Test Definition: DXPIN

Doxepin and Nordoxepin, Serum

Overview

Useful For

Monitoring doxepin therapy

Evaluating potential doxepin toxicity

May aid in evaluating patient compliance

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 mL Serum
Collection Instructions:
1. Collect specimen immediately before next scheduled dose (minimum 12 hours after last dose).
2. Within 2 hours of collection, centrifuge and aliquot serum into a plastic vial. Serum **must be** separated from cells within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

Specimen Minimum Volume

Serum: 0.25 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum Red	Refrigerated (preferred)	28 days	
	Ambient	7 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Doxepin is recommended for the treatment of psychoneurotic patients with depression or anxiety, or with depression or anxiety associated with alcoholism or organic disease.

Nordoxepin (*N*-desmethyldoxepin) is the major metabolite and is usually present at concentrations equal to doxepin. Optimal efficacy occurs at combined serum concentrations between 50 and 150 ng/mL.

Like other tricyclic antidepressants, the major toxicity of doxepin is expressed as cardiac dysrhythmias, which occur at concentrations more than 500 ng/mL. Other side effects include nausea, hypotension, and dry mouth.

Reference Values

Therapeutic concentration (doxepin + nordoxepin): 50-150 ng/mL

Note: Therapeutic ranges are for specimens collected at trough (ie, immediately before next scheduled dose). Levels may be elevated in non-trough specimens.

Interpretation

Most individuals display optimal response to doxepin when combined serum levels of doxepin and nordoxepin are between 50 and 150 ng/mL. Some individuals may respond well outside of this range or may display toxicity within the therapeutic range; thus, interpretation should include clinical evaluation. Risk of toxicity is increased with combined levels are above 500 ng/mL.

Therapeutic ranges are based on specimens collected at trough (ie, immediately before the next dose).

Cautions

This test cannot be performed on whole blood. Serum must be separated from cells within 2 hours of collection; if serum is not removed within this time, tricyclic antidepressant levels may be falsely elevated due to drug release from red blood cells.

Specimens that are obtained from gel tubes are not acceptable because the drug can absorb on the gel and lead to falsely decreased concentrations.

Clinical Reference

1. Wille SM, Cooreman SG, Neels HM, Lambert WE. Relevant issues in the monitoring and the toxicology of

antidepressants. Crit Rev Clin Lab Sci. 2008;45(1):25-89
2. Thanacoody HK, Thomas SHL. Antidepressant poisoning. Clin Med (Lond). 2003;3(2):114-118
3. 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
4. Milone MC, Shaw LM. Therapeutic drugs and their management. In: Rifai N, Chiu RWK, Young I, Burnham CAD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:420-453

Performance

Method Description
The tricyclic antidepressants are extracted from serum using a solvent to precipitate proteins. The supernatant is removed, and analysis is by liquid chromatography tandem mass spectrometry.(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Monday, Wednesday, Friday

Report Available
3 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
80299

Test Definition: DXPIN

Doxepin and Nordoxepin, Serum

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
DXPIN	Doxepin and Nordoxepin, S	43122-1

Result ID	Test Result Name	Result LOINC® Value
63507	Doxepin	3579-0
37125	Nordoxepin	3862-0
37126	Doxepin and Nordoxepin	3582-4