

Recommended Minimum Performance Limits for Common DFC Drugs and Metabolites in Urine Samples

This is not a complete list of drugs encountered in DFC, just the more common ones. Use your specific case history and demographics to determine the most likely drug(s) in your case. This list was originally compiled by the DFSA Committee as a guidance document for laboratories performing analyses of samples from alleged DFSA victims, as well as for nurses, law enforcement, attorneys, and other users of forensic toxicology services. It was originally published in the December 2005 issue of ToxTalk. The DFC Committee periodically updates this list as new drugs are reported in DFC case work. Another purpose of this list is to improve the consistency in results generated by toxicology laboratories that analyze urine specimens from DFC cases. The detection limits are derived from the literature or are an estimated concentration from the use of a single dose. Further, these detection limits should be achievable using analytical instrumentation considered standard in most laboratories today. This list is designed to encourage laboratories to evaluate their current capabilities, make improvements where necessary and to communicate to their customers if they cannot meet the recommended detection limits. Questions or comments regarding this list can be directed to the Chair of the SOFT DFC Committee, Lauren Marinetti at LJTOXIMP@gmail.com.

Parent Drug	Target Analyte(s)	Selected Trade Names and <i>Street Names</i> ¹	Recommended Min Performance Limits
Analgesics			
Buprenorphine	Buprenorphine Norbuprenorphine	Buprenex, Suboxone	1 ng/mL (ng/mL - nanograms per milliliter)
Fentanyl	Fentanyl Norfentanyl	Actiq, Duragesic, Fentora, Sublimaze	
Codeine	Codeine Morphine	Tylenol 3, Tylex	10 ng/mL
Dihydrocodeine	Dihydrocodeine	Paramol, Remedeine	
Heroin*	6-monoacetylmorphine Morphine	<i>Smack, horse, dope</i>	
Hydrocodone	Hydrocodone Dihydrocodeine Hydromorphone Norhydrocodone	Anexsia, Hycodan, Lorcet, Lortab, Norco, Panacet, Vicodin, Zydone, <i>Vics, Tabs</i>	
Hydromorphone	Hydromorphone	Dilaudid, Palladone	
Meperidine	Meperidine	Demerol, Mepergan	

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	Normeperidine		10 ng/mL
Methadone	Methadone EDDP	Dolophine, Methadose	
Morphine	Morphine	Avinza, Astramorph, Duramorph, Kadian, MSIR, MS Contin, Oramorph, Roxanol	
Oxycodone	Oxycodone Noroxycodone Oxymorphone	Oxycontin, Oxyir, Percocet, Percodan, Percolone, Roxicet, Roxicodone, Tylox, <i>Oxy, Hillbilly heroin</i>	
Oxymorphone	Oxymorphone	Numorphan, Opana, <i>Blues, Oranges</i>	
Propoxyphene*	Propoxyphene Norpropoxyphene	Darvon, Darvocet, Wygesic	
Tapentadol	Tapentadol Desmethyltapentadol	Nucynta, Palexia, Tapal	
Tramadol	Tramadol <i>n</i> -desmethyltramadol <i>o</i> -desmethyltramadol	Ultram, Ultracet	
Antidepressants			
Amitriptyline	Amitriptyline Nortriptyline	Elavil, Endep	10 ng/mL
Citalopram Escitalopram	Citalopram	Celexa, Cipramil, Lexapro	
Desipramine	Desipramine	Norpramin, Pertofrane	
Doxepin	Doxepin Nordoxepin	Adapin, Prudoxin, Sinequan, Zonalon	
Fluoxetine	Fluoxetine Norfluoxetine	Prozac, Sarafem	

