

**Overview****Useful For**

Monitoring serum concentration during therapy

Evaluating potential toxicity

Evaluating patient compliance

**Method Name**

LiquidChromatography-TandemMassSpectrometry(LC-MS/MS)

**NY State Available**

Yes

**Specimen****Specimen Type**

Serum Red

**Specimen Required**

**Collection Container/Tube:** Red top

**Submission Container/Tube:** Plastic vial

**Specimen Volume:** 1 mL

**Collection Instructions:**

1. Draw blood immediately before next scheduled dose.
2. Blood drawn from patients 12 hours after an oral dose is also appropriate. It is customary to treat the patient at bedtime with a dose, then, collect specimen the following morning prior to next dose.
3. Centrifuge and remove serum 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**

0.4 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 and Interpretive****Clinical Information**

Venlafaxine is a serotonin and norepinephrine reuptake inhibitor approved for treatment of major depression, anxiety and panic disorders, and social phobias. It is also used for bipolar disorder, bulimia, post-traumatic stress, obsessive behavior, and attention-deficit disorder. Venlafaxine is converted by cytochrome P450 (CYP) 2D6 to the active metabolite, O-desmethylvenlafaxine. The therapeutic range for venlafaxine includes measurement of O-desmethylvenlafaxine; optimal response is seen when combined concentrations of parent and metabolite are between 195 and 400 ng/mL. Venlafaxine is significantly affected by reduced hepatic function, but only slightly by reduced renal function.

Average elimination half-lives are 5 hours for venlafaxine and 10 hours for O-desmethylvenlafaxine, which are much shorter than many other antidepressants. For this reason, extended release formulations are available. Time to peak serum concentration is 2 hours for the regular product and 8 hours for the extended release product. Common toxicities are mild, including drowsiness, dizziness, nausea, and headache.

**Reference Values**

Venlafaxine + O-desmethylvenlafaxine: 195-400 ng/mL

**Interpretation**

Most individuals display optimal response to venlafaxine when combined serum levels of venlafaxine and O-desmethylvenlafaxine are between 195 and 400 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 greater than 1,000 ng/mL. Therapeutic ranges are based on specimens drawn at trough (ie, immediately before the next dose).

**Cautions**

Specimens that are obtained from gel tubes are not acceptable.

**Clinical Reference**

1. Wille SM, Cooreman SG, Neels HM, Lambert WE: Relevant issues in the monitoring and toxicology of antidepressants. *Crit Rev Clin Lab Sci* 2008;45(1):25-89
2. Baumann P, Hiemke G, Ulricj S, et al: The AGNP-TDM expert group consensus guidelines: therapeutic drug monitoring in psychiatry. *Pharmacopsychiatry* 2004;37:243-265
3. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Sixth edition. Edited by N Rifal, AR Horvath, CT Wittwer. Elsevier. 2018

## Performance

### Method Description

Venlafaxine and venlafaxine metabolite are measured using acetonitrile precipitation and analysis by high-performance liquid chromatography-tandem mass spectrometry (LC-MS/MS).(Unpublished Mayo method)

### PDF Report

No

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

Thursday; 4 p.m.

### Analytic Time

1 day

### Maximum Laboratory Time

4 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 ID	Test Order Name	Order LOINC Value
VENLA	Venlafaxine, S	62849-5

Result ID	Test Result Name	Result LOINC Value
83732	Venlafaxine	9630-5
30195	O-desmethyl Venlafaxine	9630-5



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Result ID	Test Result Name	Result LOINC Value
32182	Venlafaxine+O-Desmethylvenlafaxine	62849-5