

DOA Detection Limits

Document Number: CHEM-77.002

Urine Drugs of Abuse Screen (Test code: DSCR) performed at Northern Plains Laboratory by EIA Methodology

- Screen includes: Opiates, Amphetamines, Barbiturates, Benzodiazepine, Cocaine Metabolite, and Cannabinoids. Following is a listing of cross-reactivities at the stated concentration:

Opiate 300 ng

The Emit® II Plus Opiate Assay is a homogeneous enzyme immunoassay with a 300 ng/mL cutoff. The assay is intended for use in the qualitative and semiquantitative analyses of opiates in human urine. These reagents are packaged specifically for use on a variety of AU® Clinical Chemistry Systems.

The Emit® II Plus Opiate Assay detects morphine and morphine-3-glucuronide (the major metabolites of heroin) and codeine in human urine.

Table 9 gives the compounds this assay detects and the levels at which the compounds have been found to give a response approximately equivalent to that of the cutoff calibrator (Emit® Calibrator/Control Level 1 [300 ng/mL] or Level 3 [2000 ng/mL]). Each concentration represents the reactivity level for the stated compound when it is added to a negative urine specimen. If a specimen contains more than one compound detected by the assay, lower concentrations than those listed in Table 9 may combine to produce a rate approximately equivalent to or greater than that of the cutoff calibrator.

Therapeutic doses of ofloxacin (Floxin) or levofloxacin (Levaquin), non-opiates, may produce positive results with this assay. A positive result from an individual taking ofloxacin or levofloxacin should be interpreted with caution and confirmed by another method.

Table 9 — Concentrations (ng/mL) of Opiate Compounds That Produce a Result Approximately Equivalent to the Cutoff

Compound	Concentration (ng/mL) at the 300 ng/mL Cutoff	Concentration (ng/mL) at the 2000 ng/mL Cutoff
Codeine	102–306	660–1980
Dihydrocodeine	291	1872
Ethylmorphine	240	1570
Hydrocodone	247	1545
Hydromorphone	498	5349
Levallorphan	>5000*	>120000*
Levorphanol	1048	7680
Meperidine	>15000†	>400000†
6-Acetylmorphine	435	2100
Morphine-3-Glucuronide	626	6167
Nalorphine	5540*	>100000*
Naloxone	360000	>3500000
Oxycodone	1500	50000
Oxymorphone	9300	>100000

* Therapeutic or toxic urinary levels of levallorphan and nalorphine are not reported in the literature.

† Meperidine urinary concentrations of 150000 ng/mL have been measured in cases of fatal meperidine overdose.⁷

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Table 10 lists the concentrations of compounds that show a negative response to the Emit® II Plus Opiate Assay at both cutoff levels.

Table 10 — Concentrations of Compounds Showing a Negative Response to the Cutoff

Compound	Concentration Tested (µg/mL)	
	300 ng/mL (0.3 µg/mL) Cutoff	2000 ng/mL (2 µg/mL) Cutoff
Acetaminophen	1000	1000
L-α-Acetylmethadol (LAAM)	25	25
N-Acetylprocainamide (NAPA)	400	400
Acetylsalicylic Acid	1000	1000
Amitriptyline	7	7
D-Amphetamine	1000	1000
Benzoylcegonine	1000	1000
Buprenorphine	1000	1000
Caffeine	1000	1000
Cimetidine	1000	1000
Clomipramine	2.5	2.5
Clonidine	1000	1000
Cotinine	100	100
Cyclobenzaprine	63	63
Desipramine	25	25
Diphenhydramine	500	500
Doxepin	10	10
2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP)	1000	1000
Fluoxetine	500	500
Glutethimide	500	500
Ibuprofen	1000	1000
Ketamine	100	100
Ketorolac Trometamine	1000	1000
Lormetazepam	1	1
LSD	10 ng/mL	10 ng/mL
D-Methamphetamine	35	35
Methaqualone	1500	1500
Nalbuphine	1000	1000
Naproxen	1000	1000
Nortriptyline	250	250
Oxazepam	300	300
Phencyclidine	1000	1000
Phenytoin	1000	1000
Promethazine	2	2
Propoxyphene	1000	1000
Ranitidine	900	900

