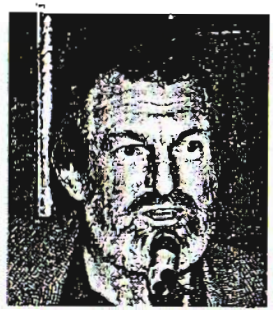

FOCUS ON

Illicit Drugs

Clarification of 'designer' drugs

By David E. Smith, M.D. and Richard B. Seymour, M.A.

THE TERM "designer drugs" is a recent addition to the lexicon of substance abuse that has caused confusion in its varied application. In an attempt to clarify some of this confusion, Donald R. Wesson, M.D., has defined designer drugs as substances wherein the psychoactive properties of a scheduled drug have been retained, but the molecular structure has been altered in order to avoid prosecution under the Controlled Substances Act. By this definition, such substances as the illicitly developed analogs of fentanyl, phencyclidine (PCP), and meperidine are correctly identified as "designer drugs," while Ecstasy or MDMA is not.

MDMA, or 3,4-methylenedioxymethamphetamine, was first synthesized in 1914, long before the Controlled Substances Act came into being. It remained an obscure amphetamine cogener until the early 1980s, when a few psychedelic chemists used it as a probe of consciousness and some psychotherapists being using it as an adjunct to psychotherapy. The Drug Enforcement Administration occasionally found samples of MDMA, but street use of the drug did not become an issue until 1984. In that year, the street drug culture, the media, and the Federal Drug Enforcement Administration, collectively discovered MDMA. In 1984, the DEA announced its intent to schedule the drug (*Federal Reg. 1984;* 49;30210), and by 1985, the scheduling process brought MDMA to national attention. Articles appeared in *Time* (June 10, 1985, p. 64); *Newsweek* (April 15, 1985, p. 96); *New York Magazine* (May 20, 1985, p. 38); and *Life* (August, 1985, p. 89). In August, Gary Trudeau devoted a "Doonesbury" cartoon series to MDMA (Smith et al. 1985).

In July of 1985, the DEA enacted an emergency scheduling of MDMA and placed it on Schedule I, drugs with no medical use and high abuse potential. This action was based on what the Administration perceived as a growing street use of MDMA and animal studies indicating that a similar drug, MDA (Ricaurte et al. 1985) damaged serotoninergic nerve terminals in the hippocampus and the striatum of rats (Shulgin, 1985). The study is considered controversial in that animal studies on MDMA indicate a different route of action than that of MDA, the drug was injected and dosages used were many times the maximum, on a mg. to kg. basis, used by humans (Seymour, 1985a).

At the Haight Ashbury Free Medical Clinic's Drug Treatment Project, where 400 to 460 new drug clients per month are seen, mentions of all the psychedelic amphetamines, including MDMA, represent less than 1%. Even with MDMA's current notoriety, this figure has not changed. When they do appear, these clients present with symptoms that include anxiety, rapid pulse and heartbeat, and in advanced cases, paranoia similar to that found with amphetamine psychosis. Most complain of being wired. Treatment usually consists of reassurance and talkdown. Symptoms usually fade as the drugs are metabolized and follow-up may consist of a short series of counseling sessions (Seymour, 1985b). MDMA can be seen as a danger for anyone vulnerable to addictive disease. It should not be used in the treatment of chemical dependency.

The consequences of using fentanyl analogs can be severe. Fentanyl itself is a powerful analgesic used when a rapid-acting and strong pain killer is needed in a hospital situation. Underground chemists have been able to tailor the fentanyl molecule into such substances as alpha methyl fentanyl, sold as "China white" and 3-methyl fentanyl. Drugs from the fentanyl series are excellent heroin substitutes, because they work just like heroin to block pain and cause euphoria. They bind to opiate receptor sites and thus display cross-tolerance and cross-dependence with heroin (Shafer, 1985).

Alpha methyl fentanyl appeared on the underground market in the late 1970s and in 1980 was responsible for 13 overdose fatalities. A major clinical problem is that the presence of these "synthetic heroins" cannot be detected by normal tests used for opiates. These drugs are 20 to 40 times stronger than heroin, and effective dosages are measured in micrograms. This makes accidental overdose a great threat with their use.

MPPP, an underground analog of meperidine, isn't usually fatal, but some of its users may wish that it was. Because of shoddy chemistry, this designer drug often contains a contaminant, 1-methyl-4-phenyl-1,2-5,6-tetrahydropyridine or MPTP. When ingested, MPTP, used commercially as a chemical intermediate, can cause severe Parkinsonism. Apparently, the chemical can cause permanent Parkinson's disease symptoms by destroying neurotransmitters in the substantia nigra at the base of the brain.

Symptoms may appear anywhere from 48 hours to six weeks after the contaminated drug is used. Early symptoms include stiffness of movement, tremors, and, in some cases, seizures, progressing to inability to speak, severe body rigidity, weakness, flat facial expression, sensory confusion and, eventually, total paralysis. Patients have responded to therapy with a combination of L-dopa and carbidopa (Sinemet®), both used in the treatment of Parkinson's disease. Unfortunately, these medications have side effects that limit their use and may limit the treatment to temporary relief of symptoms. The brain damage itself appears to be irreversible (Seymour & Smith, in press).

The examples we have given represent only a few of the possible permutations of underground synthesis. As chemistry itself has become increasingly complex, underground chemistry has become increasingly sophisticated. Many licit and illicit psychoactive drugs are capable of producing long series of analogs, that occupy a legal limbo that rules out the control, much less the prosecution of their manufacturers and traffickers. Other drugs in this category include phencyclidine (PCP).

Current attempts at dealing with the designer drug phenomenon consist of enabling enforcement agencies to place new drugs on an emergency Schedule I restriction, as has been done with MDMA. In the long run, this is a "band-aid" approach to the problem. What may be needed is a revamping of the entire scheduling system that creates categories which deal realistically with the control of experimental drugs, and the rapid prosecution of those involved with clearly dangerous drugs, such as the PCP, meperidine, and fentanyl analogs.

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