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## Overview

### Useful For

Detection and confirmation of drug use of cannabis/marijuana and to specifically identify and quantify delta-8-carboxy tetrahydrocannabinol (THC-COOH) and delta-9-THC-COOH

### 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

### Ordering Guidance

For situations where chain of custody is required, a Chain-of-Custody Kit (T282) is available. For chain-of-custody testing, order THCX / Delta-8 and Delta-9-Carboxy-Tetrahydrocannabinol (THC) 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, order, ADULT / Adulterants Survey, Random, Urine.

### Specimen Required

**Supplies:** Sarstedt Aliquot Tube, 5 mL (T914)

**Collection Container Tube:** Plastic urine container

**Submission Container/Tube:** Plastic vial

**Specimen Volume:** 3 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.

**Forms**

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:

[-General Request](#) (T239)

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

**Specimen Minimum Volume**

0.5 mL

**Reject Due To**

|                 |        |
|-----------------|--------|
| Gross hemolysis | OK     |
| Gross icterus   | Reject |

**Specimen Stability Information**

| Specimen Type | Temperature              | Time     | Special Container |
|---------------|--------------------------|----------|-------------------|
| Urine         | Refrigerated (preferred) | 14 days  |                   |
|               | Ambient                  | 72 hours |                   |
|               | Frozen                   | 14 days  |                   |

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

There are over 100 different cannabinoids in cannabis/marijuana. The main psychoactive cannabinoid is delta-9-tetrahydrocannabinol (delta-9-THC), which is the active agent of the popularly abused street drug, cannabis/marijuana. Delta-8 tetrahydrocannabinol (delta-8 THC) is another psychoactive substance found in the *Cannabis sativa* plant, of which cannabis/marijuana and hemp are 2 varieties. Delta-8 THC is one of over 100 cannabinoids produced naturally by the cannabis plant but is not typically found in significant amounts in the plant itself. As a result, concentrated amounts of delta-8 THC are typically manufactured from hemp-derived cannabidiol.

Following consumption of cannabis/marijuana, delta-9-THC metabolizes to a variety of inactive products, one of them being the carboxy metabolite (delta-9-THC-COOH). In almost all medico-legal cases or when the patient adamantly denies cannabis/marijuana use and the immunoassay test is positive, confirmation of the result by a definitive test is required. This test is a definitive, confirmatory test using liquid chromatography tandem mass spectrometry to identify and quantify delta-8-THC-COOH and delta-9 THC-COOH.

**Reference Values**

Not Detected (Positive results are reported with a quantitative result.)

Cutoff concentration by liquid chromatography tandem mass spectrometry:

Delta-8-Carboxy-Tetrahydrocannabinol (THC): 5.0 ng/mL

Delta-9-Carboxy-Tetrahydrocannabinol (THC): 5.0 ng/mL

### Interpretation

The presence of delta-8 and/or delta-9 carboxy tetrahydrocannabinol (THC-COOH) in urine is a strong indicator that the patient has used cannabis/marijuana.

THC-COOH has a long half-life and can be detected in urine for more than 7 days after a single 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. Baselt RC. Disposition of Toxic Drugs and Chemicals in Man. 12th ed. Biomedical Publications; 2020
2. 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

Carboxy tetrahydrocannabinol (THC-COOH) is extracted from urine by making the urine alkaline to hydrolyze THC-COOH glucuronide. The hydrolyzed samples are diluted for analysis by liquid chromatography tandem mass spectrometry using selected ion monitoring. (Unpublished Mayo method)

### PDF Report

No

### Day(s) Performed

Monday through Sunday

### Report Available

3 to 5 days

### Specimen Retention Time

2 weeks

### Performing Laboratory Location

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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

80349 (if appropriate for select payers)

[Clinical Toxicology CPT Code Client Guidance](#)

### LOINC® Information

| Test ID | Test Order Name             | Order LOINC® Value |
|---------|-----------------------------|--------------------|
| THCU    | Carboxy-THC Confirmation, U | 102114-6           |

| Result ID | Test Result Name                                       | Result LOINC® Value |
|-----------|--|---------------------|
| 2497      | Delta-9<br>Carboxy-Tetrahydrocannabinol by<br>LC-MS/MS | 20521-1             |
| 21186     | Carboxy-THC Interpretation                             | 69050-3             |
| 618770    | Delta-8<br>Carboxy-Tetrahydrocannabinol by<br>LC-MS/MS | 101249-1            |