MAYO CLINIC LABORATORIES

Test Definition: LACO

Lacosamide, Serum

Overview

Useful For

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

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

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Container/Tube:
Preferred: Red top
Acceptable: Serum gel
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions:
1. Collect specimen immediately before next scheduled dose.
2. For sustained-release formulations ONLY, collect specimen 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 one of the following with the specimen:
-Neurology Specialty Testing Client Test Request (T732)
-Therapeutics Test Request (T831)

Specimen Minimum Volume

0.2 mL

Reject Due To

Gross hemolysis	OK

Gross lipemia	OK
Gross icterus	OK

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 aged 17 years 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 serum concentrations occur 1 to 4 hours after oral dosing, and the elimination half-life is approximately 13 hours. Steady-state serum 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 serum concentrations and its efficacy or adverse effects is not well established. However, central nervous system toxicity has been associated with higher drug concentrations in serum.

Reference Values

Patients receiving therapeutic doses usually have lacosamide concentrations of 1.0 to 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

1. VIMPAT Medication Guide. Harris FRC Corporation. UCB, Inc; Revised 09/2022. Accessed April 23, 2024. Available at www.ucb-usa.com/vimpat-prescribing-information.pdf
2. Patsalos PN, Berry DJ. Pharmacotherapy of the third-generation AEDs: lacosamide, retigabine and eslicarbazepine acetate. Expert Opin Pharmacother. 2012;13(5):699-715
3. Chung SS. New treatment option for partial-onset seizures: efficacy and safety of lacosamide. Ther Adv Neurol Disord.

2010;3(2):77-83
4. Sattler A, Schaefer M, May TW, Rambeck B, Brandt C. 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(2):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(1-02):9-62. doi:10.1055/s-0043-116492

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

Day(s) Performed
Monday through Saturday

Report Available
Same day/1 to 4 days

Specimen Retention Time
14 days

Performing Laboratory Location
Rochester

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 was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

80235

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
LACO	Lacosamide, S	59297-2

Result ID	Test Result Name	Result LOINC® Value
62772	Lacosamide, S	59297-2