MAYO CLINIC LABORATORIES

Test Definition: FIBTP

Fibrinogen, Plasma

Overview

Useful For

Detecting increased or decreased fibrinogen (factor I) concentration of acquired or congenital origin

Monitoring severity and treatment of disseminated intravascular coagulation and fibrinolysis

Method Name

Turbidimetric

NY State Available

Yes

Specimen

Specimen Type

Plasma Na Cit

Specimen Required

Specimen Type: Platelet-poor plasma
Collection Container/Tube: Light-blue top (3.2% sodium citrate)
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions:
1. For complete instructions, see Coagulation Guidelines for Specimen Handling and Processing.
2. Centrifuge, transfer all plasma into a plastic vial, and centrifuge plasma again.
3. Aliquot plasma into plastic vial leaving 0.25 mL in the bottom of centrifuged vial.
4. Freeze plasma immediately (no longer than 4 hours after collection) at -20 degrees C or, ideally, at -40 degrees C or below.
Additional Information: Double-centrifuged specimen is critical for accurate results as platelet contamination may cause spurious results.

Specimen Minimum Volume

0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma Na Cit	Frozen (preferred)	14 days	
	Ambient	24 hours	

Clinical & Interpretive

Clinical Information

Fibrinogen, also known as factor I, is a plasma protein that can be transformed by thrombin into a fibrin gel ("the clot"). Fibrinogen is synthesized in the liver and circulates in the plasma as a disulfide-bonded dimer of 3 subunit chains. The biological half-life of plasma fibrinogen is 3 to 5 days.

An isolated deficiency of fibrinogen may be inherited as an autosomal recessive trait (afibrinogenemia or hypofibrinogenemia) and is one of the rarest of the inherited coagulation factor deficiencies.

Acquired causes of decreased fibrinogen levels include acute or decompensated intravascular coagulation and fibrinolysis (disseminated intravascular coagulation: DIC), advanced liver disease, L-asparaginase therapy, and therapy with fibrinolytic agents (eg, streptokinase, urokinase, tissue plasminogen activator).

Fibrinogen function abnormalities, dysfibrinogenemias, may be inherited (congenital) or acquired. Patients with dysfibrinogenemia are generally asymptomatic. However, the congenital dysfibrinogenemias are more likely to be associated with bleeding or thrombotic disorders than the acquired dysfibrinogenemias are. While the dysfibrinogenemias are generally not associated with clinically significant hemostasis problems, they characteristically produce a prolonged thrombin time clotting test.

Acquired dysfibrinogenemias mainly occur in association with liver disease (eg, chronic hepatitis, hepatoma) or kidney diseases (eg, chronic glomerulonephritis, hypernephroma) and usually are associated with elevated fibrinogen levels.

Fibrinogen is an acute phase reactant, so a number of acquired conditions can result in an increase in its plasma concentration:
-Acute or chronic inflammatory illnesses
-Nephrotic syndrome
-Liver disease and cirrhosis
-Pregnancy or estrogen therapy
-Compensated intravascular coagulation
-Diabetes
-Obesity

The finding of an increased level of fibrinogen in a patient with obscure symptoms suggests an organic rather than a functional condition. Chronically increased fibrinogen has been recognized as a risk factor for development of arterial thromboembolism.

Reference Values

200-393 mg/dL

Interpretation

Fibrinogen may be decreased in acquired conditions such as liver disease and acute intravascular coagulation and fibrinolysis and disseminated intravascular coagulation.

Fibrinogen may be decreased in rare conditions, including congenital afibrinogenemia or hypofibrinogenemia.

Fibrinogen may be elevated with acute or chronic inflammatory conditions.

Cautions

In patients with dysfibrinogenemias, fibrinogen concentration is often low and may be further differentiated from hypofibrinogenemia by measuring the fibrinogen antigen concentration.

Direct oral anticoagulants and high concentrations of heparin (>2 U/mL) can falsely decrease fibrinogen concentration.

Clinical Reference

1. Mackie IJ, Kitchen S, Machin SJ, Lowe GD: Haemostais and Thrombosis Task Force of the British Committee for standards in Haematology. Guidelines for fibrinogen assays. Br J Haemotol. 2003 May;121(3):396-304
2. Boender J, Kruip MJ, Leebeek FW: A diagnostic approach to mild bleeding disorders. J Thromb Haemost. 2016 Aug;14(8):1507-1516

Performance

Method Description

Coagulometric (turbidimetric) detection is based on the principle that light passing through a medium in which fibrinogen is converted to fibrin is absorbed by the fibrin strands. Light at 671 nm is transmitted through a sample onto a photodetector, which is positioned 180 degrees to the source. Light absorption increases as fibrin clot formation progresses. Consequently, light transmittance through the sample continuously decreases and is measured by the photodetector. The corresponding electrical signal output from the photodetector changes according to the detected light. The signal output is processed via software through a series of algorithms to determine the clot point.

In 1957, Clauss developed a quantitative assay using thrombin to measure fibrinogen in plasma. In this procedure, an excess of thrombin is added to diluted plasma, and the resulting clotting time value is measured. The log of the clotting time value is inversely proportional to the log of the fibrinogen concentration. A fibrinogen reference curve is plotted from the clotting time results of the known reference plasma dilutions having different fibrinogen values. The concentration of fibrinogen in patient plasma samples is determined by comparing clotting time values to the reference curve.(Package insert: HemosIL Q.F.A. Thrombin [Bovine]. Instrumentation Laboratory; R10, 06/2017; instruction manual: IL TOP Operators Manual, Instrumentation Laboratory; 2013)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

Same day/1 day

Specimen Retention Time

Same day/1 day

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

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

85384

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
FIBTP	Fibrinogen, P	3255-7

Result ID	Test Result Name	Result LOINC® Value
FIBTP	Fibrinogen, P	3255-7