MAYO CLINIC LABORATORIES

Test Definition: A2M

Alpha-2-Macroglobulin, Serum

Overview

Useful For
Evaluating patients with nephrotic syndrome and pancreatitis

Method Name
Nephelometry

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required
Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
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 Gastroenterology and Hepatology Test Request (T728) 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)	21 days	
	Ambient	72 hours	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Alpha-2-macroglobulin is a protease inhibitor and is one of the largest plasma proteins. It transports hormones and enzymes, exhibits effector and inhibitor functions in the development of the lymphatic system, and inhibits components of the complement and hemostasis systems.

Increased levels of alpha-2-macroglobulin are found in nephrotic syndrome when lower molecular weight proteins are lost but alpha-2-macroglobulin is retained because of its large size. In patients with liver cirrhosis and diabetes, the levels are found to be elevated.

Patients with acute pancreatitis exhibit low serum concentrations, which correlate with the severity of the disease. In hyperfibrinolytic states, after major surgery, in septicemia, and severe hepatic insufficiency, the measured levels of alpha-2-macroglobulin are often low. Acute myocardial infarction patients with low alpha-2-macroglobulin have been reported to have a significantly better prognosis with regard to the greater than a year survival time.

Reference Values

< or =18 years: 178-495 mg/dL
>18 years: 100-280 mg/dL

Interpretation

Values are elevated in the nephrotic syndrome in proportion to the severity of protein loss (lower molecular weight).

Values are low in proteolytic diseases such as pancreatitis.

Cautions

Quantitation of specific proteins by nephelometric means may not be possible in lipemic sera due to the extreme light scattering properties of the specimen. Turbidity and particles in the specimen may result in extraneous light scattering signals, resulting in variable specimen analysis.

Clinical Reference

1. McMahon MJ, Bowen M, Mayer AD, Cooper EH. Relation of alpha-2-macroglobulin and other antiproteases to the clinical features of acute pancreatitis. Am J Surg. 1984;147(1):164-170. doi:10.1016/0002-9610(84)90052-7
2. Haines AP, Howarth D, North WR, et al. Haemostatic variables and the outcome of myocardial infarction. Thromb Haemost. 1983;50(4):800-803
3. Hofmann W, Schmidt D, Guder WG, Edel HH. Differentiation of hematuria by quantitative determination of urinary marker proteins. Klin Wochenschr. 1991;69(2):68-75. doi:10.1007/BF01666819
4. Solerte SB, Adamo S, Viola C, et al. Acute-phase protein reactants pattern and alpha 2 macroglobulin in diabetes mellitus. Pathophysiological aspects in diabetic microangiopathy. RIC Clin Lab. 1984;14(3):575-579. doi:10.1007/BF02904891

5. Silverman LM, Christenson RH, Grant GH. Basic chemistry of amino acids and proteins. In: Tietz, NW ed. Clinical Guide to Laboratory Tests. 2nd ed. WB Saunders Comp; 1990:380-381
6. Rifai N, Horvath AR, Wittwer CT, eds: Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018

Performance

Method Description

In this method, the light scattered onto the antigen-antibody complexes is measured. The intensity of the measured scattered light is proportional to the amount of antigen-antibody complexes in the sample under certain conditions. If the antibody volume is kept constant, the signal behaves proportionally to the antigen volume.

A reference curve is generated by a standard with a known antigen content on which the scattered light signals of the samples can be evaluated and calculated as an antigen concentration. Antigen-antibody complexes are formed when a sample containing antigen and the corresponding antiserum are put into a cuvette. A light beam is generated with a light-emitting diode, which is transmitted through the cuvette. The light is scattered onto the immuno-complexes that are present. Antigen and antibody are mixed in the initial measurement, but no complex is formed yet. An antigen-antibody complex is formed in the final measurement.

The result is calculated by subtracting the value of the final measurement from the initial measurement. The distribution of intensity of the scattered light depends on the ratio of the particle size of the antigen-antibody complexes to the radiated wavelength.(Instruction manual: Siemens Nephelometer II. Siemens, Inc; Version 2.4, 07/2019)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

1 to 3 days

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

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

83883

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
A2M	Alpha-2-Macroglobulin, S	1835-8

Result ID	Test Result Name	Result LOINC® Value
A2M	Alpha-2-Macroglobulin, S	1835-8