

Overview

Useful For

Monitoring serum concentrations of cenobamate to optimize efficacy and minimize toxicity

Method Name

Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)

NY State Available

Yes

Specimen

Specimen Type

Serum Red

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)

Collection Container/Tube: Red top (serum gel/SST are **not acceptable**)

Submission Container/Tube: Plastic vial

Specimen Volume: 1.2 mL Serum

Collection Instructions: Within 2 hours of collection, centrifuge, and aliquot serum into a plastic vial.

Specimen Minimum Volume

Serum: 0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum Red	Refrigerated (preferred)	28 days	
	Ambient	28 days	
	Frozen	28 days	

Clinical & Interpretive**Clinical Information**

Cenobamate was approved by the US Food and Drug Administration for the treatment of partial-onset seizures in adult patients. Cenobamate reduces repetitive neuronal firing by inhibiting voltage-gated sodium currents and is a positive allosteric modulator of the gamma-aminobutyric acid (GABA-A) ion channel.

Common side effects may include double vision (diplopia), dizziness, somnolence, fatigue, or headache. Severe effects include QT interval shortening and acute hepatic failure.

Cenobamate has good oral bioavailability (88%) is extensively metabolized and primarily eliminated through the renal system (approximately 6% unchanged) with a long elimination half-life (50-60 hours).

Reference Values

Trough concentrations of 5 to 35 mcg/mL for daily dosages of 100 to 400 mg/day

Interpretation

Ninety-five percent of patients with 50% seizure reduction or seizure freedom had trough serum cenobamate concentrations between 5 mcg/mL and 35 mcg/mL when taking 100 to 400 mg/day.

Cautions

No significant cautionary statements

Clinical Reference

1. Greene SA, Kamin M. Cenobamate Trough Plasma Concentrations in Patients With Uncontrolled Focal Seizures Achieving 50% and 100% Seizure Reduction in Two Randomized Clinical Studies (1377). *Neurology* 2021;96(15_supplement):1377
2. Krauss GL, Klein P, Brandt C, et al. Safety and efficacy of adjunctive cenobamate (YKP3089) in patients with uncontrolled focal seizures: a multicentre, double-blind, randomised, placebo-controlled, dose-response trial. *Lancet Neurol.* 2020;19(1):38-48. doi:10.1016/S1474-4422(19)30399-0
3. Roberti R, De Caro C, Iannone LF, Zaccara G, Lattanzi S, Russo E. Pharmacology of Cenobamate: Mechanism of Action, Pharmacokinetics, Drug-Drug Interactions and Tolerability. *CNS Drugs.* 2021;35(6):609-618. doi:10.1007/s40263-021-00819-8
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5. Steinhoff BJ, Georgiou D, Dietmann D, Intravooth T. Cenobamate plasma levels in patients with epilepsy: correlation with efficacy and tolerability?. *J Clin Med.* 2024;13(10):2757. doi:10.3390/jcm13102757
6. Johannessen Landmark C, Belkilani H, Awad L, et al. Pharmacokinetic variability and complex two-way interactions with cenobamate in patients with refractory epilepsy. *Epilepsia.* 2026;67(6):2820-2835. doi:10.1002/epi.70184
7. Elliott T, Ridley-Pryor T, Gienapp AJ, Wheless JW. Initial real-world experience with cenobamate in adolescents and adults: A single center experience. *Pediatr Neurol.* 2022;129:19-23. doi:10.1016/j.pediatrneurol.2022.01.001
8. Beltran-Corbellini A, Romeral-Jimenez M, Mayo P, et al. Cenobamate in patients with highly refractory focal epilepsy: A retrospective real-world study. *Seizure.* 2023;111:71-77. doi:10.1016/j.seizure.2023.07.026
9. Smith MC, Klein P, Krauss GL, et al. Dose Adjustment of Concomitant Antiseizure Medications During Cenobamate Treatment: Expert Opinion Consensus Recommendations. *Neurol Ther.* 2022;11(4):1705-1720.

doi:10.1007/s40120-022-00400-5

Performance

Method Description

The sample is diluted with an acetonitrile internal standard. The protein precipitate is centrifuged, and a portion of the supernatant is diluted for detection by a tandem mass spectrometry.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

Same day/1 to 2 days

Specimen Retention Time

2 weeks

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

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

80299

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CENO	Cenobamate, S	96909-7

Result ID	Test Result Name	Result LOINC® Value

624174	Cenobamate, S	96909-7
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