# Precision SalivaStik

**Multi-Saliva Drugs of Abuse**

**Rapid Test Device**

## INTENDED USE

The Multi-Saliva Drugs of Abuse Rapid Test Device is a rapid visual immunoassay for the qualitative, presumptive detection of drugs of abuse in human oral fluid specimens. The test system consists of one or two membrane strips mounted in a plastic cassette.
This test detects combinations of the following drugs at the concentrations listed below. Specific combinations will vary according to the test in question:

| Test | Calibrator | Cut-off(ng/mL) |
|---|---|---|
| Amphetamine (AMP) | D-Amphetamine | 50 |
| Benzodiazepine (BZO) | Oxazepam | 10 |
| Buprenorphine(BUP) | Buprenorphine | 5 |
| Cocaine (COC) | Cocaine | 20 |
| Cocaine (COC) | Cocaine | 50 |
| Cotinine(COT) | Cotinine | 50 |
| EDDP(EDDP) | 2-Ethyliden-1,5-Dimethyl-3,3-Diphenylpyrrolidine | 20 |
| Ketamine（KET） | Ketamine、 | 50 |
| Marijuana (THC) | 11-nor-$\Delta^9$-THC-9 COOH | 12 |
| Methadone (MTD) | Methadone | 30 |
| Methamphetamine (MET) | D-Methamphetamine | 50 |
| Opiates (OPI) | Morphine | 40 |
| Opiates (OPI) | Morphine | 50 |
| Oxycodone(OXY) | Oxycodone | 20 |
| Phencyclidine (PCP) | Phencyclidine | 10 |
| Propoxyphene(PPX) | Propoxyphene | 50 |
| Barbiturate(BAR) | Barbiturate | 50 |
| Ecstasy（MDMA） | 3,4-Methylenedioxymethamphetamine | 50 |
| FYL (Fentanyl) | Fentanyl | 10 |

## PRINCIPLE

The Multi-Saliva Drugs of Abuse Rapid Test Device 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.

## MATERIALS

**Materials Provided**

Individually packed test devices — Package insert

**Materials Required but Not provided**

Timer — Positive and negative controls

## PRECAUTIONS

- For professional *in vitro* diagnostic use only.
- Do not use after the expiration date indicated on the package. Do not use the test if the foil pouch is damaged. Do not reuse tests.
- Read the entire procedure carefully prior to testing.
- Do not eat, drink or smoke in the area where specimens and kits are handled. Handle all specimens as if they contain infectious agents. Observe established precautions against microbiological hazards throughout the procedure and follow standard procedures for the proper disposal of specimens. Wear protective clothing such as laboratory coats, disposable gloves and eye protection when specimens are assayed.
- Humidity and temperature can adversely affect results.
- Used testing materials should be discarded in accordance with local regulations.

## STORAGE AND STABILITY

- The kit should be stored at 2-30°C until the expiry date printed on the sealed pouch.
- The test must remain in the sealed pouch until use.
- Do not freeze.
- Kits should be kept out of direct sunlight.
- Care should be taken to protect the components of the kit from contamination. Do not use if there is evidence of microbial contamination or precipitation. Biological contamination of dispensing equipment, containers or reagents can lead to false results.

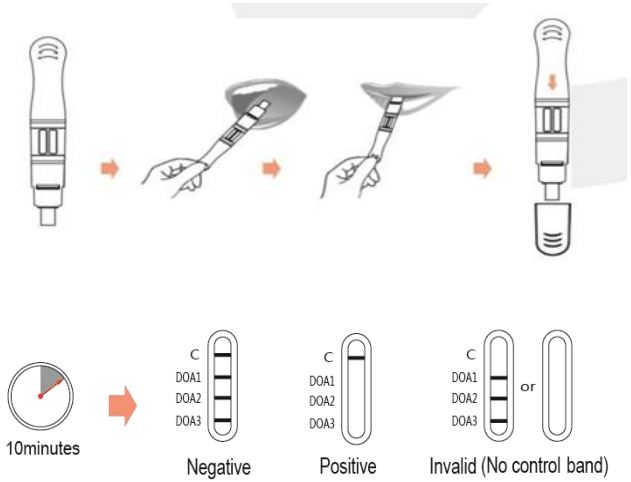
## SPECIMEN COLLECTION AND STORAGE

- The Multi-Saliva Drugs of Abuse Rapid Test Device is intended for use with human oral fluid specimens only.
- Oral fluid specimens must be collected according to the directions in the Procedure section of this package insert.
- Perform testing immediately after specimen collection.
- If specimens are to be shipped, pack them in compliance with all applicable regulations for transportation of etiological agents.

