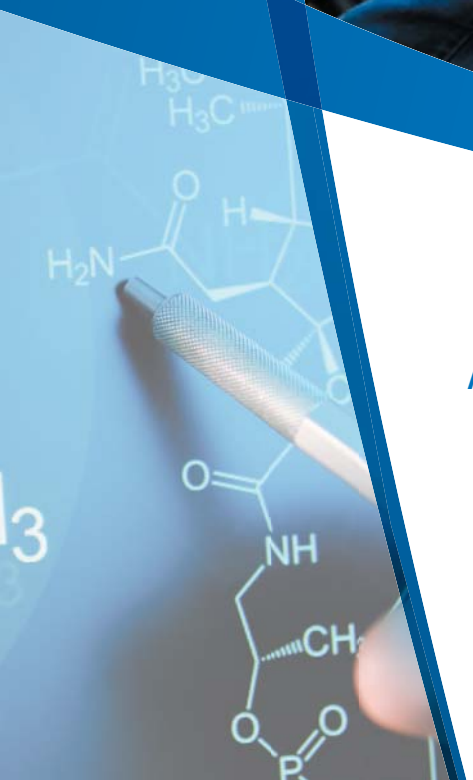
TOXIC AND ESSENTIAL ELEMENTS



Assessment of Key Minerals and Harmful Metals

- Whole Blood, Red Blood Cell and Serum Elements
- Urine Toxic and Essential Elements
- Creatinine Clearance
- Hair Elements
- Fecal Metals

DOCTOR'S DATA INC.

SCIENCE + INSIGHT

Toxic and Essential Elements

Elements are the basic building blocks of all chemical compounds, and human exposure to them occurs both from natural and anthropogenic sources. Many elements are considered nutrients and are essential for the proper functioning of the body. These are generally divided between macrominerals such as calcium, magnesium, potassium, sodium and zinc, and trace minerals including selenium, iodine, boron and molybdenum.

Conversely, there are a number of elements that are toxic to the human body, interfere with its functioning and undermine health—such as mercury, lead, cadmium, aluminum, and arsenic. These toxic metals have no known physiological functions. They can be toxic to organ systems and may disrupt the balance of essential nutrients. Toxic metals and essential element status can be assessed in urine, blood, feces and hair.

Deficiencies of essential trace elements or excessive amounts of heavy metals in the human body can cause significant health effects.

Doctor's Data has always employed the best-available techniques as a specialist and pioneer in essential and toxic elemental testing. In fact, we were one of the first clinical reference laboratories in the world to employ ICP-MS and high-resolution ICP-MS for elemental analysis.

Comprehensive Blood Elements

The standard for diagnosis of lead, mercury or other metal toxicity or poisoning, whole blood metals are also used to assess recent or ongoing exposure to potentially toxic elements. In addition, blood element analysis is ideal for guiding supplementation, and should be performed before and during metal detoxification to evaluate essential element status to ensure treatment safety and effectiveness.

In addition to whole blood, serum elements are used to assess the status of key elements and electrolytes that have important functions in the extracellular fluid compartment of blood, giving a more complete evaluation of total blood element levels.

Red blood cell (RBC) elements tests are used to assess the status of essential elements with important intracellular functions, such as magnesium, copper and zinc. Deficiencies or excesses of these essential elements affect numerous metabolic processes. RBC element analysis is also useful for the assessment of ongoing or recent exposure to specific toxic metals, such as arsenic, cadmium, lead, methylmercury and thallium, that accumulate preferentially in erythrocytes.

Doctor's Data measures essential and toxic metals using ICP-MS for whole blood and red blood cells, and a highly sensitive and specific chemistry analyzer for serum elements.

	Comprehensive Blood Elements	Whole Blood Elements	Serum Elements	Red Blood Cell Elements
Calcium	✔	✔	✔	✔
Magnesium	✔	✔	✔	✔
Copper	✔	✔		✔
Zinc	✔	✔		✔
Manganese	✔	✔		✔
Lithium	✔	✔		
Chromium	✔	✔		
Selenium	✔	✔		✔
Strontium	✔	✔		
Molybdenum	✔	✔		✔
Sodium	✔		✔	
Potassium	✔		✔	✔
Phosphorus	✔		✔	✔
Iron	✔		✔	✔
Boron				✔
Vanadium	✔	✔		✔
Arsenic	✔	✔		✔
Barium	✔	✔		
Cadmium	✔	✔		✔
Cesium				✔
Cobalt	✔	✔		
Lead	✔	✔		✔
Mercury	✔	✔		✔
Nickel	✔	✔		
Platinum	✔	✔		
Thallium	✔	✔		✔
Tungsten	✔	✔		
Uranium	✔	✔		

Whole Blood and Serum Elements tests are available separately or as part of the Comprehensive Blood Elements profile. Red Blood Cell Elements is available as a separate test.

LAB #: B000000-0000-0
PATIENT: Sample Patient
ID: PATIENT-S-00016
SEX: Female
AGE: 34

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Essential Elements; Serum

ESSENTIAL ELEMENTS		RESULT/UNIT		REFERENCE INTERVAL
Calcium	(Ca)	9.1	mg/dL	8.6- 10.3
Magnesium	(Mg)	2.0	mg/dL	1.7- 2.5
Sodium	(Na)	138	mEq/L	133- 145
Potassium	(K)	3.5	mEq/L	3.5- 5.0
Phosphorus	(P)	3.7	mg/dL	2.5- 5.0
Iron	(Fe)	115	µg/dL	50- 200

-2SD -1SD MEAN +1SD +2SD

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 para poor diet/malabsorption, diabetes, hyperthyroidisn alcoholism and diuresis. Increased serum Mg lev Addison's disease.

Calcium
Although 99% of calcium exists in bones and tee nerve impulses, muscle contraction, coagulation, regulated by parathyroid hormone, and serum C muscle tetany while high Ca levels result in lowere Marked variations in serum Ca may result from par kidney disease, and other abnormalities.

