EDDP Rapid Test Dipstick (Urine)
Package Insert

REF DED-101	English

A rapid test for the qualitative detection of EDDP in human urine.
For medical and other professional in vitro diagnostic use only.

【INTENDED USE】
The EDDP (Methadone Metabolite) Rapid Test Dipstick (Urine) is a rapid immunochromatographic assay for the qualitative detection of 2-ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP), an inactive metabolite of methadone that acts as a narcotic pain reliever and is used as a treatment for opiate addiction.
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】
Methadone is an unusual drug in that its primary urinary metabolites (EDDP and EMDP) are cyclic in structure, making them very difficult to detect using immunoassays targeted to the native compound.1 Exacerbating this problem, there is a subsection of the population classified as "extensive metabolizers" of methadone. In these individuals, a urine specimen may not contain enough parent methadone to yield a positive drug screen even if the individual is in compliance with their methadone maintenance. EDDP represents a better urine marker for methadone maintenance than unmetabolized methadone.
The EDDP Rapid Test Dipstick (Urine) 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 EDDP in urine. The EDDP Rapid Test Dipstick (Urine) yields a positive result when EDDP in urine exceeds 300 ng/mL.

【PRINCIPLE】
The EDDP Rapid Test Dipstick (Urine) 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. EDDP, if present in the urine specimen below 300 ng/mL, will not saturate the binding sites of antibody-coated particles in the test device. The antibody-coated particles will then be captured by immobilized EDDP conjugate and a visible colored line will show up in the test line region. The colored line will not form in the test line region if the EDDP level exceeds 300 ng/mL because it will saturate all the binding sites of anti-EDDP antibodies.
A drug-positive urine specimen will not generate a colored line in the test line region, 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 Dipstick contains mouse monoclonal anti-EDDP antibody-coupled particles and EDDP-protein conjugate. A goat antibody is employed in the control line system.

【PRECAUTIONS】
- For medical and other professional *in vitro* diagnostic use only. Do not use after the expiration date.
- The test 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.
- The used test should be discarded according to local regulations.

【STORAGE AND STABILITY】
Store as packaged in the sealed pouch either at room temperature or refrigerated (2-30°C). The test is stable through the expiration date printed on the sealed pouch. The test must remain in the sealed pouch until use. **DO NOT FREEZE.** Do not use beyond the expiration date.

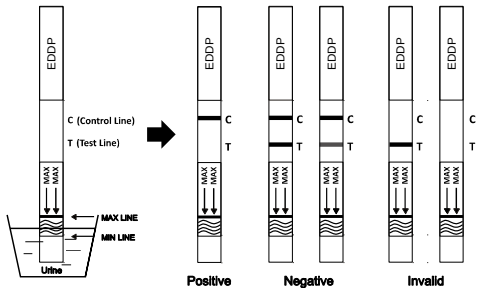
【SPECIMEN COLLECTION AND PREPARATION】
Urine Assay
The urine specimen must be collected in a clean and dry container. Urine collected at any time of the day may be used. Urine specimens exhibiting visible particles should be centrifuged, filtered, or allowed to settle to obtain clear specimen for testing.

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

【MATERIALS】
Materials Provided
- Test Dipsticks
- Package insert

Materials Required But Not Provided
- Specimen collection container
- Timer

【DIRECTIONS FOR USE】
Allow the test, urine specimen, and/or controls to reach room temperature (15-30ºC) prior to testing.
1. Bring the pouch to room temperature before opening it. Remove the Test Dipstick from the sealed pouch and use it as soon as possible.
2. With arrows pointing toward the urine specimen, **immerse the Test Dipstick vertically in the urine specimen for at least 10-15 seconds**. Do not pass the maximum line (MAX) on the Test Dipstick when immersing the strip. See the illustration below.



3. Place the Test Dipstick on a non-absorbent flat surface, start the timer and wait for the colored line(s) to appear. **Read results at 5 minutes.** Do not interpret the result after 10 minutes.

【INTERPRETATION OF RESULTS】
(Please refer to the illustration above)
NEGATIVE:* Two lines appear. One colored line should be in the control line region (C), and another apparent colored line should be in the test line region (T). A negative result indicates that the EDDP concentration is below the detectable level (300 ng/mL).
***NOTE:** The shade of color in the test line region (T) may vary, but it should be considered negative whenever there is even a faint colored line.
POSITIVE: One colored line appears in the control line region (C). No line appears in the test line region (T). A positive result indicates that the EDDP concentration exceeds 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 using a new test. If the problem persists, discontinue using the lot immediately and contact your local distributor.

