WHOLE BLOOD ELEMENTS

LAB#: B000000-0000-1
PATIENT: Sample Patient
ID: PATIENT-s-00001
SEX: Female
AGE: 54

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

NUTRIENT ELEMENTS

ELEMENTS	RESULT / UNIT		REFERENCE RANGE
Calcium	6.0	mg/dL	4.4- 6.9
Magnesium	3.7	mg/dL	2.8- 4.4
Copper	106	µg/dL	61- 128
Zinc	531	µg/dL	420- 810
Manganese	10	µg/L	6- 19
Lithium	0.7	µg/L	0.3- 20
Selenium	181	µg/L	130- 340
Strontium	29	µg/L	8- 38
Molybdenum	2.3	µg/L	0.7- 4.0

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

POTENTIALLY TOXIC ELEMENTS

TOXIC ELEMENTS	RESULT / UNIT		REFERENCE RANGE
Arsenic	4.4	µg/L	< 20
Barium	0.6	µg/L	< 10.0
Cadmium	0.4	µg/L	< 4.0
Cobalt	0.2	µg/L	< 4.0
Lead	1.1	µg/dL	< 3.5
Mercury	9.1	µg/L	< 5.0
Nickel	< 3	µg/L	< 15
Platinum	< 0.2	µg/L	< 5.0
Silver	< 0.1	µg/L	< 4.0
Thallium	< 0.1	µg/L	< 1.0
Uranium	< 0.1	µg/L	< 1.0

PERCENTILE: 95th, 99th

SPECIMEN DATA

Comments:
Date Collected: 2/19/2007
Date Received: 2/22/2007
Date Completed: 3/1/2007

Time Collected: 12:45 PM
Fasting: No

Methodology: ICP-MS

V01.07

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WHOLE BLOOD ELEMENT REPORT

INTRODUCTION

This analysis of elements in whole blood was performed by ICP Mass Spectroscopy following specimen digestion with nitric acid in a closed container microwave oven system. This procedure measures the total concentration of an element in whole blood, regardless of biochemical form and regardless of partitioning of the element in blood fractions. For units of measurement, mg/L is approximately equivalent to ppm, and mcg/L is approximately equivalent to ppb.

Whole blood element analysis is intended to be a diagnostic method that assists in determining imbalance, insufficiency, or excess of certain elements that have essential or beneficial functions. Additional testing of blood fractions or other body tissues may be necessary for differential diagnosis of imbalances. Additional testing also may be necessary to assess specific dysfunctions of assimilation, transport, retention, or excretion of elements. Whole blood element analysis is additionally intended to determine elevated or excessive levels of five potentially toxic elements: cadmium, lead, mercury, nickel and uranium.

If an element is sufficiently abnormal per the whole blood measurement, a descriptive text is included with the report. For elements with essential or beneficial functions, a text will print if the measured result is below -1.5 standard deviations from the mean of the reference population, or if the result is above +1.5 standard deviations from the mean of the reference population.
For potentially toxic elements, a text prints whenever the measured result exceeds the expected range.

Doctor's Data states the reference range as + 1SD from the mean of the reference population. This is considered to be the nutritionally and physiologically optimal range for elements with essential or beneficial functions. Physiological imbalance corresponds to levels beyond + 1SD but pathological consequences are not expected until the blood level is beyond + 2SD. Element levels beyond + 2SD may only be temporary nutritional problems or they may reflect a failure of homeostasis to control blood quantities. Pathological consequences depend upon cell and tissue functions which are disrupted by such levels.

MERCURY HIGH

The concentration of mercury (Hg) is abnormally high in this blood specimen. Elevated blood Hg indicates higher than average exposure to the metal, but does not provide information about net bodily retention of Hg. Whole blood constitutes both organic (RBC) and inorganic (serum) Hg. However, blood Hg is not indicative of past exposures if the Hg has cleared the blood and deposited in other tissues. The biological half-lives of inorganic and organic Hg in blood are about 3 days and 60 days, respectively. Blood Hg levels are typically higher than average in "high-end" fish consumers.

The symptomatology of Hg excess can depend on many factors: the chemical form of absorbed Hg and its transport in body tissues, presence of other synergistic toxics (Pb and Cd have such effects), presence of disease that depletes or inactivates lymphocytes or is immunosuppressive, organ levels of

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xenobiotic chemicals and sulfhydryl-bearing metabolites (e.g. glutathione), and the concentration of protective nutrients, (e.g. zinc, selenium, vitamin E). Early signs of excessive Hg exposure include: decreased senses of touch, hearing, vision and taste, metallic taste in the mouth, fatigue or lack of physical endurance, and increased salivation. Symptoms may progress with moderate or chronic exposure and retention include: anorexia, numbness and paresthesias, headaches, hypertension, irritability and excitability, and immune suppression, possibly immune dysregulation. Advanced disease processes from Hg toxicity include: tremors and incoordination, anemia, psychoses, manic behaviors, possibly autoimmune disorders, renal dysfunction or failure.

Mercury is commonly used in: dental amalgams, explosive detonators, in elemental or liquid form for thermometers, barometers, and laboratory equipment; batteries and electrodes; and in fungicides and pesticides. The use of Hg as a funcicial/pesticide (including that in paints) has declined somewhat due to environmental concerns, but mercury residues persist from past use. Methylmercury, the common, most neurotoxic form, results from methylation of hg 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 intake of dietary mercury is negligible unless food is contaminated with one of the previously listed forms/sources.

Measurement of fecal Hg provides an indication of exposure to inorganic mercury from dental amalgams. Net retention of Hg in the body can be assessed by comparison of pre- and post-provocation urinalysis using DMPS, DMSA or D-penicillamine.

BIBLIOGRAPHY FOR MERCURY

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