Multi-Drug Rapid Test
(Oral Fluid)
Package Insert

A rapid test for the simultaneous, qualitative detection of multiple drugs and drug metabolites in human oral fluid. For healthcare professionals including professionals at point of care sites. Immunoassay for in vitro diagnostic use only.

【INTENDED USE】

The Multi-Drug Rapid Test for AMP/ MET/ COC/ OPI/ THC/ BZO is a lateral flow chromatographic immunoassay for the qualitative detection of multiple drugs and drug metabolites in oral fluid at the following cut-off concentrations:

Test	Calibrator	Cut-off(ng/ml)
Amphetamine (AMP)	d-Amphetamine	50
Methamphetamine (MET)	d-Methamphetamine	50
Marijuana (THC)	11-nor-□9 -THC-9 COOH	50
Cocaine (COC)	Benzoylecgonine	20
Opiates (OPI)	Morphine	40
Benzodiazepines (BZO)	Oxazepam	30

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) and gas chromatography/tandem mass spectrometry (GC/MS) are the preferred confirmatory methods. Professional judgment should be applied to any drug of abuse test result, particularly when preliminary positive results are indicated.

【SUMMARY】

The Multi-Drug Rapid Test for AMP/ MET/ COC/ OPI/ THC/ BZO and their metabolites is a rapid, oral fluid screening test that can be performed without the use of an instrument. The test utilizes monoclonal antibodies to selectively detect elevated levels of specific drugs in human oral fluid

Amphetamine (AMP)

Amphetamine is a sympathomimetic amine with therapeutic indications. The drug is often self-administered by nasal inhalation or oral ingestion. Depending on the route of administration, amphetamine can be detected in oral fluid as early as 5-10 minutes following use[1]. Amphetamine can be detected in oral fluid for up to 72 hours after use[1].

Methamphetamine (MET)

Methamphetamine is a potent stimulant chemically related to amphetamine but with greater CNS stimulation properties. The drug is often self-administered by nasal inhalation, smoking or oral ingestion. Depending on the route of administration, methamphetamine can be detected in oral fluid as early as 5-10 minutes following use[1]. Methamphetamine can be detected in oral fluid for up to 72 hours after use[1].

Cocaine (COC)

Cocaine is a potent central nervous system (CNS) stimulant and a local anesthetic derived from the coca plant (erythroxylum coca). The drug is often self-administered by nasal inhalation, intravenous injection and free-base smoking. Depending on the route of administration, cocaine and metabolites benzoylecgonine and ecgonine methyl ester can be detected in oral fluid as early as 5-10 minutes following use[1]. Cocaine and benzoylecgonine can be detected in oral fluid for up to 24 hours after use[1].

Opiates (OPI)

The drug class opiates refers to any drug that is derived from the opium poppy, including naturally occurring compounds such as morphine and codeine and semi-synthetic drugs such as heroin. Opiates act to control pain by depressing the central nervous system. The drugs demonstrate addictive properties when used for sustained periods of time; symptoms of withdrawal may include sweating, shaking, nausea and irritability. Opiates can be taken orally or by injection routes including intravenous, intramuscular and subcutaneous; illegal users may also take the intravenously or by nasal inhalation. Using an immunoassay cutoff level of 40ng/ml, codeine can be detected in the oral fluid within 1 hour following a single oral dose and can remain detectable for 7-21 hours after the dose[1]. Heroin metabolite 6-monoacetylmorphine (6-MAM) is found more prevalently in excreted unmetabolized, and is also the major metabolic product of codeine and heroin[2].

Marijuana (THC)

11-nor-Δ^9-tetrahydrocannabinol-9-carboxylic acid (Δ^9-THC-COOH), the metabolite of THC (Δ^9-tetrahydrocannabinol), is detectable in oral fluid shortly after use. The detection of the drug is thought to be primarily due to the direct exposure of the drug to the mouth (oral and smoking administrations) and the subsequent sequestering of the drug in the buccal cavity[3]. Historical studies have shown a window of detection for THC in oral fluid of up to 14 hours after drug use[3].