## PROCEDURE

**Bring tests, specimens, and/or controls to room temperature (15-30°C) before use. Donors should avoid placing anything (including food, drink, gum and tobacco products) in their mouth for at least 10 minutes prior to specimen collection.**

1. Remove the cap by holding the sides and pulling gently. This will expose the collection pad.
2. Place the collection pad underneath the tongue for approximately 30 seconds to collect saliva. Instruct the donor to hold the device in place with hand.
3. Remove from mouth as soon as color move in both of the test windows. Re-cap the device.
   **As the test begins to work, color will migrate across the membrane.**
4. Wait for the colored band(s) to appear. The result should be read at 10 minutes. Do not interpret the result after 20 minutes.




## INTERPRETATION OF RESULTS

(See previous illustration)
**POSITIVE: Only one colored band appears**, in the control region (C). No colored band appears in the test region (T) for the drug in question. A positive result indicates that the drug concentration exceeds the detectable level.
**NEGATIVE: Two colored bands appear** on the membrane. One band appears in the control region (C) and another band appears in the test region (T) for the drug in question. A negative result indicates that the drug concentration is below the detectable level.
**INVALID: Control band fails to appear.** Results from any test which has not produced a control band at the specified read time must be discarded. Please review the procedure and repeat with a new test. If the problem persists, discontinue using the kit immediately and contact your local distributor.
**NOTE:**
1. The intensity of color in the test region (T) may vary depending on the concentration of analytes present in the specimen. Therefore, any shade of color in the test region (T) should be considered negative. Please note that this is a qualitative test only, and cannot determine the concentration of analytes in the specimen.
2. Insufficient specimen volume, incorrect operating procedure or expired tests are the most likely reasons for control band failure.

## QUALITY CONTROL

- Internal procedural controls are included in the test. A colored band appearing in the control region (C) is considered an internal positive procedural control, confirming sufficient specimen volume and correct procedural technique.
- External controls are not supplied with this kit. It is recommended that positive and negative controls be tested as a good laboratory practice to confirm the test procedure and to verify proper test performance.

## LIMITATIONS OF THE TEST

1. The Multi-Saliva Drugs of Abuse Rapid Test Device is for professional in vitro diagnostic use, and should be only used for the qualitative detection of drugs of abuse in oral fluid.
2. This assay provides a preliminary analytical test result only. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. Gas chromatography/mass spectrometry (GC/MS) has been established as the preferred confirmatory method by the National Institute on Drug Abuse (NIDA). Clinical consideration and professional judgment should be applied to any test result, particularly when preliminary positive results are indicated.
3. There is a possibility that technical or procedural errors as well as other substances and factors may interfere with the test and cause false results.
4. A positive result indicates the presence of a drug/metabolite only, and does not indicate or measure intoxication.
5. A negative result does not at any time rule out the presence of drugs/metabolites in urine, as they may be present below the minimum detection level of the test.
6. This test does not distinguish between drugs of abuse and certain medications.

## PERFORMANCE CHARACTERISTICS

**A. Sensitivity**
A phosphate-buffered saline (PBS) pool was spiked with drugs to target concentrations of ± 50% cut-off and ± 25% cut-off and tested with the Multi-Saliva Drugs of Abuse Rapid Test Device. The results are summarized below.

| Drug Conc. (Cut-off range) | n | AMP | | BUP | | BZO | | COC | |
|---|---|---|---|---|---|---|---|---|---|
| | | - | + | - | + | - | + | - | + |
| 0% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| -50% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| -25% Cut-off | 30 | 30 | 0 | 28 | 2 | 30 | 0 | 29 | 1 |
| Cut-off | 30 | 18 | 12 | 11 | 19 | 14 | 16 | 12 | 18 |
| +25% Cut-off | 30 | 2 | 28 | 8 | 22 | 4 | 26 | 2 | 28 |
| +50% Cut-off | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 | 30 |

| Drug Conc. (Cut-off range) | n | COT | | EDDP | | KET | | MET | |
|---|---|---|---|---|---|---|---|---|---|
| | | - | + | - | + | - | + | - | + |
| 0% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| -50% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| -25% Cut-off | 30 | 30 | 0 | 30 | 0 | 27 | 3 | 30 | 0 |
| Cut-off | 30 | 11 | 19 | 13 | 17 | 9 | 21 | 13 | 17 |
| +25% Cut-off | 30 | 1 | 29 | 2 | 28 | 3 | 27 | 3 | 27 |
| +50% Cut-off | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 | 30 |

| Drug Conc. (Cut-off range) | n | OPI | | MTD | | OXY | | PCP | |
|---|---|---|---|---|---|---|---|---|---|
| | | - | + | - | + | - | + | - | + |
| 0% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| -50% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| -25% Cut-off | 30 | 28 | 2 | 30 | 0 | 28 | 2 | 28 | 2 |
| Cut-off | 30 | 10 | 20 | 10 | 20 | 10 | 20 | 11 | 19 |
| +25% Cut-off | 30 | 9 | 21 | 2 | 28 | 4 | 26 | 5 | 25 |
| +50% Cut-off | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 | 30 |

