Prescription Drug Reference Guide

For Pain Management Physicians

Provided by

aperian
Laboratory Solutions

Quality Results You Can Count On!

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PRESCRIPTION DRUG REFERENCE GUIDE: TABLE OF CONTENTS

GLOSSARY OF TERMS AND ABBREVIATIONS

Assay Cutoff	For Immunoassays, this reflects the lowest concentration of drug/drug metabolite that indicates the urine sample should undergo Drug Confirmation testing. For GC/MS or LC/MS/MS, this reflects the lowest concentration of drug/drug metabolite that will be reported as positive.
Consistent/Inconsistent	Terms used to reflect whether the test findings correlate with the prescribed drugs and dosage regimen.
Drug Confirmation	Urine samples with drug/drug metabolites that produce positive results when undergoing Drug Screening and are submitted for additional testing by GC/MS or LC/MS/MS. This methodology both identifies and quantifies the drug/drug metabolite.
Drug Screening	The initial testing of the donor's urine sample involves the use of various immunoassays directed toward each particular drug or family/chemical class of drugs. For example, the immunoassay for the detection of cocaine is directed toward identifying benzoylecogine, the primary metabolite of cocaine. The immunoassay for barbiturate responds to all members of this family/chemical class of drugs, which includes butalbital, pentobarbital, secobarbital and phenobarbital. Our laboratory primarily uses two types of immunoassays, one often referred to as EIA and the other referred to as ELISA.
GC/MS	Gas Chromatography/Mass Spectrometry – this is one of the methodologies, which both identifies and quantifies the drug/drug metabolites in the urine or oral fluid sample.
LC/MS/MS	Liquid Chromatography/Tandem Mass Spectrometry is one of the two methodologies, which both identifies and quantifies the drug/drug metabolites in the urine or oral fluid sample.
Immunoassay	The basis of drug screening – this methodology eliminates samples that do not contain controlled drugs and identifies urine samples, which need to undergo Drug Confirmation testing.
Mean Value (Level)	Half of the values were higher and half of the values were lower than this value.

Normalization to Creatinine

Each drug/drug metabolite that is detected in the urine is reported as a quantitative value in nanograms per milliliter (ng/mL) determined by confirmatory analysis. To compensate for variations in liquid input and urine output, the ng/mL quantitative value is adjusted by dividing by the creatinine concentration.

e.g. Concentration of morphine = 1,250 ng/mL
Urine creatinine = 65 mg/dL

$$\frac{1250}{65} \times 100 = 1923 \text{ ng/mg}$$

This "normalized" value better relates to the dosage taken. Along with the current normalized value, we report the previous normalized value and the date the previous sample was collected. Monitoring the normalized value is currently the best approach to monitoring compliance. There are no valid algorithms or computer models that are able to predict plasma levels or compliance from a single urine test.

Plasma Half-life

The time in hours in which the plasma level of a drug declines by one-half.

Application: Approximately 5 times the plasma half-life is the maximum length of time that the drug is detectable in plasma after a single dose (non-steady state).

Volume of Distribution

Relates to plasma concentration after intravenous (IV) administration. Value is based on a body weight of 70 Kg (154 lbs).

Application: The dose in milligrams divided by body weight (Kg) multiplied by Volume of Distribution equals the approximate peak plasma level.

$$\text{Peak Plasma Level} = \frac{\text{Dose (Mg)}}{\text{Body wt. (Kg)} \times \text{V of D (L/Kg)}}$$

EXAMPLE: Morphine has a Vof D = 3-5 L/Kg
Administer a 10 Mg dose to a 70 Kg adult.

Theoretical Peak Plasma Level =

$$\frac{10 \text{ Mg}}{70 \text{ Kg} \times 3 \text{ L/Kg}} = .048 \text{ Mg/L (48 ng/mL)}$$

Experimental Peak Plasma Level is approximately **50 ng/mL**.

APERIAN LAB SOLUTIONS FORMULATES A "CONSISTENT" OR AN "INCONSISTENT" OPINION BASED ON:

• An "individualized case" approach to data review whereby results for each specimen are reviewed in conjunction with available donor prescription history and established drug pharmacokinetic information.

• The use of screening/confirmatory cut-offs well below industry norm, which provides absolute detection of drug and/or drug metabolites.

• Quantified drug or drug metabolite results normalized to urine creatinine, which compensates for variations on fluid intake/output.

OUR CERTIFYING SCIENTISTS:

• Have the experience backed by over 50 years in urine and forensic drug testing and the review of thousands of drug screen results with accompanying drug dosage histories originating from pain clinic accounts.

• Include an explanation or reason for each "INCONSISTENT" interpretation on every final report.

• Are available for consultation of any result during all normal business hours.

Aperian Lab Solutions does not, in any form or fashion, utilize a mathematical algorithm for any interpretive results.

PHARMACY ABBREVIATIONS

bid	two times a day
biw	two times a week
q_d	every __ days
q_h	every __ hours
qd	every day
qid	four times a day
qiw	four times a week
qm	every month
qod	every other day
qow	every other week
qw	every week
pc	after meals
po	by mouth
prn	as needed
tid	three times a day
tiw	three times a week
qhs	at bedtime

QUICK REFERENCE GUIDE FOR DRUG/DRUG METABOLITE DETECTED TO POSSIBLE DRUG TAKEN

Drug Detected	Possible Drug Taken
Amphetamine	Amphetamine Methamphetamine
Desmethyldiazepam (Nordiazepam)	Diazepam
Dihydrocodeine	Hydrocodone Dihydrocodeine
EDDP	Methadone
Hydrocodone	Hydrocodone Codeine
Hydromorphone	Hydromorphone Hydrocodone Morphine
Methamphetamine	Methamphetamine Benzphetamine
MDA	MDA MDMA MDEA
Phenobarbital	Phenobarbital Primidone
Morphine	Morphine Codeine
Oxazepam	Diazepam Oxazepam Temazepam
Oxymorphone	Oxymorphone Oxycodone
Temazepam	Diazepam Temazepam

DRUG INFORMATION

LAST UPDATED:
JANUARY 2014

AMPHETAMINE

PHARMACOKINETIC INFORMATION	
Half-Life	7 - 34 hours
Volume Distribution	3.2 – 5.6 L/kg
Medical Dosage	5 – 15 mg
Urine Levels	<4.5 mcg/mL following 20 mg oral dose 10-100 mcg/mL for abuser 25-700 mcg/mL for fatalitites
Drug Metabolites	Norephedrine
Detection Time in urine after a single dose	1-3 days

BRAND NAMES:
ADDERAL
BENZADRINE
DEXEDRINE
Vyvanse

ADDITIONAL INFORMATION:

Amphetamine is a sympathomimetic phenethylamine derivative with prominent central stimulant activity. The compound was first synthesized in 1887 and has been used since 1935 in the treatment of obesity, narcolepsy and hypertension. It is available as the d- or dl-isomeric form, the d-isomer having 3-4 times the central activity as the l-form.

The drug is commonly administered as the single sulfate salt in single oral doses of 5-15 mg and occasionally in sustained-release form. Amphetamine is frequently abused for its stimulant effects and may be self-administered either orally or by intravenous injection in amounts up to 2000 mg daily by tolerant addicts. It is also a metabolite of a number of other drugs, including fenethyline, fenproporex and methamphetamine.

