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 |