Cross-Reactivity for Beckman AU Urine Drug Screen Analytes

Amphetamine

Compounds	Concentration equivalent to 1000 ng/mL Cutoff	% Cross-Reactivity
d-Amphetamine	**1000**	**100**
Benzphetamine*	1000	100
d,l-Methamphetamine	2100	47.6
d,l-Amphetamine	2150	46.5
l-Methamphetamine	3650	27.4
MDA	6500	15.4
Donepezil	11200	8.9
l-Amphetamine	11500	8.7
4-Chloramphetamine	12200	8.2
Phenmetrazine	13000	7.7
1,3 Dimethylpentylamine	14900	6.7
d,l-4-Methylamphetamine	16500	6.1
Phentermine	25000	4.0
MDEA	27200	3.7
MDMA	34300	2.9
Isometheptene	56000	1.8
Mephentermine	60000	1.7
erythro-Dihydrobupropion	82000	1.2
Fenfluramine	150000	0.7
Nor-pseudoephedrine	170000	0.6
Tranylcypromine	200000	0.5
Methoxyphenamine	360000	0.3
Propranolol	500000	0.2
Tyramine	600000	0.2
Phenylpropanolamine	2000000	0.05
l-Ephedrine	3500000	0.03
Bupropion	4500000	0.02
Chloroquine	4500000	0.02
d,l-Pseudoephedrine	8300000	0.01
Quinacrine	16500000	<0.01
Benzphetamine metabolizes to amphetamine and methamphetamine Selegiline metabolizes to l-amphetamine and l-methamphetamine		

Barbiturates

Compounds	Concentration equivalent to 200 ng/mL Cutoff	% Cross-Reactivity
Talbital	194	103.1
Secobarbital	**200**	**100.0**
Pentobarbital	252	79.4
Butabarbital	274	73.0
Aprobarbital	275	72.7
Alphenal	284	70.4
Butalbital	304	65.8
Cyclopentobarbital	304	65.8
Amobarbital	348	57.5
Butobarbital	349	57.3
Phenobarbital	509	39.3
5-Ethyl-5-(4-hydroxyphenyl) barbituric acid	927	21.6
Barbital	1278	15.6
Thiopental	28200	0.7

Buprenorphine

Compounds	Concentration equivalent to 5 ng/mL Cutoff	% Cross-Reactivity
Norbuprenorphine	**4.6**	**92.6**
Buprenorphine Glucuronide	1000	0.1
Norbuprenorphine Glucuronide	1000	0.1

Benzodiazepine

Compounds	Concentration equivalent to 200 ng/mL Cutoff	% Cross-Reactivity
Alprazolam	65	307.7
Diazepam	70	285.7
Tetrazepam	70	285.7
Nitrazepam	78	256.4
Estazolam	90	222.2
Phenazepam	90	222.2
Prazepam	90	222.2
α-Hydroxyalprazolam	100	200.0
Ketazolam	100	200.0
N-Desmethyldiazepam	110	181.8
Halazepam	110	181.8
α-Hydroxyalprazolam glucuronide†	110	181.8
N-Desalkylflurazepam	130	153.8
α-Hydroxytriazolam	130	153.8
Midazolam	130	153.8
Triazolam	130	153.8
Flunitrazepam	140	142.9
Temazepam	140	142.9
1-N-Hydroxyethlylflurazepam	150	133.3
Medazepam	150	133.3
Flurazepam	190	105.3
Lormetazepam	**200**	**100.0**
Clonazepam	210	95.2
Oxazepam	250	80.0
Clobazam	260	76.9
Clotiazepam	380	52.6
Lorazepam	600	33.3
Bromazepam	630	31.7
7-Aminoflunitrazepam	930	21.5
Demoxepam	1600	12.5
7-Aminoclonazepam	5300	3.8
Norchlordiazepoxide	4500	4.4
Chlordiazepoxide	3300	6.1
Clorazepate	*	
Clorazepate degrades rapidly in stomach acid to nordiazepam. Nordiazepam hydroxylates to oxazepam.		