| Drug Conc. (Cut-off range) | n | THC | | BAR | | PPX | |
|---|---|---|---|---|---|---|---|
| | | - | + | - | + | - | + |
| 0% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 |
| -50% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 |
| -25% Cut-off | 30 | 30 | 0 | 27 | 3 | 30 | 0 |
| Cut-off | 30 | 10 | 20 | 9 | 21 | 10 | 20 |
| +25% Cut-off | 30 | 5 | 25 | 3 | 27 | 4 | 26 |
| +50% Cut-off | 30 | 0 | 30 | 0 | 30 | 0 | 30 |

| Drug Conc. | n | MDMA | COC 50 | OPI 50 | FYL 10 |
|---|---|---|---|---|---|

| (Cut-off range) | | - | + | - | + | - | + | - | + |
|---|---|---|---|---|---|---|---|---|---|
| 0% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| -50% Cut-off | 30 | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 |
| -25% Cut-off | 30 | 25 | 5 | 30 | 0 | 27 | 3 | 25 | 5 |
| Cut-off | 30 | 14 | 16 | 10 | 20 | 9 | 21 | 12 | 18 |
| +25% Cut-off | 30 | 4 | 26 | 4 | 26 | 3 | 27 | 8 | 22 |
| +50% Cut-off | 30 | 0 | 30 | 0 | 30 | 0 | 30 | 0 | 30 |

**B. Specificity**

The following table lists the concentrations of compounds (ng/mL) above which the Multi-Saliva Drugs of Abuse Rapid Test Device identified positive results at 10 minutes.