Compound	Concentration Tested (µg/mL)	
	300 ng/mL (0.3 µg/mL) Cutoff	2000 ng/mL (2 µg/mL) Cutoff
Scopolamine	500	500
Secobarbital	1000	1000
Tapentadol	45	45
11-nor-Δ ⁹ -THC-9-COOH	100	100
Thioridazine	100	100
Tramadol	1000	1000
Tyramine	100	100
Zidovudine (AZT)	2 mg/mL	2 mg/mL
Zolpidem	100	100

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Amphetamines

The Emit® II Plus Amphetamines Assay is a homogeneous enzyme immunoassay technique used for the analysis of specific compounds in human urine.⁶ The assay is based on competition between drug in the specimen and drug labeled with the enzyme glucose-6-phosphate dehydrogenase (G6PDH) for antibody binding sites. Enzyme activity decreases upon binding to the antibody, so the drug concentration in the specimen can be measured in terms of enzyme activity. Active enzyme converts nicotinamide adenine dinucleotide (NAD) to NADH, resulting in an absorbance change that is measured spectrophotometrically. Endogenous serum G6PDH does not interfere because the coenzyme NAD functions only with the bacterial (*Leuconostoc mesenteroides*) enzyme employed in the assay.

The Emit® II Plus Amphetamines Assay detects amphetamine compounds in human urine. Data found in the following tables are representative of the performance of this assay. However, results may vary among reagent lots. Table 22 lists the concentrations of amphetamine compounds that produce a result that is approximately equivalent to the 300 ng/mL, 500 ng/mL, and 1000 ng/mL calibrator/control cutoffs. Each concentration represents the reactivity level for the stated compound when it is added to a negative urine specimen. These concentrations are within the range of the levels found in urine following use of the compound or, in case of metabolites, the parent compound. If a specimen contains more than one compound detected by the assay, lower concentrations than those listed in Table 22 may combine to produce a rate approximately equivalent to or greater than that of the cutoff calibrator.

Table 22 — Concentrations of Amphetamines that Produce a Result Approximately Equivalent to the 300 ng/mL, 500 ng/mL, and 1000 ng/mL Amphetamine Cutoffs

Compounds	Concentration (ng/mL) Giving a Response Approximately Equivalent to the Cutoff		
	300 ng/mL Cutoff	500 ng/mL Cutoff	1000 ng/mL Cutoff
d,l-4-Methylamphetamine	4400	10200	16500
d-Amphetamine	300	500	1000
d,l-Methamphetamine	450	700	2100
d,l-Amphetamine	625	1050	2150
l-Methamphetamine	725	1325	3650
l-Amphetamine	3450	3750	11500
1,3 Dimethylpentylamine*	3400	5500	14900
MDA	1100	1700	6500
MDMA	5200	9150	34300
MDEA	4400	6800	27200

*Methylhexanamine

Table 23 lists the concentrations of compounds that produce a result that is approximately equivalent to the 300 ng/mL, 500 ng/mL, and 1000 ng/mL cutoffs. Each concentration represents the reactivity level for the stated compound when it is added to a negative urine specimen. Most of the compounds react at levels much higher than typically found in urine (but which may occasionally occur).^{5,9} If a specimen contains more than one compound detected by the assay, lower concentrations than those listed in Table 23 may combine to produce a rate approximately equivalent to or greater than that of the cutoff calibrator.

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Table 23 — Concentrations of Compounds that Produce a Result Approximately Equivalent to the 300 ng/mL, 500 ng/mL, and 1000 ng/mL Amphetamine Cutoffs

Compounds	Concentration (µg/mL) Giving a Response Approximately Equivalent to the Cutoff		
	300 ng/mL Cutoff	500 ng/mL Cutoff	1000 ng/mL Cutoff
4-Chloramphetamine	2.6	4.5	12.2
Benzphetamine*	0.4	0.7	1.0
Bupropion	250	500	2220
Chloroquine	2100	2200	4500
<i>erythro</i> -Dihydrobupropion	20	32	82
Donepezil	6.4	10.2	20.8
l-Ephedrine	400	800	3500
Fenfluramine	25	40	150
Isometheptene	16	29	56
Mephentermine	8	15	60
Methoxyphenamine	90	160	360
Nor-pseudoephedrine	40	70	170
Phenmetrazine	2.3	3.5	13.0
Phentermine	5.8	9.0	25.0
Phenylpropanolamine	700	1000	2000
Propranolol	100	125	500
d,l-Pseudoephedrine	1400	2600	8300
Quinacrine	2500	3800	16500
Tranlycypromine	30	60	200
Tyramine	150	200	600

