MAYO CLINIC LABORATORIES

Test Definition: TRAM

Tramadol and Metabolite, Random, Urine

Overview

Useful For

Monitoring of compliance utilizing tramadol

Detection and confirmation of the illicit use of tramadol

This test is **not intended** for use in employment-related testing.

Special Instructions

- Clinical Toxicology CPT Code Client Guidance

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Urine

Additional Testing Requirements

If urine creatinine is required or adulteration of the sample is suspected, order ADULT / Adulterants Survey, Random, Urine in addition to this test.

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Plastic urine container
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL
Collection Instructions:
1. Collect a random urine specimen.
2. No preservative.

Additional Information:
1. No specimen substitutions.
2. STAT requests are **not accepted** for this test.
3. Submitting less than 1 mL will compromise our ability to perform all necessary testing.

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

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 & 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
Negative (Positive results are reported with a quantitative result.)

Cutoff concentrations by liquid chromatography tandem mass spectrometry:
Tramadol: 25 ng/mL
O-desmethyltramadol: 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 other healthcare professional.

Clinical Reference
1.Tramadol. In: Merative Micromedex. Merative; Accessed August 20, 2026. Available at:

www.micromedexsolutions.com/
2. Jutkiewicz EM, Traynor JR. Opioid analgesics. In: Brunton LL, Knollmann BC, eds. Goodman and Gilman's: The Pharmacological Basis of Therapeutics. 14th ed. McGraw-Hill Education; 2023
3.Langman LJ, Bechtel LK, Holstege CP. Clinical toxicology. In: Rifai N, Chiu RWK, Young I, Burnham CAD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023:chap 43

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;49[2]:354-366)

PDF Report
No

Day(s) Performed
Tuesday, Thursday

Report Available
2 to 6 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

G0480
80373 (if appropriate for select payers)
Clinical Toxicology CPT Code Client Guidance

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
TRAM	Tramadol and Metabolite, U	100734-3

Result ID	Test Result Name	Result LOINC® Value
35914	Tramadol	20561-7
35915	O-desmethyltramadol	92639-4