a minor route of excretion for some elements, (Cu, Fe, Mn Zn), urinary excretion may not influence or reflect body stores. Also, renal excretion for many elements reflects homeostasis and the loss of quantities that may be at higher dietary levels than is needed temporarily. For these reasons, descriptive texts are provided for specific elements when deviations are clinically significant. For potentially toxic elements, a descriptive text is provided whenever levels are measured to be higher than expected. If no descriptive texts follow this introduction, then all essential element levels are within acceptable range and all potentially toxic elements are within expected limits.

For essential elements, the mean and the reference ranges apply to human urine under non-challenge, non-provocation conditions. Detoxification therapies can cause significant deviations in essential element content of urine. For potentially toxic elements, the expected range also applies to conditions of non-challenge or non-provocation. Diagnostic or therapeutic administration of detoxifying agents frequently raise the urinary levels content of potentially

toxic elements. Descriptive texts appear in this report on the basis of measured results and correspond to non-challenge, non-provocation conditions.

CAUTION: Even the most sensitive instruments have some detection limit below which a measurement cannot be made reliably. Any value below the method detection limit is simply reported as "< dl." If an individual excretes an abnormally high volume of urine, urinary components are likely to be extremely dilute. It is possible for an individual to excrete a relatively large amount of an element per day that is so diluted by the large urine volume that the value measured is near the dl. This cannot automatically be assumed to be within the reference range.

LEAD HIGH

This individual's urine lead is higher than expected which means that lead intake or body burden is higher than that of the reference population.

Sources of lead include: old lead-pigment paints, batteries, industrial smelting and alloying, some types of solders, glazes on (foreign) ceramics, leaded (anti-knock compound) fuels, bullets and fishing sinkers, artist paints with lead pigments, and leaded joints in some municipal water systems. Most lead contamination occurs via oral ingestion of contaminated food or water or by children mouthing or eating lead-containing substances. The degree of absorption of oral lead depends upon stomach contents (empty stomach increases uptake) and upon the body's mineral status. Deficiency of zinc, calcium or iron may increase lead uptake. Transdermal exposure is slight. Inhalation has decreased significantly with almost universal use of non-leaded automobile fuel.

Lead accumulates in bones and inhibits formation of heme and hemoglobin in erythroid precursor cells. Before this happens, however, lower levels of lead can cause other problems. These are: impaired vitamin D metabolism, decreased nerve conduction rates, and developmental problems for children including: loss of IQ, hearing impairment, delayed growth, and behavior disorders. Transplacental transfer of lead to the fetus can occur at very low lead concentrations in the body. At relatively low levels, lead can participate in synergistic toxicity with other elements (cadmium, mercury).

Confirming tests for lead excess are: urinary lead following provocation with intravenous EDTA, or DMPS, or oral DMSA and hair element analysis. Whole blood analysis can be expected to reflect only recent exposures and does not correlate well with total body burden of lead (Carson, Ellis and McCann, Toxicology and Biological Monitoring of Metals in Humans, Lewis Publishers, p. 130, 1987). Preliminary studies performed at DDI indicate significantly increased fecal lead following I.V. vitamin C.

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2. "Preventing Lead Poisoning in Young Children", US Centers for Disease Control, Atlanta, GA, Oct. 1991 Statement, US Dept. of Health and Human Services.
3. Carson B.L. et al. Toxicology and Biological Monitoring of Metals in Humans, Lewis Publishers, Inc., Chelsea, MI, p. 128-135, 1986.

4. Tsalev D.L. et al. Atomic Absorption Spectrometry in Occupational and Environmental Health Practice Vol 1, CRC Press, Boca Raton, FL 1983.
5. Piomelli S. et al. "Management of Childhood Lead Poisoning", J. Pediatr 105 (1990) p. 523-32.
6. Shubert J. et al. "Combined Effects in Toxicology - a Rapid Systematic Testing Procedure: Cadmium, Mercury and Lead" - J. Toxicology and Environmental Health, 4:763-776, 1978.

MERCURY HIGH

This individual's urine mercury is higher than expected but not sufficiently high to assume pathophysiological effects. Symptomatology depends on many factors: the chemical form of absorbed Hg and its transport in body tissues, presence of other synergistic toxics (Pb, Cd have such effects),presence of disease that depletes or inactivates lymphocytes or is immunosuppressive, organ levels of xenobiotic chemicals and sulfhydryl-bearing metabolites (e.g. glutathione), and the concentration of protective nutrients, (e.g. zinc, selenium, vitamin E).

Early signs of mercury contamination include: decreased senses of touch, hearing, vision and taste,metallic taste in mouth, fatigue or lack of physical endurance, and increased salivation. Symptoms may progress with moderate or chronic exposure to include: anorexia, numbness and paresthesias, headaches,hypertension, irritability and excitability, and immune suppression, possibly immune dysregulation. Advanced disease processes from mercury toxicity include: tremors and incoordination, anemia,psychoses, manic behaviors, possibly autoimmune disorders, renal dysfunction or failure. Note that in mercury contamination of long duration, renal excretion of mercury (and normal metabolites) may become impaired, and the urine level of mercury might be only mildly elevated or not elevated at all due to renal failure.

Mercury is used in: dental amalgams (50% by weight), explosive detonators; some vaccines in pure liquid form for thermometers, barometers, and laboratory equipment; batteries and electrodes ("calomel"); and in fungicides and pesticides and in the paper industry. The fungicide/pesticide use of mercury has declined due to environmental concerns, but mercury residues persist from past use. Emissions from coalfired power plants and hospital/municiple incinerators are significant sources of mercury poollution.

Methylmercury, the common, poisonous form, occurs by methylation in aquatic biota or sediments (both freshwater and ocean sediments). Methylmercury accumulates in aquatic animals and fish and is concentrated up the food chain reaching high concentrations in large fish and predatory birds. Except for fish, the human intake of dietary mercury is negligible unless the food is contaminated with one of the previously listed forms/sources. A daily diet of fish can cause 1 to 10 micrograms of mercury/day to be ingested; the majority of which is organic, methylmercury.

Depending upon body burden and upon type, duration and dosage of detoxifying agents, elevated urine mercury may occur after administration of: DMPS, DMSA, or D-penicillamine. Mercury accumulation can also be assessed by comparing pre- and post-I.V. vitamin C fecal mercury levels (DDI observations). Blood and especially blood cell analyses are only useful for diagnosing very recent or ongoing organic (methyl) mercury exposure.

BIBLIOGRAPHY FOR MERCURY

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