URINE TESTING FOLLOWING AMPHETAMINE INGESTION:

Amphetamine* → Norephedrine

* Almost always present in urine

METHAMPHETAMINE

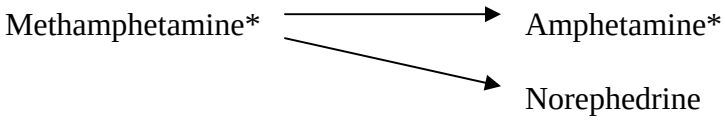
PHARMACOKINETIC INFORMATION	
Half-Life	6 – 15 hours
Volume Distribution	3.0 - 7.0 L/kg
Medical Dosage	2.5 – 15 mg
Urine Levels	Up to 7 mcg/mL following 30 mg oral dose 24-333 mcg/mL for abuser 25-700 mcg/mL for fatalities
Drug Metabolites	Amphetamine Norephedrine
Detection Time in urine after a single dose	1-3 days

ADDITIONAL INFORMATION:

d-Methamphetamine, the N-methyl derivitive of amphetamine, was first prepared in 1919. As the hydrochloride salt, it is utilized in the treatment of obesity in single oral doses of 2.5 to 15 mg. The l-isomer is used in certain non-prescription inhalers as a decongestant. D-Methamphetamine has received a great deal of attention as a drug of abuse in past years and at one time was available by prescription and as an injectable solution in ampule form.

It is now available as conventional tablets of 2.5 to 5 mg and prolonged release tablets of 5 to 15 mg for oral use. Illicit methamphetamine is readily synthesized from phenylacetone and N-methylformamide (dl-mixture), or from ephedrine using red phosphorus/hydriodic acid reduction (d-isomer). d-Methamphetamine is also formed as a metabolite of benzphetamine and famprofazone.

URINE TESTING FOLLOWING METHAMPHETAMINE INGESTION:



* Almost always present in urine

MDA

PHARMACOKINETIC INFORMATION	
Half-Life	6 – 10 hours (dose dependent)
Illicit Dosage	50 – 250 mg
Detection Time in urine after a single dose	1-3 days

ADDITIONAL INFORMATION:

3,4-Methylenedioxyamphetamine (MDA) is a psychotropic amphetamine derivative first synthesized in 1910. It is similar in potency to p-methoxyamphetamine, and is administered both orally and intravenously in does of 50 to 250 mg as an illicit drug. The compound is primarily a central stimulant and may be hallucinogenic in large doses.

URINE TESTING FOLLOWING MDA INGESTION:

MDA*

* Almost always present in urine

MDEA

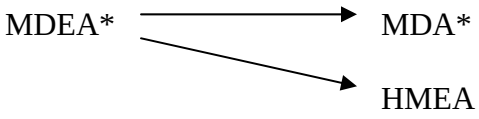
PHARMACOKINETIC INFORMATION	
Half-Life	3 – 5 hours
Illicit Dosage	50 – 250 mg
Drug Metabolites	MDA HMEA
Detection Time in urine after a single dose	1-3 days

STREET NAMES:
EVE
MDE

ADDITIONAL INFORMATION:

3,4-Methylenedioxyethylamphetamine (MDEA) is a close chemical analog of MDMA (Ecstasy) and is a member of a group of methoxylated amphetamine derivatives that has seen widespread abuse for their hallucinogenic properties. Illicit forms of the drug often contain from 50 to 250 mg as the hydrochloride salt; they are generally capsules or tablets intended for oral administration, and occasionally contain greater or lesser amounts of related compounds such as MDA or MDMA.

URINE TESTING FOLLOWING MDEA INGESTION:



* Almost always present in urine

MDMA

PHARMACOKINETIC INFORMATION	
Half-Life	6 – 9 hours
Volume Distribution	5 - 8 L/kg
Illicit Dosage	100 – 150 mg
Drug Metabolites	MDA
Detection Time in urine after a single dose	1-3 days

STREET NAMES:
ECSTASY
XTC

ADDITIONAL INFORMATION:

3,4-Methylenedioxymethamphetamine (MDMA) is a ring-substituted derivative of methamphetamine that has been evaluated as an adjunct to psychotherapy. In recent years, its widespread use as a recreational drug caused the U.S. Drug Enforcement Administration to place the compound in Schedule I. The drug is usually taken in oral doses of 100 to 150 mg as the hydrocholoride.

URINE TESTING FOLLOWING MDMA INGESTION:

MDMA* ⟶ MDA*

* Almost always present in urine

AMOBARBITAL

PHARMACOKINETIC INFORMATION	
Half-Life	15 - 40 hours
Volume Distribution	0.9 – 1.4 L/kg
Medical Dosage	15 – 200 mg oral
Toxic Levels	98 mcg/mL in urine (average)
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
AMYTAL

ADDITIONAL INFORMATION:

Amobarbital is a barbiturate derivative of intermediate duration of action first prepared in 1924. The compound is available as either the sodium salt or the free acid in oral dosage forms of 15 to 200 mg for use as a sedative or hypnotic, and in ampules of 65 to 500 mg for intravenous or intramuscular injection for the control of seizures. It is also found in combination with other drugs such as secobarbital, ampetamine and ephedrine.

BUTABARBITAL

PHARMACOKINETIC INFORMATION	
Half-Life	34 - 42 hours
Medical Dosage	15 – 100 mg
Toxic Levels	58 mcg/mL in blood (average)
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
BUTISOL

ADDITIONAL INFORMATION:

Butabarbital is a short to intermediate-acting barbiturate derivative that was prepared in 1932 and is now frequently used as a sedative and hypnotic. In the United States, it is available in amounts of 15 to 100 mg either alone or in combination with other drugs, in at least 10 different preparations containing analgesic, antihypertensive, antispasmodic or diuretic agents. The compund is easily confused with butethal, a closely related drug that is in common use in Europe.

BUTALBITAL

PHARMACOKINETIC INFORMATION	
Half-Life	35 - 88 hours
Medical Dosage	30 – 50 mg
Toxic Levels	51 mcg/mL in urine (average)
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
FIORINAL
ESGC
Triad
Bupap
Cephadyn

ADDITIONAL INFORMATION:

Butalbital is an occasionally encountered short-acting barbiturate closely related to talbutal and less closely to aprobarbital and secobarbital. At one time, it was available as a sole agent for sedative-hyspnotic use, but at this time, it is found only in combination with other drugs such as acetaminophen, aspirin, caffeine, codeine and phenacetin. These "analgesic-sedative" mixtures may contain from 30 to 50 mg of butalbital and are intended for oral administration.

PENTOBARBITAL

PHARMACOKINETIC INFORMATION	
Half-Life	20 - 30 hours
Volume Distribution	0.5 – 1.0 L/kg
Medical Dosage	15 – 200 mg
Toxic Levels	25 mcg/mL in urine (average)
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
NEMBUTAL

ADDITIONAL INFORMATION:

Pentobarbital is a short-acting barbiturate derivative first prepared in 1930. The drug is available alone and in combination with other agents in amounts of 15 to 200 mg for oral, intramuscular or rectal administration. It is supplied as the racemic mixture in the form of both the free acid and the sodium salt, the latter being strongly alkaline in aqueous solution.