| | | | | |
|---|---|---|---|---|
| **Amphetamine-Related Compounds** | | | $\Delta^9$-Tetrahydrocannabinol | 4,000 |
| D-Amphetamine | 50 | | 11-hydroxy-$\Delta^9$ -THC | 300 |
| L-Amphetamine | 4,000 | | **Propoxyphene -Related Compounds** | |
| (+)-3,4-Methylenedioxyamphetamine | 150 | | Propoxyphene (PPX) | 50 |
| Phentermine | 40,000 | | D-Norpropoxyphene | 200 |
| PMA | 125 | | **Fentanyl -Related Compounds** | |
| Tyramine | 3,000 | | Fentanyl | 10 |
| **Barbiturate -Related Compounds** | | | Norfentanyl | 200 |
| Barbiturate (BAR) | 50 | | | |
| Allobarbital | 200 | | **Methadone -Related Compounds** | |
| Alphenal | 100 | | Methadone | 30 |
| Amobarbital | 100 | | Alpha-Methadol | 125 |
| Aprobarbital | 30 | | Biperiden | 80,000 |
| Butabarbital | 15 | | Doxylamine | 12,500 |
| Butalbital | 400 | | 2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrolidine | 10,000 |
| Butethal | 30 | | Phencyclidine | 12,500 |
| Cyclopentobarbital | 60 | | Pheniramine | 25,000 |
| Pentobarbital | 150 | | **Methamphetamine-Related Compounds** | |
| Phenobarbital | 300 | | D-Methamphetamine | 50 |
| **Benzodiazepine-Related Compounds** | | | Fenfluramine | 3,000 |
| Oxacepam | 10 | | L-Methamphetamine | 500 |
| Alprazolam | 15 | | L-Phenylephrine | 2,500 |
| Bromazepam | 8 | | MDEA | 400 |
| Chlordiazepoxide | 10 | | 3,4-Methylenedioxymethamphetamin | 75 |
| Clonazepam | 40 | | Mephentermine | 200 |
| Clorazepate | 20 | | PMMA | 50 |
| Clbazam | 6 | | Procaine | 2,500 |
| Diazepam | 15 | | **Ketamine-Related Compounds** | |
| Estazolam | 10 | | Ketamine(KET) | 50 |
| Desalkyflurazepam | 8 | | Norketamine | 50 |
| Flunitrazepam | 10 | | Dextromethorphan | 25 |
| Flurazepam | 10 | | Hydrocodone | 50 |
| Lorazepam | 20 | | Hydromorphone | 100 |
| Medazepam | 10 | | Temazepam | 8 |
| Nitrazepam | 10 | | Triazola | 15 |
| Nordiazepam | 6 | | **Opiates -Related Compounds** | |
| Prazepam | 20 | | Morphine | 40 |
| Temazepam | 8 | | Codeine | 10 |
| Triazola | 15 | | Diacetylmorphine (Heroin) | 50 |
| **Buprenorphine -Related Compounds** | | | Ethylmorphine | 24 |
| Buprenorphine | 5 | | Hydrocodone | 50 |
| Nalorphine | 10,000 | | Hydromorphone | 100 |
| Oxycodone | 25,000 | | 6-Monoacetylmorphine (6-MAM) | 25 |
| Oxymorphone | 25,000 | | Morphine-3- β-d-glucuronide | 50 |
| Thebaine | 5,000 | | Nalorphine | 10,000 |
| **Cocaine-Related Compounds** | | | Oxycodone | 25,000 |
| Cocaine | 20 | | Oxymorphone | 25,000 |
| Benzoylecgonine | 200 | | Thebaine | 5,000 |
| Ecgonine | 100,000 | | **Opiates -Related Compounds** | |
| Ecgonine methyl ester | 10,000 | | Morphine | 50 |
| **Cocaine-Related Compounds** | | | Codeine | 15 |
| Cocaine | 50 | | Diacetylmorphine (Heroin) | 60 |
| Benzoylecgonine | 500 | | Ethylmorphine | 30 |
| Ecgonine | >100,000 | | Hydrocodone | 60 |
| Ecgonine methyl ester | 50,000 | | Hydromorphone | 125 |
| **Cotinine-Related Compounds** | | | 6-Monoacetylmorphine (6-MAM) | 60 |
| Cotinine | 50 | | Morphine-3- β-d-glucuronide | 60 |
| Buprenorphine | >100,000 | | Nalorphine | 12,500 |
| **EDDP -Related Compounds** | | | Oxycodone | 31,250 |
| EDDP | 20 | | Oxymorphone | 31,250 |
| Meperidine | 20,000 | | Thebaine | 6,250 |
| Methadone | 20,000 | | **Oxycodone-Related Compounds** | |
| Norfentanyl | 20,000 | | Oxycodone | 20 |
| Phencyclidine | 20,000 | | Hydrocodone | 1,000 |
| Promazine | 10,000 | | Hydromorphone | 6,250 |
| Promethazine | 5,000 | | Naloxone | 6,250 |
| Prothipendyl | 10,000 | | Oxymorphone | 1,000 |
| Prozine | 2,500 | | **Phencyclidine-Related Compounds** | |
| **Ecstasy -Related Compounds** | | | Phencyclidine (PCP) | 10 |
| 3,4-Methylenedioxymethamphetamin | 50 | | Hydrocodone | 2,000 |
| 3,4-Methylenedioxyamphetamine | 250 | | Hydromorphone | 2,000 |
| 3,4-Methylenedioxyethylamphetamin | 60 | | Morphine-3- β-d-glucuronide | 20,000 |
| Paramethoxyamphetamine | 1,600 | | Nalorphine | 10,000 |
| Paramethoxymethamphetamine | 160 | | | |
| **Marijuana -Related Compounds** | | | | |
| 11-nor-$\Delta^9$ -THC-9 COOH | 12 | | | |
| $\Delta^8$-Tetrahydrocannabinol | 2,000 | | | |
| | | | | |
| | | | | |

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-Saliva Drugs of Abuse Rapid Test Device when tested at concentrations up to 100 ug/mL.

| | | |
|---|---|---|
| (-)-Ephedrine (Except MET) | Chlorpheniramine | Oxalic Acid |
| (+)-Naproxen | Creatine | Penicillin-G |
| (+/-)-Ephedrine (Except MET) | Dextromethorphan (Except KET) | Pheniramine |
| 4-Dimethyllaminoantiyrine | Dextrorphan tartrate (Except KET) | Phenothiazine |
| Acetaminophen | Dopamine | Procaine |
| Acetone | Erythromycin | Protonix |
| Albumin | Ethanol | Pseudoephedrine |
| Amitriptyline | Furosemide | Quinidine |
| Ampicillin | Glucose | Ranitidine |
| Aspartame | Guaiacol Glyceryl Ether | Sertraline |
| Aspirin | Hemoglobin | Tyramine |
| Benzocaine | Imipramine | Trimeprazine |
| Bilirubin | (+/-)-Isoproterenol | Venlafaxine |
| b-Phenylethyl-amine | Methadone (Except MTD) | Ibuprofen |
| Caffeine | Vitamin C (Ascorbic Acid) | Lidocaine |
| Chloroquine (Except MET) | | |

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## GLOSSARY OF SYMBOLS

| | | | |
|---|---|---|---|
| ρ | Catalog number | ϐ | Temperature limitation |
| ι | Consult instructions for use | Λ | Batch code |
| I | *In vitro* diagnostic medical device | ε | Use by |
| μ | Manufacturer | σ | Do not reuse |


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