MAYO CLINIC LABORATORIES

Test Definition: THCU

Delta-8 and
Delta-9-Carboxy-Tetrahydrocannabinol (THC)
Confirmation, Random, Urine

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	20521-1

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