Toxic & Essential Elements; Hair

TOXIC METALS

		RESULT µg/g	REFERENCE INTERVAL
Aluminum	(Al)	3.2	< 7.0
Antimony	(Sb)	0.015	< 0.050
Arsenic	(As)	0.017	< 0.060
Barium	(Ba)	1.4	< 2.0
Beryllium	(Be)	< 0.01	< 0.020
Bismuth	(Bi)	0.096	< 2.0
Cadmium	(Cd)	< 0.009	< 0.050
Lead	(Pb)	0.10	< 0.60
Mercury	(Hg)	0.04	< 0.80
Platinum	(Pt)	< 0.003	< 0.005
Thallium	(Tl)	< 0.001	< 0.002
Thorium	(Th)	< 0.001	< 0.002
Uranium	(U)	0.005	< 0.060
Nickel	(Ni)	0.40	< 0.30
Silver	(Ag)	0.12	< 0.15
Tin	(Sn)	0.10	< 0.30
Titanium	(Ti)	0.17	< 0.70
Total Toxic Representation			

PERCENTILE: 68th, 95th

ESSENTIAL AND OTHER ELEMENTS

		RESULT µg/g	REFERENCE INTERVAL
Calcium	(Ca)	420	300- 1200
Magnesium	(Mg)	410	35- 120
Sodium	(Na)	65	20- 250
Potassium	(K)	13	8- 75
Copper	(Cu)	33	11- 37
Zinc	(Zn)	210	140- 220
Manganese	(Mn)	1.0	0.08- 0.60
Chromium	(Cr)	0.41	0.40- 0.65
Vanadium	(V)	0.018	0.018- 0.065
Molybdenum	(Mo)	0.038	0.020- 0.050
Boron	(B)	0.15	0.25- 1.5
Iodine	(I)	1.0	0.25- 1.8
Lithium	(Li)	< 0.004	0.007- 0.020
Phosphorus	(P)	122	150- 220
Selenium	(Se)	0.84	0.55- 1.1
Strontium	(Sr)	1.6	0.50- 7.6
Sulfur	(S)	47900	44000- 50000
Cobalt	(Co)	0.010	0.005- 0.040
Iron	(Fe)	8.4	7.0- 16
Germanium	(Ge)	0.029	0.030- 0.040
Rubidium	(Rb)	0.016	0.007- 0.096
Zirconium	(Zr)	0.47	0.020- 0.42

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

SPECIMEN DATA

COMMENTS:

Date Collected: 05/31/2013
Date Received: 06/07/2013
Date Completed: 06/10/2013
Methodology: ICP/MS

Sample Size: 0.2 g
Sample Type: Head
Hair Color: Brown
Treatment:
Shampoo: Acure Argan Oil

RATIOS

ELEMENTS	RATIOS	RANGE
Ca/Mg	1.02	4- 30
Ca/P	3.44	1- 12
Na/K	5	0.5- 10
Zn/Cu	6.36	4- 20
Zn/Cd	> 999	> 800

Brocc. Max or Indole 3 carbinol
+ PS/PE/PC + DHA wait until lithium is in balance prior to adding hydroxy & adenosyl B12
naem (Nickel)
Be sure this is due to magn. support (Magnesium)
Zinc lozenge (Zinc)
capsule or MTRcap (Molybdenum)
Consider BlackBear lowdose MTRcap (Boron)
Be Calm Spray + "All in One" vitamin + work with your doctor on lithium orotate (Lithium)
+ ATP or MitoForce (Phosphorus)
OraTriplex (Germanium)

Toxic Metals; Urine

1/31/2012 1stmd@9:00ff.

TOXIC METALS		RESULT µg/g creat	REFERENCE INTERVAL	WITHIN REFERENCE / OUTSIDE REFERENCE
Aluminum	(Al)	1.6	< 35	
Antimony	(Sb)	< dl	< 0.4	
Arsenic	(As)	5.2	< 117	
Barium	(Ba)	0.8	< 7	
Beryllium	(Be)	< dl	< 1	
Bismuth	(Bi)	0.08	< 15	
Cadmium	(Cd)	0.6	< 1	
Cesium	(Cs)	5.5	< 10	
Gadolinium	(Gd)	< dl	< 0.4	
Lead	(Pb)	3.5	< 2	
Mercury	(Hg)	3	< 4	
Nickel	(Ni)	3	< 12	
Palladium	(Pd)	< dl	< 0.3	
Platinum	(Pt)	< dl	< 1	
Tellurium	(Te)	< dl	< 0.8	
Thallium	(Tl)	0.3	< 0.5	
Thorium	(Th)	< dl	< 0.03	
Tin	(Sn)	0.4	< 10	
Tungsten	(W)	< dl	< 0.4	
Uranium	(U)	< dl	< 0.04	