Benzodiazepines (BZO)

Benzodiazepines are medications that are frequently prescribed for the symptomatic treatment of anxiety and sleep disorders. They produce their effects via specific receptors involving a neurochemical called gamma aminobutyric acid (GABA). Because they are safer and more effective, Benzodiazepines have replaced Barbiturates in the treatment of both anxiety and insomnia. Benzodiazepines are also used as sedatives before some surgical and medical procedures, and for the treatment of seizure disorders and alcohol withdrawal. Risk of physical dependence increases if Benzodiazepines are taken regularly (e.g., daily) for more than a few months, especially at higher than normal doses. Stopping abruptly can bring on such symptoms as trouble sleeping, gastrointestinal upset, feeling unwell, loss of appetite, sweating, trembling, weakness, anxiety and changes in perception[1].

【ASSAY PRINCIPLE】

The Multi-Drug Rapid Test for AMP/ MET/ COC/ OPI/ THC/ BZO is an immunoassay based on the principle of competitive binding. Drugs that may be present in the oral fluid specimen compete against their respective drug conjugate for binding sites on their specific antibody.

During testing, a portion of the oral fluid specimen migrates upward by capillary action. A drug, if present in the oral fluid specimen below its cut-off concentration, will not saturate the binding sites of its specific antibody. The antibody will then react with the drug-protein conjugate and a visible colored line will show up in the test line region of the specific drug strip. The presence of drug above the cut-off concentration in the oral fluid specimen will saturate all the binding sites of the antibody. Therefore, the colored line will not form in the test line region.

A drug-positive oral fluid specimen will not generate a colored line in the specific test line region of the strip because of drug competition, while a drug-negative oral fluid specimen will generate a line in the test line region because of the absence of drug competition.

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 contains membrane strips coated with drug-protein conjugates (purified bovine albumin) on the test line, a goat polyclonal antibody against gold-protein conjugate at the control line, and a dye pad which contains colloidal gold particles coated with mouse monoclonal antibody specific to Amphetamine, Methamphetamine, Cocaine, Opiates, Δ^9-THC-COOHand Benzodiazepines,.

【PRECAUTIONS】

- Do not use after the expiration date.
- The test should remain in the sealed pouch until use.
- Oral fluid is not classified as biological hazard unless derived from a dental procedure.
- The used collector/test should be discarded according to local regulations.

【STORAGE AND STABILITY】

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

【SPECIMEN COLLECTION AND PREPARATION】

Follow the detailed Directions for Use below. No other collection Device should be used with this assay. Oral fluid collected at any time of the day may be used.

【MATERIALS】

Materials Provided

- Test Midstream
- Package insert

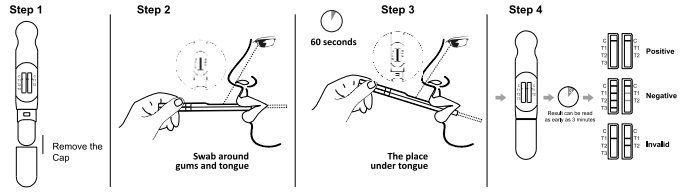
Materials Required but Not Provided

- Timer

【DIRECTIONS FOR USE】

Allow the test Midstream, specimen, and/or controls to reach room temperature (15-30°C) prior to testing. Instruct the donor to not place anything in the mouth including food, drink, gum or tobacco products for at least 10 minutes prior to collection.

1. Bring the pouch to room temperature before opening it. Remove the test from the sealed pouch and use it within one hour.
2. Take off the Midstream cap and collect oral fluid specimen as follows.
   Important: Place the tongue against the upper and lower jaws to enrich the oral fluid. Insert the sponge end into the mouth, actively swab around the gums on both sides of the mouth (10-15 times) to assist saturation.
   Put the absorbent wick under the tongue to collect oral fluid until the flow appears in the test windows (approximately 60 seconds) and then take out the Midstream and start a timer.
   If no flow has appeared, repeat the procedure in steps above until the flow appears. If no flow has appeared after triplicate of steps above, discard the Midstream, review procedures with the donor and repeat the test using a new Midstream.
3. Place the test Midstream on a clean and level surface.
4. Read the test result at **3-10 minutes.**
   If all lines are clearly visible at 3 minutes or sooner, then the test can be interpreted as negative and discarded. If any lines are not visible at 3 minutes, then the test should be re-read at 10 minutes.