Inorganic Phosphorus
Measurements of serum inorganic phosphorus (parathyroid gland and kidney diseases, and vit parathyroid hormone, and PO_4 levels are inversely muscle weakness, while elevated PO_4 may be ass

Iron
Measurements of non-heme, serum iron (Fe) are toxicity and acute or chronic hemochromatosis. T ferritin.

Comments:

Date Collected: 5/16/2014
Date Received: 5/17/201
Date Completed: 5/19/2014

0001548

Results are presented in a clear, easy-to-understand report which details target ranges and graphically illustrates areas of concern. Result-specific commentary is also provided.

LAB #: B000000-0000-0
PATIENT: Sample Patient
ID: PATIENT-S-00000
SEX: Female
DOB: AGE: 68

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Toxic & Essential Elements; Whole Blood

ESSENTIAL AND OTHER ELEMENTS		RESULT / UNIT		REFERENCE INTERVAL
Calcium	(Ca)	5.7	mg/dL	4.8-7.1
Magnesium	(Mg)	3.8	mg/dL	3-4.2
Copper	(Cu)	100	µg/dL	65-130
Zinc	(Zn)	730	µg/dL	480-780
Manganese	(Mn)	7	µg/L	4-22
Chromium	(Cr)	0.21	µg/L	0.2-0.8
Lithium	(Li)	0.45	µg/L	0.4-20
Selenium	(Se)	150	µg/L	140-350
Strontium	(Sr)	14	µg/L	10-45
Molybdenum	(Mo)	1.2	µg/L	0.3-2.5
Vanadium	(V)	0.045	µg/L	0.04-0.3

PERCENTILE 2.5th 16th 50th 84th 97.5th

TOXIC METALS		RESULT / UNIT		REFERENCE INTERVAL
Arsenic	(As)	0.9	µg/L	< 9.0
Barium	(Ba)	0.8	µg/L	< 4.0
Cadmium	(Cd)	0.3	µg/L	< 1.0
Cobalt	(Co)	0.1	µg/L	< 0.8
Lead	(Pb)	7.5	µg/dL	< 3.0
Mercury	(Hg)	1.7	µg/L	< 4.5
Nickel	(Ni)	< 1.5	µg/L	< 3.0
Platinum	(Pt)	< 0.05	µg/L	< 0.10
Thallium	(Tl)	< 0.05	µg/L	< 0.50
Tungsten	(W)	< 0.03	µg/L	< 0.10
Uranium	(U)	<0.02	µg/L	< 0.10

PERCENTILE 95th 99th

SPECIMEN DATA

Comments:

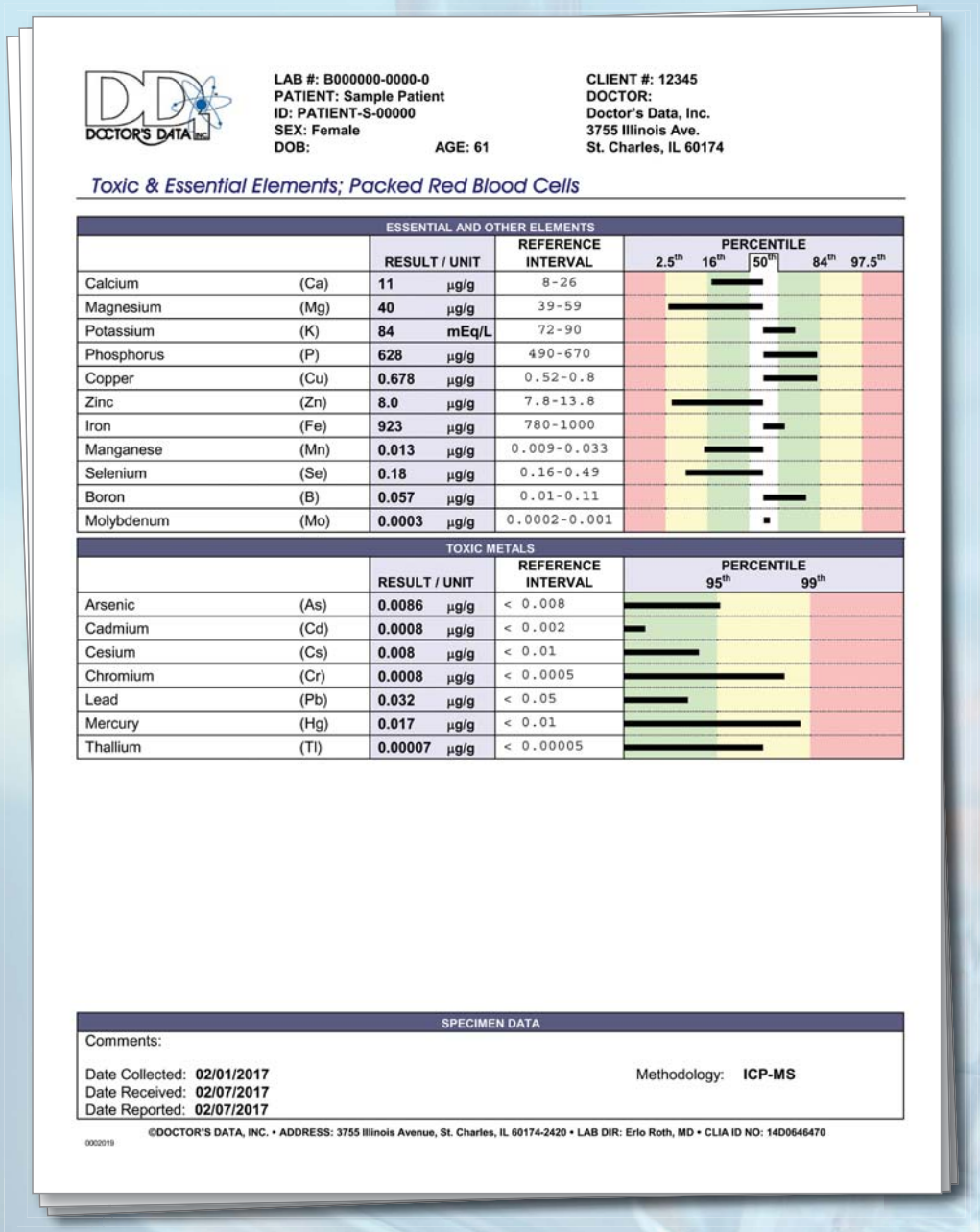
Date Collected: 02/02/2017
Date Received: 02/07/2017
Date Reported: 02/09/2017

Time Collected: 1:00 PM
Fasting: Random

Methodology: ICP-MS

Blood lead levels in the range of 5-9 µg/dL have been associated with adverse health effects in children aged 6 years and younger.

