Test Definition: F_2

Coagulation Factor II Activity Assay, Plasma

Overview

Useful For

Diagnosing a congenital deficiency (rare) of coagulation factor II

Evaluating acquired deficiencies associated with liver disease or vitamin K deficiency, oral anticoagulant therapy, and antibody-induced deficiencies (eg, in association with lupus-like anticoagulant)

Determining warfarin treatment stabilization in patients with nonspecific inhibitors (ie, lupus anticoagulant)

Determining degree of anticoagulation with warfarin to correlate with level of protein S

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

Yes

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, we suggest ordering Coagulation Consultations.

Necessary Information

If priority specimen, mark request form, give reason, and request a call-back.

Specimen Required

Specimen Type: Platelet-poor plasma
Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Patient Preparation: Patient **must not** be receiving coumadin (warfarin) or heparin therapy. (If not possible for medical reasons, note on request.)
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
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 plastic vial, leaving 0.25 mL in the bottom of centrifuged vial.
5. Freeze plasma immediately (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
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 II (prothrombin) is a vitamin K-dependent serine protease synthesized in liver. It participates in the final common pathway of coagulation, as the substrate for the prothrombinase enzyme complex. Prothrombin is the precursor of thrombin (IIa), which converts fibrinogen to fibrin. Plasma biological half-life is about 3 days.

Deficiency of factor II may cause prolonged prothrombin time and activated partial thromboplastin time. Deficiency may result in a bleeding diathesis.

Reference Values
Adults: 75-145%
Normal, full-term newborn infants or healthy premature infants may have decreased levels (> or =25%) which may remain below adult levels for > or =180 days postnatal.*

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

Interpretation

Liver disease, vitamin K deficiency, or warfarin anticoagulation can cause decreased factor II activity.

Normal newborn infants may have levels of 25% to 50%.

Cautions

Factor II is one of the last vitamin K-dependent coagulation factors to decrease after starting warfarin therapy and one of the last to return to normal when anticoagulation is discontinued. It may take 10 to 14 days for a return to baseline levels.

Clinical Reference

1. Lancellotti S, De Cristofaro R. Congenital prothrombin deficiency. Semin Thromb Hemost. 2009;35(4):367-381. doi:10.1055/s-0029-1225759
2. Peyvandi F, Bolton-Maggs PH, Batorova A, De Moerloose P. Rare bleeding disorders. Haemophilia. 2012;18 Suppl 4:148-153. doi:10.1111/j.1365-2516.2012.02841.x
3. Girolami A, Scandellari R, Scapin M, Vettore S. Congenital bleeding disorders of the vitamin K-dependent clotting factors. Vitam Horm. 2008;78:281-374. doi:10.1016/S0083-6729(07)00014-3
4. Brenner B, Kuperman AA, Watzka M, Oldenburg J. Vitamin K-dependent coagulation factors deficiency. Semin Thromb Hemost. 2009;35(4):439-446. doi:10.1055/s-0029-1225766
5. Favaloro EJ and Lippi G. eds. Hemostasis and Thrombosis, Methods and Protocols. Humana Press 2017

Performance

Method Description

The factor II assay is performed on the Instrument Laboratory ACL TOP using the prothrombin time (PT) method and a factor-deficient substrate. Patient plasma is combined and incubated with a factor II-deficient substrate (normal plasma depleted of factor II 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 Saturday

Report Available

1 to 3 days

Specimen Retention Time

7 days

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 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

85210

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
F_2	Coag Factor II Assay, P	3289-6

Result ID	Test Result Name	Result LOINC® Value
F_2	Coag Factor II Assay, P	3289-6