****Benzphetamine metabolizes to amphetamine and methamphetamine.***

Note: Selegiline, a prescription medication used in the treatment of Parkinson's disease, metabolizes to l-amphetamine and l-methamphetamine. Therefore, patients taking Selegiline may test positive by amphetamine assays.

Table 24 lists the compounds that produce a negative result by the Emit® II Plus Amphetamines Assay. Specificity testing was performed at the 300, 500, and 1000 ng/mL cutoffs. Positive results for compounds structurally unrelated to amphetamines have not been observed.

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Table 24 — Concentrations of Compounds Showing a Negative Response

Compound	300 ng/mL Cutoff (µg/mL)	500 ng/mL Cutoff (µg/mL)	1000 ng/mL Cutoff (µg/mL)
Acetaminophen	1000	1000	1000
<i>α</i> -Acetyl- <i>N,N</i> -dinormethadol (dinor LAAM)	25	25	25
<i>l</i> - <i>α</i> -Acetylmethadol (LAAM)	25	25	25
<i>N</i> -Acetylprocainamide (NAPA)	400	400	400
Acetylsalicylic Acid	1000	1000	1000
Albuterol	1000	1000	1000
<i>p</i> -Aminobenzoic Acid (PABA)	1000	1000	1000
Amitriptyline	1000	1000	1000
Amoxicillin	1000	1000	1000
Atenolol	1000	1000	1000
Benzoyllecgonine	1000	1000	1000
Buprenorphine	1000	1000	1000
Caffeine	1000	1000	1000
Carbamazepine	250	250	250
Carisoprodol	1000	1000	1000
Chlorpheniramine	1000	1000	1000
Chlorpromazine	200	200	200
Cimetidine	1000	1000	1000
Clomipramine	2.5	2.5	2.5
Clonidine	1000	1000	1000
Codeine	500	500	500
<i>l</i> -Cotinine	100	100	100
Cyclobenzaprine	1000	1000	1000
Desipramine	300	500	800
Dextromethorphan	1000	1000	1000
Dextrophan	280	280	280
Diphenhydramine	1000	1000	1000

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Compound	300 ng/mL Cutoff (µg/mL)	500 ng/mL Cutoff (µg/mL)	1000 ng/mL Cutoff (µg/mL)
Doxepin	1000	1000	1000
Doxylamine	1000	1000	1000
l-Epinephrine	1000	1000	1000
2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP)	1000	1000	1000
Fenoprofen	150	150	150
Fluoxetine	500	500	500
Furosemide	1000	1000	1000
Glutethimide	500	500	500
Haloperidol	500	700	1000
Ibuprofen	1000	1000	1000
Imipramine	750	750	750
Isosuprine	300	500	500
Ketamine	100	100	100
Ketoprofen	1000	1000	1000
Ketorolac Tromethamine	1000	1000	1000
Labetalol	750	750	750
Lidocaine	1000	1000	1000
LSD	2.5	2.5	2.5
Meperidine	1000	1000	1000
Mescaline	1000	1500	1500
Methadone	1000	1000	1000
Methaqualone	1500	1500	1500
d,l-Methyldopa	1000	1000	1000
l-Methyldopa	1000	1000	1000
Monoethylglycinexylidide (MEGX)	1000	1000	1000
Morphine	1000	1000	1000
Nalmefene	20	20	20
Naloxone	500	500	500