0002020



DOCTOR'S DATA inc

LAB #: B000000-0000-0
PATIENT: Sample Patient
ID: PATIENT-S-00000
SEX: Female
DOB: AGE: 61

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Toxic & Essential Elements; Packed Red Blood Cells

ESSENTIAL AND OTHER ELEMENTS		RESULT / UNIT		REFERENCE INTERVAL	PERCENTILE 2.5th 16th 50th 84th 97.5th
Calcium	(Ca)	11	µg/g	8-26	
Magnesium	(Mg)	40	µg/g	39-59	
Potassium	(K)	84	mEq/L	72-90	
Phosphorus	(P)	628	µg/g	490-670	
Copper	(Cu)	0.678	µg/g	0.52-0.8	
Zinc	(Zn)	8.0	µg/g	7.8-13.8	
Iron	(Fe)	923	µg/g	780-1000	
Manganese	(Mn)	0.013	µg/g	0.009-0.033	
Selenium	(Se)	0.18	µg/g	0.16-0.49	
Boron	(B)	0.057	µg/g	0.01-0.11	
Molybdenum	(Mo)	0.0003	µg/g	0.0002-0.001	

TOXIC METALS		RESULT / UNIT		REFERENCE INTERVAL	PERCENTILE 95th 99th
Arsenic	(As)	0.0086	µg/g	< 0.008	
Cadmium	(Cd)	0.0008	µg/g	< 0.002	
Cesium	(Cs)	0.008	µg/g	< 0.01	
Chromium	(Cr)	0.0008	µg/g	< 0.0005	
Lead	(Pb)	0.032	µg/g	< 0.05	
Mercury	(Hg)	0.017	µg/g	< 0.01	
Thallium	(Tl)	0.00007	µg/g	< 0.00005	

SPECIMEN DATA

Comments:

Date Collected: **02/01/2017**
Date Received: **02/07/2017**
Date Reported: **02/07/2017**

Methodology: **ICP-MS**

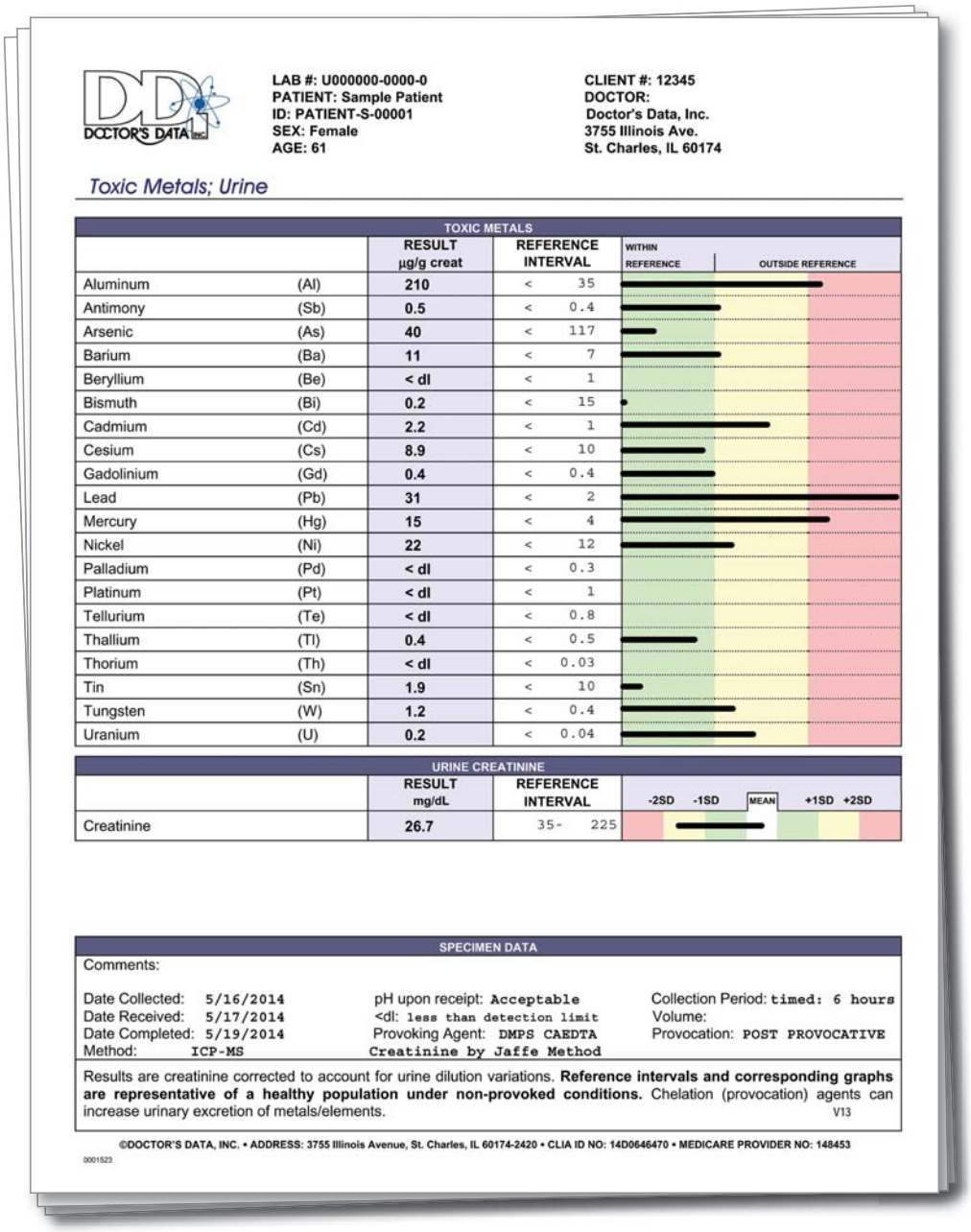
0002019

For more information about all available tests, clinical information and sample reports, visit doctorsdata.com.

