PA Copy

Elemental Analysis Hair

Great Smokies Diagnostic Lab

63 Zillicoa Street
Asheville, NC 28801-1074
© Genova Diagnostics

Patient: STEPHANIE

Age: 40
Sex: F
MRN: 0000887638

Order Number: 74170332
Completed: February 21, 2006
Received: February 17, 2006
Collected: February 11, 2006

ADRIANE DENBOER DC
2851 Michigan St NE
Ste 101
Grand Rapids, MI 49506

Toxic Elements

Element	Reference Range	Reference Range in µg/g
Aluminum	2.1	<= 17.3
Antimony	0.006	<= 0.016
Arsenic	0.068	<= 0.080
Barium	0.23	<= 1.70
Bismuth	<dl	<= 0.178
Cadmium	0.003	<= 0.022
Gadolinium	<dl	<= 0.0005
Lead	0.061	<= 0.700
Mercury	0.08	<= 1.32
Nickel	0.07	<= 0.55
Rhodium	0.0003	<= 0.0005
Rubidium	0.007	<= 0.040
Thallium	<dl	<= 0.0004
Tin	0.020	<= 0.149
Uranium	0.0269	<= 0.0057

Nutrient Elements

Element	Reference Range	Reference Range in µg/g
Calcium	362	192-1,588
Chromium	0.18	0.01-1.58
Cobalt	0.002	0.001-0.129
Copper	20	8-136
Iron	10.5	5.2-24.4
Magnesium	34	11-122
Manganese	0.04	0.04-1.93
Molybdenum	0.04	0.01-1.24
Phosphorous	150	104-208
Selenium	2.11	0.58-1.13
Sodium	3	14-426
Strontium	0.73	0.01-4.40
Sulfur	46,235	41,781-60,894
Vanadium	0.052	0.003-0.108
Zinc	140	119-245

Element	Reference Range	Reference Range in µg/g
Lithium	<dl	<= 0.302
Potassium	3	<= 174

Ratios

	Inside Range	Outside Range	Reference Range
Ca/Mg	11		5-29
Ca/P	2		1-9

Elemental Analysis Hair

Genova Diagnostics®
Innovative Testing for Optimal Health

63 Zillicoa Street
Asheville, NC 28801

Patient: **STEPHANIE**

Age: 41
Sex: F
MRN: 0000887638

Order Number: 83170314
Completed: November 21, 2006
Received: November 17, 2006
Collected: November 14, 2006

DBC Natural Wholistic Health Center
Adriane denBoer DC
2851 Michigan St NE Ste 101
Grand Rapids, MI 49506

Toxic Elements

Element	Reference Range	Reference Range In µg/g
Aluminum	7.8	<= 17.3
Antimony	0.009	<= 0.016
Arsenic	0.027	<= 0.080
Barium	0.56	<= 1.70
Bismuth	0.082	<= 0.178
Cadmium	0.002	<= 0.022
Gadolinium	<dl	<= 0.0005
Lead	0.094	<= 0.700
Mercury	0.09	<= 1.32
Nickel	0.11	<= 0.55
Rhodium	<dl	<= 0.0005
Rubidium	0.002	<= 0.040
Thallium	<dl	<= 0.0004
Tin	0.062	<= 0.149
Uranium	0.0250	<= 0.0057

Nutrient Elements

Element	Reference Range	Reference Range In µg/g
Calcium	857	192-1,566
Chromium	0.13	0.01-1.58
Cobalt	0.004	0.001-0.129
Copper	20	8-136
Iron	5.6	5.2-24.4
Magnesium	66	11-122
Manganese	0.09	0.04-1.93
Molybdenum	0.04	0.01-1.24
Phosphorous	108	104-206
Selenium	1.06	0.58-1.13
Sodium	14	14-426
Strontium	1.63	0.01-4.40
Sulfur	42,160	41,781-60,894
Vanadium	0.026	0.003-0.108
Zinc	120	119-245

	Reference Range	
Lithium	<dl	<= 0.302
Potassium	2	<= 174

Ratios

	Inside Range	Outside Range	Reference Range
Ca/Mg	13		5-29
Ca/P	8		1-9

King James Medical Laboratory, Inc. / Omegatech

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Phone (800) 437-1404
Fax (440) 835-2177

MINERAL ANALYSIS

Patient	
Doctor	
Test Date	28-Nov-06

HAIR

Sample Number	611211009		
Age	41	Sex	F
Sample Source	Head		

Essential Trace Elements (ppm=mg/L = mg/kg)