【INTERPRETATION OF RESULTS】

(Please refer to the previous illustration)

NEGATIVE:* A colored line appears in the Control region (C) and colored lines appear in the Test region (T). This negative result means that the concentrations in the oral fluid sample are below the designated cut-off levels for the particular drug tested.

***NOTE:** The shade of the colored lines(s) in the Test region (T) may vary. The result should be considered negative whenever there is even a faint line.

POSITIVE: A colored line appears in the Control region (C) and NO line appears in the Test region (T). The positive result means that the drug concentration in the oral fluid sample is greater than the designated cut-off for a specific drug.

INVALID: No line appears in the Control region (C). Insufficient specimen volume or incorrect procedural techniques are the most likely reasons for Control line failure. Read the directions again and repeat the test with a new test Midstream. If the result is still invalid, contact your manufacturer.

【QUALITY CONTROL】

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

【LIMITATIONS】

1. The Multi-Drug Rapid Test 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) or gas chromatography/tandem mass spectrometry (GC/MS/MS) are preferred confirmatory methods.[4]
2. A positive test result does not indicate the concentration of drug in the specimen or the route of administration.
3. A negative result may not necessarily indicate a drug-free specimen. Drug may be present in the specimen below the cutoff level of the assay.

【PERFORMANCE CHARACTERISTICS】

Analytical Sensitivity

A Phosphate-buffered saline (PBS) pool was spiked with drugs to target concentrations of ± 50% cut-off, ± 25% cut-off and +300% cut-off and tested with the Multi-Drug Rapid Test. The results are summarized below.

Drug Concentration	AMP		MET		THC		BZO		COC		OPI	
Cut-off Range	-	+	-	+	-	+	-	+	-	+	-	+
0% Cut-off	30	0	30	0	30	0	30	0	30	0	30	0
-50% Cut-off	30	0	30	0	30	0	30	0	30	0	30	0
-25% Cut-off	27	3	28	2	27	3	25	5	27	3	27	3
Cut-off	15	15	16	14	12	18	13	17	15	15	13	17
+25% Cut-off	7	23	6	24	8	22	4	26	8	22	7	23
+50% Cut-off	0	30	0	30	0	30	0	30	0	30	0	30
+300% Cut-off	0	30	0	30	0	30	0	30	0	30	0	30

Analytical Specificity

The following table lists the concentration of compounds (ng/mL) above which the Multi-Drug Rapid Test for AMP/ MET/ COC/ OPI/ THC/ BZO identified positive results at a read time of 10 minutes.

Compound	ng/ml
AMPHETAMINE (AMP)	
d-Amphetamine	50
d/l-Amphetamine	100
ß-Phenylethylamine	25,000
Tryptamine	12,500
p-Hydroxyamphetamine	100
(+)3,4-Methylenedioxyamphetamine (MDA)	100
l-Amphetamine	25,000
Methoxyphenamine	12,500
METHAMPHETAMINE (MET)	
d-Methamphetamine	50
Fenfluramine	60,000
p-Hydroxymethamphetamine	400
Methoxyphenamine	25,000
Mephentermine	1,500

3,4-Methylenedioxymethamphetamine (MDMA)	50
l-Phenylephrine (R)-(-)-Phenylephrine	6,250
Procaine	2,000
(1R,2S) - (-) Ephedrine	400
Ephedrine	400
Benzphetamine	25,000
MARIJUANA (THC)	
11-nor-Δ^9 -THC-9 COOH	50
Cannabinol	50,000
Δ_8 -THC	25,000
Δ^9 -THC	40,000
11-nor-Δ^8-THC-9 COOH	40
COCAINE (COC)	
Benzoylecgonine	20
Cocaine	20
Cocaethylene	30
Ecgonine	1,500
Ecgonine methyl ester	12,500
OPIATES (OPI)	
Morphine	40
Codeine	25
Ethylmorphine	25
Hydromorphine	100
Hydrocodone	100
Levorphanol	400
Oxycodone	25,000
Morphine 3-β-D-Glucuronide	50
Norcodeine	6,250
Normorphine	25,000
Nalorphine	10,000
Oxymorphone	25,000
Thebaine	2,000
Diacetylmorphine (Heroin)	50
6-Monoacetylmorphine	25
Benzodiazepines (BZO)	
Alprazolam	15
a-hydroxyalprazolam	150
Bromazepam	75
Chlordiazepoxide	75
Clobazam	15
Clonazepam	40
Clorazepatedipotass	40
Delorazepam	75
Desalkylflurazepam	15
Diazepam	150
Estazolam	600
Flunitrazepam	15
(±) Lorazepam	300
RS-Lorazepamglucuronide	15
Midazolam	600
Nitrazepam	15
Norchlordiazepoxide	15
Nordiazepam	75
Oxazepam	30
Temazepam	15
Triazolam	300

