

COC

One Step Cocaine Test Strip Package Insert

A rapid, one step test for the qualitative detection of Cocaine Metabolite in human urine.

For healthcare professionals including professionals at point of care sites.

For in vitro diagnostic use only.

INTENDED USE

The COC One Step Cocaine Test Strip is a rapid chromatographic immunoassay for the qualitative detection of cocaine metabolite, Benzoyllecgonine, in human urine at a cut-off concentration of 300 ng/mL.

This assay provides only a preliminary analytical test result. A more specific alternate chemical method must be used in order to obtain a confirmed analytical result. Gas chromatography/mass spectrometry (GC/MS) is the preferred confirmatory method. Clinical consideration and professional judgment should be applied to any drug of abuse test result, particularly when preliminary positive results are used.

SUMMARY

Cocaine is a potent central nervous system (CNS) stimulant and a local anesthetic. Initially, it brings about extreme energy and restlessness while gradually resulting in tremors, over-sensitivity and spasms. In large amounts, cocaine causes fever, unresponsiveness, and difficulty in breathing and unconsciousness.

Cocaine is often self-administered by nasal inhalation, intravenous injection and free-base smoking. It is excreted in the urine in a short time primarily as Benzoyllecgonine^{1,2}. Benzoyllecgonine, a major metabolite of cocaine, has a longer biological half-life (5 - 8 hours) than cocaine (0.5 - 1.5 hours), and can generally be detected for 24-48 hours after cocaine exposure.²

The COC One Step Cocaine Test Strip is a rapid urine screening test that can be performed without the use of an instrument. The test utilizes a monoclonal antibody to selectively detect elevated levels of cocaine metabolite in urine. The COC One Step Cocaine Test Strip yields a positive result when the cocaine metabolite in urine exceeds 300 ng/mL. This is the suggested screening cut-off for positive specimens set by the Substance Abuse and Mental Health Services Administration (SAMHSA, USA).

PRINCIPLE

The COC One Step Cocaine Test Strip is an immunoassay based on the principle of competitive binding. Drugs which may be present in the urine specimen compete against the drug conjugate for binding sites on the antibody.

During testing, a urine specimen migrates upward by capillary action. Benzoyllecgonine, if present in the urine specimen below 300 ng/mL, will not saturate the binding sites of antibody in the test strip. The antibody coated particles will then be captured by immobilized Benzoyllecgonine conjugate and a visible colored line will appear in the test line region. The colored line will not form in the test line region if the Benzoyllecgonine level exceeds 300 ng/mL because it will saturate all the binding sites of anti-Benzoyllecgonine antibody.

A drug-positive urine specimen will not generate a colored line in the test line region because of drug competition, while a drug-negative urine specimen or a specimen containing a drug concentration less than the cut-off will generate a line in the test line region.

To serve as a procedural control, a colored line will always appear at the control line region, indicating that proper volume of specimen has been added and membrane wicking has occurred.

REAGENTS

The test strip contains monoclonal anti-Benzoyllecgonine antibody-coupled particles and Benzoyllecgonine-protein conjugate. A goat antibody is employed in the control line system.

PRECAUTIONS

- For healthcare professionals including professionals at point of care sites.
- For professional *in vitro* diagnostic use only. Do not use after the expiration date.
- The test strip should remain in the sealed pouch until use.
- All specimens should be considered potentially hazardous and handled in the same manner as an infectious agent.
- Used test strip should be discarded according to federal, state and local regulations.

STORAGE AND STABILITY

Store as packaged in the sealed pouch at 2-30°C. The test strip is stable through the expiration date printed on the sealed pouch. The test strips must remain in the sealed pouch until use. DO NOT FREEZE. Do not use beyond the expiration date.

SPECIMEN COLLECTION AND PREPARATION

Urine Assay

The urine specimen must be collected in a clean and dry container. Urine collected at any time of the day may be used. Urine specimens exhibiting visible precipitates should be centrifuged, filtered, or allowed to settle to obtain a clear specimen for testing.

Specimen Storage

Urine specimens may be stored at 2-8°C for up to 48 hours prior to testing. For prolonged storage, specimens may be frozen and stored below -20°C. Frozen specimens should be thawed and mixed before testing.

MATERIALS

Materials Provided

- Test strips
- Package insert

Materials Required But Not Provided

- Specimen collection container
- Timer
- External controls

DIRECTIONS FOR USE

Allow the test strip, urine specimen, and/or controls to equilibrate to room temperature (15-30°C) prior to testing.

1. Bring the pouch to room temperature before opening it. Remove the test strip from the sealed pouch and use it as soon as possible.
2. With arrows pointing toward the urine specimen, immerse the test strip vertically in the urine specimen for at least 10-15 seconds. Do not pass the maximum line (MAX) on the test strip when immersing it. See the illustration below.
3. Place the test strip on a non-absorbent flat surface, start the timer and wait for the colored line(s) to appear. The result should be read at 5 minutes. Do not interpret the result after 10 minutes.