Urine Toxic and Essential Elements

Urine Elements are traditionally used to evaluate exposure to potentially toxic elements and wasting of nutrient elements. Toxic metals do not have any useful physiological function. Instead, they adversely affect virtually every organ system and disrupt the homeostasis of nutrient elements.

Additionally, the comparison of urine element concentrations before and after administration of a chelator can be used to estimate net retention of potentially toxic elements. Subsequent urine element analyses, also following the administration of a chelator, are useful for monitoring the efficacy of metal detoxification therapy. Results are expressed per 24 hours or creatinine corrected to account for urine dilution effects.



DOCTOR'S DATA inc

LAB #: U000000-0000-0
PATIENT: Sample Patient
ID: PATIENT-S-00001
SEX: Female
AGE: 61

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Toxic Metals; Urine

TOXIC METALS		RESULT µg/g creat	REFERENCE INTERVAL	WITHIN REFERENCE / OUTSIDE REFERENCE
Aluminum	(Al)	210	< 35	
Antimony	(Sb)	0.5	< 0.4	
Arsenic	(As)	40	< 117	
Barium	(Ba)	11	< 7	
Beryllium	(Be)	< dl	< 1	
Bismuth	(Bi)	0.2	< 15	
Cadmium	(Cd)	2.2	< 1	
Cesium	(Cs)	8.9	< 10	
Gadolinium	(Gd)	0.4	< 0.4	
Lead	(Pb)	31	< 2	
Mercury	(Hg)	15	< 4	
Nickel	(Ni)	22	< 12	
Palladium	(Pd)	< dl	< 0.3	
Platinum	(Pt)	< dl	< 1	
Tellurium	(Te)	< dl	< 0.8	
Thallium	(Tl)	0.4	< 0.5	
Thorium	(Th)	< dl	< 0.03	
Tin	(Sn)	1.9	< 10	
Tungsten	(W)	1.2	< 0.4	
Uranium	(U)	0.2	< 0.04	

URINE CREATININE	RESULT mg/dL	REFERENCE INTERVAL	-2SD -1SD MEAN +1SD +2SD
Creatinine	26.7	35- 225	

SPECIMEN DATA

Comments:

Date Collected: 5/16/2014
Date Received: 5/17/2014
Date Completed: 5/19/2014
Method: ICP-MS

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

Collection Period: timed: 6 hours
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

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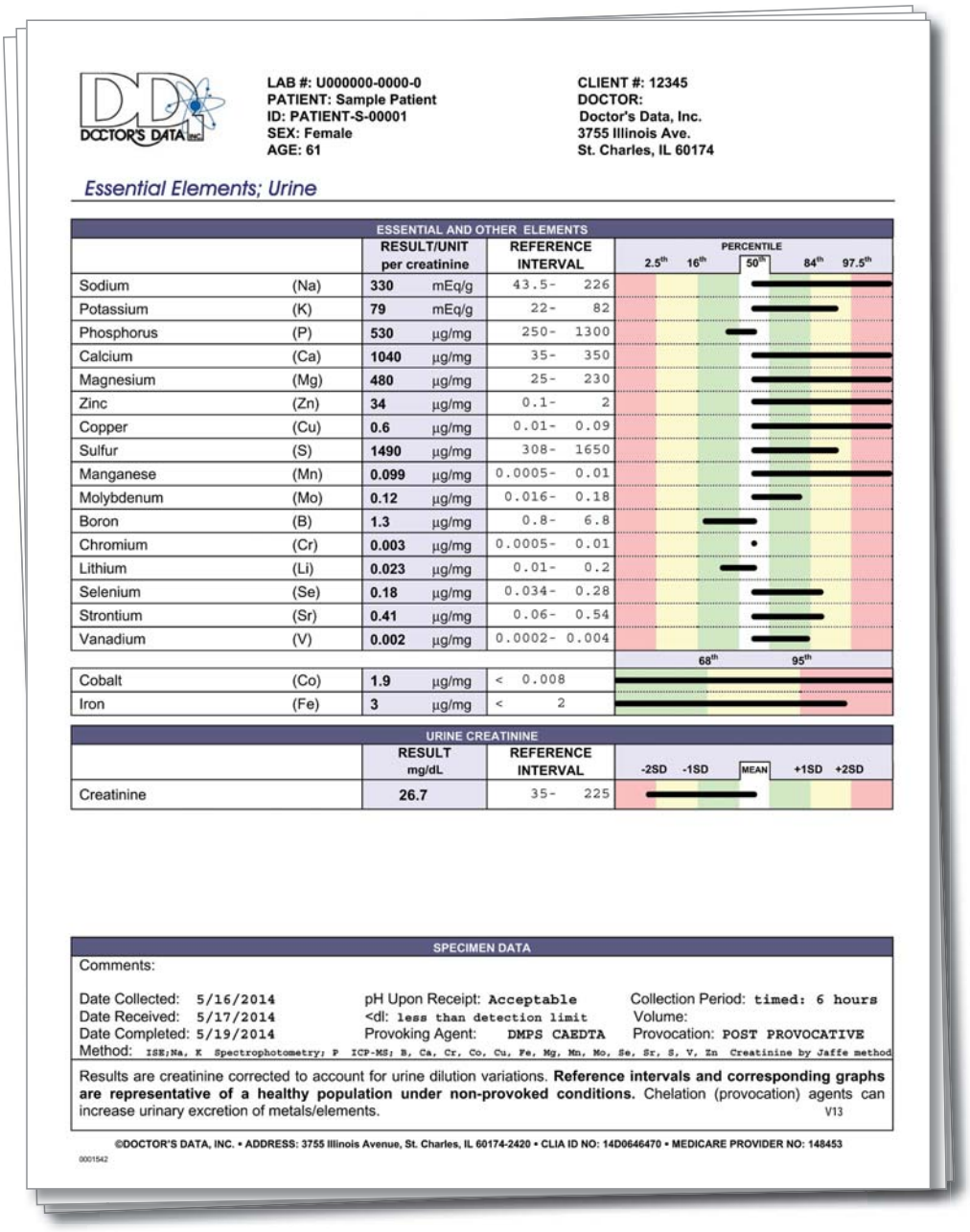
0001523