PHENOBARBITAL

PHARMACOKINETIC INFORMATION	
Half-Life	2 – 6 hours
Volume Distribution	0.5 – 0.6 L/kg
Medical Dosage	15 – 65mg oral
Toxic Levels	38 mcg/mL in urine (average)
Detection Time in urine after a single dose	3-5 days

BRAND NAMES:
BELLATAL
SOLFOTON

ADDITIONAL INFORMATION:

Phenobarbital is a barbiturate derivative that has been used as a daytime sedative and very extensively as an anticonvulsant since 1912. Phenobarbital is an excellent inducer of drug-metabolizing microsomal enzymes and its use often results in the lowering of plasma levels of other drugs. Its low oil/water partition coefficient relative to other barbiturates is the basis for its slow accumulation in brain tissue and its limited metabolism.

The drug is available as either the free acid or the sodium salt in an elixer or as tablets of 15 to 65 mg for oral use, or in a 65 to 130 mg/mL solution for intravenous or intramuscular injection. It is often found in combination with bronchodilators, vasodilators, analgesics, and anticholinergic agents. It is generally administered to epileptic patients in oral doses of 60 to 200 mg daily, often in combination with other anticonvulsant drugs.

SECOBARBITAL

PHARMACOKINETIC INFORMATION	
Half-Life	22 – 29 hours
Volume Distribution	1.6 – 1.9 L/kg
Medical Dosage	8 – 250 mg oral
Toxic Levels	6 – 32 mcg/L in urine
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
SECONAL

ADDITIONAL INFORMATION:

Secobarbital is a barbiturate derivative of short duration of action first prepared in 1934. It is available in amounts of 8 to 250 mg alone or in combination with other drugs for use as either a sedative or hypnotic. Both the free acid and sodium salt are utilized and may be administered rectally, orally or by intravenous and intramuscular injection.

ALPRAZOLAM

PHARMACOKINETIC INFORMATION	
Half-Life	6 - 27 hours (average is 11)
Volume Distribution	0.9 – 1.3 L/kg
Medical Dosage	0.25 – 1mg
Drug Metabolites	Alpha-hydroxyalprazolam
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dose)

BRAND NAMES:
ALPRAZOLAM INTENSOL
NIRAVAM
XANAX

ADDITIONAL INFORMATION:

Alprazolam, a triazolobenzodiazepine derivative, is a short-acting antidepressant and anxiolytic agent. The drug has also been found effective in the treatment of agoraphobia, panic attacks and panic disorders. Doses of 0.75-4 mg daily are effective for generalized anxiety, while doses of 6-9 mg daily have been used for phobic and panic disorders. The drug is supplied as the free base in tablets of 0.25 to 1.0 mg

URINE TESTING FOLLOWING ALPRAZOLAM INGESTION:

Alprazolam* ⟶ Alpha-hydroxyalprazolam*

* Almost always present in urine

CLONAZEPAM

PHARMACOKINETIC INFORMATION	
Half-Life	19 - 60 hours
Volume Distribution	1.5 – 4.4 L/kg
Medical Dosage	0.5 – 2 mg tablets
Drug Metabolites	7-aminoclonazepam
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dose)

BRAND NAMES:
CLONOPIN
KLONOPIN
RIVOTRIL

ADDITIONAL INFORMATION:

Clonazepam is a benzodiazepine derivative that was approved for use as an anticonvulsant in the U.S. in 1975. It is the 2-chloro analogue of nitrazepam, which is a potent sedative. The drug is administered as the free base in daily oral maintenance doses of 1.5 to 20 mg, in the form of 0.5 to 2 mg tablets.

URINE TESTING FOLLOWING CLONAZEPAM INGESTION:

Clonazepam* → 7-aminoclonazepam*

* Almost always present in urine

CLORAZEPATE

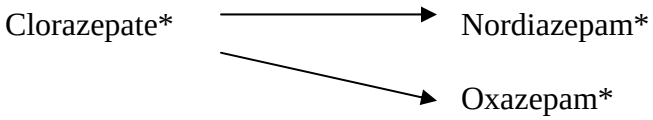
PHARMACOKINETIC INFORMATION	
Half-Life	2 hours (Clorazepate) 31 – 97 hours (Nordiazepam)
Volume Distribution	1.1 – 1.7 L/kg
Medical Dosage	3.75 – 22.5 mg
Drug Metabolites	Nordiazepam Oxazepam
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dosage)

BRAND NAMES:
TRANSXENE
TRANXILIUM

ADDITIONAL INFORMATION:

Clorazepate was synthesized in 1969 and was first made available for clinical use in 1972. It is produced commercially as the dipotassium salt for oral use in tablets of 3.75-22.5 mg. Daily doses may range from 15-60 mg. The compound degrades rapidly in the acid environment of the stomach to nordiazepam, the predominant species in plasma after clorazepate administration.

URINE TESTING FOLLOWING CLORAZEPATE INGESTION:



* Almost always present in urine

DIAZEPAM

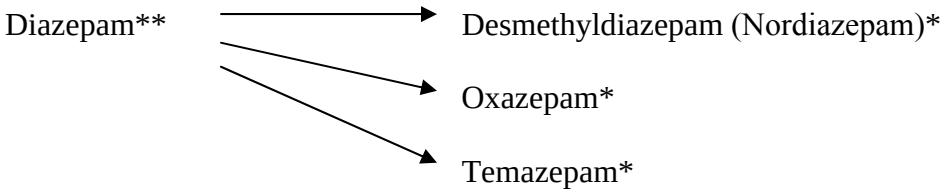
PHARMACOKINETIC INFORMATION	
Half-Life	20 - 100 hours
Volume Distribution	0.5 – 2.5 L/kg
Medical Dosage	5 – 30 mg/day
Drug Metabolites	Desmethyldiazepam Oxazepam Temazepam
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dosage)

BRAND NAMES:
VALIUM
VALRELEASE

ADDITIONAL INFORMATION:

Diazepam is the second benzodiazepine derivative approved for human usage (1963) and has been one of the most frequently prescribed drugs in the United States. It is administered as an antianxiety agent, muscle relaxant or anticonvulsant, orally or by intramuscular or intravenous injection, in single doses of 2-20 mg and up to 40 mg daily. It is supplied as the free base, which is only very slightly soluble in water, in 2, 5 and 10 mg tablets and a 1 mg/mL solution for oral administration, a 5 mg/mL injectable solution and a 5 mg/mL rectal gel.

