Biolab Medical Unit

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Biolab Reference: **Patient:**

DOB:

Date: **Doctor:**

TOXIC ELEMENTS IN BLOOD

Reference intervals based on ICP-MS analyses of blood samples in trace-element-free EDTA tubes.

ELEMENT	RESULTS	REFERENCE RANGE	COMMENTS
ALUMINIUM (Al)	362	180 – 560 nmol/L	Urine preferred for monitoring Al exposure
ARSENIC (As)	87*	< 60 nmol/L	In water, soil and fish (contains non-toxic organic As).Inorganic As is a neurotoxic carcinogen, with adverse effects on fertility and foetal development. Urine As preferred to diagnose toxicity
BARIUM (Ba)	1	< 20 nmol/L	High concentration in soil; toxic effects involve stimulation, followed by paralysis
BERYLLIUM (Be)	ND	<30 nmol/L	CBD – chronic beryllium disease (skin rash)
CADMIUM (Cd)	3	< 27 nmol/L	Carcinogen, can cause osteroporosis. Non smokers <27 nmol/L, smokers <54 nmol/L, significant industrial exposure >90 nmol/L
CHROMIUM (Cr)	9.7	3.6 – 23.1 nmol/L	Chromium (III) is essential for insulin action. Chromium (VI) is carcinogenic.
COBALT (Co)	6.6	0.3 – 10.0 nmol/L	Required as a component of vitamin B12; a possible carcinogen and a myocardial poison in excess; stimulates erythropoiesis
LEAD (Pb)	0.22	< 0.50 µmol/L	Neurotoxic. Adverse effects on fertility or foetal development. Ranges requiring close monitoring: Females (premenopausal) 1.0 – 2.9 mol/L Males 1.4 – 2.9 mol/L
MANGANESE (Mn)	162	80 – 200 nmol/L	Significant industrial exposure >360 nmol/L Raised levels associated with cholestasis and Parkinsonian symptoms. Adverse effects on fertility or foetal development
MERCURY (Hg)	27.3*	< 15.0 nmol/L	Neurotoxic. Adverse effects on fertility or foetal development. Current "acceptable" adult range < 50.0 nmol/L Unexposed range for adults < 15.0 nmol/L Unexposed range for children < 6.0 nmol/L
MOLYBDENUM (Mo)	9.0	2.2 – 85.0 nmol/L	Essential; acts as an enzyme co-factor. Toxic at higher levels
NICKEL (Ni)	6.9	5.0 – 13.0 nmol/L	Sensitising; highly genotoxic carcinogen
SELENIUM (Se)	1.36	1.75 – 3.50 µmol/L	Enhances immune function: toxic effects, e.g. on heart, at higher levels
THALLIUM (Tl)	0.14	< 0.30 nmol/L	May be present in flue dust; from coal burning, and hence on home grown fruit and vegetables. Rodenticide. Can enter cells via K uptake pathways and high affinity for S may disrupt cellular organelles.
TIN (Sn)	6.7	<36.0 nmol/L	Organic tin is more toxic than inorganic and is better absorbed. Lipophilic, affecting cell and organelle membranes. Carcinogen.