Phencyclidine

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Introduction

Phencyclidine (PCP) is the most common member of the “dissociatives.” The dissociatives constitute an entirely synthetic class of drugs that act at multiple receptor sites. They act as agonists or antagonists at cholinergic, dopaminergic, noradrenergic, opioid, serotonergic, sigma, and NDMA (N-methyl-D-aspartate) -high-affinity and -low-affinity receptor sites. As a result, dissociatives can mimic atropinic, GABAminergic, opioid, psychedelic, and sympathomimetic drugs. Since the drugs in this class are active in powdered, crystalline, suspended, and volatile forms, they can be ingested, snorted, injected, smoked, or inhaled (Giannini, 1987b).

Because of its low price, multiple sites of action, and multiple physical forms, PCP can partially mimic more expensive street drugs. As a result, PCP is the most common active adulterant in the United States. Powdered PCP has been sold as amphetamine, methamphetamine, heroin, cocaine, and methylqualone. Liquid PCP or dissolved powdered PCP has been saturated into gels, paper, and sugar cubes and sold as LSD. It has been mixed with low-potency marijuana or Clorox®-bleached oregano and sold as high-THC-content marijuana.

PCP produces a highly complex presentation. The symptomatic grouping of hypersexuality, hyperaggressivity, and anorexia mimics symptoms produced by such sympathomimetics as amphetamine and cocaine. The mixture of tranquilizing and anesthetic effects are similar to those of heroin or Fentanyl. Its tranquilizing effects allow it to be sold as methylqualone or pentobarbital. Its hallucinogenic actions can be mistaken for those of LSD, DMT, or MDA. On occasion, it has been saturated into different ornamental cacti which are then marketed as “peyote” or into mushrooms which are presented as psilocybin. The tranquilizing and hallucinogenic actions plus its combustibility allow a PCP-oregano mix to be presented as high-quality marijuana (Giannini, Loiselle, Giannini, & Price, 1987).

History

Phencyclidine, the first dissociative, was synthesized by Parke-Davis Laboratories in the 1950s. It was marketed under the trade name “Sernyl” due to its “serene” anesthetic and tranquilizing effect. Although in wide use at the time, many behavioral disturbances were subsequently observed. These included agitation, dysphoria, delirium, hallucinations, paranoia, rage, and violence. Therefore, it was withdrawn in 1965 but reintroduced as a veterinary tranquilizer, “Sernylan,” in 1967. Its reincarnation as Sernylan was unpropitiously associated with the development of the drug-oriented culture of the late 1960s (Giannini & Castellani, 1982).
Sernylan abuse was first reported in the Haight-Ashbury district of San Francisco in late 1967. It was a much sought-after product because of its relatively low price, nonaddicting "high," and absence of legal prohibition; known as the peace pill (i.e., "PeaCe Pill"), it soon became a nationwide phenomenon. The increased demand was met by an assemblage of underground laboratories. In them, relatively cheap raw materials such as piperidines and ketones were used to manufacture high-grade PCP. The introduction of automotive pollution-control devices made of platinum, made a highly efficient catalyst available to these laboratories. Cars were raided for their platinum wire as were college chemistry laboratories. Some abusers would synthesize their own supply in toilet tanks. These were ideal because there was a ready supply of water, while the porcelain could dissipate the heat. After the manufacture of phencyclidine became illegal, the choice of the toilet tank became fortuitous because incriminating evidence could be quickly eliminated by two flushes while the police were presenting their search warrant.

Because of its association with violent crimes and self-destructive acts, such as enucleation and immolation, PCP fell under the scrutiny of the Bureau of Narcotics and Dangerous Drugs (BNDD). In 1967, its manufacture, sale, and use became illegal under the provisions of the Comprehensive Drug Abuse, Prevention and Control Act. Because of the easy availability of piperidines and the ease of manufacture, PCP use continued unabated. As a result, in 1968, Congress passed the Psychotropic Substance Act, which restricted these precursors as well. Because of the restriction of phencyclidine precursors, part-time chemists quickly reduced their activities and phencyclidine became less available to college students and part-time dabblers. This restriction led to a shakeout in the illegal manufacturing industry. As a result, only two sets of manufacturing and distribution networks survived. One network was maintained by chapters of the larger national and regional motorcycle gangs. A second network was maintained by the Arellano–Felix cartel in Tijuana, Mexico (Allen, Robles, Dovenski, & Calderon, 1993; Little, 1996).

**Demographics**

Typical PCP abusers are white, blue-collar males living in industrial metropolitan areas in the Midwest and the East and West coasts. They tend to have a high school or partial high school education. They are usually employed and work in unskilled or semiskilled jobs. This group of abusers knowingly buys PCP or its analogues for specific actions: PCP when knowingly purchased is used alone or in combination with marijuana (stepped-on grass) or crack cocaine (space base).

**Laboratory Testing**

PCP and ketamine can be detected by thin-layer chromatography (TLC). Phencyclidine has a short elimination time and must be analyzed quickly. It can be tested by the presence of its metabolite. Because of the relatively long elimination time, urinalysis is more practical and less costly than serum analysis. If increased sensitivity is needed, gas, liquid chromatography (GLC) is used although it can produce false negatives when only small amounts are available. In cases when absolute accuracy is required and cost is not a consideration, the combination of gas chromatography and mass spectrometry (GCMS) is preferred. Because the dissociatives act at multiple receptor sites, neither enzyme immunoassay (EIA) nor radioimmunoassay (RIA) are recommended due to the cross-reactivity of this class of drugs with reagent antibodies (Davis & Beach, 1960; Little, 1996; Schwarzhoff & Cody, 1989; Sneath & Jain, 1992).

**Biochemistry, Physiology, and Pharmacology**

All dissociatives are arylcyclohexylamines. Their common chemical structure consists of a phenyl group, a piperidine group and a cyclohexyl ring. Electron-dense regions in the aro-