

## **Prescription and Over-the-Counter (OTC) Drug Screens**

Please refer to Drug Testing at [MayoMedicalLaboratories.com/articles/drug-book](http://MayoMedicalLaboratories.com/articles/drug-book) for further information. The page numbers in “Table 1” refer to the *2008 Drug Testing* overview (found on the Web site above).

### **This test is not appropriate for detecting drugs of abuse.**

The prescription and OTC drug screens are available to test for a broad spectrum of drugs in serum, plasma, whole blood, gastric, urine, or other biological samples. Testing is performed by GC/MS. Positive results are definitive. The test is intended for use by a physician to manage an apparent overdose, intoxicated patient, or to determine if a specific set of symptoms might be due to the presence of drugs. The test is not designed to screen for intermittent or illicit use of drugs—as therapeutic concentrations of many drugs are below the detection threshold of this test. This test is designed to detect those drugs that have toxic effects, but for which there are known antidotes or active therapies that a clinician can initiate to treat the toxic effect.

Most drugs or their metabolites that can be detected in serum and plasma are also detected in urine. While urine is the preferred specimen when evaluating a patient who might be abusing drugs intermittently, serum or plasma is preferred when determining if a specific set of symptoms at the time of evaluation are related to drug exposure.

In urine, blood, gastric, or other biological samples, when drugs are identified above the reportable (detection) limits in the specimen, they are reported as “Present.” If the sample is plasma or serum, and sufficient sample is submitted, quantified results will be reported; otherwise the drugs will be reported as “Present.”

**Note:** *Alcohol, LSD, digoxin, lithium, tetrahydrocannabinol (THC), and some benzodiazepines, opiates, and amphetamine-type stimulants are not detected by this procedure. For these drugs, the specific confirmation tests should be ordered.*

Table 1. lists the drugs detectable, limit of detection, and therapeutic ranges (if the drug is quantified). Therapeutic ranges are based on serum or plasma samples collected at trough (predose). Therapeutic ranges do not apply to other matrices, such as whole blood, and do not apply if samples collected at time other than trough.

*Note: Submission of less than the minimum sample volume requires increasing the limit of detection. Due to the complex nature of whole blood matrix, the detection limits are 4-fold higher than indicated in Table 1.*

**Table 1. Drug Screen Detection Limits**

Generic Name	Brand Names	Limit of Detection	Therapeutic Range (Serum)	Comments
Acetaminophen	Tylenol	10 µg/mL	<50 µg/mL	
Acetohexamide	Dymelor	2 µg/mL		
Allobarbitol	Dialog	1.0 µg/mL	1–5 µg/mL	
Alprazolam				Preferred test for detection of benzodiazepines is a specific request; see Specific Drug Group Confirmation (page 22).
Amitriptyline	Elavil	100 ng/mL	75–200 ng/mL	
Amobarbital	Amytal	1.0 µg/mL	1–5 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Aprobarbital	Alurate	1.0 µg/mL	1–5 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Barbital		1.0 µg/mL	1–10 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Benztropine	Cogentin	2 µg/mL		
Brompheniramine	Dimetane, Nasahist B, NDStat, Oraminic II	0.3 µg/mL		
Bupropion	Amfebutamone, Wellbutrin, Zyban	200 ng/mL	20–100 ng/mL	
Butabarbital	Butisol	1.0 µg/mL	10–20 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Butalbital	Fiorinal	1.0 µg/mL	1–5 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Caffeine		15 µg/mL	5–15 µg/mL	
Carbamazepine	Tegretol	0.5 µg/mL	2–10 µg/mL	
Carisoprodol	Soma	1 µg/mL	<20 µg/mL	

