Test Definition: COM

Complement, Total, S

Overview

Useful For

Detection of individuals with an ongoing immune process

First-order screening test for congenital complement deficiencies

Method Name

Automated Liposome Lysis Assay

NY State Available

Yes

Specimen

Specimen Type

Serum Red

Specimen Required

Patient Preparation: Fasting preferred.

Supplies: Aliquot Tube, 5 mL (T465)

Collection Container/Tube: Red top

Submission Container/Tube: Plastic, 5 mL tube

Specimen Volume: 1 mL

Collection Instructions:

1. Immediately after specimen collection, place the tube on wet ice.

2. Centrifuge and separate serum from clot.

3. Immediately freeze specimen.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum Red	Frozen	28 days	

Clinical and Interpretive

Clinical Information

Complement proteins are components of the innate immune system. There are 3 pathways to complement activation: 1) the classic pathway, 2) the alternative (or properdin) pathway, and 3) the lectin activation (or mannan-binding protein) pathway. The classic pathway of the complement system is composed of a series of proteins that are activated in response to the presence of immune complexes. The activation process results in the generation of peptides that are chemotactic for neutrophils and that bind to immune complexes and complement receptors. The end result of the complement activation cascade is the formation of the lytic membrane attack complex (MAC).

The absence of early components (C1, C2, C3, C4) of the complement cascade results in the inability of immune complexes to activate the cascade. Patients with deficiencies of the early complement proteins are unable to generate the peptides that are necessary to clear immune complexes and to attract neutrophils or to generate lytic activity. These patients have increased susceptibility to infections with encapsulated microorganisms. They may also have symptoms that suggest autoimmune disease, and complement deficiency may be an etiologic factor in the development of autoimmune disease.

Patients with deficiencies of the late complement proteins (C5, C6, C7, C8, and C9) are unable to form the MAC, and may have increased susceptibility to neisserial infections.

Undetectable complement levels are found in patients with specific component deficiencies. Decreased complement levels are found in infectious and autoimmune diseases due to fixation and consumption of complement.

Reference Values

> or =16 years: 30-75 U/mL

Reference values have not been established for patients that are <16 years of age.

Interpretation

Low levels of total complement (total hemolytic complement CH50) may occur during infections, disease exacerbation in patients with systemic lupus erythematosus, and in patients with immune complex diseases such as glomerulonephritis.

Undetectable levels suggest the possibility of a complement component deficiency. Individual complement component assays are useful to identify the specific deficiency.

Cautions

Because this is a functional assay, the results are dependent on appropriate specimen transport and storage.

Clinical Reference

1. Ross SC, Densen P: Complement deficiency states and infection: epidemiology, pathogenesis and consequences of neisserial and other infections in an immune deficiency. Medicine 1984;63:243-273

2. Frank MM: Complement in the pathophysiology of human disease. N Engl J Med 1987;316:1525-1530

3. Yamamoto S, Kubotsu K, Kida M, et al: Automated homogeneous liposome-based assay system for total

complement activity. Clin Chem 1995;41:586-590

Performance

Method Description

An automated method is performed using liposomes as the target for the serum complement system. The dinitrophenyl (DNP)-labeled liposomes are sensitized with antibody to DNP. Serum complement causes lysis and release of entrapped glucose-6-phosphate dehydrogenase. Glucose-6-phosphate dehydrogenase reacts with glucose-6-phosphate and nicotinamide adenine dinucleotide (NAD). NAD is reduced to reduced nicotinamide adenine dinucleotide (NADH) and the conversion is measured at 340 nm. The assay correlates with the total complement (CH50) assay based on sheep RBC lysis, has lower variability, and is simpler to perform.(Package insert: Wako Autokit CH50. Wako Pure Chemical Industries, Ltd., 08/2007; Yamamoto S, Kubotsu K, Kida M, et al: Automated homogeneous liposome-based assay system for total complement activity. Clin Chem 1995;41:586-590)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Saturday; 3 p.m.

Analytic Time

1 day

Maximum Laboratory Time

2 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees and Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification

This test has been cleared or approved by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

86162

LOINC® Information

Test Definition: COM

Complement, Total, S

Test ID	Test Order Name	Order LOINC Value
COM	Complement, Total, S	4532-8

Result ID	Test Result Name	Result LOINC Value
COM	Complement, Total, S	4532-8