MAYO CLINIC LABORATORIES

Test Definition: HAPT

Haptoglobin, Serum

Overview

Useful For
Confirmation of intravascular hemolysis

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

Specimen Minimum Volume
Serum: 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)	28 days	
	Ambient	14 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Haptoglobin is an immunoglobulin-like plasma protein that binds hemoglobin. The haptoglobin-hemoglobin complex is removed from plasma by macrophages and the hemoglobin is catabolized. When the hemoglobin-binding capacity of haptoglobin is exceeded, hemoglobin passes through the renal glomeruli, resulting in hemoglobinuria.

Haptoglobin has lower serum concentrations in children and therefore is not suited for hemolysis testing. Haptoglobin is an acute-phase reactant, which can develop very high serum levels during periods of inflammation or tissue necrosis. Chronic intravascular hemolysis causes persistently low haptoglobin concentration. Regular strenuous exercise may cause sustained low haptoglobin, presumably from low-grade hemolysis. Low serum haptoglobin may also be due to severe liver disease.

Neonatal plasma or serum specimens usually do not contain measurable haptoglobin; adult levels are achieved by 6 months.

Increase in plasma haptoglobin concentration occurs as an acute-phase reaction. Levels may appear to be increased in conditions such as burns and nephrotic syndrome. An acute-phase response may be confirmed and monitored by assay of other acute-phase reactants, such as alpha-1-antitrypsin and C-reactive protein.

Reference Values

30-200 mg/dL

Interpretation

Absence of plasma haptoglobin may indicate intravascular hemolysis. However, congenital anhaptoglobinemia is common, particularly in the African American population. For this reason, it may be difficult or impossible to interpret a single measurement of plasma haptoglobin. If the assay value is low, the test should be repeated after 1 to 2 weeks following an acute episode of hemolysis. If all the plasma haptoglobin is removed following an episode of intravascular hemolysis and if hemolysis ceases, the haptoglobin concentration should return to normal in a week.

Low levels of plasma haptoglobin may indicate intravascular hemolysis.

Cautions

Low haptoglobin is normal for the first 3 to 6 months of life.

Haptoglobin is an acute-phase reactant and increases with inflammation or tissue necrosis.

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. Shih AW, McFarlane A, Verhovsek M. Haptoglobin testing in hemolysis: measurement and interpretation. Am J Hematol. 2014;89(4):443-447. doi:10.1002/ajh.23623
2. di Masi A, De Simone G, Ciaccio C, D'Orso S, Coletta M, Ascenzi P. Haptoglobin: From hemoglobin scavenging to

human health. Mol Aspects Med. 2020;73:100851. doi:10.1016/j.mam.2020.100851
3. Rifai N. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2022:1584

Performance

Method Description

In this Siemens Nephelometer II 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 (LED), 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 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 Operations Instruction Manual; 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

83010

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
HAPT	Haptoglobin, S	46127-7

Result ID	Test Result Name	Result LOINC® Value
HAPT	Haptoglobin, S	46127-7