# Test Definition: DULOX

Duloxetine, S

## Overview

### Useful For

Monitoring serum concentration during therapy

Evaluating potential toxicity

Evaluating patient compliance

### Method Name

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

### NY State Available

Yes

## Specimen

### Specimen Type

Serum Red

### Specimen Required

**Container/Tube:** Red top

**Specimen Volume:** 1 mL

**Collection Instructions:**

1. Draw specimen immediately before the next scheduled dose (trough).

2. Centrifuge within 2 hours of draw.

### Forms

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

### Specimen Minimum Volume

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 | |

| Specimen Type | Temperature | Time | Special Container |
|---|---|---|---|
| | Ambient | 28 days | |
| | Frozen | 28 days | |

## Clinical and Interpretive

### Clinical Information

Duloxetine is an antidepressant of the serotonin-norepinephrine reuptake inhibitor class. It is effective in treating symptoms of depression, including physical pain associated with depression; other uses include therapy of neuropathic pain, fibromyalgia, and urinary stress incontinence. Duloxetine also inhibits serotonin uptake in human platelets, and may be associated with potentiation of bleeding.

Duloxetine undergoes extensive hepatic biotransformation to numerous inactive metabolites. The drug is metabolized by CYP1A2 and CYP2D6, with moderate potential for drug interactions (duloxetine is both a substrate and a moderate inhibitor of CYP2D6). The mean elimination half-life is 12.5 hours with steady-state concentrations occurring in about 3 days. Specimens for therapeutic monitoring should be drawn immediately before the next scheduled dose (ie, trough).

Duloxetine is not recommended for patients with hepatic impairment, substantial alcohol use, or chronic liver disease. Use in patients with renal disease significantly increases exposure to duloxetine due to decreased elimination. Patients with mild-to-moderate renal dysfunction should be monitored closely; use of duloxetine is not recommended in end-stage renal disease.

### Reference Values

30-120 ng/mL

### Interpretation

Therapeutic ranges are not well-established, but literature suggests that patients receiving duloxetine monotherapy for depression responded well when trough concentrations were 60 to 120 ng/mL. Higher levels may be tolerated by individual patients. The therapeutic relevance of this concentration range to other uses of duloxetine therapy is currently unknown.

### Cautions

Specimens that are obtained from gel tubes or anticoagulate collections can cause assay interference.

### Clinical Reference

1. Hiemke C, Bergemann N, Clement HW, et al: Consensus Guidelines for Therapeutic Drug Monitoring in Neuropsychopharmacology: Update 2017. Pharmacopsychiatry 2018 Jan;51(1-02):9-62

2. Westanmo AD, Gayken J, Haight R: Duloxetine: a balanced and selective norepinephrine- and serotonin-reuptake inhibitor. Am J Health-Syst Pharm 2005 Dec;62(23):2481-2490

3. Waldschmitt C, Vogel F, Pfuhlmann B, Hiemke C: Duloxetine serum concentrations and clinical effects. Data from a therapeutic drug monitoring (TDM) survey. Pharmacopsychiatry 2009 Sep;42(5):189-193

4. Feighner JP, Cohn JB: Double-blind comparative trials of Fluoxetine and doxepin in geriatric patients with major depressive disorder. J Clin Psychiatry 1985 Mar;46(3 Pt 2):20-25

5. Kelly MW, Perry PJ, Holstad SG, Garvey MJ: Serum fluoxetine and norfluoxetine concentrations and antidepressant response. Ther Drug Monit 1989;11:165-170

6. Benfield P, Heel RC, Lewis SP: Fluoxetine: a review of its pharmacodynamic and pharmacokinetic properties, and therapeutic efficacy in depressive illness. Drugs 1986 Dec;32(6):481-508

7. Wille SM, Cooreman SG, Neels, et al: Relevant issues in the monitoring and toxicology of antidepressants. Crit Rev Clin Lab Sci 2008;45(1):25-89

## Performance

### Method Description

Serum samples containing duloxetine are diluted in an aqueous solution containing deuterated internal standard, then injected onto a high-turbulence liquid chromatography system for online extraction. Detection is by tandem mass spectrometry.(Unpublished Mayo method)

### PDF Report

No

### Day(s) and Time(s) Test Performed

Tuesday; 4 p.m.

### Analytic Time

1 day/2 days

### Maximum Laboratory Time

8 days

### Specimen Retention Time

14 days

### Performing Laboratory Location

Rochester

## Fees and 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 Regional Manager. 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. This test has not been cleared or approved by the U.S. Food and Drug Administration.

### CPT Code Information

80299

### LOINC® Information

# Test Definition: DULOX

Duloxetine, S

| Test ID | Test Order Name | Order LOINC Value |
|---|---|---|
| DULOX | Duloxetine, S | 46227-5 |

| Result ID | Test Result Name | Result LOINC Value |
|---|---|---|
| 89305 | Duloxetine, S | 46227-5 |