
Overview

Useful For

Confirming drug exposure involving amphetamines such as amphetamine and methamphetamine, phentermine, methylenedioxyamphetamine (MDA), methylenedioxymethamphetamine (MDMA), and methylenedioxyethylamphetamine (MDEA)

Method Name

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

NY State Available

Yes

Specimen

Specimen Type

Urine

Ordering Guidance

For situations where chain of custody is required, a Chain of Custody Kit (T282) is available. For chain-of-custody testing, order AMPHX / Amphetamines Confirmation, Chain of Custody, Random, Urine.

Additional drug panels and specific requests are available. Call 800-533-1710 or 507-266-5700.

Additional Testing Requirements

If urine creatinine is required or adulteration of the sample is suspected, the following test should also be ordered, ADULT / Adulterants Survey, Urine.

Specimen Required

Supplies: Aliquot Tube, 5 mL (T465)

Collection Container/Tube: Plastic urine container

Submission Container/Tube: Plastic, 5-mL tube

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 <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.

Reject Due To

Gross hemolysis OK
Gross icterus OK

Specimen Minimum Volume

0.5 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	28 days	
	Ambient	28 days	
	Frozen	28 days	

Clinical & Interpretive**Clinical Information**

Amphetamines are sympathomimetic amines that stimulate the central nervous system activity and, in part, suppress the appetite. Phentermine, amphetamine, and methamphetamine are prescription drugs for weight loss. All of the other amphetamines are Class I (distribution prohibited) compounds. In addition to their medical use as anorectic drugs, they are used in the treatment of narcolepsy, attention-deficit disorder/attention-deficit hyperactivity disorder and minimal brain dysfunction.

Because of their stimulant effects, the drugs are commonly sold illicitly and abused. Physiological symptoms associated with very high amounts of ingested amphetamine or methamphetamine include elevated blood pressure, dilated pupils, hyperthermia, convulsions, and acute amphetamine psychosis.

Reference Values

Negative

Cutoff concentrations by liquid chromatography-tandem mass spectrometry:

Amphetamine: <25 ng/mL

Methamphetamine: <25 ng/mL

Phentermine: <25 ng/mL

Methylenedioxyamphetamine: <25 ng/mL

Methylenedioxymethamphetamine: <25 ng/mL

Pseudoephedrine/ephedrine: <25 ng/mL reported as negative

Interpretation

The presence of amphetamines in urine at concentrations greater than 500 ng/mL is a strong indicator that the patient has used one of these drugs within the past 3 days.

Methamphetamine has a half-life of 9 to 24 hours and is metabolized by hepatic demethylation to amphetamines. Consequently, a sample containing methamphetamine usually also contains amphetamine. Amphetamine has a half-life of 4 to 24 hours.

Amphetamine is **not** metabolized to methamphetamine; absence of methamphetamine in the presence of amphetamine indicates the primary drug of abuse is amphetamine.

3,4-Methylenedioxymethamphetamine (Ecstasy, MDMA) is metabolized to 3,4-methylenedioxyamphetamine (MDA).

The detection interval in urine for amphetamine type stimulants is typically to 3 to 5 days after last ingestion.

This test will produce true-positive results for urine specimens collected from patients who are administered Adderall and Benzedrine (contain amphetamine); Desoxyn and Vicks Inhaler (contain methamphetamine); Selegiline, and famprofazone (metabolized to methamphetamine and amphetamine); and clobenzorex, fenproporex, and mefenorex, which are metabolized to amphetamine.

Cautions

Over-the-counter sympathomimetics such as ephedrine and phenylpropanolamine are occasionally detected in the screening immunoassay.

Clinical Reference

1. Baselt RC: Disposition of Toxic Drugs and Chemicals in Man. 10th ed. Biomedical Publications; 2014
2. Langman LJ Bechtel LK, Meier BM, Holstege C: Clinical toxicology. In: Rifai N, Horvath AR, Wittwer CT, eds. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:832-887

Performance**Method Description**

The urine sample is diluted and then analyzed by liquid chromatography-tandem mass spectrometry for the presence of amphetamines.(Unpublished Mayo method)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes**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 US Food and Drug Administration.

CPT Code Information

80325

80359

G0480 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
AMPHU	Amphetamines Confirmation, U	97161-4

Result ID	Reporting Name	LOINC®
2934	Amphetamine-by LC-MS/MS	20410-7
29278	Phentermine-by LC-MS/MS	20557-5
2550	Methamphetamine-by LC-MS/MS	16235-4
29279	Pseudoephedrine/Ephedrine-by LC-MS/MS	58707-1
29280	MDA (Ecstasy metabolite)-by LC-MS/MS	20545-0
29281	MDMA (Ecstasy)-by LC-MS/MS	18358-2
21197	Amphetamines Interpretation	69050-3