

Mannan-Binding Lectin Protein

Test Name: Mannan-Binding Lectin (MBL) Protein

Other Names: Mannose-Binding Protein or Lectin

Test Code: 0033

CPT Code: 86160 or 86849

Background: Mannan-binding lectin (MBL) is an acute-phase, carbohydrate-binding serum protein secreted by the liver that plays a central role in the innate immune system. Structurally MBL is a C1q-like molecule that in association with MBL associated serine proteases (MASPs) binds to surface carbohydrates on bacteria, fungi, viruses and protozoa making them accessible for phagocytosis through MBL receptors or by activating the complement cascade via the recently elucidated MBL or lectin pathway. Functional MBL is a multimeric protein that consists of three-six MBL oligomers which are derived from a single functional gene (*mbi2*) on chromosome 10. Interindividual oligomeric MBL serum concentrations can differ 1000-fold, from <10 to 10,000 ng/mL and is primarily determined by the MBL genotype of the individual. Oligomeric MBL deficiencies (<100 ng/mL) that occur in approximately 10-20% of the population are mainly due to single nucleotide polymorphisms (SNPs) located within the promoter and structural region of the *mbi2* gene. These SNPs reduce MBL oligomer levels as well as inhibit MBL oligomeric formation that is essential for complement activation. While many individuals with MBL deficiency appear to be healthy, this deficiency leads to severe or recurrent infections within a small percent of this population.

Method: Enzyme Immunoassay. The test uses a monoclonal antibody against the oligomeric MBL carbohydrate-binding domain for both capture and detection. The specificity of this monoclonal antibody for oligomeric MBL has been previously reported. *The performance characteristics of this test were determined by IBT Reference Laboratory. This test has not been approved or cleared by the FDA.*

Specimen Requirement: 1 mL of serum. The specimen can be shipped via overnight courier at ambient temperature. For longer storage, the serum should be kept frozen.

Reference Range: >100 Nanograms/mL

Interpretation: Clinical studies have used cut-off values of 50 or 100 ng/mL for defining severe oligomeric MBL deficiency. Although the innate immune system possesses a number of redundant functional components, oligomeric MBL values below these cut-off levels may be associated with a history of increased susceptibility to infections. The determination of oligomeric MBL concentration within individuals especially those suffering from recurrent infections may be useful for the elucidation of suspected immune defects and as a prognostic indicator alerting to the need for heightened therapeutic or prophylactic measures.

References:

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