URINE TESTING FOLLOWING DIAZEPAM INGESTION:



* Almost always present in urine
** Sometimes present in urine

FLURAZEPAM

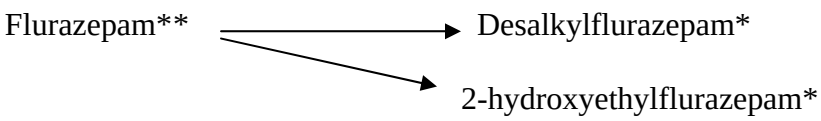
PHARMACOKINETIC INFORMATION	
Half-Life	1 - 3 hours 47-100 hours for N-1-desalkylflurazepam
Volume Distribution	3.4 – 5.5 L/kg
Medical Dosage	15 – 30 mg
Drug Metabolites	Desalkylflurazepam 2-hydroxyethylflurazepam
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dosage)

BRAND NAMES:
DALMANE

ADDITIONAL INFORMATION:

Flurazepam was introduced in 1970 as a benzodiazepine derivative with hypnotic efficacy. It is administered orally as the dihydrochloride salt in capsules of 15 to 30 mg. Adult doses are normally 15 to 30 mg once nightly.

URINE TESTING FOLLOWING FLURAZEPAM INGESTION:



* Almost always present in urine
** Sometimes present in urine

LORAZEPAM

PHARMACOKINETIC INFORMATION	
Half-Life	9 -16 hours
Volume Distribution	0.9 – 1.3 L/kg
Medical Dosage	1 – 10mg
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dosage)

BRAND NAMES:
ATIVAN
LORAZEPAM INTENSOL

ADDITIONAL INFORMATION:

Lorazepam is a 3-hydroxy benzodiazepine, one of a group that includes oxazepam and temazepam. It is available as the free base in 0.5 to 2 mg tablets or a 2 to 4 mg/mL solution, and is administered orally or parenterally in daily doses of 1 to 10 mg as an anti-anxiety agent.

URINE TESTING FOLLOWING LORAZEPAM INGESTION:

Lorazepam*

* Almost always present in urine

MIDAZOLAM

PHARMACOKINETIC INFORMATION	
Half-Life	1 - 4 hours
Volume Distribution	1.0 – 2.5 L/kg
Medical Dosage	2.5 – 7.5 mg
Drug Metabolites	Alpha-hydroxymidazolam
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dosage)

BRAND NAMES:
VERSED

ADDITIONAL INFORMATION:

Midazolam, an imidazobenzodiazepine derivative, was first synthesized in 1976. The drug is utilized as a preoperative medication, sedative-hypnotic and anesthetic induction agent. When the drug is used alone for intravenous sedation during diagnostic procedures, a total dose of 0.10 to 0.15 mg/kg is used. For intramuscular preoperative sedation, 0.07 to 0.08 mg/kg (4.9 to 5.6 mg/70kg) is administered one hour before surgery. For induction of anesthesia, an initial dose of 0.30 to 0.35 mg/kg (21 to 25 mg/70kg) is usually given to patients less than 55 years of age and not receiving premedication.

The drug is currently available in the United States as the hydrochloride salt in a 1 or 5 mg/mL oral syrup, and in many European countries as the maleate salt in forms intended for oral administration. Midazolam has been given to children as a premedication for minor surgical procedures by intravenous, oral, intranasal and rectal administration in doses of 0.05 to 0.5 mg/kg.

URINE TESTING FOLLOWING MIDAZOLAM INGESTION:

Midazolam* ⟶ Alpha-hydroxymidazolam*

* Almost always present in urine

OXAZEPAM

BRAND NAMES CONTAINING OXAZEPAM INCLUDE: **Serax**

PHARMACOKINETIC INFORMATION	
Half-Life	4 - 11 hours
Volume Distribution	0.7 – 1.6 L/kg
Medical Dosage	30 – 60 mg
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dosage)

BRAND NAMES:
SERAX

ADDITIONAL INFORMATION:

Oxazepam is the 3-hydroxy metabolite of nordiazepam, and has been used in the United States as an anti-anxiety agent since 1965. It is available as tablets or capsules containing 10 to 30 mg of the free base and is administered orally in doses of 30 to 60 mg, being somewhat less potent than diazepam and nordiazepam.

URINE TESTING FOLLOWING OXAZEPAM INGESTION:

Oxazepam* ⟶ Oxazepam conjugate*

* Almost always present in urine

TEMAZEPAM

PHARMACOKINETIC INFORMATION	
Half-Life	3-13 hours
Volume Distribution	0.8 – 1.0 L/kg
Medical Dosage	15 – 30 mg
Drug Metabolites	Oxazepam
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dosage)

BRAND NAMES:
NORMISON
RESTORIL

ADDITIONAL INFORMATION:

Temazepam, the 3-hydroxylated metabolite of diazepam, has been available as a hypnotic drug since 1979. It is supplied as the free base in 15 and 30 mg capsules intended for oral administration on a once-nightly basis.

URINE TESTING FOLLOWING TEMAZEPAM INGESTION:

Temazepam* → Oxazepam*

* Almost always present in urine

TRIAZOLAM

PHARMACOKINETIC INFORMATION	
Half-Life	1.8 – 3.9 hours
Volume Distribution	1.1 – 2.7 L/kg
Medical Dosage	0.125 – 0.25 mg
Drug Metabolites	Alpha-hydroxytriazolam
Detection Time in urine after a single dose	3 days (therapeutic dose) 4-6 weeks (extended dosage)

BRAND NAMES:
HALCION

ADDITIONAL INFORMATION:

Triazolam, a triazolobenzodiazepine hypnotic agent, has been used for short-term management of insomnia since 1978. It is structurally related to alprazolam and estazolam. It is available for oral administration in tablets containing 0.125 to 0.25 mg as the free base.

URINE TESTING FOLLOWING TRIAZOLAM INGESTION:

Triazolam* ⟶ Alpha-hydroxytriazolam*

* Almost always present in urine

BUPRENORPHINE

PHARMACOKINETIC INFORMATION	
Half-Life	2 - 4 hours
Volume Distribution	2.5 L/kg
Medical Dosage	0.3 – 0.6 mg
Drug Metabolites	Norbuprenorphine
Detection Time in urine after a single dose	3 days

BRAND NAMES:
BUPRENEX
SUBOXONE
SUBUTEX

ADDITIONAL INFORMATION:

Buprenorphine is a synthetic thebaine derivative that has both analgesic and opioid antagonist properties. As an analgesic, it is about 25 to 40 times more potent than morphine. When used as an antagonist, it is equivalent in potency to naltrexone. The usual dose is 0.3 to 0.6 mg given parenterally, or 0.2 to 0.4 mg by the sublingual route, every 6 to 8 hours. It is supplied as the hydrochloride in 0.3 mg/mL ampules for parenteral administration, and as 0.2 and 0.4 tablets for sublingual administration. High-dose tablets of 2 and 8 mg are also available for the maintenance therapy of opiate addicts, who may be given chronic doses ranging from 2 to16 mg.

