Test Definition: HYDCU

Hydrocodone with Metabolite Confirmation, Random, Urine

Overview

Useful For
Detection and quantification of hydrocodone, norhydrocodone, and hydromorphone in urine

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 OPATX / Opiates Confirmation, Chain of Custody, Random, Urine.

Additional drug panels and specific requests are available; call 800-533-1710.

Additional Testing Requirements
If urine creatinine is required or adulteration of the specimen 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, 5-mL tube
Specimen Volume: 3 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.
3. Submitting less than 1 mL will compromise our ability to perform all necessary testing.

Forms

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If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

Specimen Minimum Volume

2.5 mL

Reject Due To

Gross hemolysis	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	28 days	
	Ambient	14 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Hydrocodone exhibits a complex pattern of metabolism including O-demethylation, N-demethylation, and 6-keto reduction to the 6-beta hydroxymetabolites. Hydromorphone and norhydrocodone are both metabolites of hydrocodone. Dihydrocodeine is also a minor metabolite. Trace amounts of hydrocodone can also be found in the presence of approximately 100-fold higher concentrations of oxycodone or hydromorphone since it can be a pharmaceutical impurity in these medications. The presence of hydrocodone indicates exposure within 2 to 3 days prior to specimen collection.

Hydromorphone is metabolized primarily in the liver and is excreted primarily as the glucuronidated conjugate, with small amounts of parent drug and minor amounts of 6-hydroxy reduction metabolites. The presence of hydromorphone indicates exposure within 2 to 3 days prior to specimen collection. Hydromorphone is also a metabolite of hydrocodone; therefore, the presence of hydromorphone could also indicate exposure to hydrocodone.

The detection interval for the opiates is generally 2 to 3 days after last ingestion.

Reference Values

Negative
Positive results are reported with a quantitative result.

Cutoff concentrations by-liquid chromatography tandem mass spectrometry:
Hydrocodone: 25 ng/mL
Norhydrocodone: 25 ng/mL
Hydromorphone: 25 ng/mL

Interpretation
This procedure reports the total urine concentration; this is the sum of the unconjugated and conjugated forms of the parent drug.

Cautions
Other drugs in the opioid class, such as fentanyl, meperidine, methadone, and opiate antagonists such as naloxone, are not detected

Clinical Reference
1. Gutstein HB, Akil H. Opioid analgesics. In: Brunton LL, Lazo JS, Parker KL, eds. The Pharmacological Basis of Therapeutics. 11th ed. Goodman and Gilman's: McGraw-Hill Companies, Inc. 2006 Available at www.accessmedicine.com/content.aspx?aID=940653
2. Baselt RC, ed: Disposition of Toxic Drugs and Chemical in Man. 9th ed. Biomedical Publications; 2011
3. Hackett LP, Dusci LJ, Ilett KF, Chiswell GM. Optimizing the hydrolysis of codeine and morphine glucuronides in urine. Ther Drug Monit. 2002;24(5):652-657. doi:10.1097/00007691-200210000-00012
4. 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
Confirmation with quantification by liquid chromatography/mass spectrometry (LC-MS/MS).(Unpublished Mayo method)

PDF Report
No

Day(s) Performed
Monday through Friday

Report Available
2 to 5 days

Specimen Retention Time
14 days

Performing Laboratory Location
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

80361 (if appropriate for select payers)

Clinical Toxicology CPT Code Client Guidance

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
HYDCU	Hydrocodone w/metabolite Conf, U	74760-0

Result ID	Test Result Name	Result LOINC® Value
62614	Hydrocodone-by LC-MS/MS	16252-9
35966	Hydromorphone-by LC-MS/MS	16998-7
36026	Hydrocodone Interpretation	69050-3
41999	Norhydrocodone-by LC-MS/MS	61422-2