Test Definition: COKEX

Cocaine and Metabolite Confirmation, Chain of Custody, Random, Urine

Overview

Useful For

Detecting and confirming drug abuse involving cocaine

Chain of custody is required whenever the results of testing could be used in a court of law. Its purpose is to protect the rights of the individual contributing the specimen by demonstrating that it was always under the control of personnel involved with testing the specimen; this control implies that the opportunity for specimen tampering would be limited.

This test is **not intended for use** in employment-related testing.

Additional Tests

Test Id	Reporting Name	Available Separately	Always Performed
COCH	Chain of Custody Processing	No	Yes
ADLTX	Adulterants Survey, CoC, U	Yes	Yes

Testing Algorithm

Adulterants testing will be performed on all chain-of-custody urine samples as per regulatory requirements.

Method Name

Immunoassay/Gas Chromatography Mass Spectrometry (GC-MS)

NY State Available

Yes

Specimen

Specimen Type

Urine

Ordering Guidance

This test is for situations that require the chain-of-custody process. For testing **not** requiring chain of custody, order COKEU / Cocaine and Metabolite Confirmation, Random, Urine

Specimen Required

Supplies: Chain of Custody Kit (T282)
Container/Tube: Chain of custody kit containing the specimen containers, seals, and documentation required.
Specimen Volume: 10 mL

Test Definition: COKEX

Cocaine and Metabolite Confirmation, Chain of Custody, Random, Urine

Collection Instructions: Collect specimen in the container provided, seal, and submit with the associated documentation to satisfy the legal requirements for chain-of-custody testing.
Additional Information: Submitting less than 10 mL will compromise the ability to perform all necessary testing.

Forms

1. Chain of Custody Request is included in the Chain of Custody Kit (T282).
2. If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

Specimen Minimum Volume

5 mL

Reject Due To

Gross hemolysis	OK
Gross icterus	OK

Specimen Stability Information

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

Clinical & Interpretive

Clinical Information

Cocaine is a drug of current health concern because of its proliferation among recreational drug abusers.

Freebase and crack increase the potential for major cocaine toxicity. Cocaine use is declining across the nation according to the National Institute of Drug Abuse.

Increasingly, laboratory results are disputed or there are medical/legal overtones. Therefore, physicians are finding an increased need to confirm positive results before informing or confronting the patients.

Chain of custody is a record of the disposition of a specimen to document all personnel who collected, handled, and performed the analysis. When a specimen is submitted in this manner, analysis will be performed in such a way that it will withstand regular court scrutiny.

Reference Values

Negative
Positive results are reported with a quantitative result.

Cutoff concentrations:

Immunoassay screen: 150 ng/mL

Gas chromatography mass spectrometry:
Cocaine: 50 ng/mL
Benzoylecgonine: 50 ng/mL

Interpretation

Reports will specifically indicate the presence or absence of cocaine and benzoylecgonine.

The presence of cocaine, or its major metabolite, benzoylecgonine, indicates use within the past 4 days.

Cocaine has a 6-hour half-life, so it will be present in urine for 1 day after last use.

Benzoylecgonine has a half-life of 12 hours, so it will be detected in urine up to 72 hours after last use.

There is no correlation between concentration and pharmacologic or toxic effects.

Cautions

No significant cautionary statements

Clinical Reference

1. Baselt RC. Disposition of Toxic Drugs and Chemical 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
3. Isenschmid DS. Cocaine. In: Levine BS, Kerrigan S, eds. Principles of Forensic Toxicology. 5th ed. Springer Nature; 2020:371-388

Performance

Method Description

Drug classes are initially screened by an immunoassay technique. The cocaine assay is based on the kinetic interaction of microparticles in a solution as measured by changes in light transmission. In the absence of sample drug, soluble drug conjugates bind to antibody-bound microparticles, causing the formation of particle aggregates. As the aggregation reaction proceeds in the absence of sample drug, the absorbance increases. When a urine sample contains the drug in question, this drug competes with the drug derivative conjugate for microparticle-bound antibody. Antibody bound to sample drug is no longer available to promote particle aggregation, and subsequent particle lattice formation is inhibited. The presence of sample drug diminishes the increasing absorbance in proportion to the concentration of drug in the sample. Sample drug content is determined relative to the value obtained for a known cutoff concentration of drug.(Package insert: COC2. Roche Diagnostics; V 4.0, 04/2024)

To accommodate the need to confirm specifically the presence of cocaine in urine, Mayo Clinic Laboratories offers a

single test to identify cocaine and its principal metabolite, benzoylecgonine, by using gas chromatography mass spectrometry.(Chinn DM, Crouch DJ, Peat MA, Finkle BS, Jennison TA. Gas chromatography-chemical ionization mass spectrometry of cocaine and its metabolites in biological fluids. J Anal Toxicol. 1980;4[1]:37-42; Rosado T, Gonçalves A, Margalho C, Barroso M, Gallardo E. Rapid analysis of cocaine and metabolites in urine using microextraction in packed sorbent and GC/MS. Anal Bioanal Chem. 2017;409[8]:2051-2063. doi:10.1007/s00216-016-0152-2)

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
80353 (if appropriate for select payers)
Clinical Toxicology CPT Code Client Guidance

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
COKEX	Cocaine and metabolite Conf, CoC, U	53747-2

Result ID	Test Result Name	Result LOINC® Value

2903	Cocaine Immunoassay Screen	42241-0
36162	Cocaine-by GC/MS	20519-5
36163	Benzoylecgonine-by GC/MS	16226-3
36164	Cocaine Interpretation	69050-3
36165	Chain of Custody	77202-0