MAYO CLINIC LABORATORIES

Test Definition: LACO

Lacosamide, S

Overview

Useful For

Monitoring serum concentrations of lacosamide to ensure compliance and appropriate dosing in specific clinical conditions (ie, severe renal impairment, mild-to-moderate hepatic impairment, and end-stage renal disease)

Method Name

Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)
Portions of this test are covered by patents held by Quest Diagnostics

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Container/Tube:
Preferred: Red top
Acceptable: Serum gel
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions:
1. Draw blood immediately before next scheduled dose.
2. For sustained-release formulations ONLY, draw blood a minimum of 12 hours after last dose.
3. Centrifuge and aliquot serum into plastic vial within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send a Neurology Specialty Testing Client Test Request (T732) with the specimen.

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Minimum Volume

0.2 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container

Serum	Refrigerated (preferred)	28 days	
	Ambient	28 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Lacosamide is approved for adjunctive therapy to treat partial-onset seizures in epileptic patients 17 years of age and older. In clinical trials, the most common side effects were dizziness, headache, nausea, and double vision. Lacosamide is completely absorbed after oral administration with negligible first-pass metabolism. Peak plasma concentrations occur 1 to 4 hours after oral dosing, and the elimination half-life is approximately 13 hours. Steady-state plasma concentrations are achieved after 3 days of twice daily repeated administration. About 40% of the administered dose is eliminated by the renal system unchanged and 30% is metabolized by hepatic isoenzymes (CYP2C9, CYP2C19, and CYP3A4) to the O-desmethyl inactive metabolite. The relationship between lacosamide plasma concentrations and its efficacy or adverse effects is not well established. However, central nervous system toxicity has been associated with higher drug concentrations in plasma.

Reference Values

Patients receiving therapeutic doses usually have lacosamide concentrations of 1.0-10.0 mcg/mL.

Interpretation

The serum concentration should be interpreted in the context of the patient's clinical response and may provide useful information in patients showing poor response or adverse effects, particularly when lacosamide is co-administered with other anticonvulsant drugs.
Toxic ranges are not well established but occur more frequently when concentrations are greater or equal to 20 mcg/mL.

Cautions

Abnormalities in liver function tests (eg, alanine aminotransferase) have been observed in controlled trials in adult patients with partial-onset seizures who were taking 1 to 3 concomitant antiepileptic drugs.

Clinical Reference

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3. Chung SS: New treatment option for partial-onset seizures: efficacy and safety of lacosamide. Ther Adv Neurol Disord. 2010;3:77-83
4. Sattler A, Schaefer M, May TW, et al: Fluctuation of lacosamide serum concentrations during the day and occurrence of adverse drug reactions-first clinical experience. Epilepsy Res. 2011;95(3):207-212
5. Greenaway C, Ratnaraj N, Sander JW, Patsalos PN: Saliva and serum lacosamide concentrations in patients with epilepsy. Epilepsia. 2011;52:258-263
6. McMullin M, Dalrymple R: Analysis for lacosamide in human serum by LC/MS/MS and a summary of 8,000 patient values. Ther Drug Monit. 2011;33(4):520-521
7. Hiemke C, Bergemann N, Clement HW, et al: Consensus guidelines for therapeutic drug monitoring in neuropsychopharmacology: Update 2017. Pharmacopsychiatry. 2018;51:9-62

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Performance

Method Description

Lacosamide and the internal standard are separated from other serum constituents by high-performance liquid chromatography with analysis on a tandem mass spectrometer equipped with an electrospray ion source using multiple reaction monitoring.(Unpublished Mayo method)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

This test was developed, and its performance characteristics 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

80235