Generic Name	Brand Names	Limit of Detection	Therapeutic Range (Serum)	Comments
Chlordiazepoxide	Librium	0.5 µg/mL	1–3 µg/mL	
Chlorpheniramine	Chlor-Trimeton, Efidac, Teldrin	0.1 µg/mL		
Chlorpromazine	Thorazine	500 ng/mL	>50 ng/mL	
Chlorpropamide	Diabinese	2 µg/mL		
Chlorzoxazone	Inspra	0.3 µg/mL	5–20 µg/mL	
Citalopram (R, S)	Celexa	200 ng/mL	100–250 ng/mL	Unable to differentiate between R- and S-citalopram, reported as citalopram.
Citalopram (S) (aka escitalopram)	Lexapro	200 ng/mL	50–130 ng/mL	Unable to differentiate between R- and S-citalopram, reported as citalopram.
Clomipramine	Anafranil	100 ng/mL	150–450 ng/mL	
Clozapine	Clozaril	0.5 µg/mL		
Codeine		1 µg/mL		Preferred test for detection of opiates is a specific request; see Specific Drug Group Confirmation (page 38).
Cyclobenzaprine	Flexeril	0.1 µg/mL		
Desipramine	Norpramin	1000 ng/mL	75–225 ng/mL	
Dextromethorphan		0.5 µg/mL		
Diazepam	Valium	0.2 µg/mL	0.2–0.8 µg/mL	
Diclofenac	Voltaren			
Dicyclomine	Bentyl	0.3 µg/mL		
Diltiazem	Cardizem	0.5 µg/mL		
Diphenhydramine	Benadryl	0.2 µg/mL	<0.5 µg/mL	
Disopyramide	Norpace	1.5 µg/mL	2.0–4.5 µg/mL	
Doxepin	Sinequan	100 ng/mL		
Doxylamine	Unisom	0.5 µg/mL		
Ethchlorvynol	Placidyl	5 µg/mL	5–10 µg/mL	
Ethosuximide	Zarontin	10 µg/mL	40–75 µg/mL	
Etomidate		0.25 µg/mL		
Felbamate	Felbatol	5 µg/mL	25–100 µg/mL	
Fenoprofen	Nalfon			
Fentanyl		0.25 µg/mL		
Fluconazole	Diflucan	1.0 µg/mL		
7-Aminoflunitrazepam	Flunitrazepam metabolite	200 ng/mL	20–50 ng/mL	
Fluoxetine	Prozac	1000 ng/mL	200–1100 ng/mL	

Generic Name	Brand Names	Limit of Detection	Therapeutic Range (Serum)	Comments
Hydroxyethyl Flurazepam	Flurazepam (Dalmane ) metabolite	100 ng/mL	100–500 ng/mL	
Flurbiprofen	Ansaid			
Gabapentin	Neurontin		2–12 µg/mL	
Gemfibrozil	Lopid	0.5 µg/mL		
Glutethimide	Doriden	0.5 µg/mL	0.2–7 µg/mL	
Guaifenesin	Humibid, Humibid LA, Robitussin, Organidin NR, Fenesin, Mucinex			
Hydrocodone		0.5 µg/mL		Preferred test for detection of opiates is a specific request; see Specific Drug Group Confirmation (page 38).
Hydroxyzine	Atarax	0.5 µg/mL		
Ibuprofen	Motrin, Advil, Nuprin	10 µg/mL	20–70 µg/mL	Quantitated only if >250 µg/mL.
Imipramine	Tofranil	100 ng/mL	125–275 ng/mL	
Indomethacin	Indicin	1 µg/mL	1.0–2.0 µg/mL	
Ketoprofen	Orudis	5 µg/mL		
Ketoralac	Toradol			
Lamotrigine	Lamictal	1 µg/mL	1–4 µg/mL	
Levetiracetam	Keppra	0.5 µg/mL	10–63 µg/mL	
Lidocaine	Xylocaine	1.0 µg/mL	2–5 µg/mL	
Lorazepam	Ativan	0.5 µg/mL	0.1–0.3 µg/mL	Preferred test for detection of benzodiazepines is a specific request; see Specific Drug Group Confirmation (page 22).
Maprotiline	Ludiomil	1500 ng/mL	100–300 ng/mL	
Meperidine	Demerol	0.1 µg/mL	0.15–0.3 µg/mL	
Mephobarbital	Mebaral	0.5 µg/mL	1–7 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Meprobamate	Miltown metabolite of carisoprodol	1 µg/mL	<10 µg/mL	
Metaxalone		0.25 µg/mL		
Methadone	Dolophine	0.1 µg/mL	30–1000 µg/mL	
EDDP	Methadone metabolite	0.5 µg/mL		Only detected in urine.

