



TECHNICAL NOTICE

SOUTH BEND MEDICAL FOUNDATION

Vitamin B1 (Thiamine), Whole Blood

Effective Date: November 1, 2010

Performing Department: Manual Lab

Clinical Significance: Thiamine is required by the body as the pyrophosphate (TPP), mainly for the metabolism of carbohydrates, fats, and alcohol. Sources of thiamine include legumes, nuts and whole grains. Intake of alcohol, coffee, loop diuretics, raw fish, shellfish, and tea often leads to deficiency of thiamine.

Clinical signs of thiamine deficiency primarily involve the nervous and cardiovascular systems. Beriberi is the disease resulting from thiamine deficiency. Frequently observed symptoms in the adults are mental confusion, anorexia, muscle weakness, ataxia, peripheral analysis, ophthalmoplegia, edema (wet beriberi), muscle wasting (dry beriberi), tachycardia and an enlarged heart. Sudden and severe onset of symptoms appear in infants and usually involves cardiac failure and cyanosis. Distinction of wet (cardiovascular) and dry (neuritic) manifestations of beriberi relates to duration and severity of the deficiency, the degree of physical exertion and caloric intake. Severe physical exertion and high carbohydrate intake result in the wet beriberi, while dry conditions usually result from relative inactivity with caloric restriction during the chronic deficiency.

Thiamine diphosphate (TDP) is the main active form of thiamine in vivo. Approximately 80% of vitamin B1 in blood is found in erythrocytes, predominantly, 90%, in the form of TDP. Because of its abundance and good correlation of depletion rate with other organs, whole blood TDP measurement is the most sensitive and specific way to monitor thiamine status of body store.

Method: High Performance Liquid Chromatography (HPLC)

Use: Assessment of thiamine status

Reference Range: 70-180 nmol/L

SPECIMEN REQUIREMENTS AND COLLECTION:

SPECIMEN TYPE: Whole blood (acceptable anti-coagulants include heparin and EDTA)

PREFERRED VOLUME: 2 mL of whole blood

MINIMUM VOLUME: 1 mL of whole blood

COLLECTION: Collect into heparinized or EDTA anti-coagulated vacutainer, mix well and protect specimen from light.

STORAGE: Freeze whole blood samples within 4 hours of collection

TRANSPORT: Frozen. Wrap specimen in foil to protect from light.

CAUSES FOR REJECTION: Non-frozen, clotted specimen, incorrect anti-coagulants, not protected from light

Testing Schedule: Testing on Mondays and Thursdays

Order: Test #: 23304 CPT: 84425

Please direct any questions, or comments regarding this notice to Deborah H. Sun, Ph.D. (dsun@sbfm.org), or Brett Colter (bcolter@sbfm.org) or call South Bend Medical Foundation, (574) 234-4176 or (800) 544-0925.