Cocaine Metabolite

Compounds	Concentration equivalent to 300 ng/mL Cutoff	% Cross-Reactivity
Benzoylecgonine	**300**	**100**
Ecgonine	7000	4.3
Cocaine	40000	0.8

Fentanyl

Norfentanyl (Major Metabolite)

Compounds	Concentration Tested (ng/mL)	% Cross-Reactivity
Norfentanyl (Major Metabolite)	15	7

Other Metabolites and Structural Analogs of Fentanyl

Compounds	Concentration equivalent to 1 ng/mL Cutoff	*% Cross-Reactivity*
Acetyl fentanyl	1.1	90.91
Isobutyryl fentanyl	1.1	90.91
ω-1-Hydroxyfentanyl	1.2	83.33
Acrylfentanyl	1.3	76.90
Butyryl fentanyl	1.4	71.43
Furanyl fentanyl	1.5	66.67
Para-fluoro fentanyl	1.5	66.67
Ocfentanil	1.6	62.50
4-Fluoro-isobutyryl fentanyl	1.9	52.63
Para-fluorobutyryl fentanyl (p-FBF)	1.9	52.63
Valeryl fentanyl	2.3	43.48
β-hydroxyfentanyl	9.5	10.53
Acetyl norfentanyl	12.1	8.26
(±) β-hydroxythiofentanyl	32.7	3.06
(±)-3-cis-methyl fentanyl	144.1	0.69
Carfentanil	448.2	0.22
Despropionyl fentanyl (4-ANPP)	471.8	0.21
Sufentanil	2,362	0.04
Remifentanil	10,000	<0.01
Norcarfentanil	38,196	0.003
Alfentanil	100,000	<0.001

Methadone

Compounds	Concentration equivalent to 300 ng/mL Cutoff	% Cross-Reactivity
Methadone	**300**	**100**

Opiates

Compounds	Concentration equivalent to 300 ng/mL Cutoff	% Cross-Reactivity
Codeine	102	294.1
Ethylmorphine	240	125.0
Hydrocodone	247	121.5
Dihydrocodeine	291	103.1
Morphine	**300**	100.0
6-Acetylmorphine	435	69.0
Levorphanol	480	62.5
Hydromorphone	498	60.2
Morphine-3-Glucuronide	626	47.9
Nalorphine	2130	14.1
Oxycodone	3340	9.0
Levallorphan	3740	8.0
Oxymorphone	9300	3.2
Meperidine	>15000	<2
Naloxone	360000	0.1

Oxycodone

Compounds	Concentration equivalent to 100 ng/mL Cutoff	% Cross-Reactivity
Oxycodone	**100**	**100**
Oxymorphone	97	103

Phencyclidine (PCP)

Compounds	Concentration equivalent to 25 ng/mL Cutoff	% Cross-Reactivity
Phencyclidine (PCP)	**25**	**100**
4-Phenyl-4-piperidinocyclohexanol	32	78.1
1-[1-(2-Thienyl)-cyclohexyl]piperidine (TCP)	37	67.6
1-(1-Phenylcyclohexyl)morpholine (PCM)	41	61.0
1-(1-Phenylcyclohexyl)pyrrolidine (PCPy)	54	46.3
1-[1-(2-Thienyl)-cyclohexyl]morpholine (TCM)	80	31.3
1-[1-(2-Thienyl)-cyclohexyl]pyrrolidine (TCPy)	83	30.1
N,N-Diethyl-1-phenylcyclohexylamine (PCDE)	234	10.7
1-(4-Hydroxypiperidino)phenylcyclohexane	420	6.0
Mesoridazine	50000	0.1
Meperidine	67000	<0.1
Dextrorphan	97000	<0.1
Dextromethorphan	120000	<0.1

THC/Cannabinoids

Compounds	Concentration equivalent to 50 ng/mL Cutoff	% Cross-Reactivity
11-nor-Δ-9-THC-9-COOH	50	100
8-ß-11-Dihydroxy-Δ-9 -THC	58	86
8-ß-Hydroxy- Δ-9 -THC	68	74
11-Hydroxy- Δ-8 -THC	67	75
11-Hydroxy- Δ-9 -THC	77	65
9-Carboxy-11-nor-Δ-9-THC-glucuronide	95	53