URINE CREATININE	RESULT mg/dL	REFERENCE INTERVAL	-2SD -1SD MEAN +1SD +2SD
Creatinine	99.9	35- 225	

mailed 1/26/12

SPECIMEN DATA

Comments:

Date Collected: 1/9/2012
Date Received: 1/12/2012
Date Completed: 1/14/2012
Method: ICP-MS

pH upon receipt: Acceptable
<dl: less than detection limit
Provoking Agent: DMSA
Creatinine by Jaffe Method

Collection Period: Random
Volume:
Provocation: POST PROVOCATIVE

Results are creatinine corrected to account for urine dilution variations. **Reference intervals and corresponding graphs are representative of a healthy population under non-provoked conditions.** Chelation (provocation) agents can increase urinary excretion of metals/elements.

V13

TOXIC METALS		RESULT µg/g creat	REFERENCE INTERVAL	WITHIN REFERENCE / OUTSIDE REFERENCE
Aluminum	(Al)	**31**	< 35	
Antimony	(Sb)	**< dl**	< 0.2	
Arsenic	(As)	**< dl**	< 80	
Barium	(Ba)	**3.9**	< 7	
Beryllium	(Be)	**< dl**	< 1	
Bismuth	(Bi)	**< dl**	< 4	
Cadmium	(Cd)	**1.8**	< 1	
Cesium	(Cs)	**6.2**	< 10	
Gadolinium	(Gd)	**240**	< 0.8	
Lead	(Pb)	**7.2**	< 2	
Mercury	(Hg)	**2.6**	< 4	
Nickel	(Ni)	**10**	< 10	
Palladium	(Pd)	**< dl**	< 0.15	
Platinum	(Pt)	**< dl**	< 0.1	
Tellurium	(Te)	**< dl**	< 0.5	
Thallium	(Tl)	**0.5**	< 0.5	
Thorium	(Th)	**< dl**	< 0.03	
Tin	(Sn)	**0.3**	< 5	
Tungsten	(W)	**< dl**	< 0.4	
Uranium	(U)	**0.1**	< 0.04	

URINE CREATININE	RESULT mg/dL	REFERENCE INTERVAL	-2SD -1SD MEAN +1SD +2SD
Creatinine	**21.6**	35- 225	

SPECIMEN DATA

Comments:

Date Collected: 04/19/2013
Date Received: 04/24/2013
Date Completed: 04/29/2013
Method: ICP-MS

pH upon receipt: Acceptable
<dl: less than detection limit
Provoking Agent: CAEDTA
Creatinine by Jaffe Method

Collection Period: timed: 6 hours
Volume: 1775 ml
Provocation: POST PROVOCATIVE

Results are creatinine corrected to account for urine dilution variations. **Reference intervals and corresponding graphs are representative of a healthy population under non-provoked conditions.** Chelation (provocation) agents can increase urinary excretion of metals/elements.

V13

ESSENTIAL AND OTHER ELEMENTS		RESULT/UNIT per creatinine		REFERENCE INTERVAL	PERCENTILE 2.5th 16th 50th 84th 97.5th
Sodium	(Na)	N/A	mEq/g	45- 200	
Potassium	(K)	N/A	mEq/g	20- 110	
Phosphorus	(P)	N/A	µg/mg	180- 1100	
Calcium	(Ca)	N/A	µg/mg	30- 350	
Magnesium	(Mg)	N/A	µg/mg	25- 230	
Zinc	(Zn)	N/A	µg/mg	0.1- 1.5	
Copper	(Cu)	N/A	µg/mg	0.007- 0.06	
Sulfur	(S)	N/A	µg/mg	275- 1200	
Manganese	(Mn)	**0.058**	µg/mg	0.0004- 0.007	
Molybdenum	(Mo)	N/A	µg/mg	0.013- 0.15	
Boron	(B)	N/A	µg/mg	0.5- 4	
Chromium	(Cr)	N/A	µg/mg	0.0003-0.0025	
Lithium	(Li)	N/A	µg/mg	0.009- 0.2	
Selenium	(Se)	N/A	µg/mg	0.03- 0.25	
Strontium	(Sr)	N/A	µg/mg	0.045- 0.5	
Vanadium	(V)	N/A	µg/mg	0.0001-0.0017	
					68th 95th
Cobalt	(Co)	N/A	µg/mg	< 0.008	
Iron	(Fe)	N/A	µg/mg	< 1	

