MAYO CLINIC LABORATORIES

Test Definition: CDP

Chlordiazepoxide and Metabolite, Serum

Overview

Useful For

Monitoring chlordiazepoxide therapy

Assessing toxicity

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Serum Red

Shipping Instructions

Ship specimen in amber vial to protect from light.

Specimen Required

Supplies: Amber Frosted Tube, 5 mL (T915)
Collection Container/Tube: Red top
Submission Container/Tube: Amber vial
Specimen Volume: 0.5 mL
Collection Instructions: Centrifuge and aliquot serum into amber vial within 2 hours of collection.

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

0.3 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)	14 days	LIGHT PROTECTED
	Frozen	14 days	LIGHT PROTECTED
	Ambient	24 hours	LIGHT PROTECTED

Clinical & Interpretive

Clinical Information

Chlordiazepoxide (Librium) is a benzodiazepine widely used in the treatment of anxiety, alcohol withdrawal symptoms, and as a premedication for anesthesia. The mechanism of action of all benzodiazepines remains unclear. However, it is known that benzodiazepines facilitate gamma-amino butyric acid (GABA)-mediated neurotransmission in the brain. Benzodiazepines most likely facilitate the inhibitory presynaptic or postsynaptic reactions of GABA.

Chlordiazepoxide is metabolized to long-acting metabolites in the liver to the active metabolite nordiazepam (desmethyldiazepam), and the clearance of the drug is reduced considerably in the elderly and in patients with hepatic disease.

Therapeutic assessment should include measurement of both the parent drug (chlordiazepoxide) and the active metabolite (nordiazepam).

Since chlordiazepoxide has a wide therapeutic index and toxicity is dose-dependent, routine drug monitoring is not indicated in all patients

Reference Values

Therapeutic concentration:
Chlordiazepoxide: 400-3,000 ng/mL
Nordiazepam: 100-500 ng/mL

Interpretation

Chlordiazepoxide and nordiazepoxide combined concentrations above 5000 ng/mL have been associated with toxicity.

Cautions

The specimen must be protected from light.

Clinical Reference

1. Langman, LJ, Bechtel L, Meier BM, Holstege CP. Clinical toxicology. In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:832-887
2. Burtis CA, Ashwood ER, Bruns DE, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. WB Saunders Company; 2011:1109-1188
3. Hiemke C, Baumann P, Bergemann N, et al. AGNP Consensus Guidelines for Therapeutic Drug Monitoring in Psychiatry: Update 2011. Pharmacopsychiatry. 2011;44(6):195-235

Performance

Method Description

The internal standard mixture containing chlordiazepoxide-d5, diazepam-d4, and nordiazepam-d5 is added to serum samples. The serum samples are treated with phosphate buffer and extracted via liquid/liquid extraction. The organic layer from the extraction is dried under nitrogen, reconstituted, and injected on a liquid chromatography tandem mass spectrometer.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday, Wednesday

Report Available

2 to 7 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

80346
G0480 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CDP	Chlordiazepoxide and metabolite, S	33060-5

Result ID	Test Result Name	Result LOINC® Value
8610	Chlordiazepoxide	3457-9
37321	Nordiazepam	3537-8