

## LABORATORY SERVICES BUREAU

Document: Controlled Substances Analysis Manual

Policy Number:  
1536

Revision:  
4

Subject: CS-SOP-25 GHB

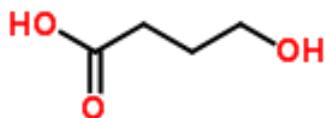
Approved:  
Schneider, Roger

PHOENIX POLICE DEPARTMENT Effective: 8/13/2020 10:25:59 AM

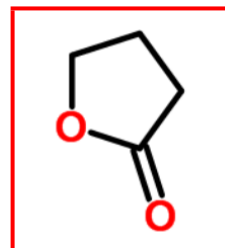
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### 1. GHB

A. Structure, Empirical Formula, Molecular Weight



GHB  
 $C_4H_8O_3$   
MW 104.1



GBL  
 $C_4H_6O_2$   
MW 86.0

- B. Synonyms: gamma-hydroxybutyrate,  $\gamma$ -hydroxybutyrate, 4-hydroxybutyrate, easy lay, salt water, Grievous Bodily Harm, nature's quaalude, G, liquid ecstasy, liquid X, date rape drug
- C. Trade Names: NA
- D. Drug Action: CNS depressant
- E. Common pharmaceutical/street forms: No medicinal use in the U.S.A. White powder dissolved in clear liquid, white powder, white slushy powder, (very hygroscopic).
- F. Solubility: Water
- G. Extraction:
- (1) Dry extraction for chemical indicator tests
    - (a) Place slush or several drops of liquid in a spot plate.
    - (b) Evaporate on a hot plate in the fume hood. Watch the samples carefully so that they do not scorch.

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(2) Dry extraction for GC/MS analysis

- (a) Place slush or liquid in a spot plate. If the sample is a liquid, completely fill the well of the spot plate.
- (b) Evaporate on a hot plate in the fume hood. Watch the samples carefully so that they do not scorch.
- (c) Scrape the solid from the spot plate and place into a GC/MS vial. GBL is a liquid and may not evaporate completely.
- (d) Add 200  $\mu$ L BSTFA containing 1% TMCS and 200  $\mu$ L ethyl acetate with **C15 or** caffeine to the GC/MS vial.
- (e) Cap tightly and vortex for approximately 1 minute. The solid will not completely dissolve.
- (f) Analyze by GC/MS.

H. Chemical indicator tests:

- (1) 5% Ferric chloride: Orange-brown
- (2) 1% Cobalt nitrate in methanol: Purples
- (3) Cobalt thiocyanate, solid/chloroform: Blue (Indicator test for GBL)

I. GC/MS: Analyze using "DRUGS2" program.

**Note:** GHB must be derivatized prior to GC/MS analysis to differentiate between GHB and GBL.

J. Comments: GBL,  $\gamma$ -butyrolactone, is a precursor and thermal breakdown product of GHB. GBL is a liquid and will not evaporate during heating. GBL will not react with the chemical indicator tests for GHB and will not derivatize with TMCS. After derivatization, GHB and GBL can be differentiated by retention time and mass spectrum using GC/MS. GBL and GHB will resonate between both structures.

K. Report as: Gamma hydroxy butyrate, a dangerous drug.

L. References:

- (1) Busby, C., GHB gamma-Hydroxybutyrate Analysis Techniques for GHB and 1,4 Butanediol, Houston Police Department Crime Laboratory, Houston, TX.