

Instantaneous Detection of the "Date-Rape" Drug -- GHB

Gamma hydroxybutyrate (GHB) is a fast-acting central nervous system depressant¹. Prior to its ban by the FDA in 1990, GHB was sold in bodybuilding formulas. It has been abused as a euphoriant. Because it is colorless and odorless, it can be added to alcoholic drinks of unsuspecting victims. An overdose can result in serious consequences, including respiratory depression and coma. GHB was classified as a Schedule I Controlled Substance in March, 2000.

Detection of GHB is problematic. GC/MS and LC/MS methods are time consuming. A rapid colorimetric assay for GHB has been developed², but this assay suffers from some limitations. For example, ethanol produces the same colorimetric response as GHB.

The AccuTOF[™] mass spectrometer equipped with Direct Analysis in Real Time (DART[™]) can rapidly detect GHB anion ($C_4H_7O_3^-$; m/z 103.0395) on surfaces, in urine, and in ethanol. No solvent extraction, wipes, or chromatography are required. Examples are shown in the figures below.

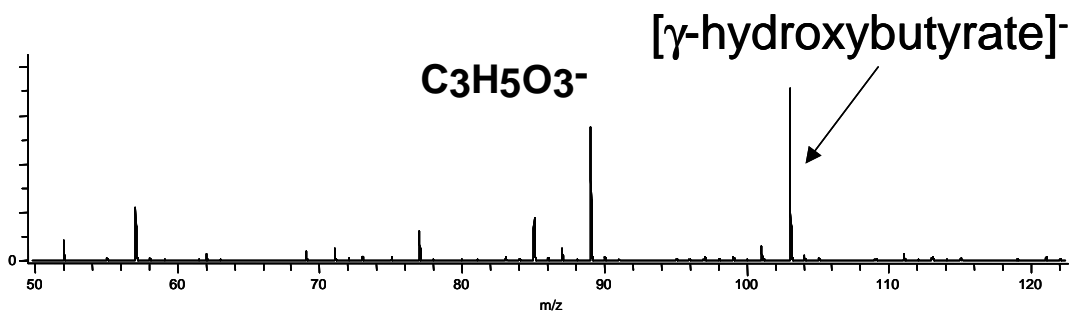


Figure 1. 10 ppm GHB (sodium salt) added to "Bombay Blue Sapphire" Gin.

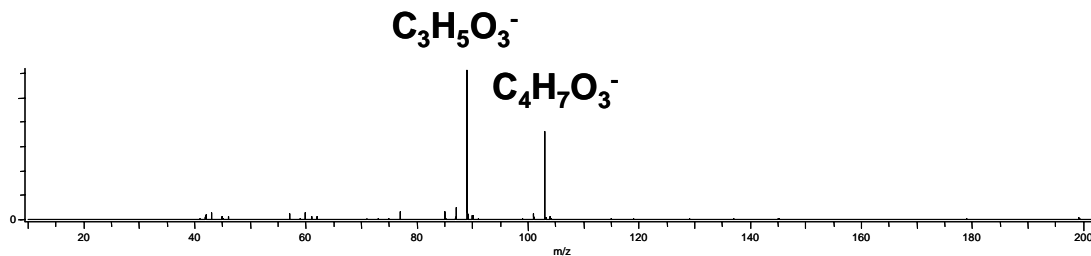


Figure 2. 100 ng of GHB (sodium salt) deposited on the rim of a glass.

¹<http://www.whitehousedrugpolicy.gov/publications/factsht/gamma/>

² Alston WC 2nd, Ng K. Forensic Sci Int. 2002 Apr 18;126(2):114-7. Rapid colorimetric screening test for gamma-hydroxybutyric acid (liquid X) in human urine.