MAYO CLINIC LABORATORIES

Test Definition: SVISC

Viscosity, Serum

Overview

Useful For

Detection of increased viscosity

Monitoring patients with hyperviscosity syndrome

This test is **not useful for** patients with small concentrations of monoclonal proteins.

Method Name

Capillary Measurement

NY State Available

Yes

Specimen

Specimen Type

Serum Red

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Red top (serum gel/SST are **not acceptable**)
Submission Container/Tube: Plastic vial
Specimen Volume: 3 mL serum
Collection Instructions:
1. Use a warm pack or heat block to keep specimen at 37 degrees C until after centrifugation.
2. Centrifuge at 37 degrees C and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
-Benign Hematology Test Request Form (T755)
-Hematopathology/Cytogenetics Test Request (T726)

Specimen Minimum Volume

Serum: 2.0 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK

Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum Red	Refrigerated (preferred)	28 days	
	Ambient	14 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Viscosity is the property of fluids to resist flow. Hyperviscosity may be manifested by nasal bleeding, blurred vision, headaches, dizziness, nystagmus, deafness, diplopia, ataxia, paresthesias, or congestive heart failure. Funduscopic examination reveals dilation of retinal veins and flame shaped retinal hemorrhages.

The most common cause of serum hyperviscosity is the presence of large concentrations of IgM monoclonal proteins, and Waldenstrom macroglobulinemia accounts for 80% to 90% of hyperviscosity cases. Hyperviscosity syndrome can also occur in multiple myeloma patients.

Because the ability of a monoclonal protein to cause hyperviscosity is affected by its concentration, molecular weight, and aggregation, sera with concentrations of monoclonal IgM greater than 4 g/dL, IgA greater than 5 g/dL, or IgG greater than 6 g/dL should be tested for hyperviscosity.

Serum viscosity and electrophoresis are recommended before and after plasmapheresis in order to correlate viscosity and M-spike with patient symptoms. This correlation may be useful for anticipating the need for repeat plasmapheresis.

Reference Values

< or =1.5 centipoises

Interpretation

Although viscosities greater than 1.5 centipoises (cP) are abnormal, hyperviscosity is rarely present unless the viscosity is greater than 3 cP.

Cautions

Failure to follow specimen handling instructions may cause false-low results.

Hyperviscosity syndrome may not be present even if the viscosity is greater than 3 centipoises.

Clinical Reference

1. Gertz MA, Kyle RA. Hyperviscosity syndrome. J Intensive Care Med. 1995;10{3}:128-141
2. Gertz MA. Acute hyperviscosity: syndromes and management. Blood. 2018;132(13):1379-1385
3. Kesmarky G, Kenyeres P, Rabai M, Toth K. Plasma viscosity: a forgotten variable. Clin Hemorheol Microcirc. 2008;39(1-4):243-246

4. Wood AW: Rheology of blood. In: Physiology, Biophysics, and Biomedical Engineering. CRC Press; 2012:217-233

Performance

Method Description

The Benson BV200 automated viscometer employs vacuum pressure through a capillary to measure the dynamic viscosity of serum samples. Samples at ambient temperature are aspirated by the sample probe, which is heated to 37 degrees C. Viscosity results are calculated by the instrument at both 25 degrees C and 37 degrees C temperature points. Viscosity units on board the instrument are mPa.s (milli-pascal seconds), which is the International Standard (SI) unit for viscosity. Centipoise (cP) units are named after French physicist Jean Leonard Marie Poiseuille and are used in the centimeter-gram-second (CGS) system of units. 1 mPa.s is equal to 1 cP.(Instruction manual: BV200 Automated Clinical Viscometer User Manual. Benson Viscometers; Ver. 1.5, 02/2020)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

1 to 3 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 modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

85810

LOINC® Information

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Test Definition: SVISC

Viscosity, Serum

Test ID	Test Order Name	Order LOINC® Value
SVISC	Viscosity, S	3128-6

Result ID	Test Result Name	Result LOINC® Value
SVISC	Viscosity, S	3128-6