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## Overview

### Useful For

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

### Ordering Guidance

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, Random, 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, Random, 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 1 of the following forms with the specimen:

[-General Request](#) (T239)

[-Therapeutics Test Request](#) (T831)

**Reject Due To**

Gross hemolysis    OK  
Gross icterus        OK

**Specimen Minimum Volume**

5 mL

**Specimen Stability Information**

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

**Clinical & Interpretive****Clinical Information**

Delta-9-tetrahydrocannabinol (THC) 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.

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

**Reference Values**

Negative

Cutoff concentration:

Carboxy-THC- by GC/MS &lt;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. Biomedical Publications, 2014
2. Langman LJ Bechtel LK, Meier BM, Holstege C: Chapter 41: Clinical Toxicology. In Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Edited by N Rifai, AR Horvath, CT Wittwer. Sixth edition. Elsevier, 2018, pp 832-887

**Performance****Method Description**

This test includes immunoassay and confirmation with quantification by gas chromatography-mass spectrometry (GC-MS).(Unpublished Mayo method)

**PDF Report**

No

**Specimen Retention Time**

2 weeks

**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**

80349

G0480 (if appropriate)

**LOINC® Information**

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

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