



Gammahydroxybutyric Acid (GHB)

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Abstract

This paper is intended to be a brief discussion on the effects on memory of the "date rape drug" GHB.

Gammahydroxybutyric acid (GHB) is a new drug with abuse potential and is popularly known as "liquid ecstasy". Another similar class of drug is Rohypnol.

GHB is a naturally occurring compound of the mammalian brain. GHB is synthesized from GABA (a naturally occurring neurotransmitter in the brain). Since GHB can traverse the blood-brain barrier recent studies indicate that working memory may be significantly altered. Many studies indicate that the prefrontal medial cortex may be a crucial structure of working memory. These findings suggest that GHB could affect memory by altering the structure and/or function of specific brain regions such as prefrontal medial cortex.

Even though GHB is a naturally occurring compound found in the brain, excess GHB acts as a depressant on the central nervous system because it is rapidly metabolized by the body. The effects of the drug can be felt within fifteen minutes after ingestion.

GHB can cause dizziness, nausea, vomiting, confusion, seizures, respiratory depression, intense drowsiness, unconsciousness, and coma. In some cases, GHB also can cause "anterograde amnesia" (memory loss for the events following ingestion). This means that you may not be able to recall what happened to you while you were under the influence of the drug.

When GHB is ingested with alcohol or other drugs, the consequences may be life-threatening. Without immediate and appropriate medical care, the results may be fatal.



Remember in class we discussed how Cortisol produced in the Acute Stress Response also affects memory. Cortisol interferes with the transfer of information from short-term to long-term memory and interferes with the retrieval of information from long term memory. The mechanism with “Date Rape” drugs is very similar.

With regard to the human brain, it has been asserted that GABA signals interfere with the registration and consolidation stages of memory.

The three main stages in the formation and retrieval of memory, from an information processing perspective are:

- Encoding: The registration and consolidation of received information.
- Storage: The creation of a permanent record of the encoded information.
- Retrieval: The calling back of the stored information in response to some cue for use in some process or activity.

The “Date Rape” drugs can produce complete or partial amnesia (loss of memory) for the events that take place after it is ingested. This means that you may not be able to remember what you did - or what was done to you - while you are under the influence of the drug, which may be a significant period of time. This "amnesic" effect is especially likely when “Date Rape” drugs are ingested with alcohol.

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