MAYO CLINIC LABORATORIES

Test Definition: FACTV

Coagulation Factor V Activity Assay, Plasma

Overview

Useful For

Diagnosing congenital deficiencies (rare) of coagulation factor V

Evaluating acquired deficiencies associated with liver disease, factor V inhibitors, myeloproliferative disorders, and intravascular coagulation and fibrinolysis

Investigation of prolonged prothrombin time or activated partial thromboplastin time

Special Instructions

- Coagulation Guidelines for Specimen Handling and Processing

Method Name

Optical Clot-Based

NY State Available

No

Specimen

Specimen Type

Plasma Na Cit

Ordering Guidance

Coagulation testing is highly complex, often requiring the performance of multiple assays and correlation with clinical information. For that reason, consider ordering a Coagulation Consultation.

Specimen Required

Specimen Type: Platelet-poor plasma

Patient Preparation:

1. Specimen must be collected prior to initiation of anticoagulants and thrombolytic therapy.
2. Patient **must not** be receiving warfarin, heparin, direct thrombin inhibitors (argatroban, dabigatran), or direct factor Xa inhibitors (apixaban, rivaroxaban, and edoxaban).
   a. If medically feasible, for 4 to 6 hours before specimen collection, do not administer intravenous heparin.
   b. If medically feasible, for 10 to 14 days before specimen collection, do not administer subcutaneous heparin or warfarin.
3. It is best to collect the specimen pretransfusion if possible. If patient has been recently transfused, wait at least 48 hours after transfusion to collect the specimen.

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)

Collection Container/Tube: Light-blue top (3.2% sodium citrate)

Submission Container/Tube: 13-mm x 75-mm, 5-mL, plastic vial (polypropylene preferred)
Specimen Volume: 1 mL Platelet-poor plasma
Collection Instructions:
1. Specimen must be collected prior to factor replacement therapy.
2. For complete instructions, see Coagulation Guidelines for Specimen Handling and Processing
3. Centrifuge, transfer all plasma into a plastic vial, and centrifuge plasma again.
4. Aliquot plasma into a separate plastic vial, leaving 0.25 mL in the bottom of centrifuged vial.
5. Immediately freeze plasma (no longer than 4 hours after collection) at -20 degrees C or, ideally, -40 degrees C or below.
Additional Information:
1. Double-centrifuged specimen is critical for accurate results as platelet contamination may cause spurious results.
2. Each coagulation assay requested should have its own vial.

Forms
If not ordering electronically, complete, print, and send a Coagulation Test Request (T753) with the specimen.

Specimen Minimum Volume
Platelet-poor plasma: 0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma Na Cit	Frozen	14 days	

Clinical & Interpretive

Clinical Information
Factor V is a vitamin K-independent protein synthesized in the liver and in other tissues (endothelium, megakaryocytes/platelets). In its thrombin-activated form (factor Va), it serves as an essential cofactor in the prothrombinase enzyme complex, which converts prothrombin to thrombin (the prothrombinase complex consists of the enzyme, activated factor X, factor Va cofactor, a phospholipid surface, and calcium).

Deficiency of factor V may cause prolonged prothrombin time and activated partial thromboplastin time and may result in a bleeding diathesis. Plasma biological half-life varies from 12 to 36 hours.

Platelets contain 20% to 25% of the factor V in blood. Factor V (also known as labile factor) is highly susceptible to proteolytic inactivation, with the potential for spuriously decreased assay results.

Reference Values

>1 month: 70%-165%

<1 month: Normal, full-term and premature newborn infants may have mildly decreased levels (> or =30% to 35%) which reach adult levels within 21 days postnatal.

*See Pediatric Hemostasis References section in Coagulation Guidelines for Specimen Handling and Processing

Interpretation

Acquired deficiencies are much more common than congenital.

Patients that are congenitally deficient homozygous generally have activity levels less than or equal to10% to 20%.

Patients that are congenitally deficient heterozygous generally have activity levels less than or equal to 50%.

Congenital deficiency may occur in combined association with factor VIII deficiency.

Cautions

Factor V (labile factor) is highly susceptible to proteolytic inactivation, with the potential for spuriously decreased assay results. In normal individuals, after freeze-thaw of citrate plasma, factor V activity typically may be 10% to 20% less than observed in a fresh plasma specimen, and in occasional individuals, a more marked decrease of factor V activity occurs. Normal results can be regarded as reliable, but decreased factor V activity results need to be correlated with other clinical and laboratory information. Repeat testing may be necessary.

Clinical Reference

1. Girolami A, Scandellari R, Scapin M, Vettore S. Congenital bleeding disorders of the vitamin K-dependent clotting factors. Vitam Horm. 2008;78:281-374

2. Brenner B, Kuperman AA, Watzka M, Oldenburg J. Vitamin K-dependent coagulation factors deficiency. Semin Thromb Hemost. 2009;35(4):439-446

3. Asselta R, Peyvandi F. Factor V deficiency. Semin Thromb Hemost. 2009;35(4):382-389

4. Lippi G, Favaloro EJ, Montagnana M, Manzato F, Guidi GC, Franchini M. Inherited and acquired factor V deficiency. Blood Coagul Fibrinolysis. 2011;22(3):160-166

5. Spreafico M, Peyvandi F. Combined FV and FVIII deficiency. Haemophilia. 2008;14(6):1201-1208

6. Kottke-Marchant K, ed. Laboratory Hematology Practice. Wiley Blackwell Publishing; 2012

7. Favaloro EJ, Lippi G, eds. Hemostasis and Thrombosis, Methods and Protocols. Humana Press; 2017

Performance

Method Description

The factor V assay is performed on the Instrumentation Laboratory ACL TOP using the prothrombin time (PT) method and a factor-deficient substrate. Patient plasma is combined and incubated with a factor V-deficient substrate (normal plasma depleted of factor V by immunoadsorption). After a specified incubation time, a PT reagent is added to trigger the coagulation process in the mixture. Then the time to clot formation is measured optically at a wavelength of 671 nm.(Owen CA Jr, Bowie EJW, Thompson JH Jr: Diagnosis of Bleeding Disorders. 2nd ed. Little, Brown and Company; 1975;

Meijer P, Verbruggen HW, Spannagi M: Clotting factors and inhibitors: Assays and interpretation. In: Kottke-Marchant K, ed. Laboratory Hematology Practice. Wiley Blackwell Publishing; 2012:435-446)

PDF Report
No

Day(s) Performed
Monday through Friday

Report Available
1 to 2 days

Specimen Retention Time
7 days

Performing Laboratory Location
Mayo Clinic Jacksonville Clinical Lab

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
85220

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
FACTV	Coag Factor V Assay, P	3193-0

Result ID	Test Result Name	Result LOINC® Value
FACTV	Coag Factor V Assay, P	3193-0