DOCTOR'S DATA INC

LAB #:
PATIENT:
ID:
SEX: Male
DOB:

CLIENT #: xxx
DOCTOR:
Biolab Medical Unit
The Stone House 9 Weymouth St
London, W1W 6DB UNITED KINGDOM

Toxic & Essential Elements; Whole Blood

ESSENTIAL AND OTHER ELEMENTS		RESULT / UNIT	REFERENCE INTERVAL	PERCENTILE 2.5th 16th 50th 84th 97.5th
Calcium	(Ca)	**6.0 mg/dL**	4.6- 6.7	
Magnesium	(Mg)	**3.4 mg/dL**	3.1- 4.5	
Copper	(Cu)	**75 µg/dL**	65- 110	
Zinc	(Zn)	**604 µg/dL**	500- 820	
Manganese	(Mn)	**10 µg/L**	4- 21	
Chromium	(Cr)	**0.29 µg/L**	0.2- 0.80	
Lithium	(Li)	**0.6 µg/L**	0.4- 20	
Selenium	(Se)	**142 µg/L**	150- 350	
Strontium	(Sr)	**20 µg/L**	10- 40	
Molybdenum	(Mo)	**0.6 µg/L**	0.3- 2.5	
Vanadium	(V)	**0.11 µg/L**	0.04- 0.30	

TOXIC METALS		RESULT / UNIT	REFERENCE INTERVAL	PERCENTILE 95th 99th
Arsenic	(As)	**< 0.5 µg/L**	< 9.0	
Barium	(Ba)	**0.7 µg/L**	< 4.0	
Cadmium	(Cd)	**0.1 µg/L**	< 1.0	
Cobalt	(Co)	**0.4 µg/L**	< 0.8	
Lead	(Pb)	**0.8 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)	**0.07 µg/L**	< 0.50	
Tungsten	(W)	**< 0.03 µg/L**	< 0.10	
Uranium	(U)	**< 0.02 µg/L**	< 0.10	

SPECIMEN DATA

Comments:

Date Collected:
Date Received:
Date Reported:

Time Collected:
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.

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 eleven potentially toxic elements.

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 1.5 standard deviations (SD) above or below the mean of the reference population. Exceptions are made for chromium and vanadium; a text will print if the measured result is 2 standard devations above or below the mean. 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.

SELENIUM LOW

THE concentration of selenium (Se) is abnormally low in this blood specimen. Se has two documented functions as an enzyme activator in humans: (1) activation of the enzyme T4 to T3 (deiodinase) for balance in thyroid hormone level, and (2) activation of glutathione peroxidase for reduction of peroxides by oxidation of glutathione. In its antioxidant function, Se works with vitamin E. Vitamin E functions to prevent oxidation of cell membranes and fatty acids, while glutathione, via the peroxidase enzyme, works to undo oxidation after it has happened.

Symptoms and conditions that can result from Se deficiency include: increased susceptibility to viral infections, increased inflammation during infection or following exposure to xenobiotics or oxidant chemicals, hardening or sclerosing of tissue, muscle pain and tenderness, and possibly hypothyroid function with subnormal T3.

Selenium deficiency usually is the result of a poor quality diet, or a diet containing primarily highly refined foods. However, there are geographical regions in the world where the soil contains little Se, and even unprocessed food grown in such soils can be deficient in Se. Selenium often is lost through urinary wasting in cystinuria; hyperaminoaciduria conditions and renal transport disorders may feature Se wasting. Excessive exposure/retention of mercury can deplete biologically active Se because Se irreversibly binds to and neutralizes mercury.

BIBLIOGRAPHY FOR SELENIUM, LOW

1. Paglia D.E. et al, ”Studies on the Quantitative and Qualitative Characterization of Erythrocyte Glutathione Peroxidase”. J. Lab andClin Med 70(1), 1967 pp 158-69.

2. Rotruck J.T. et al, ”Selenium: Biochemical Role as a Component of Glutathione Peroxidase” Science 179, Feb 1973 pp 588-90.

3. Dhur A. et al, ”Relationship between Selenium, Immunity and Resistance against Infection” Comp. Biochem. Physiol. 966(2), 1990pp 271-80.

4. Tarp U. ”Selenium and the Selenium-Dependent Glutathione Peroxidase in Rheumatoid Arthritis” Danish Medical Bulletin, 41(3), 1994pp 264-74.

5. Berry M.J. et al ”Type I Iodothyronine Deiodinase Is a Seleno-cysteine-Containing Enzyme” Nature 349, Jan 1991.6. Harper H.A. et al, Review of Physiological Chemistry 17th ed, Lange Med Pub, Los Altos CA, 1979 pp 592-93.