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Naproxen	1000	1000	1000
Nicotinic Acid	500	500	500
Noracetylmethadol (nor LAAM)	25	25	25
11-nor- Δ^9 -THC-9-COOH	100	100	100
Nortryptiline	750	750	750
Nylidrin	750	750	750
Ofloxacin	100	100	100
Oxazepam	300	300	300
Phencyclidine	1000	1000	1000
Phenelzine	50	100	100
1-Phenylcyclohexylamine (PCA)	50	50	50
Phenytoin (DPH)	1000	1000	1000
Phthalic Acid	1000	1000	1000
1-Piperidinocyclohexane Carbonitrile (PCC)	50	50	50
Procainamide	1000	1000	1000
Promethazine	1000	1000	1000
Propoxyphene	1000	1000	1000
Ranitidine	1000	1000	1000
Scopolamine	500	500	500
Secobarbital	1000	1000	1000
Thioridazine	100	100	100
Tolmetin Sodium	2000	2000	2000
Tramadol	1000	1000	1000
Trazodone	1000	1000	1000
Trifluoperazine	1000	1000	1000
Trimethoberzamide	500	500	500
Trimethoprim	1000	1000	1000
Verapamil	1000	1000	1000
Zidovudine (AZT)	2000	2000	2000
Zolpidem	100	100	100

Sympathomimetic Amines

Diethylpropion	1000	1000	1000
d,l-Isoproterenol	1000	1000	1000
Metaproterenol	500	500	500
3,4-Methylenedioxypropylvalerone (MDPV)	100	100	100
4-Methylmethcathione (Mephedrone)	100	100	100
Methylone	100	100	100
Methylphenidate (Ritalin®)	1000	1000	1000

Compound	300 ng/mL Cutoff ($\mu\text{g/mL}$)	500 ng/mL Cutoff ($\mu\text{g/mL}$)	1000 ng/mL Cutoff ($\mu\text{g/mL}$)
Phenethylamine	15	20	20
Phenylephrine	1000	1000	1000
Propylhexedrine	20	30	50
3-OH-Tyramine (dopamine)	300	300	300

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Barbiturates

The Emit® II Plus Barbiturate Assay is a homogeneous enzyme immunoassay with a 200 ng/mL cutoff. The assay is intended for use in the qualitative and semiquantitative analyses of barbiturates in human urine. These reagents are packaged specifically for use on a variety of AU® Clinical Chemistry Systems.

The Emit® II Plus Barbiturate Assay detects both long- and short-acting barbiturates in human urine. Table 6 lists the concentrations of compounds that produce a result approximately equivalent to the 200 ng/mL and 300 ng/mL calibrator/control cutoffs, respectively. Each concentration represents the reactivity level for the stated compound when it is added to a negative urine specimen. These concentrations are within the range of the levels found in urine following use of the compound or, in the case of metabolites, the parent compound. If a specimen contains more than one compound detected by the assay, lower concentrations than those listed in Table 6 may combine to produce a rate approximately equivalent to or greater than that of the cutoff calibrator.

Table 6 — Concentrations (ng/mL) of Barbiturate Compounds That Produce a Result Approximately Equivalent to the 200 ng/mL and 300 ng/mL Secobarbital Cutoff

Compound	Concentration (ng/mL) at 200 ng/mL Cutoff	Concentration (ng/mL) at 300 ng/mL Cutoff
Allobarbital	345	744
Alphenal	284	354
Amobarbital	555	923
Aprobarbital	275	478
Barbital	1278	4148
5-Ethyl-5-(4-hydroxyphenyl) barbituric acid	927	4719
Butabarbital	274	523
Butalbital	304	475
Butobarbital	349	875
Cyclopentobarbital	304	527
Pentobarbital	252	447
Phenobarbital	1087–1631*	2675–4013*
Talbutal	194	262
Thiopental	1109	10174

***Observed Range**

Table 7 lists the compounds that produce a negative result by the Emit® II Plus Barbiturate Assay. Specificity testing was performed at the 200 ng/mL cutoff, which represents the greatest potential for cross-reactivity. Positive results for compounds structurally unrelated to barbiturates have not been observed.