Cross-Reactivity

A study was conducted to determine the cross-reactivity of the test with compounds spiked into drug-free PBS stock. The following compounds demonstrated no false positive results on the Multi-Drug Rapid Test when tested with at concentrations up to 100 μg/mL.

Acetaminophen	d/l-Chloropheniramine	Tetracycline
N-Acetylprocainamide	Chloroquine	Tetrahydrocortisone 3 (β-D-glucuronide)
Aminopyrine	Clonidine	Thioridazine
Ampicillin	l-Cotinine	Tolbutamide
Apomorphine	Deoxycorticosterone	Trifluoperazine
Atropine	Diclofenac	d/l-Tryptophan
Benzoic acid	Digoxin	Uric acid
d/l-Brompheniramine	l -Ψ-Ephedrine	Ketoprofen
Chloral-hydrate	Estrone-3-sulfate	Loperamide
Chlorothiazide	l(–)-Epinephrine	Meprobamate
Chlorpromazine	Fenoprofen	Nalidixic acid
Cholesterol	Gentisic acid	Niacinamide
Cortisone	Hydralazine	Norethindrone
Creatinine	Hydrocortisone	Noscapine
Dextromethorphan	p-Hydroxytyramine	Oxalic acid
Diflunisal	Iproniazid	Oxymetazoline
Diphenhydramine	Isoxsuprine	Penicillin-G
β-Estradiol	Labetalol	Perphenazine
Ethyl-p-aminobenzoate	Meperidine	Trans-2-phenylcyclopropylamine hydrochloride
Erythromycin	Methylphenidate	Prednisolone
Furosemide	Naproxen	d/l-Propranolol
Hemoglobin	Nifedipine	d-Pseudoephedrine
Hydrochlorothiazide	d-Norpropoxyphene	Quinine
o-Hydroxyhippuric acid	d/l-Octopamine	Ranitidine
Ibuprofen	Oxolinic acid	Serotonin
d/l-Isoproterenol	Papaverine	Sulindac
Acetophenetidin	Pentazocine hydrochloride	Tetrahydrocortisone 3-acetate
Acetylsalicylic acid	Phenelzine	Thiamine
Amoxicillin	Phenylpropanolamine	d/l-Tyrosine
l-Ascorbic acid	Prednisone	Triamterene
Aspartame	d-Propoxyphene	Trimethoprim
Benzilic acid	Quinacrine	Tyramine
Benzphetamine	Quindine	Verapamil
Caffeine	Salicylic acid	Zomepirac
Chloramphenicol	Sulfamethazine	

【BIBLIOGRAPHY】

1. Moolchan, E., et al, “Saliva and Plasma Testing for Drugs of Abuse: Comparison of the Disposition and Pharmacological Effects of Cocaine”, Addiction Research Center, IRP, NIDA, NIH, Baltimore, MD. As presented at the SOFT-TIAFT meeting October 1998.
2. Kim, I, et al, “Plasma and oral fluid pharmacokinetics and pharmacodynamics after oral codeine administration”, *ClinChem,* 2002 Sept.; 48 (9), pp 1486-96.
3. Schramm, W. et al, “Drugs of Abuse in Saliva: A Review,” *J Anal Tox*, 1992 Jan-Feb; 16 (1), pp 1-9
4. Baselt RC. Disposition of Toxic Drugs and Chemicals in Man. 2nd Ed. Biomedical Publ., Davis, CA. 1982; 488

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