URINE TESTING FOLLOWING BUPRENORPHINE INGESTION:

Buprenorphine* ⟶ Norbuprenorphine*

* Almost always present in urine

CARISOPRODOL

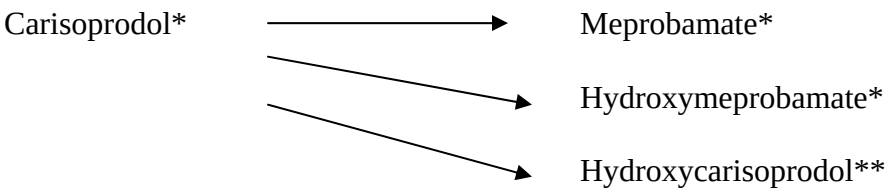
PHARMACOKINETIC INFORMATION	
Half-Life	0.9 – 2.4 hours
Medical Dosage	200 – 350 mg
Drug Metabolites	Meprobamate Hydroxymeprobamate Hydroxycarisoprodol
Detection Time in urine after a single dose	2 days

BRAND NAMES:
SOMA
VANADOM

ADDITIONAL INFORMATION:

Carisoprodol is a carbamate derivative first synthesized in 1959. It is used primarily as a muscle relaxant, and is administered orally in doses of 200 to 350 mg up to four times daily. In certain preparations, it is found in combination with such drugs as aspirin, caffeine or codeine.

URINE TESTING FOLLOWING CARISOPRODOL INGESTION:



* Almost always present in urine
** Sometimes present in urine

FENTANYL

PHARMACOKINETIC INFORMATION	
Half-Life	3 - 12 hours
Volume Distribution	3 - 8 L/kg
Medical Dosage	2.5 – 10 mg (transdermal patch)
Drug Metabolites	Norfentanyl
Detection Time in urine after a single dose	1-2 days

BRAND NAMES:
ACTIQ
DURAGESIC
INNOVAR
SUBLIMAZE

ADDITIONAL INFORMATION:

Fentanyl is a synthetic narcotic analgesic of high potency and short duration of action. It is closely related to methylfentanyl, a street drug, and to alfentanil and sufentanil, which are marketed as narcotic analgesics. Fentanyl has been in clinical use since 1963 as an adjunct to surgical anesthesia, often in combination with nitrous oxide or droperidol.

The drug is available as the citrate salt in an injectable solution containing 50ug/mL; single doses of 25-100 ug are administered intravenously or intramuscularly as needed. Transdermal patches are also available that contain 2.5 to 10 mg fentanyl and provide a dose of 25 to 100 ug/hr for 72 hours for management of chronic pain. An oral transmucosal dosage form containing 200-1600 ug was developed for breakthrough cancer pain; it is to be consumed within 15 minutes at the rate of four or less per day.

URINE TESTING FOLLOWING FENTANYL INGESTION:

Fentanyl* ⟶ Norfentanyl*

* Almost always present in urine

GABAPENTIN

PHARMACOKINETIC INFORMATION	
Half-Life	5 - 9 hours
Volume Distribution	0.8 – 1.3 L/kg
Medical Dosage	100 – 400 mg
Detection Time in urine after a single dose	1-4 days

BRAND NAMES:
NEURONTIN

ADDITIONAL INFORMATION:

Gabapentin is an analog of the inhibitory neurotransmitter gamma-aminobutyric acid (GABA) that is used as an anticonvulsant drug. It is indicated as adjunctive therapy in the treatment of partial seizures in adults with epilepsy and is being evaluated for the relief of neuropathic pain. The drug is available for oral administration in capsules containing 100, 300 or 400 mg of the free acid. The usual daily dose of gabapentin is 900 to 1800 mg given in divided doses.

URINE TESTING FOLLOWING GABAPENTIN INGESTION:

Gabapentin*

* Almost always present in urine

MEPERIDINE

PHARMACOKINETIC INFORMATION	
Half-Life	2 - 5 hours
Volume Distribution	3.7 – 4.2 L/kg
Medical Dosage	50 – 150 mg
Drug Metabolites	Normeperidine
Detection Time in urine after a single dose	1-3 days

BRAND NAMES:
DEMEROL
MEPERGAN

ADDITIONAL INFORMATION:

Meperidine is a synthetic narcotic analgesic introduced in 1931. It has approximately one-eighth the potency of morphine on a weight basis, with a somewhat shorter duration of action. It is supplied as the hydrochloride in the form of 50 and 100 mg tablets and 50 mg/5 mL syrup for oral use, or solutions of 25-100 mg/mL for parenteral injection. Single doses of 50 to 150 mg and daily doses of 150 to 1200 mg are given.

URINE TESTING FOLLOWING MEPERIDINE INGESTION:

Meperidine* ⟶ Normeperidine*

* Almost always present in urine

METHADONE

PHARMACOKINETIC INFORMATION	
Half-Life	15 - 55 hours
Volume Distribution	4 – 5 L/kg
Medical Dosage	5 – 10 mg q6h
Drug Metabolites	EDDP
Detection Time in urine after a single dose	3-5 days

BRAND NAMES:
DOLOPHINE

ADDITIONAL INFORMATION:

Methadone was first synthesized as a morphine substitute in Germany during World War II and was made clinically available in the United States in 1947. It possesses many of the pharmacologic properties of morphine and is approximately equipotent as an analgesic when administered parenterally. Unlike morphine, however, methadone produces marked sedative effects with repeated administration as a result of drug accumulation. This undesirable property restricted clinical usage of the drug until 1965 when Dole and Nyswander began narcotic maintenance treatment of former heroin addicts using large daily oral doses of dl-methadone. Whereas maintenance patients may receive as much as 180 mg of the drug daily, doses of 50 mg or less have been known to prove fatal to nontolerant adults.

The drug is available commercially as a hydrochloride salt of the racemic mixture, in tablets of 5 to10 mg or diskets of 40 mg for oral usage and a 10 mg/mL solution for parenteral injection. The pharmacologic activity is due almost entirely to the l-isomer. The d-methadone isomer does have analgesic properties in large doses and this may be due to its conversion to minor amounts of alpha-l-methadone and alpha-l-normethadol, both of which are potent analgesics.

URINE TESTING FOLLOWING METHADONE INGESTION:

Methadone* ⟶ EDDP*

* Almost always present in urine

METHAQUALONE

BRAND NAMES CONTAINING METHAQUALONE INCLUDE: **Quaalude**
Sopor

PHARMACOKINETIC INFORMATION	
Half-Life	20 - 60 hours
Volume Distribution	6 L/kg
Medical Dosage	75 – 300 mg (freebase) 200 – 400 mg (hydrochloride)
Drug Metabolites	4-hydroxymethaqualone
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
QUAALUDE
SOPOR

ADDITIONAL INFORMATION:

Methaqualone is a quinazoline derivative that was synthesized in 1951 and found clinically effective as a sedative and hypnotic in 1956. The compound acts primarily as a weak base but is also soluble in dilute alkaline solutions. It is supplied for oral use in amounts of 75 to 300 mg as the freebase and 200 to 400 mg as the hydrochloride.

Methaqualone has received a great deal of attention as a drug of abuse, being self-administered in oral doses of up to 3 g daily; chronic usage can result in tolerance and physical dependence. The drug was removed from the U.S. market in 1984 due to its extensive misuse. It is still occasionally encountered in illicit form, and is available in European countries with diphenhydramine (Mandrax).

