

## Pharmacokinetics of GHB and detection window in serum and urine after single uptake of a low dose of GBL

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### Abstract

During the last few years  $\gamma$ -hydroxybutyric acid (GHB) and  $\gamma$ -butyrolactone (GBL) have attracted much interest as recreational drugs and knock-out drops in drug-facilitated sexual assaults. This experiment aims at getting an insight into the pharmacokinetics of GHB after intake of GBL. Therefore two volunteers took a single dose of 1.5 mL GBL, which had been spiked to a soft drink. Assuming that GBL was completely metabolized to GHB, the corresponding amount of GHB was 2.1 g. Blood and urine samples were collected 5 h and 24 h after ingestion, respectively. Additionally, hair samples (head hair and beard hair) were taken within four to five weeks after intake of GBL. Samples were analyzed by liquid chromatography-tandem mass spectrometry (LC-MS/MS) after protein precipitation with acetonitrile. The following observations were made: spiked to a soft drink, GBL, which tastes very bitter, formed a liquid layer at the bottom of the glass, only disappearing when stirring. Both volunteers reported weak central effects after approximately 15 min, which disappeared completely half an hour later. Maximum concentrations of GHB in serum were measured after 20 min (95  $\mu\text{g/mL}$  and 106  $\mu\text{g/mL}$ ). Already after 4–5 h the GHB concentrations in serum decreased below 1  $\mu\text{g/mL}$ . In urine maximum GHB concentrations (140  $\mu\text{g/mL}$  and 120  $\mu\text{g/mL}$ ) were measured after 1–2 h, and decreased to less than 1  $\mu\text{g/mL}$  within 8–10 h. The ratio of GHB in serum versus blood was 1.2 and 1.6.

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