

URINE BENZODIAZEPINES

Specificity⁶

Non Interfering Substances

Each of the following compounds when added to urine containing lorazepam at +/- 25% concentration of the cutoff do not yield a false response relative to the 200 ng/mL cutoff:

Compound	Concentration
Acetone	1.0 g/dL
Ascorbic Acid	1.5 g/dL
Bilirubin	2.0 mg/dL
Creatinine	0.5 g/dL
Ethanol	1.0 g/dL
Gamma Globulin	0.5 g/dL
Glucose	2.0 g/dL
Hemoglobin	115 mg/dL
Human Serum Albumin	0.5 g/dL
Oxalic Acid	0.1 g/dL
Riboflavin	7.5 mg/dL
Sodium Chloride	6.0 g/dL
Urea	6.0 g/dL

‡ Each of the following compounds was added to drug free urine and gave negative BENZ results at the concentration listed for the 200 ng/mL cutoff.

Compound	Concentration
Acetaminophen	1000 µg/mL
α-Acetyl-N,N-dinormethadol (dinor LAAM)	25 µg/mL
l-α-Acetylmethadol (LAAM)	25 µg/mL
N-Acetylprocainamide (NAPA)	400 µg/mL
Acetylsalicylic Acid	1000 µg/mL
Amitriptyline	1000 µg/mL
d-Amphetamine	1000 µg/mL
Benzoylcegonine	1000 µg/mL
Buprenorphine	100 µg/mL
Caffeine	1000 µg/mL
Cimetidine	1000 µg/mL
Clomipramine	2.5 µg/mL
Clonidine	1000 µg/mL
Codeine	500 µg/mL
Cotinine	100 µg/mL
Cyclobenzaprine	28 µg/mL
Desipramine	800 µg/mL
Diphenhydramine	1000 µg/mL
Doxepin	10 µg/mL

Compound	Concentration
2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP)	1000 µg/mL
Fluoxetine	500 µg/mL
Glutethimide	500 µg/mL
Ibuprofen	1000 µg/mL
Ketamine	100 µg/mL
Ketorolac Tromethamine	1000 µg/mL
LSD	10 ng/mL
Meperidine	1000 µg/mL
d-Methamphetamine	2 µg/mL
Methaqualone	1500 µg/mL
Morphine	1000 µg/mL
Naproxen	1000 µg/mL
Nortriptyline	750 µg/mL
Phencyclidine	1000 µg/mL
Phenytoin	1000 µg/mL
Promethazine	1000 µg/mL
Propoxyphene	1000 µg/mL
Ranitidine	900 µg/mL
Scopolamine	500 µg/mL
Secobarbital	1000 µg/mL
11-nor- Δ^9 -THC-9-COOH	0.2 µg/mL
Thioridazine	100 µg/mL
Tramadol	100 µg/mL
Tyramine	100 µg/mL
Zidovudine (AZT)	2 mg/mL
Zolpidem	100 µg/mL

Cross-reactivity ‡

The table below gives the compounds this assay is designed to detect and the levels at which the compounds have been found to give a response approximately equivalent to that of the 200 ng/mL lormetazepam cutoff. Each concentration represents the reactivity level for the stated compound when it is added to a negative urine specimen. If a sample contains more than one compound detected by the assay, lower concentrations than those listed below may combine to produce a rate approximately equivalent to or greater than that of the cutoff calibrator.

Compound	Concentration (ng/mL)
Alprazolam	65
7-aminoclonazepam	2600
7-aminoflunitrazepam	590
Bromazepam	630
Chlordiazepoxide	3300
Clobazam	260
Clonazepam	580

Compound	Concentration (ng/mL)
Clorazepate	^g
Clotiazepam	380
Demoxepam	1600
<i>N</i> -Desalkylflurazepam	130
<i>N</i> -Desmethyldiazepam	110
Diazepam	70
Estazolam	90
Flunitrazepam	140
Flurazepam	190
Halazepam	110
α -Hydroxyalprazolam	100
α -Hydroxyalprazolam Glucuronide	110 ^h
1- <i>N</i> -Hydroxyethylflurazepam	150
α -Hydroxytriazolam	130
Ketazolam	100
Lorazepam	600
Lorazepam glucuronide	>20000 ^h
Medazepam	150
Midazolam	130
Nitrazepam	320
Norchlordiazepoxide	2600
Oxazepam	250
Oxazepam glucuronide	>50000 ^h
Prazepam	90
Temazepam	140
Temazepam Glucuronide	6900 ^h
Tetrazepam	70
Triazolam	130

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

h. Glucuronide metabolite of α -Hydroxyalprazolam crossreact with this assay. Other glucuronide metabolites such as Lorazepam, Oxazepam and Temazepam cross-react to a limited extent. The cross-reactivity of other glucuronide metabolites with this assay is not known.

Analytical Sensitivity

The sensitivity of the BENZ method is 30 ng/mL for the 200 ng/mL cutoff and it represents the lowest concentration of BENZ that can be distinguished from zero. Sensitivity is defined as the concentration at two standard deviations above 0 ng/mL using Drugs of Abuse Calibrator Level A (n=20).

‡ The Dimension Vista® BENZ method (REF K5097) and the Dimension® BENZ (REF DF97A) method utilize the same reagents under equivalent reaction conditions.

Interfering substances and Cross-reactivity were tested using Dimension® BENZ (REF DF97A) and the results are representative of both methods.