MAYO CLINIC LABORATORIES

Test Definition: C3

Complement C3, Serum

Overview

Useful For

Assessing disease activity in systemic lupus erythematosus

Investigating an undetectable total complement (CH50) level

Method Name

Nephelometry

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 1 mL

Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send a Renal Diagnostics Test Request (T830) with the specimen.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	Reject
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	
	Frozen	28 days	
	Ambient	72 hours	

Clinical & Interpretive

Clinical Information

The complement system is an integral part of the body's immune defenses. It can be activated via immune complexes (classic pathway) or by bacterial polysaccharides (alternative pathway).The primary complement pathway consists of recognition (Clq, Clr, Cls), activation (C4, C2, C3), and attack (C5, C6, C7, C8, C9) mechanisms with respect to their role in antibody-mediated cytolysis.

C3 activation involves cleavage by C3 convertase into C3a and C3b. When immune complexes are not involved, the alternate method of complement activation initiates the reactant sequence at C3, bypassing C1, C4, and C2.

Severe recurrent bacterial infections occur in patients with homozygous C3 deficiency and in those patients with low levels of C3 secondary to the absence of C3b activator.

Decreased C3 may be associated with acute glomerulonephritis, membranoproliferative glomerulonephritis, immune complex disease, active systemic lupus erythematosus, septic shock, and end-stage liver disease.

Reference Values

75-175 mg/dL

Interpretation

A decrease in C3 levels to the abnormal range is consistent with disease activation in systemic lupus erythematosus.

Cautions

The results are dependent on appropriate specimen transport and storage.

Clinical Reference

1. Willrich MAV, Braun KMP, Moyer AM, Jeffrey DH, Frazer-Abel A: Complement testing in the clinical laboratory. Crit Rev Clin Lab Sci. 2021 Nov;58(7):447-478. doi: 10.1080/10408363.2021.19072972

2. Wong EKS, Kavanagh D: Diseases of complement dysregulation-an overview. Semin Immunopathol. 2018 Jan;40(1):49-64. doi: 10.1007/s00281-017-0663-8

3. Prohaszka Z, Kirschfink M, Frazer-Abel A: Complement analysis in the era of targeted therapeutics. Mol Immunol. 2018 Oct;102:84-88. doi: 10.1016/j.molimm.2018.06.001

4. Brodszki N, Frazer-Abel A, Grumach AS, et al: European Society for Immunodeficiencies (ESID) and European Reference Network on Rare Primary Immunodeficiency, Autoinflammatory and Autoimmune Diseases (ERN RITA) Complement Guideline: Deficiencies, Diagnosis, and Management. J Clin Immunol. 2020 May;40(4):576-591. doi: 10.1007/s10875-020-00754-1

Performance

Method Description

C3 is measured by immunonephelometry. Antiserum to C3 is mixed with patient serum, the light scatter resulting from the antibody interaction with C3 is measured, and the signal is compared to standard concentrations of C3.(Instruction manual: Siemens Nephelometer II Operations. Siemens, Inc; Version 2.4, 07/2019; Addendum to the Instruction Manual 2.3, 08/2017)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

Same day/1 to 2 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & 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 account representative. For assistance, contact Customer Service.

Test Classification

This test has been cleared, approved, or is exempt by the US 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

86160

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
C3	Complement C3, S	4485-9

Test Definition: C3

Complement C3, Serum

Result ID	Test Result Name	Result LOINC® Value
C3	Complement C3, S	4485-9