



red blood cell (rbc) elements

Analysis of red blood cells provides the best diagnostic tool for assessing the status of elements that have important functions inside cells or on blood cell membranes. Blood cell element levels are useful for assessing cardiac influences, anti-inflammatory processes, anemia, immunological function, glucose tolerance and other disorders that are associated specifically with zinc deficiency.

Red blood cell (RBC) analysis is an invaluable diagnostic method for assessing insufficiency or excess of elements that have important functions within cells or on blood cell membranes. An important feature is that the cells are not washed, because this would result in partial loss of some important elements that bind to the plasma membrane, for example, calcium.

RBC element levels are very useful for assessing: cardiotoxic influences (magnesium, potassium); anti-inflammatory processes (selenium, copper, zinc); anemia (copper, iron); immunological function (zinc, copper, magnesium), and glucose tolerance (chromium, manganese, and possibly vanadium). Disorders specifically associated with zinc deficiency also are addressed by this analysis. These disorders include loss of visual acuity, dysgeusia, dermatitis and poor wound healing, alopecia, amino acid malabsorption, sexual impotence, decreased production of testosterone, depressed immune function, and growth retardation.

Accurate assessment of essential element status is highly recommended for the determination of appropriate supplementation. The absorption, transport and metabolism of essential elements is highly integrated and regulated. Inappropriate supplementation or dietary imbalance of elements can have significant adverse health effects. For example, excess intake of zinc or molybdenum can result in copper deficiency and, although essential, excess retention of manganese can have serious neurotoxic effects. RBC element analysis is also useful for the assessment of ongoing or very recent EXPOSURE to specific toxic elements that accumulate preferentially in erythrocytes. These toxic elements include arsenic, cadmium, lead, methylmercury and thallium. It is important to keep in mind that elevated levels of the toxic elements in these cells reflect only recent or ongoing exposure and do not provide information about the net retention of the metals in the body.

RBC element analysis should be performed prior to and intermittently throughout the course of detoxification/chelation therapy. Monitoring essential element status is necessary to identify needs for and effectiveness of supplementation. Replacement and maintenance of adequate levels of essential nutrients can markedly reduce the apparent adverse "side effects" associated with the use of detoxification agents, per se, and the general effects of mobilization of toxic elements. It is important to note that some diseases are associated with abnormal levels of blood cell elements that could be misleading with respect to nutritional status. For example, blood cell copper can be temporarily elevated during inflammatory response while liver levels are not.

RED BLOOD CELL (RBC) ELEMENTS

- **Measurement of toxic and functional intracellular elements**
- **Analysis by ICP-MS**
- **Result specific commentary provided**
- **Requires unwashed packed red blood cells**



LAB#: B000000-0000-0
 PATIENT: Sample Patient
 SEX: Female
 AGE: 43

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

RED BLOOD CELL ELEMENTS

ELEMENTS	RESULT µg/g	REFERENCE RANGE	PERCENTILE				
			2.5 th	16 th	50 th	84 th	97.5 th
Calcium	17	8 - 31					
Magnesium	38	36 - 64					
Potassium mEq/L	78	65 - 95					
Phosphorus	526	480 - 745					
Copper	0.65	0.52 - 0.89					
Zinc	11.3	8 - 14.5					
Iron	871	745 - 1050					
Manganese	0.019	0.007 - 0.030					
Chromium	0.0003	0.0003 - 0.0060					
Selenium	0.27	0.19 - 0.38					
Boron	0.008	0.01 - 0.110					
Vanadium	0.0005	0.0001 - 0.0020					
Molybdenum	0.0012	0.0005 - 0.0020					

TOXIC ELEMENTS	RESULT µg/g	REFERENCE RANGE	PERCENTILE	
			95 th	99 th
Arsenic	0.005	< 0.010		
Cadmium	0.001	< 0.005		
Lead	0.006	< 0.090		
Mercury	< 0.001	< 0.010		
Thallium	< 0.0001	< 0.0005		

SPECIMEN DATA

Comments:
 Date Collected: 12/26/2008
 Date Received: 12/27/2008
 Date Completed: 12/28/2008

Methodology: ICP-MS
 µg/g = ppm

V10.01

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