URINE TESTING FOLLOWING METHAQUALONE INGESTION:

Methaqualone* ⟶ 4'hydroxymethaqualone*

* Almost always present in urine

CODEINE

PHARMACOKINETIC INFORMATION	
Half-Life	1.9 – 3.9 hours
Volume Distribution	3.5 L/kg
Medical Dosage	15 – 60mg
Toxic Levels (Fatal)	60 mcg/mL (urine mean) 3.6 mcg/mL (plasma mean)
Drug Metabolites	Hydrocodone Morphine Norcodeine
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:

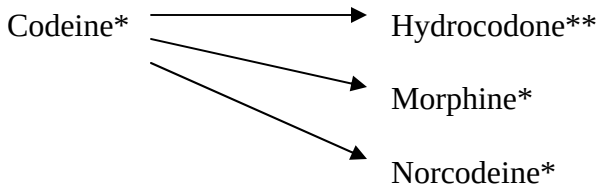
ACETA WITH CODEINE
ASPIRIN WITH CODEINE
EMPIRIN WITH CODEINE
FIORICET WITH CODEINE
FIORINAL WITH CODEINE
PHENAPHEN WITH CODEINE
TYLENOL #1 (CONTAINS 8 MG CODEINE)
TYLENOL #2 (CONTAINS 15 MG CODEINE)
TYLENOL #3 (CONTAINS 30 MG CODEINE)
TYLENOL #4 (CONTAINS 60 MG CODEINE)

ADDITIONAL INFORMATION:

Codeine is a narcotic analgesic occuring naturally in opium, from which it was first isolated in 1832. It is usually produced commercially by 3-O-methylation or morphine, which is present in much higher concentrations in the juice of the poppy plant, *Papaver somniferum*. Like the other narcotic analgesics, codeine is a weak base and is levorotatory in its natural form.

It is considered to be 1/10 and 1/6 as potent an analgesic in man on a weight basis, but is quite effective as an antitussive. The drug is available as the phosphate or sulfate salt; single doses of 15 to 60 mg are given orally or by subcutaneous injection, and the total daily dose may range from 60 to 240 mg. Codeine is also found in numerous proprietary preparations in combination with nonnarcotic analgesics, antihistamines, and other drugs.

URINE TESTING FOLLOWING CODEINE INGESTION:



* Almost always present in urine
** Sometimes present in urine

DIHYDROCODEINE

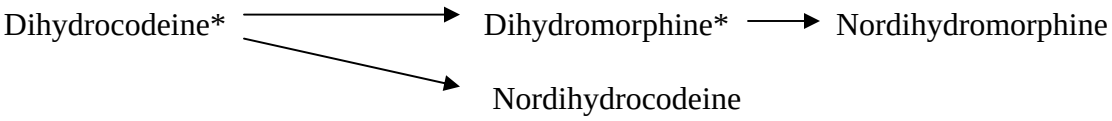
PHARMACOKINETIC INFORMATION	
Half-Life	3.4 – 4.5 hours
Volume Distribution	1.0 – 1.3 L/kg
Medical Dosage	10 – 30 mg q6h
Toxic Levels (fatal)	7.2 - 12 mcg/mL in blood (mean=9.0)
Drug Metabolites	Dihydromorphine Hydrocodone Nordihydrocodeine Nordihydromorphine
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
CODI-CONTIN
CODIDOL
CODOX
DF-118
DHC CONTINUS
DHC PLUS
DICODIN
DICOGESIC
DIDOR CONTINUS
DROCODE
PANLOR DC
PANLOR SS
PARACODIN
RIKODEINE
SS BRON
S. TAC EVE
SYNALGOS DC
ZERLOR

ADDITIONAL INFORMATION:

Dihydrocodeine is a semi-synthetic narcotic analgesic prepared by the hydrogenation of codeine. It is supplied as the bitartrate salt in 16 mg tablets or capsules for oral administration. Single doses of 16 to 32 mg may be taken every four hours, with a maximum recommended daily limit of 192 mg.

URINE TESTING FOLLOWING DIHYDROCODEINE INGESTION:



* Almost always present in urine

HYDROCODONE

PHARMACOKINETIC INFORMATION	
Half-Life	3.4 – 8.8 hours
Volume Distribution	3.3 – 4.7 L/kg
Medical Dosage	10 – 30 mg
Toxic Levels	>100 ng/mL in blood
Drug Metabolites	Hydromorphone Norhydrocodone 6-hydrocodol (Dihydrocodeine) 6-hydromorphol
Detection Time in urine after a single dose	2-3 days

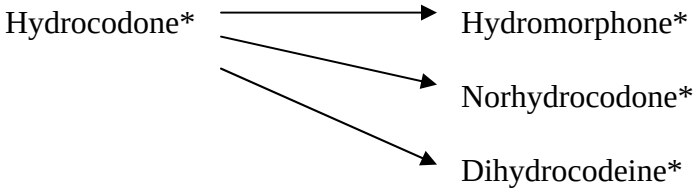
BRAND NAMES:

ALOR
ANEXSIA
AZDONE
BANCAP HC
CETA-PLUS
CO-GESIC
DAMASON-P
DICODID
DOLOCET
DUOCET
HYCODAN
HYCOMINE
HYDROCET
HYDROCO
HYDROGESIC
HY-PHEN
LORCET
LORTAB
MARGESIC H
MAXIDONE
NORCO
NOVAHISTEX
PANACET
PANASAL
STAGESIC
T-GESIC
TUSSIONEX
VICODIN
VICOPROFEN
ZYDONE

ADDITIONAL INFORMATION:

Hydrocodone is a semi-synthetic narcotic analgesic prepared from codeine. It is widely used as an antitussive in cough syrups and tablets (2.5 to 5 mg) and as an analgesic in tablets and capsules (5 to 10 mg), usually as the bitartrate salt and oftentimes in combination with acetaminophen. Oral doses may be taken every 4-6 hours, with a maximum recommended daily limit of 45 mg. Hydrocodone is considered to have approximately 6 times the analgesic potency of codeine.

URINE TESTING FOLLOWING HYDROCODONE INGESTION:



* Almost always present in urine

HYDROMORPHONE

PHARMACOKINETIC INFORMATION	
Half-Life	1.5 – 3.8 hours
Volume Distribution	2.9 L/kg
Medical Dosage	2 – 4 mg q6h
Toxic Levels	8.6 mcg/mL in urine (average) >100 ng/mL in blood
Drug Metabolites	6-alpha-hydroxymorphone 6-beta-hydroxymorphone
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
DILAUDID
HYDAL
HYDROSTAT
SOPHIDONE

ADDITIONAL INFORMATION:

Hydromorphone is a semi-synthetic narcotic analgesic that is available in a variety of forms for oral, parenteral and rectal administration in doses of 1 to 4 mg every 4 to 6 hours as the hydrochloride. The compound is prescribed as both an antitussive and analgesic, and has achieved popularity as a drug of abuse. Its addiction liability is similar to that of morphine and it is reportedly 7 to 10 times more potent.