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Imipramine	Imipramine Despiramine	Tofranil	10 ng/mL
Nortriptyline	Nortriptyline	Aventyl, Pamelor	
Norvenlafaxine	Norvenlafaxine	Pristiq	
Paroxetine	Paroxetine	Asimia, Paxil	
Sertraline	Sertraline Norsertraline	Zoloft	
Trazodone	Trazodone 1-(3-Chlorophenyl)piperazine (mCPP)	Desyrel	
Venlafaxine	Venlafaxine Norvenlafaxine	Effexor	
Antihistamines and cough/cold treatment			
Brompheniramine	Brompheniramine	Alatapp, Bromaline, Bromanate, Bromfed, Bromphen, Dimetane, Dimetapp, Myphetane, Polytime, Puretane	10 ng/mL
Carbinoxamine	Carbinoxamine	Arbinoxa, Palgic	
Cetirizine	Cetirizine	Zyrtec	
Chlorpheniramine	Chlorpheniramine	Aller Chlor, Chlor-trimeton, Coricidin, Deconamine, Efidac, Kronofed, Teldrin	
Dextromethorphan	Dextromethorphan Dextrophan	Benylin, Delsym, Romilar	

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Diphenhydramine	Diphenhydramine	Banophen, Belix, Benadryl, Dermarest, Excedrin PM, Hydramine, Sleepinal, Sleep-Eze 3, Tylenol PM, Unisom Sleep Gels	10 ng/mL
Doxylamine	Doxylamine	Bendectin, Unisom	
Hydroxyzine	Hydroxyzine Cetirizine Norchlorcyclizine	Atarax, Vistaril	
Meclizine	Meclizine	Antivert	
Promethazine	Promethazine	Phenergan, Zipan	
Tetrahydrozoline	Tetrahydrozoline	Murine, Visine	
Antipsychotics			
Chlorpromazine	Chlorpromazine	Thorazine	10 ng/mL
Clozapine	Clozapine Norclozapine	Clozaril, Leponex	
Olanzapine	Olanzapine	Zyprexa	
Quetiapine	Quetiapine Norquetiapine 7-Hydroxyquetiapine	Seroquel	
Thioridazine	Thioridazine	Mellaril	
Ziprasidone	Ziprasidone	Geodon, Zeldox	
Barbiturates			
Amobarbital*	Amobarbital	Amytal	25 ng/mL
Butalbital	Butalbital	Esgic, Fioricet, Fiorinol, Fiorpap	
Pentobarbital	Pentobarbital	Nembutal	
Phenobarbital	Phenobarbital	Luminol, Phenobarbitone	
Primidone	Primidone, Phenobarbital	Mysoline	
Secobarbital	Secobarbital	Seconal, Tuinal	

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<p>Benzodiazepines Many benzodiazepines are bio-transformed into glucuronide-conjugated metabolites. To improve detection limits and extend detection time, it is recommended that laboratories use instrumental techniques that will detect the glucuronide metabolites or hydrolyze urine specimens to free the conjugate before extraction.</p>			
Clonazepam	Clonazepam 7-aminoclonazepam	Clonopin, Klonopin, Rivotril	5 ng/mL
Flunitrazepam*	Flunitrazepam 7-aminoflunitrazepam	Rohypnol, <i>Roofies</i>	
Triazolam	Triazolam α-hydroxytriazolam	Halcion	
Alprazolam	Alprazolam α-hydroxyalprazolam	Niravam, Xanax, <i>Barrs</i>	10 ng/mL
Bromazepam*	Bromazepam α-hydroxybromazepam	Lectopam, Lexillum, Lexotan	
Clordiazepoxide	Chlordiazepoxide Nordiazepam	Libritabs, Librium	
Clobazam	Clobazam	Onfi, Urbanol	
Clorazepate	Nordiazepam Oxazepam Temazepam	Azene, Tranxene, clorazepic acid	
Clotiazepam*	Clotiazem	Clozan	
Diazepam	Diazepam Nordiazepam Oxazepam Temazepam	Diastat, Dizac, Valium	
Estazolam (desmethyalprazolam)	Estazolam	Prosom	
Etizolam*	Etizolam	Etilaam	
Flubromazepam*	Flubromazepam	Novel psychoactive substance	

