MAYO CLINIC LABORATORIES

Test Definition: OMHC

Oxcarbazepine Metabolite, Serum

Overview

Useful For

Monitoring serum concentration during oxcarbazepine therapy or eslicarbazepine acetate (S-licarbazepine) therapy

Assessing compliance

Assessing potential toxicity

Method Name

High-Turbulence Liquid Chromatography Mass Spectrometry (HTLC-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 is **not acceptable**)
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL Serum
Collection Instructions:
1. Collect specimen immediately before next scheduled dose.
2. Within 2 hours of collection, centrifuge and aliquot serum into a plastic vial.

Forms

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

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

Oxcarbazepine (OCBZ) is approved as monotherapy and adjunctive therapy for partial seizures with and without secondary generalized seizures in adults and as adjunctive therapy for partial seizures in children. In humans, OCBZ is a prodrug that is almost immediately and completely metabolized to 10-hydroxy-10,11-dihydrocarbamazepine, known as monohydroxy carbamazepine (MHC), an active metabolite that is responsible for OCBZ's therapeutic effect. The elimination half-life is approximately 2 hours for OCBZ and 7 to 11 hours for MHC. The therapeutic range (10-35 mcg/mL) is based on concentrations of the metabolite, not the parent drug; this assay measures the metabolite only.

In clinical practice, the OCBZ dosage should be individually adjusted for each patient to achieve the desired therapeutic response. Toxicity associated with OCBZ includes hyponatremia, dizziness, somnolence, diplopia, fatigue, nausea, vomiting, ataxia, abnormal vision, abdominal pain, tremor, dyspepsia, and abnormal gait. These toxicities may be observed when blood concentrations are in the therapeutic range.

Reference Values

Oxcarbazepine metabolite: 10-35 mcg/mL

Interpretation

Therapeutic ranges are based on specimens collected at trough (ie, immediately before the next dose). Most individuals display optimal response to oxcarbazepine therapy when serum levels of the metabolite (measured in this assay) are between 10 and 35 mcg/mL. Some individuals may respond well outside of this range or may display toxicity within the therapeutic range. Thus, interpretation should include clinical evaluation.

Cautions

Toxic levels have not been well established.

This test cannot be performed on whole blood. Serum must be separated from cells within 2 hours of collection.

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. Perucca E. Clinical pharmacology and therapeutic use of the new antiepileptic drugs. Fundam Clin Pharmacol. 2001;15(6):405-417
3. Lloyd P, Flesch G, Dieterle W. Clinical pharmacology and pharmacokinetics of oxcarbazepine. Epilepsia. 1994;35(Suppl

3):S10-S13
4. Gonzalez-Esquivel DF, Ortega-Gavilan M, Alcantara-Lopez G, Jung-Cook H. Plasma level monitoring of oxcarbazepine in epileptic patients. Arch Med Res. 2000;31(2):202-205
5. Johannessen SI, Tomson T. Pharmacokinetic variability of newer antiepileptic drugs: when is monitoring needed? Clin Pharmacokinet. 2006;45(11):1061-1075
6. Patsalos PN, Berry DJ, Bourgeois BFD, 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

Performance

Method Description
The serum sample is diluted in acetonitrile containing internal standard. The protein precipitate is centrifuged, and a portion of the supernatant is diluted with mobile phase for detection by a tandem mass spectrophotometer.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Monday through Saturday

Report Available
1 to 3 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.

Test Definition: OMHC

Oxcarbazepine Metabolite, Serum

CPT Code Information

80183

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
OMHC	Oxcarbazepine Metabolite (MHC), S	31019-3

Result ID	Test Result Name	Result LOINC® Value
81030	Oxcarbazepine Metabolite (MHC), S	31019-3