【QUALITY CONTROL】
A procedural control is included in the test. A colored line appearing in the control line region (C) is considered 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 good laboratory testing practice to confirm the test procedure and to verify proper test performance.

【LIMITATIONS】
1. The EDDP Rapid Test Dipstick (Urine) 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.[1,2]
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 cut-off level of the test.
6. Test does not distinguish between drugs of abuse and certain medications.

【EXPECTED VALUES】
This negative result indicates that the 2-ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP) concentration is below the detectable level of 300ng/ml. Positive result means the concentration of EDDP is above the level of 300ng/ml. The EDDP Rapid Test Dipstick has a sensitivity of 300ng/ml

【PERFORMANCE CHARACTERISTICS】
Accuracy
A side-by-side comparison was conducted using the EDDP Rapid Test Dipstick (Urine) and GC/MS. The following results were tabulated:

Method		GC/MS		Total Results
EDDP Rapid Test Dipstick	Results	Positive	Negative	
	Positive	92	1	93
	Negative	2	155	157
Total Results		94	156	250
% Agreement		97.9%	99.4%	98.8%

Analytical Sensitivity
A drug-free urine pool was spiked with EDDP at the following concentrations: 0 ng/mL, 150 ng/mL, 225 ng/mL, 300 ng/mL, 375 ng/mL, 450 ng/mL and 900 ng/mL.The results demonstrate >99% accuracy at 50% above and 50% below the cut-off concentration. The data are summarized below:

EDDP Concentration (ng/mL)	Percent of Cut-off	n	Visual Result	
			Negative	Positive
0	0%	30	30	0
150	-50%	30	30	0
225	-25%	30	27	3
300	Cut-off	30	14	16
375	+25%	30	4	26
450	+50%	30	0	30
900	+300%	30	0	30

Analytical Specificity
The following table lists compounds that are positively detected in urine by the EDDP Rapid Test Dipstick (Urine) at 5 minutes.

Compound	Concentration (ng/mL)
2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP)	300

Precision
A study was conducted at three hospitals 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 containing, according to HPLC, no EDDP, 25% EDDP above and below the cut-off and 50% EDDP above and below the 300 ng/mL cut-off was provided to each site. The following results were tabulated:

EDDP Concentration (ng/mL)	n per Site	Site A		Site B		Site C	
		-	+	-	+	-	+
0	10	10	0	10	0	10	0
150	10	10	0	10	0	10	0
225	10	9	1	9	1	9	1
375	10	1	9	2	8	1	9
450	10	0	10	0	10	0	10

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 EDDP. The EDDP Rapid Test Dipstick (Urine) was tested in duplicate using the fifteen neat and spiked urine samples. The results demonstrate that varying ranges of urinary specific gravity do not affect the test results.

Effect of Urinary pH
The pH of an aliquoted negative urine pool was adjusted to a pH range of 4 to 9 in 1 pH unit increments and spiked with EDDP to 150 ng/mL and 450 ng/mL. The spiked, pH-adjusted urine was tested with the EDDP Rapid Test Dipstick (Urine) in duplicate. The results demonstrated that varying ranges of pH do 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-free urine or EDDP positive urine. The following compounds show no cross-reactivity when tested with the EDDP Rapid Test Dipstick (Urine) at a concentration of 100 µg/mL.