INTERPRETATION OF RESULTS

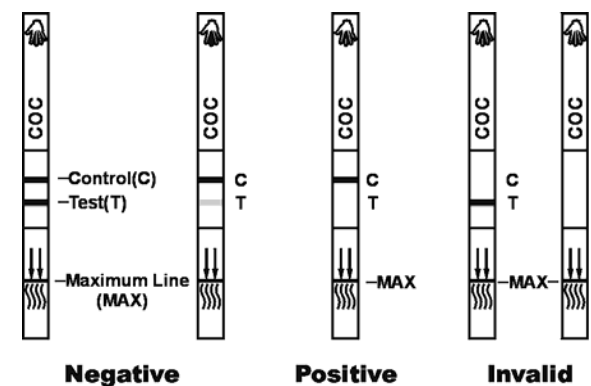
NEGATIVE: * **Two lines appear.** One colored line should be in the control region (C), and another colored line should be in the test region (T). This negative result indicates that the Benzoyllecgonine concentration is below the detectable level (300 ng/mL).

* **NOTE:** The shade of the color in the test region (T) may vary, but it should be considered negative whenever there is even a faint line.

POSITIVE: **One colored line appears in the control region (C).** No line appears in the test region. This positive result indicates that the Benzoyllecgonine concentration is above the detectable level (300 ng/mL).

INVALID: **Control line fails to appear.** Insufficient specimen volume or incorrect procedural techniques are the most likely reasons for control line failure. Review the procedure and repeat the test with a new test strip. If the problem persists, discontinue using the test kit immediately and contact your local distributor.

Test Results



QUALITY CONTROL

A procedural control is included in the test. A colored line appearing in the control region (C) is considered as an internal procedural control. It confirms sufficient specimen volume, adequate membrane wicking and correct procedural technique.

Control standards are not supplied with this kit; however, it is recommended that positive and negative controls be tested as a good laboratory testing practice to confirm the test procedure and to verify proper test performance.

LIMITATIONS

1. The COC One Step Cocaine Test Strip provides only a qualitative, preliminary analytical result. A secondary analytical method must be used to obtain a confirmed result. Gas chromatography/mass spectrometry (GC/MS) is the preferred confirmatory method.^{3,4}
2. It is possible that technical or procedural errors, as well as other interfering substances in the urine specimen may cause erroneous results.
3. Adulterants, such as bleach and/or alum, in urine specimens may produce erroneous results regardless of the analytical method used. If adulteration is suspected, the test should be repeated with another urine specimen.
4. A Positive Result indicates presence of the drug or its metabolites but does not indicate level of intoxication, administration route or concentration in urine.
5. A Negative Result may not necessarily indicate drug-free urine. Negative results can be obtained when drug is present but below the cutoff level of the test.
6. Test does not distinguish between drugs of abuse and certain medications.

PERFORMANCE CHARACTERISTICS

Accuracy

A side-by-side comparison was conducted by laboratory personnel using the COC One Step Cocaine Test Strip and a commercially available rapid test. Testing was performed on specimens previously collected from subjects presenting for Drug Screen Testing. Presumptive positive results were confirmed by GC/MS. The following results were tabulated:

Method		Other COC Rapid Test		Total Results
COC One Step Test Strip	Results	Positive	Negative	
	Positive	136	0	136
	Negative	7	157	164
Total Results		143	157	300
% Agreement with this commercial kit		95%	>99%	98%

When compared to GC/MS at the cut-off of 300 ng/mL, the following results were tabulated:

Method		GC/MS		Total Results
COC One Step Test Strip	Results	Positive	Negative	
	Positive	119	17	136
	Negative	5	159	164
Total Results		124	176	300
% Agreement with GC/MS Analysis		96%	90%	93%

Eighty (80) of these clinical samples were also run using the COC One Step Cocaine Test Strip by an untrained operator at a different site. Based on GC/MS data, the operator obtained a statistically similar Positive Agreement, Negative Agreement and Overall Agreement rate as the laboratory personnel.

Analytical Sensitivity

A drug-free urine pool was spiked with Benzoyllecgonine at the following concentrations: 0 ng/mL, 150 ng/mL, 225 ng/mL, 300 ng/mL, 375 ng/mL and 450 ng/mL. The result demonstrates >99% accuracy at 50% above and 50% below the cut-off concentration. The data are summarized below:

Benzoyllecgonine Concentration (ng/mL)	Percent of Cutoff	n	Visual Result	
			Negative	Positive
0	0	30	30	0
150	-50%	30	30	0
225	-25%	30	30	0
300	Cutoff	30	4	26
375	+25%	30	0	30
450	+50%	30	0	30

Specificity

The following table lists compounds that are positively detected in urine by the COC One Step Cocaine Test Strip at 5 minutes.

