
Overview**Useful For**

Detection and confirmation of drug abuse involving delta-9-tetrahydrocannabinol (marijuana)

Method Name

Gas Chromatography-Mass Spectrometry (GC-MS) Confirmation with Quantitation

NY State Available

Yes

Specimen**Specimen Type**

Urine

Advisory Information

1. For situations where chain of custody is required, a Chain-of-Custody Kit (T282) is available. For chain-of-custody testing, order THCX / Carboxy-Tetrahydrocannabinol (THC) Confirmation, Chain of Custody, Urine.
2. Additional drug panels and specific requests are available. Call 800-533-1710 or 507-266-5700.
3. If urine creatinine is required or adulteration of the sample is suspected, order, ADULT / Adulterants Survey, Urine.

Specimen Required

Supplies: Urine Tubes, 10 mL (T068)

Collection Container Tube: Plastic urine container

Submission Container/Tube: 10 mL tube

Specimen Volume: 10 mL

Collection Instructions:

1. Collect a random urine specimen.
2. No preservative.

Additional Information:

1. No specimen substitutions.
2. STATS are **not** accepted for this test.

Forms

If not ordering electronically, complete, print, and send a [General Request](#) (T239) with the specimen.

Specimen Minimum Volume

5 mL

Reject Due To

Hemolysis	Mild OK; Gross OK
Lipemia	NA
Icterus	Mild OK; Gross OK
Other	NA

Specimen Stability Information

Specimen Type	Temperature	Time
Urine	Refrigerated (preferred)	14 days
	Frozen	14 days
	Ambient	72 hours

Clinical and Interpretive
Clinical Information

Delta-9-tetrahydrocannabinol is the active agent of the popularly abused street drug, marijuana.

Following consumption of the drug, either by inhalation or ingestion, it is metabolized to a variety of inactive chemicals, one of them being delta-9-tetrahydrocannabinol carboxylic acid.

The immunochemical procedure used to screen for tetrahydrocannabinol (THC) as part of IDOAU / Drug Abuse Survey, Urine is designed to cross-react with THC carboxylic acid.

In almost all medico-legal cases and in screening of employees, or when the patient adamantly denies THC use and the immunochemical test is positive, confirmation of the result by gas chromatography-mass spectrometry (GC-MS) and EIA are required.

Reference Values

Negative

Cutoff concentration:

Carboxy-THC- by GC/MS <3.0 ng/mL

Interpretation

The presence of tetrahydrocannabinol carboxylic acid (THC-COOH), a major metabolite of delta-9-tetrahydrocannabinol, in urine at concentrations greater than 15.0 ng/mL is a strong indicator that the patient has used marijuana.

The metabolite of marijuana (THC-COOH) has a long half-life and can be detected in urine for more than 7 days after a single use. The presence of THC-COOH in urine greater than 100.0 ng/mL indicates relatively recent use, probably within the past 7 days. Levels greater than 500.0 ng/mL suggest chronic and recent use. Chronic use causes accumulation of THC and THC-COOH in adipose tissue such that it is excreted into the urine for as long as 30 to 60

days from the time chronic use is halted.

Cautions

No significant cautionary statements

Clinical Reference

1. Disposition of Toxic Drugs and Chemicals in Man. Tenth edition. Edited by RC Baselt. Foster City, CA: Biomedical Publications, 2014

2. Langman LJ et al: Clinical Toxicology. In Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Edited by N Rifai, AR Horvath, CT Wittwer. Sixth edition. St. Louis, MO. Elsevier, 2018, pp 832-887

Performance**Method Description**

The gas chromatography-mass spectrometry procedure yields quantitative results by a different technique than the immunochemical procedure, and serves primarily as a documentary procedure when results of the immunochemical assay come into question.(Moyer TP, Palmen MA, Johnson P, et al: Marijuana testing-how good is it? Mayo Clin Proc 1987;62:413-417)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Saturday

Analytic Time

3 days

Maximum Laboratory Time

4 days

Specimen Retention Time

2 weeks

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

80349

G0480 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
THCU	Carboxy-THC Confirmation, U	20521-1

Result ID	Test Result Name	Result LOINC Value
2497	Carboxy-THC- by GC/MS	20521-1
21186	Carboxy-THC Interpretation	69050-3
21187	Chain of Custody	77202-0