URINE CREATININE	RESULT mg/dL	REFERENCE INTERVAL	-2SD -1SD MEAN +1SD +2SD
Creatinine	**21.6**	35- 225	

SPECIMEN DATA

Comments:

Date Collected: 04/19/2013
Date Received: 04/24/2013
Date Completed: 04/29/2013

pH Upon Receipt: Acceptable
<dl: less than detection limit
Provoking Agent: CAEDTA

Collection Period: timed: 6 hours
Volume: 1775 ml
Provocation: POST PROVOCATIVE

Method: ISE;Na, K Spectrophotometry; P ICP-MS; B, Ca, Cr, Co, Cu, Fe, Mg, Mn, Mo, Se, Sr, S, V, Zn Creatinine by Jaffe method

Results are creatinine corrected to account for urine dilution variations. **Reference intervals and corresponding graphs are representative of a healthy population under non-provoked conditions.** Chelation (provocation) agents can increase urinary excretion of metals/elements. V13

Essential Elements; Serum

ESSENTIAL ELEMENTS		RESULT/UNIT		REFERENCE INTERVAL	-2SD -1SD MEAN +1SD +2SD
Calcium	(Ca)	**9.2**	mg/dL	8.6- 10.3	
Magnesium	(Mg)	**1.9**	mg/dL	1.7- 2.5	
Sodium	(Na)	**137**	mEq/L	133- 145	
Potassium	(K)	**4.1**	mEq/L	3.5- 5.0	
Phosphorus	(P)	**3.1**	mg/dL	2.5- 5.0	
Iron	(Fe)	**99**	µg/dL	50- 200	

INFORMATION

Sodium and Potassium
Sodium (Na^+) and potassium (K^+) are electrolytes that affect most metabolic functions. They serve to maintain osmotic pressure and hydration of various body fluid compartments, body pH and regulation of heart and muscle functions. Electrolytes are also involved in oxidation-reduction reactions and participate in essential enzymatic reactions. Electrolytes can be affected by state of hydration. Hemolysis can result in falsely elevated K^+.

Magnesium
Magnesium (Mg) is a major intracellular cation that is involved in over three hundred enzymatic reactions in the body. Little is known about the factors affecting serum Mg, but the parathyroid gland appears to be involved. Low serum Mg levels may be associated with poor diet/malabsorption, diabetes, hyperthyroidism, hypoparathyroidism, myocardial infarction, congestive heart failure, liver cirrhosis, alcoholism and diuresis. Increased serum Mg levels may be associated with renal failure, dehydration, severe diabetic acidosis, and Addison's disease.

Calcium
Although 99% of calcium exists in bones and teeth, serum calcium (Ca) is of greatest clinical concern. Ca regulates transmission of nerve impulses, muscle contraction, coagulation, and numerous enzymatic reactions. The uptake and release of Ca from bone is regulated by parathyroid hormone, and serum Ca levels are inversely proportional to phosphorus levels. Low serum Ca results in muscle tetany while high Ca levels result in lowered neuromuscular excitability, muscle weakness, and other more complex symptoms. Marked variations in serum Ca may result from parathyroid gland or bone disease, poor diet/intestinal absorption of calcium (vitamin D), kidney disease, and other abnormalities.

Inorganic Phosphorus
Measurements of serum inorganic phosphorus (phosphate or PO_4) are used in the diagnosis and treatment of disorders including parathyroid gland and kidney diseases, and vitamin D status. Serum PO_4 is regulated by coordinated efforts of vitamin D and parathyroid hormone, and PO_4 levels are inversely proportional to Ca levels. Low PO_4 may be associated with fatigue, paresthesias and muscle weakness, while elevated PO_4 may be associated with hypoparathyroidism, hyperthyroidism, hypocalcemia and tetany.

Iron
Measurements of non-heme, serum iron (Fe) are used in the diagnosis and treatment of diseases such as Fe deficiency anemia, Fe toxicity and acute or chronic hemochromatosis. The most comprehensive assessment of Fe status includes transferrin saturation and ferritin.