LAB #: U000000-0000-0
PATIENT: Sample Patient
ID: PATIENT-S-00001
SEX: Female
AGE: 61

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Essential Elements; Urine

ESSENTIAL AND OTHER ELEMENTS		RESULT/UNIT per creatinine		REFERENCE INTERVAL
Sodium	(Na)	330	mEq/g	43.5- 226
Potassium	(K)	79	mEq/g	22- 82
Phosphorus	(P)	530	µg/mg	250- 1300
Calcium	(Ca)	1040	µg/mg	35- 350
Magnesium	(Mg)	480	µg/mg	25- 230
Zinc	(Zn)	34	µg/mg	0.1- 2
Copper	(Cu)	0.6	µg/mg	0.01- 0.09
Sulfur	(S)	1490	µg/mg	308- 1650
Manganese	(Mn)	0.099	µg/mg	0.0005- 0.01
Molybdenum	(Mo)	0.12	µg/mg	0.016- 0.18
Boron	(B)	1.3	µg/mg	0.8- 6.8
Chromium	(Cr)	0.003	µg/mg	0.0005- 0.01
Lithium	(Li)	0.023	µg/mg	0.01- 0.2
Selenium	(Se)	0.18	µg/mg	0.034- 0.28
Strontium	(Sr)	0.41	µg/mg	0.06- 0.54
Vanadium	(V)	0.002	µg/mg	0.0002- 0.004
Cobalt	(Co)	1.9	µg/mg	< 0.008
Iron	(Fe)	3	µg/mg	< 2

PERCENTILE: 2.5th 16th 50th 84th 97.5th
68th 95th

URINE CREATININE	RESULT mg/dL	REFERENCE INTERVAL
Creatinine	26.7	35- 225

-2SD -1SD MEAN +1SD +2SD

SPECIMEN DATA

Comments:

Date Collected: 5/16/2014
Date Received: 5/17/2014
Date Completed: 5/19/2014
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

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

Collection Period: timed: 6 hours
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

0001542

Results are presented in a clear, easy-to-understand report which graphically illustrates target ranges and areas of concern. Result-specific commentary is provided.

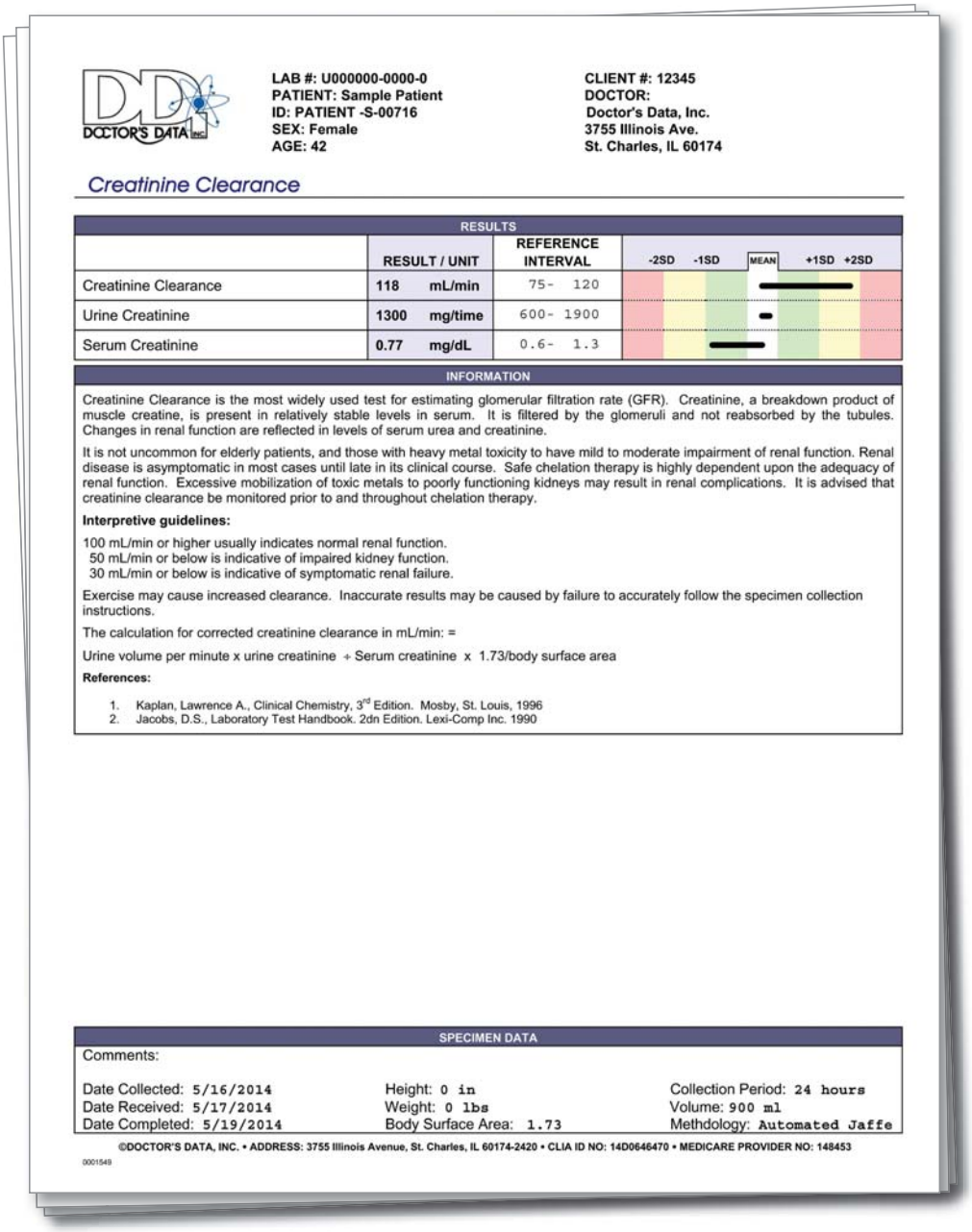
For more information about all available tests, clinical information and sample reports, visit doctorsdata.com.

