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**AIM:** This study was started to collect data of GHB positive cases to gain more knowledge and safety for the interpretation of GHB concentration in serum samples.

**METHODS:** Samples were obtained from A) patients of intensive care units, B) roadside testing, C) a "psychiatric" patient for drugs of abuse-control, D) a patient under treatment for narcolepsy.

Patients of group A were unconscious or comatose, recovering after a few hours. Persons of group B were still actively participating in traffic. Patient C: teenager known to have abused GHB for a prolonged time on a daily basis. Patient D received GHB for treatment of narcolepsy besides amphetamine and was suspicious in roadside testing.

23 serum samples were analyzed for GHB and were found positive. For quantification they were spiked with deuterated GHB and acetonitrile was added for protein precipitation. Samples were analyzed with an LC-MS/MS system (API 365, Applied Biosystems) operated in multiple reaction monitoring mode (MRM) using a TurbolonSpray source and a Synergi Polar RP column (Phenomenex) applying gradient elution with a runtime of 15 minutes. The method showed good linearity in the working range (10 to 200  $\mu\text{g/mL}$ ).

**RESULTS:** GHB concentrations within group A ranged from 23  $\mu\text{g/mL}$  to 393  $\mu\text{g/mL}$ ; within group B from 186  $\mu\text{g/mL}$  to 266  $\mu\text{g/mL}$ . Patient D showed a moderate concentration of 27  $\mu\text{g/mL}$ . Endogenous plasma/blood concentrations in healthy individuals have been reported to be below 3  $\mu\text{g/mL}$ .

For those persons of group A with very high survived GHB concentrations and for some persons of group B frequent abuse of GHB is known. They appeared in our data pool more than once or had reported frequent abuse of GHB.

**CONCLUSIONS:** While some persons with rather low concentrations of GHB were comatose, others with rather high GHB concentrations - normally assumed to be toxic or lethal - could still "drive" a vehicle. This raises the question of acquired tolerance to the toxic effects of GHB if it is abused regularly.

**KEYWORDS:** *GHB, Liquid ecstasy, Serum concentrations, Interpretation*

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