	Acceptable Range	Test Value		Low / Acceptable Range / High
Chromium (Cr)	0.2—0.5	< 0.05	Low	<
Cobalt (Co)	0.1—0.5	< 0.05	Low	<
Copper (Cu)	12—35	28.67		**********
Iron (Fe)	3—15	8.00		**********
Manganese (Mn)	0.1—1.3	0.66		**********
Molybdenum (Mo)	0.1—1	< 0.06	Low	<
Selenium (Sc)	1—3	1.83		**********
Vanadium (V)	0.1—0.5	< 0.02	Low	<
Zinc (Zn)	100—250	172.30		**********

Essential Macro Elements (ppm=mg/L = mg/kg)

	Acceptable Range	Test Value		Low / Acceptable Range / High
Calcium (Ca)	200—750	1126.00	High	**********
Magnesium (Mg)	25—115	88.67		**********
Phosphorus (P)	100—170	189.70	High	**********
Potassium (K)	2—28	1.22	Low	*
Sodium (Na)	10—50	8.43	Low	*

Other Nonessential Elements (ppm=mg/L = mg/kg)

	Acceptable Range	Test Value		Low / Acceptable Range / High
Germanium (Ge)	0.1—5	< 0.08	Low	<
Lithium (Li)	0.1—0.8	< 0.05	Low	<

Potentially Toxic Elements (ppm=mg/L = mg/kg)

	Acceptable Range	Test Value		Low / Acceptable Range / High
* Aluminum (Al)	0—8	9.38	High	**********
* Arsenic (As)	0—2	1.11		**********
* Cadmium (Cd)	0—0.2	< 0.05		<
* Lead (Pb)	0—3	0.22		**********
* Mercury (Hg)	0—0.6	0.15		**********
* Nickel (Ni)	0—0.5	0.13		**********

Raymond J. Shamberger Ph. D., Laboratory Director, CLIA # 36D0339322

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MINERAL ANALYSIS

HAIR

Patient	
Doctor	
Test Date	28-Nov-06

Sample Number	611211009		
Age	41	Sex	F
Sample Source	Head		

Hair Element Ratios

Elements	Calculated Ratio	Optimum Midline	Elements	Calculated Ratio	Optimum Midline
Ca:Mg	12.6 : 1	7:1	Zn:Cu	6 : 1	7:1
Ca:P	5.9 : 1	4:1	Zn:Mn	259.7 : 1	250:1
Ca:Pb	5047 : 1	679:1	Zn:Se	93.9 : 1	88:1
Na:K	6.9 : 1	2:1	Zn:Pb	772.2 : 1	250:1
Mg:K	72.9 : 1	4.7:1	Zn:Cd	n/a	4375:1
Fe:Al	0.8 : 1	0.6:1	Se:Hg	12.5 : 1	100:1

REPORT INFORMATION

HAIR VALUE = the concentration of each element found in this hair specimen.

REFERENCE RANGE = the range of concentrations for each element suggested as optimum guidelines with which to compare the reported hair values. These ranges are established from a population of "healthy" individuals as identified through published literature studies and clinical assessment data. Reference ranges should not be viewed as absolute limits of acceptability. Ranges for "suggested" and "unknown" element classifications are more tentative.

ESSENTIAL ELEMENTS = elements for which a necessary role in human nutrition has been established, and, for the purposes of this report, those elements classified by the HASB to have "Clinical Significance" when measured in hair. NOTE: sodium, potassium, selenium, manganese, iron, molybdenum, and phosphorus are also essential in human nutrition, but the utility of their concentrations in hair is not as well-established.

TOXIC ELEMENTS = elements for which a potential toxic hazard exists when accumulated in excess in the body.
Low - concentration generally expected in today's environment and usually tolerable at this level.
Medium - moderate elevation suggesting adverse tissue accumulation.
High - higher concentrations and generally found suggesting toxicity, further evaluation warranted.

HAIR ELEMENT RATIO = the calculated, relative amount between two elements. Such comparisons may offer additional clinical significance; however, the importance of these ratios and hair is not fully understood. "Optimum Midline" ratio values, provide for the comparison purposes, are derived by dividing the midpoint of the reference ran for one element by the reference range midpoint of the other (for toxic metals, the lowest detectable limit is used). These ratios are provided for research interest.

Raymond J. Shamberger Ph. D., Laboratory Director, CLIA # 36D0339322