Creatinine Clearance

The Creatinine Clearance test is the most widely used test for estimating glomerular filtration rate (GFR) and renal function. GFR assessment is highly recommended for weighing the advisability of prescribing a variety of drugs, including chelating agents.

The Creatinine Clearance test analyses creatinine in a timed urine collection and a single serum specimen collected during the same period.

Results are presented in a clear, easy-to-understand report complete with result-specific commentary.



DOCTOR'S DATA INC

LAB #: U000000-0000-0
PATIENT: Sample Patient
ID: PATIENT -S-00716
SEX: Female
AGE: 42

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Creatinine Clearance

RESULTS

	RESULT / UNIT	REFERENCE INTERVAL	-2SD -1SD MEAN +1SD +2SD
Creatinine Clearance	118 mL/min	75- 120	
Urine Creatinine	1300 mg/time	600- 1900	
Serum Creatinine	0.77 mg/dL	0.6- 1.3	

INFORMATION

Creatinine Clearance is the most widely used test for estimating glomerular filtration rate (GFR). Creatinine, a breakdown product of muscle creatine, is present in relatively stable levels in serum. It is filtered by the glomeruli and not reabsorbed by the tubules. Changes in renal function are reflected in levels of serum urea and creatinine.

It is not uncommon for elderly patients, and those with heavy metal toxicity to have mild to moderate impairment of renal function. Renal disease is asymptomatic in most cases until late in its clinical course. Safe chelation therapy is highly dependent upon the adequacy of renal function. Excessive mobilization of toxic metals to poorly functioning kidneys may result in renal complications. It is advised that creatinine clearance be monitored prior to and throughout chelation therapy.

Interpretive guidelines:

100 mL/min or higher usually indicates normal renal function.
50 mL/min or below is indicative of impaired kidney function.
30 mL/min or below is indicative of symptomatic renal failure.

Exercise may cause increased clearance. Inaccurate results may be caused by failure to accurately follow the specimen collection instructions.

The calculation for corrected creatinine clearance in mL/min: =

Urine volume per minute x urine creatinine ÷ Serum creatinine x 1.73/body surface area

References:

1. Kaplan, Lawrence A., Clinical Chemistry, 3rd Edition. Mosby, St. Louis, 1996
2. Jacobs, D.S., Laboratory Test Handbook. 2dn Edition. Lexi-Comp Inc. 1990

SPECIMEN DATA

Comments:

Date Collected: 5/16/2014
Date Received: 5/17/2014
Date Completed: 5/19/2014

Height: 0 in
Weight: 0 lbs
Body Surface Area: 1.73

Collection Period: 24 hours
Volume: 900 ml
Methdology: Automated Jaffe

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0001549

For more information about all available tests, clinical information and sample reports, visit doctorsdata.com.

Hair Elements

Hair Elements analysis provides information regarding recent and ongoing exposure to potentially toxic metals, especially methylmercury and arsenic, and time-averaged status of specific nutrient elements. This noninvasive screening test requires only .25 grams of hair. Doctor's Data offers a Hair Elements profile containing essential and toxic elements and a Hair Toxic Element Exposure profile containing an expanded lineup of toxic metals.

A specialist and pioneer in essential and toxic elemental testing since 1972, Doctor's Data has been validated as a supplier of trace element results for the certification of a hair reference material to the European Commission Joint Research Centre.

This noninvasive screening test requires just .25 grams of hair. Choose between the original Hair Elements profile and the expanded Hair Toxic Element Exposure profile. Results are clearly presented along with result-specific commentary.

DOCTOR'S DATA inc

LAB #: H000000-0000-0
PATIENT: Sample Patient
ID: PATIENT-S-00001
SEX: Female
AGE: 51

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Toxic Element Exposure Profile; Hair

TOXIC METALS		RESULT µg/g	REFERENCE INTERVAL
Arsenic	(As)	0.021	< 0.14
Lead	(Pb)	0.38	< 3.0
Mercury	(Hg)	0.21	< 3.0
Cadmium	(Cd)	0.032	< 0.20
Chromium	(Cr)	0.52	<
Beryllium	(Be)	< 0.01	
Cobalt	(Co)	0.010	
Nickel	(Ni)	0.54	
Zinc	(Zn)	170	
Copper	(Cu)	160	
Thorium	(Th)	< 0.001	
Thallium	(Tl)	< 0.001	
Barium	(Ba)	1.3	
Cesium	(Cs)	< 0.002	
Manganese	(Mn)	0.19	
Selenium	(Se)	0.70	
Bismuth	(Bi)	0.018	
Vanadium	(V)	0.049	
Silver	(Ag)	0.86	
Antimony	(Sb)	< 0.01	
Palladium	(Pd)	0.011	
Aluminum	(Al)	24	
Platinum	(Pt)	< 0.003	
Tungsten	(W)	< 0.001	
Tin	(Sn)	0.38	
Uranium	(U)	0.26	
Gold	(Au)	0.082	
Tellurium	(Te)	< 0.05	
Germanium	(Ge)	0.029	
Titanium	(Ti)	0.70	
Gadolinium	(Gd)	< 0.001	

PERCENTILE 68th 95th

SPECIMEN DATA

Comments:

Date Collected: 5/16/2014
Date Received: 5/17/2014
Date Completed: 5/19/2014
Method: ICP-MS
<dl: less than detection limi
µg/g = ppm

Metals are listed in descending priority order based upon data from the Agency for Toxic Substances and Disease which considers not only the relative toxicity per gram metal, but also the frequency for occurrence of exposure.

