## TML Rapid Test Panel (Urine) Package Insert

rapid test for the qualitative detection of Tramadol in human urine. or medical and other professional in vitro diagnostic use only.

### CINTENDED USE 1

he TML Rapid Test Panel (Urine) is a rapid chromatographic immunoassay for the qualitative detection f Tramadol in human urine at a cut-off concentration of 100 ng/mL. It is a prescription assay intended for se by healthcare professionals including those at point of care sites. This test will detect other related ompounds, please refer to the Analytical Specificity table in this package insert.

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

### [SUMMARY]

ramadol(TML) is a quasi-narcotic analgesic used in the treatment of moderate to severe pain. It is a ynthetic analog of codeine, but has a low binding affinity to the µ-opioid receptors. Large doses of ramadol can develop tolerance and physiological dependency and lead to its abuse. Tramadol is xtensively metabolized after oral administration. Approximately 30% of the dose is excreted in the urine is unchanged drug, whereas 60% is excreted as metabolites. The major pathways appear to be N- and

3- demethylation, glucoronidation or sulfation in the liver.
he TML Rapid Test Panel (Urine) is a rapid urine-screening test that can be performed without the use of an instrument. The test utilizes the antibody to selectively detect elevated levels of Tramadol in urine. he TML Rapid Test Panel (Urine) yields a positive result when Transdol in urine, the Substance Abuse and Mental Health Services Administration (SAMHSA) does not have a ecommended screening cutoff for Tramadol positive specimens.

he TML Rapid Test Panel (Urine) is an immunoassay based on the principle of competitive binding. Trugs which may be present in the urine specimen compete against the drug conjugate for binding sites in the antihody

Juring testing, a urine specimen migrates upward by capillary action. Tramadol, if present in the urine pecimen below 100 ng/mL, will not saturate the binding sites of antibody-coated particles in the test. The intibody-coated particles will then be captured by immobilized Tramadol conjugate and a visible colored ne will show up in the test line region. The colored line will not form in the test line region if the Tramadol

evel exceeds 100 ng/mL because it will saturate all the binding sites of anti-Tramadol antibodies. If 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 han 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 hat proper volume of specimen has been added and membrane wicking has occurred

### [REAGENTS]

he test contains mouse monoclonal anti-Tramadol antibody-coupled particles and Tramadol-protein

- onjugate. 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 lest 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 at room temperature or refrigerated (2-30°C). The test is stable through the expiration tate printed on the sealed pouch or label of the closed canister. The test must remain in the sealed rouch or closed canister 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 nay be used. Urine specimens exhibiting visible particles should be centrifuged, filtered, or allowed to settle to obtain a clear specimen for testing

# Specimen Storage

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

# [MATERIALS] · Test Panels

## Materials Provided

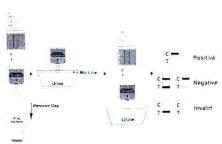
- Package insert
- Materials Required But Not Provided
- Specimen collection container

### • Timer

# [DIRECTIONS FOR USE]

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

- Remove the test panel from the sealed pouch and use it within one hour.
- Remove the cap.
- With the arrow pointing toward the urine specimen, immerse the test panel vertically in the urine specimen for at least 10 to 15 seconds. Immerse the strip to at least the level of the wavy lines, but do not touch the plastic device.
- Replace the can and place the test panel 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. Results may be stable up to 1 hour after test initiation.



### [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). This negative result indicates that the Tramadol

concentration is below the detectable cut-off level (130 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). This positive result indicates that the Tramadol concentration exceeds the detectable cut-off level (100 no/mi.)

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. If the problem persists, discontinue using the test kit immediately and contact your local distributor.

### LOUALITY CONTROL T

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

### [LIMITATIONS]

- The TML Rapid Test Panel (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 trine 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 Tramadol concentration is below the detectable level of 100ng/ml. Positive result means the concentration of Tramadol is above the level of 100ng/ml. The TML Rapid Test Panel has a sensitivity of 100ng/ml

# [PERFORMANCE CHARACTERISTICS]

# Accuracy

A comparison was conducted using the TML Rapid Test Panel (Urine) and GC/MS at 100 ng/mL cutoff.

Method		GC/MS		Total	
	Results	Positive	Negative	Results	
TML Rapid Test Panel	Positive	82	12	94	
	Negative	11	145	156	
Total Results		93	157	250	
% Agreement with C	C/MS	88.2%	92.4%	90.8%	

Analytical Sensitivity A drug-free urine pool was spiked with Tramadol at the following concentrations; 0 ng/mL, 50 ng/mL, 75 ng/mL, 100 ng/mL, 125 ng/mL, 150 ng/mL and 300 ng/mL. The result demonstrates > 99% accuracy at 50% above and 50% below the cut-off concentration of 100 ng/mL. The data are summarized below:

Tramadol Concentration	Percent of		Visual Result		
(ng/mL)	Cut-off n		Negative	Positive	
0	0%	30	30	0	
50	-50%	30	30	0	
75	-25%	30	2.7	3	
100	Cut-off	30	15	15	
125	+25%	30	4	26	
150	+50%	30	0	30	
300	3X	30	0	30	

### Analytical Specificity

The following table lists compounds that are positively detected in urine by the TML Rapid Test Panel

Compound	Concentration (ng/mL)	Compound	Concentration (ng/mL)
n-Desmethyl-cis-tramadol	200	o-Desmethyl-cls-tramadol	10.000
Cis-tramadol	100	Phencyclidine	100,000
Procyclidine	100,000	6,I-O-Desmethyl ventafaxine	50,000

