

BENZEDRINE

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1. Core Definition and Chemical Identity

Benzedrine is the historical trade name for the drug **amphetamine**, a potent central nervous system (CNS) stimulant. Marketed initially by Smith, Kline & French (SK&F) starting in the 1930s, the name Benzedrine quickly became synonymous with the pharmacological agent d/l-amphetamine sulfate, representing a racemic mixture of the two primary enantiomers, dextroamphetamine and levoamphetamine. Chemically, amphetamine belongs to the phenethylamine class, specifically categorized as a substituted amphetamine. Its molecular structure allows it to exert profound effects on the brain's neurotransmitter systems, primarily involving the monoamines.

The initial formulation of Benzedrine was intended for straightforward medical application, often dispensed in tablet form or, famously, within nasal inhalers. However, due to its powerful psychoactive properties--inducing euphoria, heightened alertness, and appetite suppression--it transcended its intended therapeutic boundaries. Although the specific trade name Benzedrine is now largely obsolete in clinical practice, the underlying chemical compound, amphetamine, remains vital in modern medicine, albeit in strictly controlled and often purer forms (e.g., dextroamphetamine formulations), highlighting its enduring, yet controversial, pharmacological significance.

The classification of Benzedrine as a stimulant means it directly increases activity in the brain and spinal cord, contrasting sharply with depressants or narcotics. This stimulation results from its mechanism of action, making it highly effective for counteracting fatigue and promoting wakefulness. Crucially, the source content emphasizes the necessary caution surrounding its use, noting the substantial risk of abuse and the development of **dependence**, a warning that defined much of the drug's regulatory history.

2. Etymology and Historical Development

The parent compound of Benzedrine, amphetamine (alpha-methylphenethylamine), was first synthesized in 1887 by Romanian chemist Lazăr Edeleanu at the University of Berlin. However, its pharmacological properties were not fully explored until decades later. In the late 1920s, American chemist Gordon Alles independently rediscovered the compound while searching for a synthetic alternative to ephedrine, a natural substance used to treat asthma and congestion. Alles recognized the powerful bronchodilatory and vasoconstrictive effects, paving the way for clinical application.

In 1932, SK&F began marketing the racemic mixture under the trade name Benzedrine, initially as a non-prescription Benzedrine Inhaler designed to treat nasal congestion, hay fever, and mild asthma. This delivery method allowed the drug to be absorbed through the nasal mucous membranes, offering rapid relief from respiratory issues. The accessibility of the inhaler, however, inadvertently facilitated its recreational use, as users discovered that crushing the paper insert containing the drug and ingesting or extracting the amphetamine provided a significant CNS high.

The pharmaceutical industry soon recognized the diverse systemic effects of amphetamine beyond mere bronchodilation. By 1937, Benzedrine tablets were introduced for prescription use to treat conditions such as narcolepsy, mild depression, and, importantly, obesity. This period marked the height of the drug's legitimate medical acceptance and utilization, solidifying its place in the clinical armamentarium despite growing anecdotal evidence of misuse. The historical trajectory of Benzedrine encapsulates the complex relationship between medical innovation and unintended societal consequences.

3. Pharmacological Mechanism of Action

The efficacy of **Benzedrine** as a psychoactive stimulant stems from its highly specific interaction with the monoamine neurotransmitter systems in the brain. Amphetamine acts primarily as a substrate for the dopamine transporter (DAT) and norepinephrine transporter (NET). Once inside the nerve terminal, amphetamine interferes with the vesicular monoamine transporter (VMAT-2), displacing dopamine and norepinephrine from storage vesicles into the cytosol. This process leads to a significant reversal of the DAT and NET, causing a massive efflux of these neurotransmitters into the synaptic cleft, far exceeding physiological release rates.

The dramatic increase in synaptic dopamine and norepinephrine concentrations is responsible for the drug's characteristic effects. Elevated dopamine levels are strongly correlated with the feelings of euphoria, increased motivation, and the high potential for addiction and abuse, as dopamine pathways are central to the brain's reward system. Increased norepinephrine activity contributes to peripheral effects (vasoconstriction, increased heart rate) and central effects such as heightened vigilance, increased focus, and the suppression of appetite--the latter being the basis for its historical use as an appetite suppressant.