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Flurazepam	Flurazepam Desalkylflurazepam	Dalmane	10 ng/mL
Loprazolam*	Loprazolam	Dormonoct, Havlane, Somnovit	
Lorazepam	Lorazepam	Ativan	
Lormetazepam* (methyl-lorazepam)	Lormetazepam	Dilamet, Ergocalm, Loramet, Noctamid	
Midazolam	Midazolam α-hydroxymidazolam	Versed	
Oxazepam	Oxazepam	Serax	
Phenazepam*	Phenazepam	Fenazepam (used in Russia) available on the internet	
Prazepam*	Prazepam	Centrac, Centrax	
Temazepam	Temazepam Oxazepam	Normison, Restoril	
Tetrazeepam*	Tetrazeepam	Clinoxan, Relaxam, Spasmorelax	
High Dose Sedatives			
Ethanol	Ethanol	Alcohol, ethyl alcohol, <i>Booze</i>	0.01 gram percent (grams per 100 milliliters)
Gamma-hydroxybutyrate (<i>GHB</i>)	GHB	<i>Xyrem, Easy, Lay, G, Georgia Home Boy, Grievous Bodily Harm, Liquid E, Liquid Ecstasy, Liquid G, Liquid X, Salty Water, Scoop, Soap</i>	10,000 ng/mL = 10 mcg/mL (micrograms per milliliter)
Gamma-butyrolactone (<i>GBL</i>)	GHB	<i>Blue Nitro, G3, Gamma G, G.H. Revitalizer, Insom-X, Invigorate, Remforce, Renewtrient, Verve</i>	

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1, 4-Butanediol (1,4-BD)	GHB	<i>Enliven, Inner G, Revitalize Plus, Serenity, Somato Pro, Sucol B, Thunder Nectar, Weight Belt Cleaner, White Magic</i>	10,000 ng/mL = 10 mcg/mL (micrograms per milliliter)
Miscellaneous			
Carisoprodol	Carisoprodol Meprobamate	Soma	50 ng/mL
Clonidine	Clonidine	Catapres, Clorpres, Combipres, Duraclon	1 ng/mL
Cyclobenzaprine	Cyclobenzaprine Norcyclobenzaprine	Flexeril	10 ng/mL
Eszopiclone	Zopiclone Zopiclone-n-oxide	Lunesta	10 ng/mL
Gabapentin	Gabapentin	Neurontin	1000 ng/mL = 1 mcg/mL
Ketamine	Ketamine Norketamine	Ketalar, Ketaject, <i>Special K</i>	10 ng/mL
Meprobamate	Meprobamate	Equagesic, Equanil, Micrainin, Miltown	50 ng/mL
Phencyclidine (PCP)*	PCP	Sernyl	10 ng/mL
Phenytoin	Phenytoin	Dilantin, diphenylhydantoin	25 ng/mL
Pregabalin	Pregabalin	Lyrica	500 ng/mL
Suvorexant	Suvorexant	Belsomra	10 ng/mL
Scopolamine	Scopolamine	Isopto Hyoscine, Scopace, Transderm Scop	
Tetrahydrocannabinol (Δ 9-THC)	11-carboxy-THC	<i>Cannabis sativa</i> , dronabinol, marijuana, Marinol	20 ng/mL
Topiramate	Topiramate	Topamax	50 ng/mL

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Valproic Acid	Valproic Acid	Depacon, Depakene, Depakote, Valproate	5,000 ng/mL = 5mcg/mL
Zaleplon	Zaleplon	Sonata, Zerene	10 ng/mL
Zopiclone	Zopiclone Zopiclone-n-oxide	Lunesta, Zimovane	10 ng/mL
Zolpidem	Zolpidem Zolpidem-phenyl-4-carboxylic acid	Ambien	10 ng/mL
Stimulants			
Amphetamine	Amphetamine	Adderall	50 ng/mL
Cocaine	Cocaine Benzoylecgonine Cocaethylene Methylecgonine	<i>Coke</i>	
Methamphetamine	Methamphetamine Amphetamine	Desoxyn, <i>Crystal Meth, Ice, Speed</i>	50 ng/mL
Methylphenidate	Methylphenidate Ritalinic Acid	Ritalin	
Methylenedioxyamphetamine* (MDA)	MDA	<i>Ecstasy</i>	
Methylenedioxymethamphetamine* (MDMA)	MDMA MDA	<i>Ecstasy</i>	

¹ For a more comprehensive list of slang terms, see also, **Drug Slang Code Words**, DEA Intelligence Report DEA-HOU-DIR-020-17, published May 2017. Accessed June 7, 2017 at <https://ndews.umd.edu/sites/ndews.umd.edu/files/dea-drug-slang-code-words-may2017.pdf>

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