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Table 7 — Concentrations of Compounds Showing a Negative Response

Compound	Concentration Tested ($\mu\text{g/mL}$) at the 200 ng/mL (0.2 $\mu\text{g/mL}$) Cutoff
Acetaminophen	1000
α -Acetyl- <i>N,N</i> -dinormethadol (dinor LAAM)	25
L- α -Acetylmethadol (LAAM)	25
<i>N</i> -Acetylprocainamide (NAPA)	400
Acetylsalicylic acid	1000
Amitriptyline	1000
D-Amphetamine	1000
Benzoyllecgonine	1000
Buprenorphine	1000
Caffeine	1000
Cimetidine	1000
Clomipramine	2.5
Clonidine	1000
Codeine	500
Cotinine	100
Cyclobenzaprine	1000
Desipramine	800
Diphenhydramine	1000
Doxepin	1000
2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP)	1000
Fluoxetine	1000
Glutethimide	300
Ibuprofen	1000
Ketamine	100
Ketorolac tromethamine	1000
Lormetazepam	1
LSD	10 ng/mL
Meperidine	1000
D-Methamphetamine	35
Methaqualone	1500
Morphine	1000

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Table 7 — Concentrations of Compounds Showing a Negative Response (cont.)

Compound	Concentration Tested ($\mu\text{g/mL}$) at the 200 ng/mL (0.2 $\mu\text{g/mL}$) Cutoff
Naproxen	1000
Nortriptyline	1000
Oxazepam	300
Phencyclidine	1000
Phenytoin	1000
Promethazine	1000
Propoxyphene	1000
Ranitidine	1000
Scopolamine	500
11-nor- Δ^9 -THC-9-COOH	100
Thioridazine	100
Tramadol	1000
Tyramine	100
Zidovudine (AZT)	2 mg/mL
Zolpidem	100

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BENZODIAZEPINE

The Emit® II Plus Benzodiazepine Assay is a homogeneous enzyme immunoassay with a 200 ng/mL cutoff. The assay is intended for use in the qualitative and semiquantitative analyses of benzodiazepines in human urine. These reagents are packaged specifically for use on a variety of AU® Clinical Chemistry Systems.

The Emit® II Plus Benzodiazepine Assay detects benzodiazepines and benzodiazepine metabolites in human urine.

Table 6 lists the concentrations of compounds that produce a result that is approximately equivalent to the 200 ng/mL and 300 ng/mL calibrator/control cutoffs, respectively. Each concentration represents the reactivity level for the stated compound when it is added to a negative urine specimen. These concentrations are within the range of the levels found in urine following use of the drug or, in the case of metabolites, the parent compound. If a specimen contains more than one compound detected by the assay, lower concentrations than those listed in Table 6 may combine to produce a rate approximately equivalent to or greater than that of the cutoff calibrator.

Table 6 — Concentrations (ng/mL) of Benzodiazepine Compounds That Produce a Result Approximately Equivalent to the 200 ng/mL and 300 ng/mL Lormetazepam Cutoffs

Compound	Concentration (ng/mL) at 200 ng/mL Cutoff	Concentration (ng/mL) at 300 ng/mL Cutoff
Alprazolam	65	79
7-Aminoclonazepam	5300	8600
7-Aminoflunitrazepam	930	1400
Bromazepam	630	1400
Chlordiazepoxide	3300	7800
Clobazam	260	230
Clonazepam	210	320
Clorazepate	*	*
Clotiazepam	380	670
Demoxepam	1600	4000
<i>N</i> -Desalkylflurazepam	130	160
<i>N</i> -Desmethylclonazepam	110	140
Diazepam	70	120
Estazolam	90	110
Flunitrazepam	140	160
Flurazepam	190	250
Halazepam	110	160
α -Hydroxyalprazolam	100	150
α -Hydroxyalprazolam glucuronide†	110	120
1- <i>N</i> -Hydroxyethylflurazepam	150	150
α -Hydroxytriazolam	130	190
Ketazolam	100	140
Lorazepam	600	890
Lorazepam glucuronide†	>20000	>20000
Medazepam	150	210
Midazolam	130	160
Nitrazepam	78	130
Norchlordiazepoxide	4500	7500
Oxazepam	250	350
Oxazepam glucuronide†	>30000	>40000
Phenazepam	90	130
Prazepam	90	130
Temazepam	140	210
Temazepam glucuronide†	>20000	>20000
Tetraazepam	70	100
Triazolam	130	180

*Clorazepate degrades rapidly in stomach acid to nordiazepam. Nordiazepam hydroxylates to oxazepam.

