CNS Stimulants

CNS stimulants are drugs such as methylphenidate, dextroamphetamine and methamphetamine, which are used for ADHD and weight loss. The main mechanism by which these drugs work is to increase catecholamine, such as NE and dopamine, availability at the synaptic cleft. Another, minor, mechanism by which these drugs work is by inhibiting reuptake of NE and dopamine, further increasing their bioavailability. CNS stimulants are often prescribed to treat ADHD, but have also been useful in treating obese patients, as they decrease appetite and lead to weight loss. Methylphenidate is a commonly prescribed CNS stimulant, used for ADHD, and methamphetamine is a controlled drug used for weight loss. The major side effect for these drugs is a high potential for abuse and addictivity.



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Indications

Attention Deficit Hyperactivity Disorder (ADHD)
AD-HeaD with ADHD
CNS stimulant drugs are primarily used to treat ADHD or ADD. This is typically prescribed to help increase concentration and focus while at school or work.

Obesity
Obese
Obese patients may often be prescribed CNS stimulants, as these medications can be used to promote weight loss. This is because CNS stimulants decrease appetite in patients.

Mechanism of Action

Increase Catecholamines at Synaptic Cleft
Up-arrow Cat-cola at Synapse Gap
The main mechanism by which amphetamines cause stimulation is via the direct release of catecholamines from storage vesicles in presynaptic cells, leading to increased NE and dopamine. Another, minor, mechanism by which these drugs increase NE and dopamine bioavailability is by inhibiting their reuptake.

Increase Norepinephrine
Up-arrow North-epi-pen
These drugs cause stimulatory effects in the patient by increasing presynaptic vesicle release of catecholamines, one of them being NE.

Increase Dopamine
Up-arrow Doberman
These drugs increase dopamine by inducing the release of catecholamine-containing storage vesicles. Dopamine's bioavailability is also increased by blocking its reuptake with these drugs.

Drug Names

Methylphenidate (Ritalin)
Metal-phoenix
Methylphenidate is a commonly prescribed drug used to treat ADHD and ADD, and is for improving concentration and focus. Off label uses include combating obesity, lethargy and depression.

Methamphetamine
Moth-amp-feet
Methamphetamine is a controlled CNS stimulant medication used to treat obesity. Off label uses of this drug include narcolepsy and depression.

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Side Effect

Potential for Abuse

Abusing Stim-mule

These drugs are often abused for recreational use and can be highly addictive.

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