



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	
			68 th	95 th
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 ₂ O	REFERENCE INTERVAL	MEAN			
			-2SD	-1SD	72.5%	
% 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 Ekstrand, 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 AACCC

SPECIMEN DATA

Comments:

Date Collected: 11/28/2011 Provocation: Dental Amalgams: not indicated
 Date Received: 12/1/2011 Detoxification Agent: Quantity:
 Date Completed: 12/8/2011 Dosage: Methodology: ICP-MS

V08.10

BISMUTH HIGH

Bi is a non-essential element of relatively low toxicity. However, excessive intake of insoluble, inorganic Bi containing compounds can cause nephrotoxicity and encephalopathy. Absorption is dependent upon solubility of the Bi compound, with insoluble Bi excreted in the feces while soluble forms are excreted in the urine. Sources of Bi include: cosmetics (lipstick), Bi containing medications such as ranitidine Bi-citrate, antacids (Pepto Bismol), pigments used in colored glass and ceramics, dental cement, and dry cell battery electrodes. Several organometallic Bi compounds are used for bactericidal and fungicidal applications.

Symptoms of moderate Bi toxicity include: constipation or bowel irregularity, foul breath, blue/black gum line, and malaise. High levels of Bi accumulation can result in nephrotoxicity (nephrosis, proteinuria) and neurotoxicity (tremor, memory loss, monoclonic jerks, dysarthria, dementia).

Urine elements analysis can be used to corroborate Bi absorption for a period of days or a few weeks after the exposure. Dithiol chelating/complexing agents (DMPS, DMSA) markedly reduced Bi levels in liver and kidneys, and increased Bi in urine in animal studies (J. Lab. Clin. Med.; 119:529-537,1992).