

DARLENE ON DRUGS

Part 1: CNS Depressants and CNS Stimulants



Washington State
Office of
Public
Defense

What are drugs?

Drugs are any substances that have a physiological effect when introduced into the body.

What happens when a person consumes drugs?

A. D. M.E.

Absorption, Distribution, Metabolism, Excretion-- the four key processes that a drug goes through within the body. It describes how it moves from the site of administration into the bloodstream, is distributed throughout the body's tissues, is broken down by the body's enzymes (metabolized), and ultimately eliminated from the body through excretion

What is a controlled substance?

Controlled substances are drugs that are regulated by law. They are classified into schedules from I to V, with Schedule I having the highest potential for abuse and therefore the most stringent regulations.

CNS DEPRESSANTS

What does CNS stand for?

Central Nervous System, which is the part of the nervous system that controls the body's functions, including movement, thought, and sensation.

What is a CNS depressant?

CNS depressants are drugs that slow down brain activity. Some common types include benzodiazepines, barbiturates, alcohol, GHB, and Ambien.

What are the typical effects of CNS depressants?

Generally, these drugs slow down various body functions. Here are some examples:

- Sensory: Loss of peripheral vision, double vision, blurred vision
- Motor: Impaired fine and gross motor skills, loss of coordination
- Cognitive: Impaired concentration, poor reasoning and judgment, altered behavior and personality

What are types of CNS depressants?

Common CNS depressants include alcohol, barbiturates (such as sleeping pills and antidepressants), benzodiazepines (like Xanax, Klonopin, and Valium), and designer benzodiazepines.

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What is the typical time for a CNS depressant to take effect?

The onset of effect depends on the specific drug and the route of administration. On average, when taken orally (such as a pill or drink), the effects will be felt within 45 minutes to an hour. If the drug is injected or smoked, it can take effect immediately.

How long does a CNS depressant stay in one's system?

The duration also depends on the specific drug. For example, you can look up "Benzodiazepine Duration of Action," which provides helpful information in table format. We can also discuss half-lives. Another example is ethanol, which has an average elimination rate of 0.015 g/100 mL per hour, but this can range from 0.01 to 0.025 g/100 mL.

As a class of drug, do CNS depressants dilate a person's pupils?

Pupil size typically appears normal with CNS depressants.

As a class of drug, do CNS depressants result in nystagmus?

Yes, you can see horizontal gaze nystagmus. You may see vertical nystagmus if the concentration is high.

What are the primary differences between alcohol, isopropanol, and methanol?

When we refer to "alcohol" in the context of beverages, we are specifically talking about ethanol. Scientifically, "alcohol" encompasses ethanol, isopropanol, and methanol. The primary difference between these three substances is the number of carbon atoms in their molecular structures.

Why don't barbiturates seem as prevalent as they once were?

Barbiturates were often prescribed for conditions like insomnia, seizures, and migraines. However, they have become less common today due to their high risk of addiction and overdose compared to newer medications, such as benzodiazepines.

What are benzodiazepines?

Benzodiazepines are central nervous system (CNS) depressants commonly prescribed to treat anxiety, insomnia, seizures, and muscle spasms.

What are some common benzodiazepines?

Some well-known brand names for benzodiazepines include Xanax (Alprazolam), Klonopin (Clonazepam), and Valium (Diazepam). There are 36 benzodiazepines classified as Schedule IV substances, all designed for medical use and typically ending in "-lam" or "-pam."

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CNS STIMULANTS

What is a CNS Stimulant?

A CNS stimulant is a type of drug that increases the levels of certain chemicals in the brain, enhancing alertness, attention, energy, and physical activity.

What are some examples of CNS stimulants?

Some common examples of CNS stimulants include Amphetamine, Caffeine, Cocaine, Methamphetamine, Nicotine

What are the typical effects of CNS stimulants?

In low doses, CNS stimulants can increase alertness, improve attention and focus, and reduce fatigue. However, they may also lead to side effects such as anxiety and tremors. In high doses, the effects of CNS stimulants can include agitation, poor impulse control, rapid speech, and lack of coordination.

CNS Stimulants are biphasic, what does that mean?

CNS stimulants are considered biphasic, meaning they have two distinct stages: an "up" phase and a "down" phase or "crash."

What is the typical time for a CNS stimulant to take effect?

Effects can take about 45 minutes to an hour when taken orally, but they can be felt immediately when injected or smoked.

How long does a CNS stimulant stay in one's system?

The duration varies by drug. It's also important to clarify whether we are discussing detection in the blood or overall presence in the body. For instance, cocaine has a half-life of about 1.5 hours, while methamphetamine is around 10 hours.

As a class of drug, do CNS stimulant dilate a person's pupils?

Yes, as a class of drugs, CNS stimulants do cause pupil dilation..

As a class of drug, do CNS stimulants result in nystagmus?

You will not see nystagmus with stimulants.

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What is the difference between a drug screen and a confirmatory test?

A drug screen is a preliminary test that indicates the presence of a drug, while a confirmatory test is a more detailed examination conducted to verify the drug's identity and concentration.

What about therapeutic dosage? Is there consensus on what they are for a particular drug?

A therapeutic dose refers to the amount of a substance that is expected to be present in a person's system when taking a prescribed medication at the recommended amount. There is often not just one accepted therapeutic dose for a specific drug. When interviewing a toxicologist about the therapeutic dosage of a particular medication, be sure to ask them which studies or guidelines they are referencing and if there are other sources that provide alternative dosages.

A TOXICOLOGIST CAN NOT EQUATE LEVEL OF IMPAIRMENT WITH THE CONCENTRATION OF A SUBSTANCE.

Key papers toxicologists reference on therapeutic levels and half-lives include:

C L Winek's *Drug & chemical blood level data 2001-*

<https://pubmed.ncbi.nlm.nih.gov/11672964/>

Martin Schulz's *Therapeutic and toxic blood concentrations of more the 1100 drugs and other xenobiotics-*

<https://pubmed.ncbi.nlm.nih.gov/32375836/>

	Therapeutic Range	Toxic Range	Half Life
Amphetamine			
WINEK	0.03-0.11 mg/L	>0.5	
SCHULZ	0.02 - 0.10 mg/L	>0.2mg/L	4-8 hours
Cocaine			
WINEK	0.05-0.930	>0.9	
SCHULZ	0.05 - 0.3 mg/L	0.5-1.0mg/L	0.5-1 hour
Alprazolam			
WINEK	0.025-0.102	0.122-0.39	
SCHULZ	0.005-0.05 mg/L	0.1-0.4 mg/L	12-15 hours
Phenobarbital			
WINEK	10-40 mg/L	>40	
SCHULZ	10-40 mg/L	>50	60-130 hours