

**Overview****Useful For**

Monitoring of compliance utilizing tramadol

Detection and confirmation of the illicit use of tramadol

**Method Name**

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

**NY State Available**

Yes

**Specimen****Specimen Type**

Urine

**Advisory Information**

If submitting for multiple tests on 1 order, submit a total volume of 5 mL per test ordered in a single plastic container.

**Specimen Required**

**Supplies:** Aliquot Tube, 5 mL (T465)

**Collection Container/Tube:** Plastic urine container

**Submission Container/Tube:** Aliquot Tube, 5 mL

**Specimen Volume:** 2 mL

**Collection Instructions:** No preservative.

**Forms**

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

**Specimen Minimum Volume**

0.1 mL

**Reject Due To**

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

**Specimen Stability Information**

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	14 days	
	Ambient	14 days	
	Frozen	14 days	

## Clinical and Interpretive

### Clinical Information

Tramadol, a centrally acting opioid analgesic, is utilized in the treatment of moderate to moderately severe pain. Tramadol acts as an opiate agonist through the binding of the parent drug and its O-desmethyl (M1) metabolite to mu-opioid receptors and through the weak inhibition of norepinephrine and serotonin reuptake. The active metabolite, O-desmethyltramadol, is a considerably more potent mu-opioid receptor agonist than its parent drug. In urine, approximately 30% of tramadol is excreted as unchanged drug, while approximately 60% is excreted as metabolites (N- and O-desmethyltramadol). The half-life of tramadol and O-desmethyltramadol is approximately 7 hours.

### Reference Values

Cutoff: 25 ng/mL

### Interpretation

The presence of tramadol or O-desmethyltramadol levels of 25 ng/mL or higher is a strong indicator that the patient has used tramadol.

### Cautions

Urine concentrations do not correlate well with serum drug levels and are not intended for therapeutic drug management.

Results are intended to be interpreted by a physician or health care professional. This test is not intended for use in employment-related testing.

### Clinical Reference

1. Grond S, Sablotzki: Clinical pharmacology of tramadol. Clin Pharmacokinet 2004;43(13):879-923
2. Dayer P, Collart L, Desmeules J: The pharmacology of tramadol. Drugs 1994;47 Suppl 1:3-7

## Performance

### Method Description

Isotopically labeled tramadol and O-desmethyltramadol are added to the sample as internal standards. The sample is then diluted with deionized water and the analytes are separated by liquid chromatography and then quantified by mass spectrometry using multiple reaction monitoring. (Patel BN, Sharma N, Sanyal M, Shrivastav PS: An accurate, rapid and sensitive determination of tramadol and its active metabolite O-desmethyltramadol in human plasma by LC-MS/MS. J Pharm Biomed Anal 2009 Feb 20;49[2]:354-366)

### PDF Report

No

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

Tuesday

### Analytic Time

2 days

**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**

80373

G0480 (if appropriate)

**LOINC® Information**

Test ID	Test Order Name	Order LOINC Value
TRAM	Tramadol and Metabolite, U	In Process

Result ID	Test Result Name	Result LOINC Value
35914	Tramadol	17719-6
35915	O-desmethyltramadol	18338-4