### Precision

A study was conducted at 3 hospitals by laypersons using 3 different lots of product to demonstrate the within run, between run and between operator precision. An identical panel of coded specimens containing no Tramadol, 25% Tramadol above and below the cut-off, and 50% Tramadol above and below the 100 no/mL cut-off were provided to each site. The following results were tabulated:

Tramadol Concentration (ng/mL)	n per Site	Site A		Site B		Site C	
			+	12			+
0	10	10	0	10	0	10	0
50	10	10	0	10	- 0	10	0
75	10	9	1	9	1	8	2
125	10	1	9	1	9	2	8
150	10	0	10	0	10	0	10

Effect of Urinary Specific Gravity

Fifteen urine specimens of normal, high, and low specific gravity ranges were spiked with 50 ng/mL and 150 ng/mL of Tramadol. The TML Rapid Test Panel (Urine) was tested in duplicate using the fifteen neat and spiked urine specimens. 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 Tramadol to 50 ng/mL and 150 ng/mL. The spiked, pH-adjusted urine was tested with the TML Rapid Test Panel (Urine) in duplicate. 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-free urine or Tramadol positive urine. The following compounds show no cross-reactivity when tested with the TML Rapid Test Panel (Urine) at a concentration of 100 µg/mL.

	Non Cross-Reacting	Compounds	
4-Acetaminophenol	Acetone	Acetophenetidin	N-Acetyiprocainamice
Acetylsalicylic acid	Albumin	Amitriptyline	Amobarbital
Amoxapine	Amoxicillin	Ampicitlin	Ascorbic acid
Aminopyrine	Apamorphine	Aspartame	Alropine
Benzilic acid	Benzoic acid	Benzphetamine	Bilirubin
Brompheniramine	Buspirone	Caffeine	Cannabidiol
Cannabinol	Cimetidine	Chloralhydrate	Chloramphenicol
Chlordiazepoxide	Chloroquine	Chlorothiazide	(+) -Chlorpheniramine
(+/-)-Chlorpheniramine	Chlorpromazine	Chlorprothixene	Cholesterol
Clomipramine	Clonidine	Codeine	Cortisone
(-) Cotinine	Creatinine	Cyclobarbital	Cyclobenzaprine
Deoxycorticosterone	(-) Deoxyephedrine	R (-)Deprenyl	Dextromethorphan
Diazepam	Diclofenac	Diffunisal	Digoxin
4-Dimethylaminoantipyrine		Dicyclomine	5.5-Diphenylhydantox
Disopyramide	Doxylamine	Ecgonine	Ecganine Methylester
EDDP	EMDP	Ephedrine	I-Ephedrine
(-) -Ψ-Ephedrine	[1R,2S] (-) Ephedrine	I-Epinephrine	(+/-)-Epinephrine
Erythromycin	S-Estradiol	Estrone-3-sulfate	Ethanol (Ethyl alcoho
Ethyl-p-aminobenzoate	Elodolac	Famprofazone	Fenfluramine
Fenografea	Fentanyi	Fluoxetine	Furosemige
Gentisic acid	d-Glucose	Guaracol Giyceryl Ethor	
Hemoglobin	Hydralazine	Hydromorphone	Hydrocodone
Hydrocortisone	3-Hydroxytyramine (Dopamine)	o-Hydroxyhippuric acid	p-Hydroxymethamph
Imipramine	Hydroxyzine	Ibuarofen	Isoxsuprine
	(-) Isoproterenoi	Ketoprofen	Kanamycin
Iproniazide Ketamine	Lidocaine	Labetalol	Levorphanol
	Lithium Carbonate	Meperidine	Methamphetamine
Loperamide	Lindane (Hexachlorocyclohexane		Mephentermine
Meprobamate I-Methamphetamine	Maprotiline	Morphine sulfate	Naloxone
			Naitrexone
Methoxyphenamine	Methadone	Naproxen Niacinamide	Nifedipine
Methyprylon	Metoprolol	Niacinamide	Miedibine
Nalidixic acid	(+)-3,4-Methylendioxy- methamphetamine	Nimesulide	d/I-Octopamine
a-Naphthaleneacetic acid	Morphine-3-β-D Glucuronide	Oxazepam	Orphenadrine
Norethindrone	Nalorphine	Oxclinic acid	Oxycodone
d-Norpropoxyphene	Narcadeine	Pemoline	Pentobarbital
Oxalic acid	Normorphine	Phenelzine	Perphenazine
Oxymorphone	Noscapine	Pheniramine	Phenobarbital
Penicillin-G	Oxymetazoline	I-Phenylephone	Promazine
Prednisolone	Papaverine	d/I-Propranoiol	Promethazine
Prednisone	Pentazocine	d-Pseudoephedrine	Quinacrine
-Propoxyphene	Phenothiazine	Ranitidine	Salicylic acid
Riboflavin	Phentermine	Secobarbital	Sodium Chloride
Sulindac	Procaine	Sustiva (Efavirenz)	Temazepam
Tetracycline	Quinidine	Tetrahydrocortexcione	Thiamine
Tolbutamide	Quinine	Thebaine	Theophylline
Trimethobenzamide	Serotonin (5-Hydroxytyramine)	I-Thyroxine	Trazodone
Trimipramine	Sulfamethazine	Tryptamine	Trifluoperazine
d/I-Tyrosine	Tetrahydrozoline	d/l-Tryptophan	Trimethoprim
Zomepirac	Tetrahydrocortisone, 3-acetate	Verapamil	Tyramine
Uric acid	Trans-2-phenylcyclopropylamine		Triamine
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### [ BIBLIOGRAPHY]

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