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Gamma Hydroxybutyrate (GHB)

Background

Gamma hydroxybutyrate (GHB) is a powerful, rapidly acting central nervous system depressant. It was first synthesized in the 1920s and was under development as an anesthetic agent in the 1960s. GHB is produced naturally by the body in small amounts but its physiological function is unclear.

GHB was sold in health food stores as a performance-enhancing additive in bodybuilding formulas until the Food and Drug Administration (FDA) banned it in 1990. It is currently marketed in some European countries as an adjunct to anesthesia. GHB is abused for its ability to produce euphoric and hallucinogenic states and for its alleged function as a growth hormone that releases agents to stimulate muscle growth. GHB became a Schedule I Controlled Substance in March 2000.

In the United States, GHB is produced in clandestine laboratories with no guarantee of quality or purity, making its effects less predictable and more difficult to diagnose. GHB can be manufactured with inexpensive ingredients and using recipes on the Internet. Gamma butyrolactone (GBL) and 1,4-butanediol are analogs of GHB that can be substituted for it. Once ingested, these analogs convert to GHB and produce identical effects. GBL, an industrial solvent, is used as an immediate precursor in the clandestine production of GHB. The FDA has issued warnings for both GBL and 1,4-butanediol, stating that the drugs have a potential for abuse and are a public health danger.

Effects

GHB is usually taken orally. It is sold as a light-colored powder that easily dissolves in liquids or as a pure liquid packaged in vials or small bottles. In liquid form, it is clear, odorless, tasteless, and almost undetectable when mixed in a drink. GHB is typically consumed by the capful or teaspoonful at a cost of $5 to $10 per dose. The average dose is 1 to 5 grams and takes effect in 15 to 30 minutes, depending on the dosage and purity of the drug. Its effects last from 3 to 6 hours.

Consumption of less than 1 gram of GHB acts as a relaxant, causing a loss of muscle tone and reduced inhibitions. Consumption of 1 to 2 grams causes a strong feeling of relaxation and slows the heart rate and respiration. At this dosage level, GHB also interferes with blood circulation, motor coordination, and balance. In stronger doses, 2 to 4 grams, pronounced interference with motor and speech control occurs. A coma-like sleep may be induced, requiring intubation to wake the user. When mixed with alcohol, the depressant effects of GHB are enhanced. This can lead to respiratory depression, unconsciousness, coma, and overdose.

Side effects associated with GHB may include nausea, vomiting, delusions, depression, vertigo, hallucinations, seizures, respiratory distress, loss of consciousness, slowed heart rate, lowered blood pressure, amnesia, and coma. GHB can become addictive with sustained use.

Patients with a history of around-the-clock use of GHB (every 2 to 4 hours) exhibit withdrawal symptoms including anxiety, insomnia, tremors, and episodes of tachycardia (abnormally fast heart rates), and may progress to delirium and agitation. Because GHB has a short duration of action and quickly leaves the user's system, withdrawal symptoms may occur within 1 to 6 hours of the last dose. These symptoms may last for many months.

NCJ 194881

According to the Drug Abuse Warning Network (DAWN), GHB emergency department (ED) mentions have increased from 56 in 1994 to 3,340 in 2001 (see table).

Estimated number of emergency department GHB mentions, 1994–2001

1994	1995	1996	1997	1998	1999	2000	2001
56	145	638	762	1,282	3,178	4,969	3,340

Source: Drug Abuse Warning Network.

GHB-related deaths have occurred in several Community Epidemiology Work Group (CEWG) sites. In 1999, there were three reported deaths involving GHB in Texas and two in Minnesota. Missouri has reported five GHB-related deaths and two near deaths in which GHB was used to facilitate rapes. In Florida, during 2000, GHB was detected in 23 deaths and identified as the cause of death in 6 cases. Since 1990, the U.S. Drug Enforcement Administration (DEA) has documented more than 15,600 overdoses and law enforcement encounters and 72 deaths relating to GHB.

Prevalence Estimates

GHB is often ingested with alcohol by young adults and teens at nightclubs and parties. It is used as a pleasure enhancer that depresses the central nervous system and induces intoxication. It also can be used as a sedative to reduce the effects of stimulants (cocaine, methamphetamine, ephedrine) or hallucinogens (LSD, mescaline) and to prevent physical withdrawal symptoms.

Since 2000, GHB has been included in the University of Michigan's Monitoring the Future Survey questionnaire. Survey results indicate that annual GHB use by secondary school students in 2000 ranged from 1.1% among 10th graders to 1.2% among 8th graders and 1.9% among 12th graders. In 2001, estimates of annual GHB use ranged from 1.0% among 10th graders to 1.1% among 8th graders and 1.6% among 12th graders.

Regional Observations

According to CEWG, as of 2001, 15 CEWG areas reported increases in GHB indicators. They were Boston, Chicago, Dallas/Houston, Denver, Los Angeles, Miami, Minneapolis/St. Paul, Newark, New York, Philadelphia, Phoenix, St. Louis, San Diego, San Francisco, and Seattle. Atlanta, Baltimore, and Washington, D.C., reported stable GHB indicators. Only two CEWG sites, Detroit and New Orleans, reported declines in GHB indicators. Most CEWG areas report that GHB is frequently used in combination with alcohol, causing users to overdose.