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DOCTOR'S DATA inc

LAB #: H000000-0000-0
PATIENT: Sample Patient
ID: PATIENT-S-00001
SEX: Male
AGE: 9

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Toxic & Essential Elements; Hair

TOXIC METALS		RESULT µg/g	REFERENCE INTERVAL
Aluminum	(Al)	9.0	< 8.0
Antimony	(Sb)	0.088	< 0.066
Arsenic	(As)	0.14	< 0.080
Barium	(Ba)	0.30	< 0.75
Beryllium	(Be)	< 0.01	< 0.020
Bismuth	(Bi)	0.13	< 2.0
Cadmium	(Cd)	0.025	< 0.070
Lead	(Pb)	0.92	< 1.0
Mercury	(Hg)	1.1	< 0.40
Platinum	(Pt)	< 0.003	< 0.005
Thallium	(Tl)	< 0.001	< 0.002
Thorium	(Th)	< 0.001	< 0.002
Uranium	(U)	0.010	< 0.060
Nickel	(Ni)	0.13	< 0.20
Silver	(Ag)	0.14	< 0.14
Tin	(Sn)	0.32	< 0.30
Titanium	(Ti)	0.51	< 0.70
Total Toxic Representation			

PERCENTILE 68th 95th

ESSENTIAL AND OTHER ELEMENTS		RESULT µg/g	REFERENCE INTERVAL
Calcium	(Ca)	157	160- 500
Magnesium	(Mg)	11	12- 50
Sodium	(Na)	100	20- 200
Potassium	(K)	100	12- 140
Copper	(Cu)	11	11- 32
Zinc	(Zn)	350	110- 190
Manganese	(Mn)	0.28	0.08- 0.50
Chromium	(Cr)	0.60	0.40- 0.70
Vanadium	(V)	0.079	0.025- 0.10
Molybdenum	(Mo)	0.14	0.040- 0.090
Boron	(B)	3.6	0.50- 3.5
Iodine	(I)	0.48	0.25- 1.3
Lithium	(Li)	0.010	0.007- 0.020
Phosphorus	(P)	146	150- 220
Selenium	(Se)	0.84	0.70- 1.1
Strontium	(Sr)	0.21	0.21- 2.1
Sulfur	(S)	50900	44000- 51000
Cobalt	(Co)	0.009	0.004- 0.020
Iron	(Fe)	10	7.0- 16
Germanium	(Ge)	0.028	0.030- 0.040
Rubidium	(Rb)	0.086	0.008- 0.080
Zirconium	(Zr)	0.42	0.060- 0.70

PERCENTILE 2.5th 16th 50th 84th 97.5th

SPECIMEN DATA

COMMENTS:

Date Collected: 5/16/2014
Date Received: 5/17/2014
Date Completed: 5/19/2014
Methodology: ICP/MS
Sample Size: 0.198 g
Sample Type: Head
Hair Color: Brown
Treatment:
Shampoo:

RATIOS

ELEMENTS	RATIOS	RANGE
Ca/Mg	14.3	4- 30
Ca/P	1.08	0.8- 8
Na/K	1	0.5- 10
Zn/Cu	31.8	4- 20
Zn/Cd	> 999	> 800

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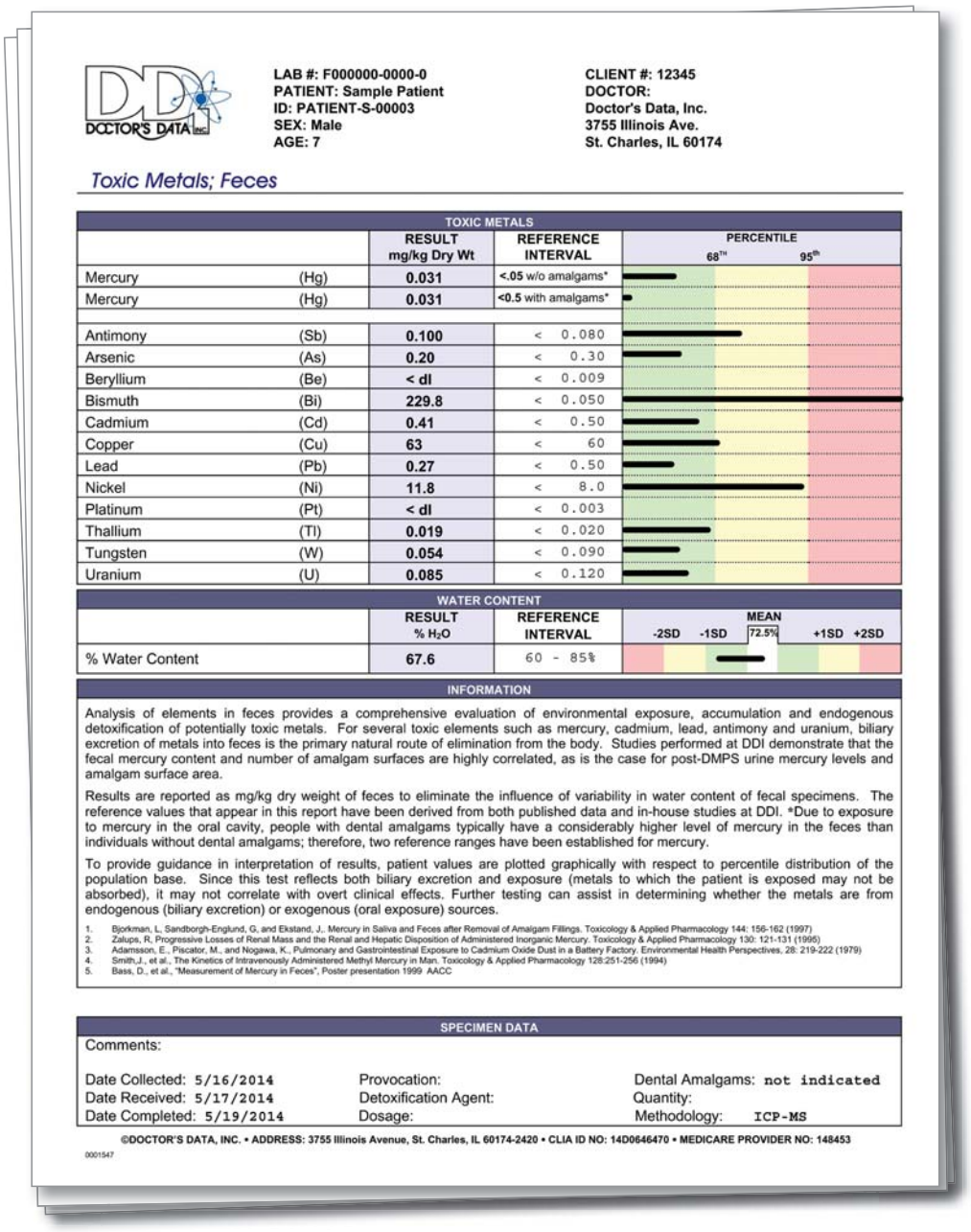
Fecal Metals

