Test Definition: EDOXA

Edoxaban, Anti-Xa, P

Overview

Useful For

Measuring edoxaban concentration in plasma

This test is **not useful for** monitoring low-molecular-weight heparin (LMWH) or unfractionated heparin (UFH) concentrations.

Special Instructions

- Coagulation Guidelines for Specimen Handling and Processing

Method Name

Chromogenic Assay

NY State Available

Yes

Specimen

Specimen Type

Plasma Na Cit

Advisory Information

This assay is **not indicated** for monitoring low-molecular-weight heparin (LMWH) or unfractionated heparin (UFH) concentrations. The presence of UFH and LMWH will cause the edoxaban anti-Xa level to be falsely elevated.

Necessary Information

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

Specimen Required

Specimen Type: Platelet-poor plasma

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

Submission Container/Tube: Polypropylene vial

Specimen Volume: 1 mL

Collection Instructions:

1. Specimen should be drawn 1 to 3 hours (peak) after a dose or just prior (trough) to the next dose for edoxaban concentrations.

2. For complete instructions, see Coagulation Guidelines for Specimen Handling and Processing in Special Instructions.

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, < or =-40 degrees C.

Additional Information:

1. A 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 plasma

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma Na Cit	Frozen	42 days	

Clinical and Interpretive

Clinical Information

Edoxaban, an oral anticoagulant that directly inhibits factor Xa, has been approved by the FDA for prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation (NVAF) and for the treatment of venous thromboembolism (VTE). Unlike warfarin, it does not require routine therapeutic monitoring. However, in selected clinical situations, measurement of drug level would be useful (eg, renal insufficiency, assessment of compliance, periprocedural measurement of drug concentration, suspected overdose, advanced age and extremes of body weight).

Predicted Edoxaban Steady-State Exposure Concentrations

Nonvalvular atrial fibrillation (1)	**Median trough levels*** (24 hours after last dose)	**Median peak levels** (2 hours after dose)
30 mg once daily	38 ng/mL (7-147)	169 ng/mL (10-400)
60 mg once daily	39 ng/mL (13-110)	300 ng/mL (60-569)

Nonvalvular atrial fibrillation (2)	**Median trough levels*** (median collection time 20 hours (IQR 15.4-24.3) post dose)	
30 mg once daily	18.4 ng/mL (10.1-32.3)	
60 mg once daily	36 ng/mL (19-62)	
Deep vein thromboembolism and pulmonary embolism continued treatment (3)	**Median trough levels** (obtained pre-dose)	**Peak levels** (obtained 1-3 hours post dose)
30 mg once daily	16 ng/mL (IQR 8.3-32)	164 ng/mL (IQR 99-225)
60 mg once daily	19 ng/mL (10-39)	234 ng/mL (IQR 149-317)

*Trough levels derived from separate references/studies containing different post dose draw times.

Reference Values

<10 ng/mL

Interpretation

The lower limit of detection of this assay is 10 ng/mL.

Therapeutic reference ranges have not been established. For peak and trough drug concentrations observed from clinical trials see Clinical Information.

Cautions

Routine monitoring of edoxaban is not indicated. Therapeutic reference ranges have not been established, however, peak and trough levels observed in clinical trials at different dosing are available. Edoxaban concentration may be affected by drug interactions as well as liver and renal disease.

Clinical Reference

1. Testa S, Dellanoce C, Paoletti O, et al: Edoxaban plasma levels in patients with non-valvular atrial fibrillation: Inter and intra-individual variability, correlation with coagulation screening test and renal function. Thromb Res 2019 Mar;175:61-67

2. Ruff CT, Giugliano RP, Braunwald E, et al: Association between edoxaban dose, concentration, anti-Factor Xa activity, and outcomes: an analysis of data from the randomized, double-blind ENGAGE AF-TIMI 48 trial. Lancet 2015 Jun 6; 385(9984):2288-2295

3. Verhamme P, Wells PS, Segers A, et al: Dose reduction of edoxaban preserves efficacy and safety for the treatment of venous thromboembolism. An analysis of the rendomised, double-blind HOKUSAI VTE trial. Thromb Haemost 2016 Sep27;116(4):747-753

4. Package insert: SAVAYSA (edoxaban): Daiichi Sankyo Co., LTD. Tokyo 103-8426, Japan

5. Gosselin RC, Adcock DM, Bates SM, et al: International Council for Standardization in Haematology (ICSH) Recommendations for Laboratory Measurement of Direct Oral Anticoagulants. Thrmb Haemost 2018;118:437-450

6. Douxfils J, Ageno W, Samama CM, et al: Laboratory testing in patients treated with direct oral anticoagulants: a

practical guide for clinicians. J Thromb Haemost 2018;16:209-219

7. Adcock DM, Gosselin RC: The danger of relying on the APTT and PT in patients on DOAC therapy, a potential patient safety issue. Int J Lab Hematol 2017;39(Suppl. 1):37-40

8. He L, Kochan J, Lin M, et al: Determination of edoxaban equivalent concentrations in human plasma by an automated anti-factor Xa chromogenic assay. Thromb Res 2017;155:121-127

9. Cuker A, Husseinzadeh H: Laboratory measurement of the anticoagulant activity of edoxaban: a systematic review. J Thromb Thrombolysis 2015;39:288-294

Performance

Method Description

The edoxaban, anti-Xa assay is performed on the Instrumentation Laboratory ACL TOP 700 using the HemosIL Liquid Anti-Xa kit. The liquid Anti-Xa kit is a 1-stage chromogenic assay based on a synthetic chromogenic substrate and on factor Xa inactivation. Factor Xa is neutralized directly by edoxaban. Residual factor Xa is quantified with a synthetic chromogenic substrate. The paranitroaniline released is monitored kinetically at 405 nm and is inversely proportional to the edoxaban in the sample.(Package insert: HemosiL Liquid Anti-Xa kit. Instrumentation Laboratory Company, rev. 06/2017)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday

Analytic Time

1 day

Maximum Laboratory Time

3 days

Specimen Retention Time

7 days

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. 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 U.S. Food and Drug Administration.

CPT Code Information

80299

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
EDOXA	Edoxaban, Anti-Xa, P	95128-5

Result ID	Test Result Name	Result LOINC Value
EDOX1	Edoxaban, Anti-Xa, P	95128-5
EDOX2	Interpretation	69049-5
EDOX3	Cautions	62364-5