

γ -Hydroxybutyrate (GHB) — Effects on Human Performance and Behavior

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ABSTRACT. γ -Hydroxybutyrate (GHB) is a powerful central nervous system (CNS) depressant which has had a history of limited therapeutic use and, more recently, potential for abuse. GHB is a naturally occurring compound present in mammalian CNS and peripheral tissues, and a minor metabolite and precursor of γ -amino butyric acid. GHB is also an emerging recreational drug and has limited therapeutic potential. It is now a federally controlled substance. Since the substances γ -butyrolactone and 1,4-butanediol rapidly convert to GHB in vivo, they are abused as metabolic precursor drugs for GHB and are available in a wide variety of forms.

GHB alters dopaminergic activity in the CNS, and its effects are primarily those of a CNS depressant. Following low doses, euphoria, relaxation, reduced inhibitions and sedation can be observed, while vomiting, sweating, severe respiratory depression, and unconsciousness are common with GHB intoxication. Tolerance to the effects of GHB develops with chronic use, and physical and psychological addiction can follow.

This monograph reviews the chemistry of GHB and its precursor drugs, their reported medicinal and recreational uses, pharmacology, pharmacokinetics, metabolism, analytical methodology, and interpretation issues such as postmortem endogenous concentrations and specimen storage conditions. The manuscript concludes with a discussion of the effects GHB may have on human performance. Given the ability of GHB to induce sleep and unconsciousness, recreational use of GHB and its precursor drugs GBL and 1,4-butanediol has the potential of causing impairment in psychomotor and cognitive skills.

KEY WORDS: 1,4-Butanediol, γ -butyrolactone, CNS depression, driving, γ -hydroxybutyrate, impairment, performance.