URINE TESTING FOLLOWING HYDROMORPHONE INGESTION:

Hydromorphone* ⟶ Hydromorphone conjugate

*Reported as total hydromorphone

MORPHINE

PHARMACOKINETIC INFORMATION	
Half-Life	1.3 – 6.7 hours
Volume Distribution	2 – 5 L/kg
Medical Dosage	5 – 20 mg q4h
Toxic Levels	52,000 ng/mL (urine mean)
Drug Metabolites	Normorphine Morphine-3-glucuronide Morphine-6-glucuronide Morphine-3-ethereal sulfate Morphine-3, 6-diglucuronide
Detection Time in urine after a single dose	2-3 days

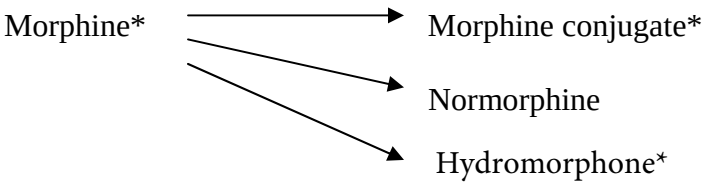
BRAND NAMES:
ASTRAMORPH
AVINZA
DURAMORPH
KADIAN
MS CONTIN
MSIR
MS/L
MS/S
MORPHINE SULFATE
OMS
ORAMORPH
RMS
ROXANOL
ROXINAL

ADDITIONAL INFORMATION:

Morphine is prototypical of the narcotic analgesics, having been available for thousands of years as the primary constituent of crude opium and finally isolated as a pure alkaloid in 1803. It remains a popular drug for treatment of moderate to severe pain, often by subcutaneous, intramuscular, intravenous, epidural or intrathecal injection of the sulfate salt at an initial dose of 1-10mg/70kg; solutions of 0.5-25 mg/mL are available in 1-60 mL containers for this purpose.

Oral preparations are available in normal-release solutions of 2 to 4 mg/mL, a 20 mg/mL concentrate or 15 to 30 mg tablets or capsules to be taken in doses of 5 to 30 mg every four hours; sustained-release tablets or capsules contain 15 to 200 mg and are taken at 8 to 24 hour intervals. Poppy seed, a common food ingredient, may contain morphine at concentrations of 4 to 200 mg/kg, leading to oral morphine doses as high as 5 to 10 mg per helping of poppy seed food. Morphine is also a metabolite of codeine, ethylmorphine, heroin and pholcodine.

URINE TESTING FOLLOWING MORPHINE INGESTION:



* Almost always present in urine
Reported as morphine total

OXYCODONE

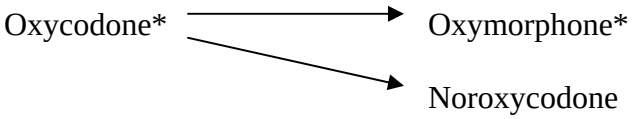
PHARMACOKINETIC INFORMATION	
Half-Life	4 – 6 hours
Volume Distribution	1.8 – 3.7 L/kg
Medical Dosage	10 – 20 mg
Toxic Levels	5 mcg/mL in blood (mean)
Drug Metabolites	Noroxycodone Oxymorphone
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
COMBUNOX
ENDOCET
ENDODAN
M-OXY
OXYCONTIN
OXYFAST
OXYIR
OXYNORM
PERCODAN
PERCOLONE
PERCOSET
ROXICET
ROXICODONE
ROXILOX
ROXIPRIN
TYLOX

ADDITIONAL INFORMATION:

Oxycodone is a semi-synthetic narcotic analgesic, derived from thebaine, which is available in oral formulations; often in combination with other drugs such as acetaminophen, aspirin, phenacetin and caffeine. The usual adult dose is 2.5 to 5 mg as the hydrochloride or terephthalate salt every six hours, although patients with moderately severe pain may take 10 to 30 mg every four hours; prolonged-release tablets containing 10 to 80 mg are to be taken every 12 hours. Given subcutaneously, the drug is approximately equipotent with morphine, but it has a higher oral/parenteral efficacy ratio.

URINE TESTING FOLLOWING OXYCODONE INGESTION:



* Almost always present in urine

OXYMORPHONE

PHARMACOKINETIC INFORMATION	
Half-Life	0.5 - 2 hours
Volume Distribution	3-4 L/kg
Medical Dosage	5 – 10 mg orally
Toxic Dose	50 mg (minimum)
Drug Metabolites	Oxymorphol
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
NUMORPHAN
OPANA
OPANA ER

ADDITIONAL INFORMATION:

Oxymorphone is a semi-synthetic narcotic analgesic derived from thebaine. It is used for the relief of moderate to severe pain and for pre-operative medication. The drug is available in ampules containing 1.0 or 1.5 mg/mL as the hydrochloride for subcutaneous or intramuscular administration and in suppositories containing 5 mg. Oxymorphone is also a metabolite of oxycodone.

URINE TESTING FOLLOWING OXYMORPHONE INGESTION:

Oxymorphone* ⟶ Oxymorphone conjugate*

* Reported as total oxymorphone

PREGABALIN

PHARMACOKINETIC INFORMATION	
Half-Life	5-6.5 hours
Bioavailability	> 90%
Volume Distribution	0.5 L/kg
Excretion	Renal
Oral Dosage	75 – 900 mg/day
Drug Metabolites	Negligible metabolism
Detection Time in urine after a single dose	2 days (therapeutic dose)

BRAND NAMES:
LYRICA

ADDITIONAL INFORMATION:

Pregabalin is an anticonvulsant drug used for neuropathic pain, as an adjunct therapy for partial seizures. It has also been found effective for generalized anxiety disorder. It was designed as a more potent successor to gabapentin. Pregabalin has FDA appproval for use in treating epilepsy, diabetic neuropathy, and Fibromyalgia Syndrome (FMS).

URINE TESTING FOLLOWING PREGABALIN INGESTION:

Pregabalin*

* Almost always present in urine

PROPOXYPHENE

PHARMACOKINETIC INFORMATION	
Half-Life	8 - 24 hours
Volume Distribution	12 - 26 L/kg
Medical Dosage	32 – 65mg (hydrochloride) 50 – 100 mg (napsylate salt)
Drug Metabolites	Norpropoxyphene
Detection Time in urine after a single dose	1-2 days

BRAND NAMES:
DARVON
WYGESIC

ADDITIONAL INFORMATION:

d-Propoxyphene is a mildly effective narcotic analgesic, somewhat less potent than codeine, that bears a close structural relationship to methadone. It is available in oral formulations either as the hydrochloride or as the napsylate salt, and is often found in combination with acetaminophen or aspirin.

Like methadone, it causes local tissue irritaion following parenteral administration. The l-isomer, which is ostensibly devoid of narcotic effects, is commercially available as an antitussive (Novrad). Daily oral doses of propoxyphene range from 128-390 mg for the hydrochloride and 200-600 mg for the napsylate. The use of large daily doses (800-1400 mg) of propoxyphene napsylate for the maintenance or withdrawal of heroin addicts has been investigated with apparent success.

