MAYO CLINIC LABORATORIES

Test Definition: CLOBZ

Clobazam and Metabolite, Serum

Overview

Useful For
Monitoring clobazam therapy

Special Instructions
- Clinical Toxicology CPT Code Client Guidance

Highlights
Both clobazam and N-desmethylclobazam (norclobazam) are detected in serum specimens.

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: 0.5 mL
Collection Instructions:
1. Collect blood immediately before next scheduled dose.
2. Within 2 hours of collection centrifuge and aliquot serum into a plastic vial.
Additional Information: Trough specimens are recommended as therapeutic ranges are based on specimens collected at trough (ie, immediately before the next dose).

Forms
If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
-Therapeutics Test Request (T831)
-Neurology Specialty Testing Client Test Request (T732)

Specimen Minimum Volume
0.35 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

Clobazam is a broad spectrum, antiepileptic drug used for various types of seizures, Lennox-Gastaut syndrome (a type of childhood onset epilepsy), and migraine prophylaxis. Clobazam blocks voltage-dependent sodium channels, potentiates gamma-aminobutyric acid (GABA) activity at some of the GABA receptors, and inhibits potentiation of the glutamate receptor and carbonic anhydrase enzyme, all of which contribute to its antiepileptic and antimigraine efficacy.

In general, clobazam shows favorable pharmacokinetics with good absorption (1-4 hours for the immediate-release formulation), low protein binding, and minimal hepatic metabolism. Elimination is predominantly renal, and it is excreted unchanged in the urine with an elimination half-life of approximately 21 hours. As with other anticonvulsant drugs eliminated by the renal system, patients with impaired kidney function exhibit decreased clobazam clearance and a prolonged elimination half-life.

Serum concentrations of other anticonvulsant drugs are not significantly affected by the concurrent administration of clobazam, with the exception of patients on phenytoin whose serum concentrations can increase after the addition of clobazam. Other drug-drug interactions include the coadministration of phenobarbital, phenytoin, or carbamazepine, which can result in decreased clobazam concentrations. In addition, concurrent use of posaconazole and clobazam may result in the elevation of clobazam serum concentrations. Therefore, changes in cotherapy with these medications (phenytoin, carbamazepine, posaconazole, or phenobarbital) may require dose adjustment of clobazam, and therapeutic drug monitoring can be helpful. The most common adverse drug effects associated with clobazam include weight loss, loss of appetite, somnolence, dizziness, coordination problems, memory impairment, and paresthesia.

Reference Values

Clobazam
Therapeutic Range: 30-300 ng/mL

N-desmethylclobazam (Norclobazam)
Therapeutic Range: 300-3000 ng/mL

Interpretation

The results of this test should be interpreted in conjunction with the patient's physical signs, symptoms, and other laboratory test results.

Most individuals display optimal response to clobazam when serum levels of clobazam are between 30 and 300 ng/mL and N-desmethylclobazam are between 300 and 3000 ng/mL. Risk of toxicity is increased when clobazam levels are above 500 ng/mL or N-desmethlyclobazam levels are above 5000 ng/mL.

Some individuals may respond well outside of these ranges or may display toxicity within the therapeutic range; thus, interpretation should include clinical evaluation.

Cautions

No significant cautionary statements

Clinical Reference

1. 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
2. Patsalos PN, Berry DJ, Bourgeois BF, et al. Antiepileptic drugs-best practice guidelines for therapeutic drug monitoring: a position paper by the subcommission on therapeutic drug monitoring, ILAE Commission on Therapeutic Strategies. Epilepsia. 2008;49(7):1239-1276
3. Johannessen SI, Tomsom T. Pharmacokinetic variability of newer antiepileptic drugs: when is monitoring needed?. Clin Pharmacokinet. 2006;45(11):1061-1075

Performance

Method Description

The serum sample is crashed with acetonitrile containing the carbon 13-labeled internal standards. The protein precipitate is centrifuged, and a portion of the supernatant is diluted with water for detection by tandem mass spectroscopy liquid chromatography tandem mass spectrometry.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

Same day/1 to 5 days

Specimen Retention Time

14 days

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

G0480

80339 (if appropriate for select payers)

Clinical Toxicology CPT Code Client Guidance

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CLOBZ	Clobazam and metabolite, S	79408-1

Result ID	Test Result Name	Result LOINC® Value
65483	Clobazam	3487-6
92363	N-desmethylclobazam	35107-2