Compound	Concentration (ng/mL)
Benzoyllecgonine	300
Cocaine HCl	780
Cocaethylene	12,500
Ecgonine HCl	32,000

Precision

A study was conducted at three physician's offices by untrained operators using three different lots of product to demonstrate the within run, between run and between operator precision. An identical panel of coded specimens were blind labeled and tested at each site. The results are given below:

Benzoyllecgonine ng/mL concentration	n	Site 1		Site 2		Site 3	
		Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
0	15	0	14*	0	15	0	15
150 ng/mL	15	1	14	0	15	1	14
225 ng/mL	15	11	4	10	5	7	8
375 ng/mL	15	15	0	15	0	15	0
450 ng/mL	15	15	0	15	0	14	1
Non Valid	15	15/15		15/15		15/15	

*Note: Non-valid results were obtained in this treatment. Non-valid tests were provided as part of this study to ensure that readers would accurately identify non-valid test results.

Effect of Urinary Specific Gravity

Fifteen (15) urine samples of normal, high, and low specific gravity ranges were spiked with 150 ng/mL and 450 ng/mL of Benzoyllecgonine respectively. The COC One Step Cocaine Test Strip was tested in duplicate using the fifteen neat and spiked urine samples. The results demonstrate that varying ranges of urinary specific gravity does not affect the test results.

Effect of the Urinary pH

The pH of an aliquoted negative urine pool was adjusted to a pH range of 5 to 9 in 1 pH unit increments and spiked with Benzoyllecgonine to 150 ng/mL and 450 ng/mL. The spiked, pH-adjusted urine was tested with the COC One Step Cocaine Test Strip in duplicate and interpreted according to the package insert. The results demonstrate that varying ranges of pH does not interfere with the performance of the test.

Cross-Reactivity

A study was conducted to determine the cross-reactivity of the test with compounds in either drug-negative urine or Benzoyllecgonine positive urine. The following compounds show no interference when tested with the COC One Step Cocaine Test Strip at a concentration of 100 µg/mL.

Non Cross-Reacting Compounds

Acetaminophen	Fenopropfen	Oxymetazoline
Acetophenetidin	Furosemide	Papaverine
N-Acetylprocainamide	Gentisic acid	Penicillin-G
Acetylsalicylic acid	Hemoglobin	Pentobarbital
Aminopyrine	Hydralazine	Perphenazine
Amitriptyline	Hydrochlorothiazide	Phencyclidine
Amobarbital	Hydrocodone	Phenelzine
Amoxicillin	Hydrocortisone	Phenobarbital
Ampicillin	O-Hydroxyhippuric acid	Phentermine
L-Ascorbic acid	p-Hydroxy-methamphetamine	L-Phenylephrine
DL-Amphetamine Sulfate		β-Phenylethylamine
Apomorphine	3-Hydroxytyramine	Phenylpropanolamine
Aspartame	Ibuprofen	Prednisolone
Atropine	Imipramine	Prednisone
Benzilic acid	Iproniazid	Procaine
Benzoic acid	(±) - Isoproterenol	Promazine
Benzphetamine	Isosuxprine	Promethazine

Bilirubin	Ketamine	DL-Propranolol
(±) -Brompheniramine	Ketoprofen	D-Propoxyphene
Caffeine	Labetalol	D-Pseudoephedrine
Cannabidiol	Levorphanol	Quinidine
Cannabinol	Loperamide	Quinine
Chloralhydrate	Maprotiline	Ranitidine
Chloramphenicol	Meperidine	Salicylic acid
Chlordiazepoxide	Meprobamate	Secobarbital
Chlorothiazide	Methadone	Serotonin
(±) -Chlorpheniramine	Methoxyphenamine	Sulfamethazine
Chlorpromazine	(±) -3,4-Methylenedioxy-amphetamine hydrochloride	Sulindac
Chlorquine		Temazepam
Cholesterol	(±)	-3,4- Tetracycline
Clomipramine	Methylenedioxy-methamphetamine hydrochloride	Tetrahydrocortisone, 3-acetate
Clonidine	Morphine-3-β-D glucuronide	Tetrahydrocortisone 3-(β-D glucuronide)
Codeine	Morphine Sulfate	Tetrahydrozoline
Cortisone	Nalidixic acid	Thebaine
(-) Cotinine	Naloxone	Thiamine
Creatinine	Naltrexone	Thioridazine
Deoxycorticosterone	Naproxen	DL-Tyrosine
Dextromethorphan	Niacinamide	Tolbutamide
Diazepam	Nifedipine	Triamterene
Diclofenac	Norcodein	Trifluoperazine
Diflunisal	Norethindrone	Trimethoprim
Digoxin	D-Norpropoxyphene	Trimipramine
Diphenhydramine	Noscapine	Tryptamine
Doxylamine	DL-Octopamine	DL-Tryptophan
Ecgonine methylester	Oxalic acid	Tyramine
(-) - Ψ-Ephedrine	Oxazepam	Uric acid
Erythromycin	Oxolinic acid	Verapamil
β-Estradiol	Oxycodone	Zomepirac
Estrone-3-sulfate		
Ethyl-p-aminobenzoate		

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