SPECIMEN DATA

Comments:

Date Collected: 04/19/2013
Date Received: 04/25/2013
Date Completed: 04/26/2013

Time Collected: 05:30 PM
Fasting: No

Methodology: Na, K ISE
Ca, Mg, P, Fe Spectrophotometry

v08.10

Health history for hair test 792

Attached please find my hair analysis results as well as several other tests (urine challenge with oral DMSA; urine challenge with IV EDTA; serum).

1) Current symptoms: Closed right ear. Gut issues for the past six years. Vision, which used to be 20/15, is getting worse--blurrier. Eye doctors tell me I need a very slight Rx for nearsightedness but even with my glasses I can't see what others can. It's weird. Adrenal fatigue. Hypothyroidism. Sleep issues (though somewhat better with the use of magnesium). First day of my last menstrual cycle was 100 days ago and I'm only 46, so hormones are out of whack.

Health history: Recent manganese toxicity (through oral supplements); hypothyroidism (T4 doesn't convert to T3 the way it should); adrenal fatigue (lots of loss and stress); gut issues (acid reflux, but I don't know if I have high or low HCL. I also don't know if I have leaky gut); osteopenia (haven't had this checked in awhile, but wasn't where I should be a few years ago); infertility when I was trying to have a baby a few years ago. Finally got pregnant twice only to miscarry twice. It looks like I also have MTHFR issues (which I know very little about). I'm also looking into getting tested for Lyme and coinfections. Just learned a few weeks ago that I have an allergy to whole eggs and soybeans. Crikey.

2) Dental history: Four wisdom teeth removed about 24 years ago (two were impacted); eight amalgam fillings placed starting at age 8 (had four at once that I probably didn't need). Two of these fillings were replaced by being drilled directly into with no safety precautions. I never had braces, crowns, root canals, etc. I do now sleep with a plastic mouth guard due to clenching.

3) What dental work do you currently have in place? What part of the dental cleanup have you completed? I have six amalgam fillings and several composite fillings. Two dentists have looked at my x-rays and say that no amalgam is under the composites. I am getting my first amalgam filling out next week.

4) What dentistry did your mother have at any time before or during pregnancy? My mother--a heavy smoker--died of lung cancer at only age 52, so I can't ask her, but I'm assuming she had a mouth full of amalgam fillings. She definitely had *some* and I'm pretty sure they came before I was born--at least some of them must have.

5) What vaccinations have you had and when (including flu and especially travel shots)? I've gotten the flu shot every year for at least the past five years (maybe I missed a year). I was also in the Air Force, so who knows what vaccinations I got there (it was a long time ago, so I don't remember).

6) Supplements and medications (including dosages) taken at time of hair test, or for the 3-6 months before the sample was taken:

*My RBC magnesium is low, so I've been taking LOTS of magnesium in different forms (Remag; magnesium glycinate; epsom salt baths; magnesium oil sprayed on body). I'm sure that's what pushed my mag levels up so high in my hair results.
*3,000-5,000 mg of vitamin C (unbuffered. Recently reading liposomal may be the way to go)
*200 mcg of selenium
*Fish oil pill (don't know dosage offhand)
*700 IUs of vitamin E
*2,000 IUs of vitamin D3
*500 mg of L-Tyrosine
*Liver rescue 4+ (includes milk thistle and dandelion root)
*Digestive enzymes

*Probiotics
*Also making lots of water kefir drinks and having those daily
*I WAS taking B-complex up until about six weeks ago, but it's not methylated B12 and was making my heart feel racy so I stopped. I haven't been taking any B vitamins since (I'm nervous about MTHFR issues and not sure how to proceed. I'm awaiting 23andme test results)

I think that's it. I'm NOT yet taking zinc (about to add in) or vitamin A.

7) Other information you feel may be relevant? When I overdosed on manganese (I was accidentally taking 122 mg/day for three weeks), I did an IV EDTA provocation test, where I received 1,500 mg of EDTA, followed by a glutathione push, and then I collected my urine for several hours afterward. (Results attached.)

About a year and a half ago (before the Mn incident), I *also* did a DMSA urine test, though this one involved taking one DMSA *pill* and then collecting urine. My Hg levels came back low on this test. (Results attached.)

8) What is your location - city & country (so that we can learn where certain toxins are more prevalent): New York City, USA (but I grew up in Milwaukee surrounded by very heavy smokers; also lived in Chapel Hill, NC; Monterey, CA; Kona, HI; Tucson, AZ; Minneapolis, MN; and a few other places).

Thanks so much for your input! :)