Generic Name	Brand Names	Limit of Detection	Therapeutic Range (Serum)	Comments
Methaqualone		0.1 µg/mL		Preferred test for detection of methaqualone is a specific request; see Confirmed Drug Abuse Survey (page 36).
Metharbital	Gemonil	1.0 µg/mL	20–40 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Methocarbamol		0.5 µg/mL		
Methsuximide	Celontin	0.5 µg/mL	<1 µg/mL	
N-Desmethyl-methsuximide	Methsuximide metabolite	1.0 µg/mL	20–40 µg/mL	
Methylphenidate	Ritalin	2.50 µg/mL		
Methyprylon	Noludar	1.0 µg/mL	<10 µg/mL	
Metoclopramide	Reglan	20 µg/mL		
Metronidazole	Flagyl	0.5 µg/mL		
Midazolam	Versed	100 ng/mL	50–150 ng/mL	Preferred test for detection of benzodiazepines is a specific request; see Specific Drug Group Confirmation (page 22).
Mirtazapine	Remeron	0.1 µg/mL		
Nabumetone	Relafen			
Nabumetone metabolite				
Naproxen	Naprosyn	10 µg/mL		
Nordiazepam	Tranxene	0.1 µg/mL	0.2–1.0 µg/mL	Preferred test for detection of benzodiazepines is a specific request; see Specific Drug Group Confirmation (page 22).
Nortriptyline	Pamelor	500 ng/mL	50–150 ng/mL	
Olanzapine	Zyprexa			
Oxazepam	Serax			Preferred test for detection of benzodiazepines is a specific request; see Specific Drug Group Confirmation (page 22).
10-Hydroxy-10,11-dihydrocarbamazepine	Oxcarbazepine (Trileptal) metabolite	1 µg/mL	6–40 µg/mL	
Paroxetine	Paxil	2.5 µg/mL	30–90 ng/mL	
Pentazocine	Talwin	1 µg/mL	0.1–0.3 µg/mL	
Pentobarbital	Nembutal Metabolite of thiopental	0.5 µg/mL	1–5 µg/mL for seizure control, 30–40 µg/mL for control of cerebral swelling	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).

Generic Name	Brand Names	Limit of Detection	Therapeutic Range (Serum)	Comments
Pentoxifylline	Trental	0.3 µg/mL	0.5–2 µg/mL	
Phencyclidine	PCP	100 µg/mL		Preferred test for detection of phencyclidine is a specific request; see Specific Drug Group Confirmation (page 46).
Phenobarbital		2 µg/mL	20–40 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Phenylbutazone	Butazolidin	0.2 µg/mL	50–150 µg/mL	
Phenyltoloxamine	Kutraxe	0.5 µg/mL		
Phenytoin	Dilantin	1 µg/mL	10–20 µg/mL	
Primidone	Mysoline	2.5 µg/mL	9–12.5 µg/mL	
Procainamide		NA	4–8 µg/mL	
N-Acetylprocainamide	Procainamide metabolite			
Prochlorperazine	Compazine	250 ng/mL	<500 ng/mL	
Promethazine	Phenergan	100 ng/mL	10–100 ng/mL	
Propofol	Diprivan	1 µg/mL		
Propoxyphene	Darvon	0.2 µg/mL	0.2–0.5 µg/mL	
Norpropoxyphene	Propoxyphene metabolite	2.0 µg/mL		
Quetiapine	Seroquel	1.0 µg/mL		
Quinidine	Quinidex	0.5 µg/mL	2–5 µg/mL	
Salicylate	Aspirin	2.0 mg/dL	2–20 mg/dL	
Secobarbital	Seconal	1.0 µg/mL	1–5 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).
Sertraline	Zoloft	200 ng/mL	50–200 ng/mL	
N-Desmethylsertraline	Sertraline metabolite		20–300 ng/mL	
Strychnine		0.5 µg/mL		
Sulindac	Clinoril			
Temazepam	Restoril	0.1 µg/mL		Preferred test for detection of benzodiazepines is a specific request; see Specific Drug Group Confirmation (page 22).
Theophylline	Aminophylline	2 µg/mL	10–20 µg/mL	
Thiopental	Pentothal	1.0 µg/mL	6–35 µg/mL	Preferred test for detection of barbiturates is a specific request; see Specific Drug Group Confirmation (page 20).

Generic Name	Brand Names	Limit of Detection	Therapeutic Range (Serum)	Comments
Thioridazine	Mellaril	200 ng/mL	>50 ng/mL	
Tiagabine	Gabitril		5–520 ng/mL	
Ticlopidine	Ticlid	0.3 µg/mL		
Tolazamide	Tolinase	1 µg/mL		
Tolbutamide	Orinase	0.5 µg/mL		
Tolmetin	Tolectin			
Topiramate	Topamax	0.5 µg/mL	2–12 µg/mL	
Tramadol	Ultram	1.0 µg/mL		
Trazodone	Desyrel	200 ng/mL	500–1100 ng/mL	
Trifluoperazine	Stelazine	1000 ng/mL	<10 ng/mL	
Trimethobenzamide	Tigan			
Trimipramine	Surmontil	100 ng/mL		
Valproic Acid	Depakene	5 µg/mL	40–100 µg/mL	
Venlafaxine	Effexor	200 ng/mL	50–300 ng/mL	
Verapamil	Calan, Isoptin, Verelan	100 ng/mL	50–200 ng/mL	
Zolpidem	Ambien	100 ng/mL		
Zonisamide	Zonegran	0.75 µg/mL	10–40 µg/mL	