LSD — An Overview on Drug Action and Detection

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ABSTRACT: LSD is a psychoactive semisynthetic ergot alkaloid. It is so potent that a small dose (≈25 μg) may produce a profound hallucinogenic effect. The compound is a controlled substance under the US code of regulations. One of the major adverse effects of LSD is the "flashback" or spontaneous recurrences of hallucinogenic effects that may occur months to years after cessation of the drug. The major concern of LSD abuse is the long duration of action and fatal accidents and suicides during the state of intoxication. Because LSD metabolizes to a number of compounds and detection methods for these compounds in a large number of samples are not well established, most of the methods are aimed at identifying unchanged LSD in urine. After initial screening by an immunoassay method, the presence of LSD in urine is confirmed by a gas chromatographic-mass spectrometric (GC-MS) method. The immunoassay techniques are simple and cost-effective. In confirmation, selective extraction is preferred because it allows detection of the compound at concentrations as low as 50 pg/mL. Recent methods for detection of an LSD metabolite, 2-oxo-3-hydroxy-LSD, by liquid chromatography-mass spectrometry appeared to be promising in some forensic investigations.

Key Words: Biochemical and pharmacological actions, LSD, metabolism and excretion, methods of analysis, synthesis.