In 2000, according to the National Drug Intelligence Center (NDIC), GHB availability was stable or increasing in nearly every DEA Field Division and High Intensity Drug Trafficking Area. Many areas reported that the increased availability of GHB occurred in concert with a rise in rave activity. Law enforcement also reported increases in the number of cases involving GHB analogs.

According to *Pulse Check: Trends in Drug Abuse*, GHB users and sellers tend to be between the ages of 18 and 30. Most users are middle-class white males. GHB is typically packaged in plastic bottles (mostly water or sports drink bottles) and distributed by the capful for $5–$20 per dose. Additional packaging includes eyedropper bottles, glass vials, and mouthwash bottles.

Drug-Facilitated Rape

Drug-facilitated rape is defined as sexual assault made easier by the offender's use of an anesthetic-type drug that renders the victim physically incapacitated or helpless and unable to consent to sexual activity. Whether the victim is unwittingly administered the drug or willingly ingests it for recreational use is irrelevant—the person is victimized because of their inability to consciously consent to sexual acts.

According to NDIC, GHB has surpassed Rohypnol (flunitrazepam) as the most common substance used in drug-facilitated sexual assaults. GHB can mentally and physically paralyze an individual, and these effects are intensified when the drug is combined with alcohol. To date, DEA has documented 15 sexual assaults involving 30 victims who were under the influence of GHB. Of the 711 drug-positive urinalysis samples submitted from victims of alleged sexual assault, 48 tested positive for GHB.

It is difficult to estimate the incidence of drug-facilitated rape involving GHB. Victims may not seek help until days after the assault, in part because the drug impairs their memory and in part because they may not identify signs of sexual assault. GHB is only detectable in a person's system for a limited amount of time and, if the victim does not seek immediate help, the opportunity to detect the drug can quickly pass. Also, law enforcement agencies may not be trained to gather necessary evidence and may not be using equipment that is sensitive enough to test for the drug.

Scheduling and Legislation

In response to the use of drugs in sexual assaults, Congress passed the Drug-Induced Rape Prevention and Punishment Act of 1996 to combat drug-facilitated crimes of violence, including sexual assaults. The act

imposes harsh penalties for distribution of a controlled substance to an individual without the individual's knowledge and consent with intent to commit a crime of violence, including rape.

On February 18, 2000, the Hillory J. Farias and Samantha Reid Date-Rape Prevention Act of 2000 (Public Law 106-72) became law. It made GBL a List I chemical subject to the criminal, civil, and administrative sanctions of the Federal Controlled Substances Act of 1970. As a result of the law, GHB became a Schedule I Controlled Substance. A Schedule I drug has a high potential for abuse, is not currently accepted for medical use in treatment in the United States, and lacks accepted safety for use under medical supervision.

On March 20, 2001, the Commission on Narcotic Drugs placed GHB in Schedule IV of the 1971 Convention of Psychotropic Substances. This placement affects international drug control laws with which countries that are a part of the convention must comply. Schedule IV mandates international requirements on licensing for manufacture, trade, and distribution of the drug. It also requires parties to comply with prohibition of and restrictions on export and import of the drug and to adopt measures for the repression of acts contrary to these laws and regulations.

On July 17, 2002, Xyrem, a drug with an active ingredient of sodium oxybate or GHB, was approved by the FDA to treat cataplexy attacks in patients with narcolepsy. Cataplexy is a condition characterized by weak or paralyzed muscles. Xyrem, when used as medically prescribed, is a Schedule III Controlled Substance. A Schedule III Controlled Substance has less potential for abuse than Schedule I and II categories, is currently accepted for medical use in treatment in the United States, and may lead to moderate or low physical dependence. Illicit use of Xyrem is subject to Schedule I penalties.

Street Terms

Street terms for GHB

Cherry Meth	Liquid X
Fantasy	Organic quaalude
GBH	Salty water
Georgia home boy	Scoop
Great hormones at bedtime	Sleep-500
Grievous bodily harm	Soap
Liquid E	Somatomaz
Liquid Ecstasy	Vita-G

Resources

ClubDrugs.org. National Institute on Drug Abuse. www.clubdrugs.org

Club Drugs. INFOFAX, National Institute on Drug Abuse. www.nida.nih.gov/Infofax/Clubdrugs.html

GHB Analogs: GBL, BD, GHV, and GVL. National Drug Intelligence Center, August 2002. www.usdoj.gov/ndic/pubs/1621/1621p.pdf

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This fact sheet was prepared by Jennifer Lloyd of the ONDCP Drug Policy Information Clearinghouse. The data presented are as accurate as the sources from which they were drawn. Responsibility for data selection and presentation rests with the Clearinghouse staff. The Clearinghouse is funded by the White House Office of National Drug Control Policy to support drug control policy research. The Clearinghouse is a component of the National Criminal Justice Reference Service. For further information about the contents or sources used for the production of this fact sheet or about other drug policy issues, call:

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