†See Section 7, Limitations of the Procedure.

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Table 7 lists the compounds that produce a negative result by the Emit® II Plus Benzodiazepine Assay. Specificity testing was performed at the 200 ng/mL cutoff, which represents the greatest potential for cross-reactivity. Positive results for compounds structurally unrelated to benzodiazepines have not been observed.

Table 7 — Concentrations of Compounds Showing a Negative Response

Compound	Concentration Tested (µg/mL) at the 200 ng/mL (0.2 µg/mL) Cutoff
Acetaminophen	1000
<i>α</i> -Acetyl- <i>N,N</i> -dinormethadol (dinor LAAM)	25
L- <i>α</i> -Acetylmethadol (LAAM)	25
<i>N</i> -Acetylprocainamide (NAPA)	400
Acetylsalicylic acid	1000
Amitriptyline	1000
D-Amphetamine	1000
Benzoylcegonine	1000
Buprenorphine	1000
Caffeine	1000
Cimetidine	1000
Clomipramine	2.5
Clonidine	1000
Codeine	500
Cotinine	100
Cyclobenzaprine	1000
Desipramine	800
Diphenhydramine	1000
Doxepin	1000
2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP)	1000
Fluoxetine	1000
Glutethimide	500
Ibuprofen	1000
Ketamine	100
Ketorolac Tromethamine	1000
LSD	10 ng/mL
Meperidine	1000
D-Methamphetamine	35
Methaqualone	1500
Morphine	1000
Naproxen	1000
Nortriptyline	1000
Phencyclidine	1000
Phenytoin	1000
Promethazine	1000
Propoxyphene	1000
Ranitidine	1000
Scopolamine	500
Secobarbital	1000
11-nor- Δ^9 -THC-9-COOH	100
Thioridazine	100
Tramadol	1000
Tyramine	100
Zidovudine (AZT)	2 mg/mL
Zolpidem	100

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Cocaine Metabolite

The Emit® II Plus Cocaine Metabolite Assay is a homogeneous enzyme immunoassay with a 300 ng/mL cutoff.¹ The assay is intended for use in the qualitative and semiquantitative analyses of benzoylecgonine (cocaine metabolite) in human urine. Emit® II Plus assays are designed for use on a variety of AU® Clinical Chemistry Systems (see Section 6, Instruments).

The Emit® II Plus Cocaine Metabolite Assay detects benzoylecgonine, the major metabolite of cocaine, in human urine. The tables below list the cross-reactivity for structurally related compounds. Data presented are representative of typical performance of this assay.

Structurally Related Compounds, 300 ng/mL cutoff

Compound	Concentration Tested (ng/mL)	% Cross-Reactivity
Ecgonine*	102,000	0.3%
Cocaine*	61,000	0.5%
Norcocaine	2,091,000	<0.01%
Cocaethylene*	1,092,000	0.03%
Ecgonine Methyl Ester*	1,961,000	0.02%

* Ecgonine, Cocaine, Cocaethylene, and Ecgonine Methyl Ester tested at the concentrations above produced a result approximately equivalent to the cutoff.

Table 7 lists the compounds that produce a negative result by the Emit® II Plus Cocaine Metabolite Assay. Specificity testing was performed on a reference analyzer at the 150 ng/mL cutoff, which represents the greatest potential for cross-reactivity. Positive results for compounds structurally unrelated to cocaine metabolite have not been observed.

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Table 7 — Concentrations of Compounds Showing a Negative Response

Compound	Concentration Tested (µg/mL) at 150 ng/mL (0.15 µg/mL) Cutoff
Acetaminophen	1000
α-Acetyl <i>N, N</i> dinormethadol (dinor LAAM)	25
L-α-Acetylmethadol (LAAM)	25
<i>N</i> -Acetylprocainamide (NAPA)	400
Acetylsalicylic Acid	1000
Amitriptyline	1000
Buprenorphine	1000
Caffeine	1000
Cimetidine	1000
Clomipramine	2.5
Clonidine	1000
Codeine	500
Cotinine	100
Cyclobenzaprine	1000
Desipramine	800
Dextromethorphan	1000
Diphenhydramine	1000
Doxepin	1000
2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP)	1000
Fluoxetine	1000
Glutethimide	500
Ibuprofen	1000
Ketamine	100
Ketorolac Tromethamine	1000
Lormetazepam	1
LSD	0.01
Meperidine	1000
Methodone	1000
Methaqualone	1500
Morphine	1000
Naproxen	1000
Nortriptyline	1000
Oxazepam	300
Phencyclidine	1000
Phenytoin	1000
Promethazine	1000
Propoxyphene	1000
Ranitidine	1000

