Adderall

Adderall is a combination drug containing salts of the two enantiomers of amphetamine, a central nervous system (CNS) stimulant of the phenethylamine class. Adderall is used in the treatment of attention deficit hyperactivity disorder (ADHD) and narcolepsy. It is also used as an athletic performance enhancer and cognitive enhancer, and recreationally as an aphrodisiac and euphoriant. By salt content, the active ingredients of Adderall are 25% levoamphetamine salts (the levorotary or 'left-handed' enantiomer) and 75% dextroamphetamine salts (the dextrorotary or 'right-handed' enantiomer).

Adderall is generally well-tolerated and effective in treating the symptoms of ADHD and narcolepsy. At therapeutic doses, Adderall causes emotional and cognitive effects such as euphoria, change in desire for sex, increased wakefulness, and improved cognitive control. At these doses, it induces physical effects such as decreased reaction time, fatigue resistance, and increased muscle strength. In contrast, much larger doses of Adderall can impair cognitive control, cause rapid muscle breakdown, or induce a psychosis (e.g., delusions and paranoia). The side effects of Adderall vary widely among individuals, but most commonly include insomnia, dry mouth, and loss of appetite. The risk of developing an addiction is insignificant when Adderall is used as prescribed at fairly low daily doses, such as those used for treating ADHD; however, the routine use of Adderall in larger daily doses poses a significant risk of addiction due to the pronounced reinforcing effects that are present at higher doses. Recreational doses of Adderall are generally much larger than prescribed therapeutic doses, and carry a far greater risk of serious adverse effects.

The two amphetamine enantiomers that compose Adderall (i.e., levoamphetamine and dextroamphetamine) alleviate the
symptoms of ADHD and narcolepsy by increasing the activity of the neurotransmitters norepinephrine and dopamine in the brain, which results from their interactions with trace amine associated receptor 1 (TAAR1) and vesicular monoamine transporter 2 (VMAT2) in neurons. Dextroamphetamine is a more potent stimulant than levoamphetamine, but levoamphetamine has slightly stronger cardiovascular and peripheral effects and a longer elimination half-life (i.e., it remains in the body longer) than dextroamphetamine. The levoamphetamine component of Adderall has been reported to improve the treatment response in some individuals relative to dextroamphetamine alone. Adderall's active ingredient, amphetamine, shares many chemical and pharmacological properties with the human trace amines, particularly phenethylamine and , the latter of which is a positional isomer of amphetamine.

**Amphetamine**

Amphetamine (contrasted from ) is a potent central nervous system (CNS) stimulant that is used in the treatment of attention deficit hyperactivity disorder (ADHD), narcolepsy, and obesity. Amphetamine was discovered in 1887 and exists as two enantiomers: levoamphetamine and dextroamphetamine. Amphetamine properly refers to a specific chemical, the racemic free base, which is equal parts of the two enantiomers, levoamphetamine and dextroamphetamine, in their pure amine forms. The term is frequently used informally to refer to any combination of the enantiomers, or to either of them alone. Historically, it has been used to treat nasal congestion and depression. Amphetamine is also used as an athletic performance enhancer and cognitive enhancer, and recreationally as an aphrodisiac and euphoriant. It is a prescription drug in many countries, and unauthorized possession and distribution of amphetamine are often tightly controlled due to the significant health risks associated with recreational use.

The first pharmaceutical amphetamine was Benzedrine, a brand which was used to treat a variety of conditions. Currently, pharmaceutical amphetamine is prescribed as racemic amphetamine, Adderall, dextroamphetamine, or the inactive prodrug lisdexamfetamine. Amphetamine, through activation of a trace amine receptor, increases monoamine and excitatory neurotransmitter activity in the brain, with its most pronounced effects targeting the catecholamine neurotransmitters norepinephrine and dopamine.

At therapeutic doses, amphetamine causes emotional and cognitive effects such as euphoria, change in desire for sex, increased wakefulness, and improved cognitive control. It induces physical effects such as decreased reaction time, fatigue resistance, and increased muscle strength. Larger doses of amphetamine may impair cognitive function and induce rapid muscle breakdown. Drug addiction is a serious risk with large recreational doses but is unlikely to arise from typical long-term medical use at therapeutic doses. Very high doses can result in psychosis (e.g., delusions and paranoia) which rarely occurs at therapeutic doses even during long-term use. Recreational doses are generally much larger than prescribed therapeutic doses and carry a far greater risk of serious side effects.

Amphetamine belongs to the phenethylamine class. It is also the parent compound of its own structural class, the substituted amphetamines, which includes prominent substances such as bupropion, cathinone, MDMA, and methamphetamine. As a member of the phenethylamine class, amphetamine is also chemically related to the naturally occurring trace amine neuromodulators, specifically phenethylamine and , both of which are produced within the human body. Phenethylamine is the parent compound of amphetamine, while is a positional isomer of amphetamine that differs only in the placement of the methyl group.
Other names

1-Phenyl-2-propanamine (IUPAC Name); 1-phenyl-2-aminopropane; 1-Phenylpropan-2-amine; adderall; alpha-Methylphenethylamine; alpha-methylphenylethylamine; alpha-Methyl-benzeneethanamine

Contributors