

Phencyclidine Drug Information

Classification

Phencyclidine (1-phencyclohexylpiperidine, PCP) is prepared from 1-piperidinocyclohexane-carbonitrile in a Grignard reaction, as first performed in 1956 for use as an intravenous anesthetic. Pharmacologically PCP is classified as a dissociative anesthetic. PCP is currently a popular drug of abuse and was once used as a veterinary tranquilizer. A structural analog, ketamine, is currently used as a veterinary tranquilizer. PCP is self-administered either by smoking (drug-laced tobacco, marijuana, or parsley), by nasal insufflation and intravenous injection, or by oral ingestion.

Metabolism

PCP is a lipophilic drug with a large volume of distribution. It undergoes extensive hepatic oxidative metabolism with about 10-15% of a dose excreted unchanged in urine, and about 65% excreted as hydroxylated metabolites and other polar metabolites. Renal excretion of PCP (pKa 8.5) is enhanced when urine is acidic, and it is reduced when urine is alkaline. Frequent or chronic PCP users may excrete PCP for 2-10+ days following last use. Urine concentrations may range from <0.1 mcg/mL to 340 mcg/mL.

Abuse

Phencyclidine's pharmacological actions are complex, since it interacts with several neurotransmitter systems (i.e., GABAergic, dopaminergic, cholinergic, and adrenergic). As a result, PCP has stimulant, depressant, hallucinogenic, and analgesic properties. Adverse effects are unpredictable and include agitation, delusions of grandeur, anxiety, hostility, stupor, paranoia, and coma. Death has been known to result following the ingestion of 120 mg of PCP (toxic dose 10-20 mg).

Methods of Analysis

The immunoassay methods (EIA) are widely used screening methods designed to specifically detect phencyclidine and its inactive metabolites. Commonly used confirmation methods include gas chromatography/mass spectrometry (GC/MS) and liquid chromatography/tandem mass spectrometry (LC/MS/MS). These methods offer excellent sensitivity and specificity and are the methods of choice for most forensic applications. False positive immunoassays have been reported following the use of thioridazine (Mellaril), chlorpromazine (Thorazine), dextromethorphan, or diphenhydramine (Benadryl), therefore indicating the necessity for specific secondary confirmation testing.