Compound	Concentration Tested (µg/mL) at 150 ng/mL (0.15 µg/mL) Cutoff
Scopolamine	500
Secobarbital	1000
11-nor-Δ ⁹ -THC-9-COOH	100
Thioridazine	100
Tramadol	1000
Tyramine	100
Zidovudine (AZT)	2000
Zolpidem	100

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Cannabinoid 20 ng

The Emit® II Plus Cannabinoid Assay is a homogeneous enzyme immunoassay with a 20 ng/mL cutoff. The assay is intended for use in the qualitative and semiquantitative analyses of cannabinoids in human urine. These reagents are packaged specifically for use on AU® Clinical Chemistry Systems.

The Emit® II Plus Cannabinoid Assay detects the major metabolites of D9 -THC in urine. Table 16 lists the concentrations of compounds that produce results approximately equivalent to the calibrator/control cutoffs. Each concentration represents the reactivity level for the stated compound when the compound is added to a negative urine specimen. These concentrations are within the range of the levels found in urine following use of the drug or, in the case of metabolites, the parent compound. If a specimen contains more than one compound detected by the assay, lower concentrations than those listed in Table 16 may combine to produce a rate approximately equivalent to or greater than the cutoff calibrator.

Table 16 — Concentrations of Cannabinoids That Produce a Result Approximately Equivalent to the Various 11-nor- Δ^9 -THC-9-COOH Cutoffs

Compound	20 ng/mL Cutoff	50 ng/mL Cutoff	100 ng/mL Cutoff
8- β -11-Dihydroxy- Δ^9 -THC	24	58	109
8- β -Hydroxy- Δ^9 -THC	26	68	146
11-Hydroxy- Δ^8 -THC	43	67	129
11-Hydroxy- Δ^9 -THC	42	77	124
9-Carboxy-11-nor- Δ^9 -THC-glucuronide	79	95	328
Δ^8 -THC	79	220	660
Δ^9 -THC	78	220	620

Table 17 lists the concentrations of compounds that were tested and found to give a negative response. Positive results for specimens containing other compounds structurally unrelated to cannabinoids have not been observed.

DOA Detection Limits

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Table 17 — Concentrations of Compounds Showing Negative Response at all Cutoff Levels

Compound	Concentration Tested (µg/mL)
Acetaminophen	1000
α-Acetyl-N,N-dinormethadol (dinor LAAM)	25
L-α-Acetylmethadol (LAAM)	25
N-Acetylprocainamide (NAPA)	400
Acetylsalicylic Acid	1000
Amitriptyline	1000
D-Amphetamine	1000
Benzoylcegonine	1000
Buprenorphine	1000
Caffeine	1000
Cimetidine	1000
Clomipramine	2.5
Clonidine	1000
Codeine	500
Cotinine	100
Cyclobenzaprine	1000
Desipramine	800
Diphenhydramine	1000
Doxepin	1000
2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP)	1000
Fluoxetine	1000
Glutethimide	500
Ibuprofen	1000
Ketamine	100
Ketorolac Tromethamine	1000
Lormetazepam	1
LSD	10 ng/mL
Meperidine	1000
D-Methamphetamine	35
Methaqualone	1500
Morphine	1000
Naproxen	1000
Nortriptyline	1000
Oxazepam	300
Phencyclidine	1000
Phenytoin	1000
Promethazine	1000
Propoxyphene	1000
Ranitidine	1000
Secobarbital	1000
Compound	Concentration Tested (µg/mL)
Scopolamine	500
Thioridazine	100
Tramadol	1000
Tyramine	100
Zidovudine (AZT)	2 mg/mL
Zolpidem	100