Fecal elemental analysis provides a direct indication of dietary exposure to toxic metals and indirect information about the potential for toxic metal burden. Chronic, low-level assimilation of toxic metals can result in accumulation in the body. For many toxic metals, fecal (biliary) excretion is the primary natural route of elimination from the body. Elements are measured by ICP-MS and expressed on a dry weight basis to eliminate variability related to water content of the specimen.

Specimen collection is convenient for the patient and requires only a single-step procedure. Results are presented in a clear, easy-to-understand report and includes result-specific commentary.



DOCTOR'S DATA INC.

LAB #: F000000-0000-0
PATIENT: Sample Patient
ID: PATIENT-S-00003
SEX: Male
AGE: 7

CLIENT #: 12345
DOCTOR:
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Toxic Metals; Feces

TOXIC METALS

		RESULT mg/kg Dry Wt	REFERENCE INTERVAL	PERCENTILE 68th 95th
Mercury	(Hg)	0.031	<.05 w/o amalgams*	
Mercury	(Hg)	0.031	<0.5 with amalgams*	
Antimony	(Sb)	0.100	< 0.080	
Arsenic	(As)	0.20	< 0.30	
Beryllium	(Be)	< dl	< 0.009	
Bismuth	(Bi)	229.8	< 0.050	
Cadmium	(Cd)	0.41	< 0.50	
Copper	(Cu)	63	< 60	
Lead	(Pb)	0.27	< 0.50	
Nickel	(Ni)	11.8	< 8.0	
Platinum	(Pt)	< dl	< 0.003	
Thallium	(Tl)	0.019	< 0.020	
Tungsten	(W)	0.054	< 0.090	
Uranium	(U)	0.085	< 0.120	

WATER CONTENT

	RESULT % H_2O	REFERENCE INTERVAL	MEAN -2SD -1SD 72.5% +1SD +2SD
% Water Content	67.6	60 - 85%	

INFORMATION

Analysis of elements in feces provides a comprehensive evaluation of environmental exposure, accumulation and endogenous detoxification of potentially toxic metals. For several toxic elements such as mercury, cadmium, lead, antimony and uranium, biliary excretion of metals into feces is the primary natural route of elimination from the body. Studies performed at DDI demonstrate that the fecal mercury content and number of amalgam surfaces are highly correlated, as is the case for post-DMPS urine mercury levels and amalgam surface area.

Results are reported as mg/kg dry weight of feces to eliminate the influence of variability in water content of fecal specimens. The reference values that appear in this report have been derived from both published data and in-house studies at DDI. *Due to exposure to mercury in the oral cavity, people with dental amalgams typically have a considerably higher level of mercury in the feces than individuals without dental amalgams; therefore, two reference ranges have been established for mercury.

To provide guidance in interpretation of results, patient values are plotted graphically with respect to percentile distribution of the population base. Since this test reflects both biliary excretion and exposure (metals to which the patient is exposed may not be absorbed), it may not correlate with overt clinical effects. Further testing can assist in determining whether the metals are from endogenous (biliary excretion) or exogenous (oral exposure) sources.

1. Bjorkman, L, Sandborgh-Englund, G, and Ekstand, J., Mercury in Saliva and Feces after Removal of Amalgam Fillings. Toxicology & Applied Pharmacology 144: 156-162 (1997)
2. Zalups, R, Progressive Losses of Renal Mass and the Renal and Hepatic Disposition of Administered Inorganic Mercury. Toxicology & Applied Pharmacology 130: 121-131 (1995)
3. Adamsson, E., Piscator, M., and Nogawa, K., Pulmonary and Gastrointestinal Exposure to Cadmium Oxide Dust in a Battery Factory. Environmental Health Perspectives, 28: 219-222 (1979)
4. Smith,J., et al., The Kinetics of Intravenously Administered Methyl Mercury in Man. Toxicology & Applied Pharmacology 128:251-256 (1994)
5. Bass, D., et al., "Measurement of Mercury in Feces", Poster presentation 1999 AACC

SPECIMEN DATA

Comments:

Date Collected: 5/16/2014
Date Received: 5/17/2014
Date Completed: 5/19/2014

Provocation:
Detoxification Agent:
Dosage:

Dental Amalgams: not indicated
Quantity:
Methodology: ICP-MS

0001547

For more information about all available tests, clinical information and sample reports, visit doctorsdata.com.

SCIENCE + INSIGHT

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