URINE TESTING FOLLOWING PROPOXYPHENE INGESTION:

Propoxyphene* ⟶ Norpropoxyhene*

* Almost always present in urine

TRAMADOL

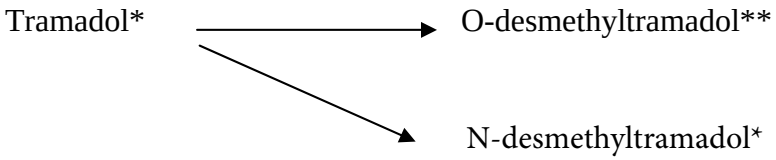
PHARMACOKINETIC INFORMATION	
Half-Life	4.3 – 6.7 hours
Volume Distribution	2.6 – 2.9 L/kg
Medical Dosage	50 mg
Drug Metabolites	O-desmethyltramadol
Detection Time in urine after a single dose	2-3 days

BRAND NAMES:
TOPALGIC
TRAMAL
ULTRAM
ZAMUDOL

ADDITIONAL INFORMATION:

Tramadol is a synthetic opioid-receptor agonist that has been used clinically as a narcotic analgesic since 1977. The drug is approximately equipotent with codeine but is considered to cause less respiratory depression and to have much less abuse potential. It is available as the hydrochloride salt in the form of 50 mg tablets or capsules for oral administration and as a 50 mg/mL solution for parenteral injection. Daily doses in adults are usually in the range of 100-400 mg.

URINE TESTING FOLLOWING TRAMADOL INGESTION:



* Almost always present in urine
** Sometimes present in urine

COCAINE

PHARMACOKINETIC INFORMATION	
Half-Life	1 hour
Bioavailability	Oral – 33% Insufflated – 60-80%
Excretion	Renal
Drug Metabolites	Benzolecgonine Ecgonine methyl ester
Detection Time in urine after a single dose	2 days (much longer for heavy chronic users)

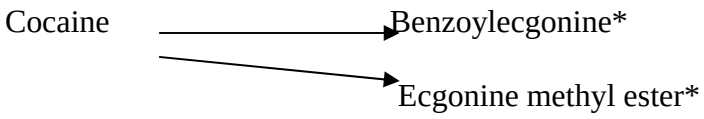
STREET NAMES:
BLOW
NOSE CANDY
SNOWBALL
TORNADO
WICKY STICK
CRACK

ADDITIONAL INFORMATION:

Cocaine is a powerfully addictive stimulant that directly affects the brain. The effects of cocaine appear almost immediately after a single dose and disapear within a few minutes or up to an hour. When taken in small amounts (up to100 mg), cocaine usually makes the user feel euphoric, energetic, talkative, and mentally alert. It will also usually temporarily decrease the need for food and sleep. The duration of cocaine's immediate euphoric effects depends on the route of administration. The faster the absorbtion, the more intense the euphoria and the shorter the duration of action. Snorting cocaine is relatively slow in onset and lasts for 15 to 30 minutes. Smoking produces an almost immediate euphoria, which lasts for 5 to 10 minutes.

Use of cocaine in a binge (often the case with "crack" cocaine) during which the drug is taken repeatedly and at increasingly high doses, leads to a state of increasing irritability, restlessness and paranoia. This may result in a full-blown paranoid psychosis, in which the individual loses touch with reality and experiences auditory hallucinations.

URINE TESTING FOLLOWING COCAINE INGESTION:



* Almost always present in urine

MARIJUANA (CANNABIS)

PHARMACOKINETIC INFORMATION	
Half-Life	1.6 – 59 hours
Bioavailability	Oral – 6-20% Smoked 10-35%
Excretion	Fecal (65-80%) Renal (20-55%) as metabolites
Active Component	delta-9-tetrahydrocannabinol (THC)
Drug Metabolites	delta-t-tetrahydrocannabinol-carboxylic acid
Detection Time in urine after a single dose	2 days (much longer for heavy chronic users)

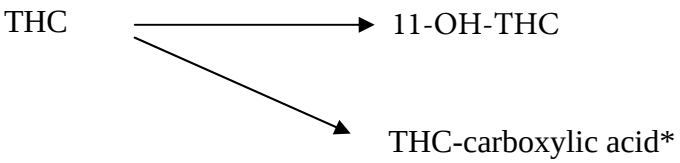
STREET NAMES:
POT
HERB
WEED
GRASS
JANE
REEFER
GANJI

ADDITIONAL INFORMATION:

When smoked the main active chemical in marijuana, THC passes from the lungs into the bloodstream, which transports it to the brain. In the brain, THC affects areas of the brain that involve coordination, thought, memory, concentration, sensory andtime perception and pleasure. The short term effects of marijuana smoking often result in distorted perception, difficulty in lthinking and problem solving, problems with memory and learning and loss of coordination.

Research into the long-term effects of marijuana smoking continues to reveal troubling effects. Heavy users are more likely to report symptoms of depression than nonusers are. They are at an increased risk of developingschizophrenia, a severe form of mental illness.

URINE TESTING FOLLOWING THC INGESTION:



* Almost always present in urine

PHENCYCLIDINE (PCP)

PHARMACOKINETIC INFORMATION	
Half-Life	7 - 46 hours
Methods of Ingestion	Snorted Swallowed Smoked (applied to plant material e.g. marijuana – Killer Joint)
Excretion	Renal
Detection Time in urine after a single dose	3 days

STREET NAMES:
ANGEL DUST
OZONE
WACK
ROCKET FUEL

ADDITIONAL INFORMATION:

PCP was developed in the 1950's as an intravenous anesthetic. Its use in humans was discontinued in 1965, because patients became agitated, delusional and irrational while recovering from its anesthetic effects.

PCP is a "dissociative drug" in that it distorts perceptions of sight and sound and produces feelings of detachment from the environment and self.

Many PCP users are admitted to emergency rooms because of overdose or because of the drug's unpleasant psychological effects. These people may become violent or suicidal and are very dangerous to themselves and others.

URINE TESTING FOLLOWING PCP INGESTION:

PCP* ⟶ PCP*

* Almost always present in urine

ETHANOL, ETHYL ALCOHOL

PHARMACOKINETIC INFORMATION *	
Volume of Distribution	Adult Males - 0.62-0.79 Adult Females - 0.55-0.66
Time to Peak Blood Level after ingestion	Empty Stomach – approx. 1.3 hours With Food – approx. 2.0 hours
Rate of Blood Level decline	Non-Drinkers – 12 + 4 mg/dL/hr Social Drinkers – 15 + 4 md/dL/hr Alcoholics – 30 + 9 mg/dL/hr

As a rule of thumb, the rate of body clearance of alcohol is about 0/10 g/kg/h and therefore a person weighing 70 g can eliminate 7 g of pure ethanol per hour or roughly the amount contained in one bottle of light beer.

Some states (i.e. California) allow the use of urine alcohol determinations as evidence of DUI when the driver refuses the blood alcohol test. In these cases, the driver is required to empty his/her bladder and then the next urine sample is collected. The determined urine alcohol level divided by 1.3 is the estimated blood alcohol level.

Most experts agree that urine alcohol levels should be interpreted with caution because of significant individual variation. As a screening test for alcohol abuse, caution should likewise be used. Individuals with both uncontrolled diabetes and a urinary yeast infection can have urine alcohol levels in excess of 1000 mg/dL or 1.0% without consuming alcohol.

ALCOHOL METABOLISM:

Ethyl alcohol $\longrightarrow$ Acetaldehyde $\longrightarrow$ acetic acid $\longrightarrow$ CO_2 and H_2O

*Medicolegal Aspects of Alcohol, 3rd Ed. , 1996,Lawyers and Judges Publishing Co., Edited by James C. Garriott

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