Non Cross-Reacting Compounds

4-Acetaminophenol	4-Dimethylaminoantipyrine	Loperamide	Prednisolone
Acetone	Diphenhydramine	Maprotiline	Prednisone
Acetophenetidin	5,5-Diphenylhydantoin	Meperidine	Procaine
N-Acetylprocainamide	Disopyramide	Meprobamate	Promazine
Acetylsalicylic acid	Doxylamine	d-Methamphetamine	Promethazine
Albumin	Ecgonine	l-Methamphetamine	l-Propoxyphene
Amitriptyline	Ecgonine methylester	Methaqualone	d,l-Propranolol
Amobarbital	EMDP	Methadone	d-Pseudoephedrine
Amoxapine	Ephedrine	Methoxyphenamine	Quinacrine
Amoxicillin	l-Ephedrine	(+)-3,4-Methylendioxy-methamphetamine	Quinidine
Ampicillin	l-Epinephrine		Quinine
Ascorbic acid	(±)-Epinephrine	Methylphenidate	Ranitidine
Aminopyrine	Erythromycin	Mephentermine	Riboflavin
Apomorphine	β-Estradiol	Metoprolol	Salicylic acid
Aspartame	Estrone-3-sulfate	Morphine-3-β-D-glucuronide	Secobarbital
Atropine	Ethanol (Ethyl alcohol)	Morphine sulfate	Serotonin
Benzilic acid	Ethyl-p-aminobenzoate	Methyprylon	(5-Hydroxytryptamine)
Benzoic acid	Etodolac	Nalidixic acid	Sodium chloride
Benzphetamine	Famprofazone	Nalorphine	Sulfamethazine
Bilirubin	Fenfluramine	Naloxone	Sulindac
Brompheniramine	Fenoprofen	Naltrexone	Sustiva (Efavirenz)
Buspirone	Fentanyl	α-Naphthaleneacetic acid	Temazepam
Caffeine	Fluoxetine	Naproxen	Tetracycline
Cannabidiol	Furosemide	Niacinamide	Tetrahydrocortexolone
Cannabinol	Gentisic acid	Nifedipine	Tetrahydrocortisone,
Cimetidine	d-Glucose	Nimesulide	3-acetate
Chloral hydrate	Guaiacol glyceryl ether	Norcodeine	Tetrahydrozoline
Chloramphenicol	Hemoglobin	Normorphine	Thebaine
Chlordiazepoxide	Hydralazine	Norethindrone	Theophylline
Chloroquine	Hydrochlorothiazide	d-Norpropoxyphene	Thiamine
Chlorothiazide	Hydrocodone	Noscapine	Thioridazine
(+)-Chlorpheniramine	Hydrocortisone	d,l-Octopamine	l-Thyroxine
(±)-Chlorpheniramine	o-Hydroxyhippuric acid	Orphenadrine	Tolbutamide
Chlorpromazine	p-Hydroxymethamphetamine	Oxalic acid	cis-Tramadol
Chlorprothixene	Hydromorphone	Oxazepam	trans-2-Phenylcyclopropylamine
Cholesterol	3-Hydroxytyramine (Dopamine)	Oxolinic acid	
Clomipramine		Oxycodone	Trazodone
Clonidine	Hydroxyzine	Oxymetazoline	Trimethobenzamide
Codeine	Ibuprofen	Oxymorphone	Triamterene
Cortisone	Imipramine	Papaverine	Trifluoperazine
(-)-Cotinine	Iproniazide	Pemoline	Trimethoprim
Creatinine	(-)-Isoproterenol	Penicillin-G	Trimipramine
Cyclobarbital	Isoxsuprine	Pentazocine	Tryptamine
Cyclobenzaprine	Kanamycin	Pentobarbital	d,l-Tryptophan
Deoxycorticosterone	Ketamine	Perphenazine	Tyramine
R (-)Deprenyl	Ketoprofen	Phencyclidine	d,l-Tyrosine
Dextromethorphan	Labetalol	Phenelzine	Uric acid
Diazepam	Levorphanol	Pheniramine	Verapamil
Diclofenac	Lidocaine	Phenobarbital	Digoxin
Dicyclomine	Lindane	Phenothiazine	Lithium carbonate
Diflunisal	(Hexachlorocyclohexane)	Phentermine	l-Phenylephrine

【BIBLIOGRAPHY】

1. Baselt RC. Disposition of Toxic Drugs and Chemicals in Man. 2nd Ed. Biomedical Publ., Davis, CA. 1982; 488
2. Hawks RL, CN Chiang. *Urine Testing for Drugs of Abuse*. National Institute for Drug Abuse (NIDA), Research Monograph 73, 1986

Index of Symbols

	Attention, see instructions for use	Σ	Tests per kit	EC REP	Authorized Representative
IVD	For in vitro diagnostic use only		Use by		Do not reuse
30°C 2°C	Store between 2-30°C	LOT	Lot Number	REF	Catalog #
	Do not use if package is damaged				

Manufacturer
Hangzhou AllTest Biotech Co.,Ltd.
Address：No 550,Yinhai Street, Hangzhou Economy and Technology Development Area
Web：www.alltests.com.cn
EC REP EURZIS Ringstrasse 14, 35091 Coelbe, Germany

Number: 145014301
Effective date: 2014-10-15