Furthermore, amphetamine exerts mild influence on the serotonin system, contributing to some of its psychoactive properties, though its primary mechanism remains focused on dopamine and norepinephrine. It is this powerful, non-specific flood of key excitatory neurotransmitters that provides the stimulant effect that was highly valued in therapeutic settings but simultaneously posed the significant danger of abuse highlighted in early warnings regarding **Benzedrine**.

4. Historical Clinical Applications

As documented in its early history, Benzedrine was initially patented and promoted for its utility as a **bronchodilator**. The drug's powerful vasoconstrictive properties helped shrink swollen nasal tissues, making it an effective treatment for rhinitis and nasal congestion. The non-prescription inhaler made it a household remedy for common respiratory ailments throughout the 1930s. However, the discovery of its systemic effects soon overshadowed this original purpose.

Perhaps the most widespread and controversial application of prescription Benzedrine was its use as an **appetite suppressant**, or anorectic. In the mid-20th century, obesity began to be recognized as a medical concern, and Benzedrine offered a simple pharmacological solution by reducing hunger signals through its effects on the hypothalamus. It was prescribed liberally as a diet pill, often packaged attractively and marketed toward women seeking weight control. This period saw the normalization of prescription stimulant use for cosmetic rather than purely health-critical purposes.

Beyond respiratory and metabolic applications, Benzedrine played a crucial role in treating psychiatric and neurological conditions. It was successfully used to treat narcolepsy, a condition characterized by uncontrollable sleep episodes, due to its wakefulness-promoting properties. Furthermore, physicians often prescribed it for "mood elevation" or to combat fatigue, particularly in soldiers, truck drivers, and students seeking performance enhancement, illustrating its rapid integration into both legitimate medicine and the developing culture of pharmaceutical enhancement.

5. The Rise of Non-Medical Use and Abuse

The danger associated with Benzedrine, as noted in the original source content, materialized rapidly following its introduction. The ease of extracting the active ingredient from the non-prescription inhalers provided an early, unregulated source of recreational amphetamine. However, the scale of abuse exploded during and immediately following World War II, when amphetamines were distributed widely by various militaries (including the U.S., UK, Germany, and Japan) to keep troops awake, focused, and impervious to fatigue during prolonged operations.

This mass distribution normalized the idea of stimulants for performance enhancement. After the war, surplus supplies and continuing medical prescriptions flooded the civilian market. Students used Benzedrine to pull "all-nighters," truck drivers relied on it to cover long hauls, and members of the counterculture sought its euphoric high. Benzedrine became one of the first widely recognized drugs associated with "speed," creating a subculture of abuse that centered on maintaining hyper-alertness and intense energy.

The inevitable consequence of such widespread use was the acknowledgment of **amphetamine**

dependence. Users frequently developed tolerance, requiring higher doses to achieve the desired effect, and experienced severe psychological withdrawal--often characterized by profound depression, exhaustion, and intense cravings--when the drug was stopped. These public health concerns led to significant media scrutiny and prompted regulatory bodies to re-evaluate Benzedrine's status.

6. Regulation and Legacy

The escalating abuse of Benzedrine and similar amphetamines eventually forced strict government intervention. In the United States, the control began incrementally, leading up to the Comprehensive Drug Abuse Prevention and Control Act of 1970, which classified amphetamine as a Schedule II controlled substance. This designation recognized its high potential for abuse leading to severe psychological or physical dependence, necessitating strict prescriptive control.

The regulatory changes effectively ended the era of Benzedrine's liberal prescribing. SK&F eventually discontinued the Benzedrine Inhaler and significantly restricted the formulation of Benzedrine tablets. While the trade name Benzedrine faded, the chemical entity, amphetamine, continued to be refined and utilized. Modern pharmaceutical science has largely favored purified, single-enantiomer forms (like dextroamphetamine, found in Dexedrine, or mixed salts, found in Adderall) to achieve more predictable therapeutic outcomes with potentially fewer peripheral side effects than the racemic mixture of Benzedrine.

The legacy of Benzedrine is paradoxical. It served as a foundational therapeutic agent, providing effective treatment for narcolepsy and attention deficits, establishing the clinical utility of stimulants. Simultaneously, it stands as a historical cautionary tale, illustrating how a medically beneficial compound, when readily available and highly potent, can swiftly transition into a substance of widespread abuse, underscoring the delicate balance required in drug regulation and prescription practices.

Further Reading

[Amphetamine \(Wikipedia\)](#)

[Drug Enforcement Administration \(DEA\) Schedule II Substances](#)

[Benzedrine and the Pre-War Medical Status of Amphetamine](#)