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AAAS examines effects of "ecstasy"

Feature

By Simson L. Garfinkel
SAN FRANCISCO — The drug MDMA, also known as "ecstasy," was the center-stage star of a day-long symposium on de-

signer drugs at this year's annual meeting of the American Association for the Advancement of Science.

In recent years, MDMA has become a popular drug for some students at MIT. Users report that the drug lets them be more open and trusting, makes it easier

for them to communicate their feelings, and that it is non-addicting. But several scientists at last week's symposium cautioned against MDMA's recreational use because of the drug's unknown neurotoxicity potential in humans.

Use spread in this decade

MDMA was patented in 1914 by E. Merck, a German pharma-

talls Mexican recovery, panel says

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AAAS studies recreational drug

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drug was sold openly in bars, often accompanied by advertisements in windows and price wars between establishments on opposite sides of the street.

Bakalar said that it was during this time period that the drug acquired the name "ecstasy" — not so much as a description of how it makes the user feel, but as a marketing strategy, "like calling a detergent 'Cheer.'"

On July 1, 1985, the drug was put on the Drug Enforcement Agency's "Schedule 1" — a classification for chemicals with a high potential for abuse and no medically-accepted practical applications. Although there have been several lawsuits seeking to change the drug's scheduling, MDMA's status on Schedule 1 was reaffirmed in 1988.

Nevertheless, the drug continues to be popular and easily found on college campuses. A recent survey at Stanford found that nearly 30 percent of the undergraduates in 1987 had tried the drug at least once, said Stephen J. Peroutka, who conducted the study.

The University of Colorado reported that 20 percent of its undergraduates had used MDMA at least once, and a major school on the East Coast, that prefers to be unnamed, reported that 17 percent of its student body had tried the drug, Peroutka said. There is also a growing "acid house" culture surrounding MDMA, which combines the drug with rock music at selected night clubs in Manhattan and San Francisco.

"It's almost impossible to get an accurate sense of how many people have taken this drug [and] how many people are taking this drug," he said.

Chemical action

MDMA works, Peroutka said, by causing certain neurons in the brain to release serotonin, a neurotransmitter, which results in a sudden drop of the brain's serotonin levels. Within 12 hours the amount of serotonin, also called 5HT, returns to normal.

"The problem is that subacutely — days to weeks to months and even a year later — it destroys 5HT nerve terminals, results in long-term depletions of the brain serotonin levels." That reduction can last for many months, Peroutka said.

While 5HT levels in the brain

eventually return to normal, MDMA appears to inflict lasting changes in the brain. Electron microscope studies of the brains of rats have shown that there are two types of 5HT terminals — called "D" types and "M" types, Peroutka said. In normal brains, "D" terminals account for approximately 80 percent of the 5HT terminals, while "M" terminals account for 20 percent.

A few days after the rats were given MDMA, he said, the "D" terminals themselves are simply gone." While the 5HT terminals appear to regenerate, all of the re-grown terminals that were examined were of the "M" type. Thus, rat brains studied one year after exposure to MDMA had only "M" terminals.

The studies were performed at a laboratory at Johns Hopkins University. Rats were given 5 milligram of MDMA per kilogram of their body weight. Typical human dosage for the drug is 2 milligrams per kilogram of body weight, or about 150 milligrams.

"Even though there is recovery, it's not identical recovery. There are different nerve cells, different origins, that are sprouting and returning to innovate the cortex. Obviously, the implications of this are unknown," he said.

Peroutka cautioned that these results from rat brains might not be directly applicable to the brains of humans. However, higher order brains appear to be more sensitive than simple brains to the neurotoxicological effects of the drug, he said.

While certain chemicals can prevent MDMA's damage to brain cells, these chemicals appear to also eliminate the mind-altering effects of the drug. Peroutka told of a woman who had been prescribed such a chemical, known as a serotonin uptake blocker, for depression. "Now, when she takes MDMA, nothing happens," he said.

None of the other scientists speaking at the symposium would comment on the significance of the new findings.

"We really still don't have a good idea of what [serotonin] does," Peroutka said. He suspected that a person who had lost 90 percent of the ability to make serotonin would suffer depression and insomnia.

"Is [MDMA] a human neurotoxin?" Peroutka asked. "There is no data to suggest that it is.

But there are hints." Those hints include:

- The fact that MDMA is non-addicting, and that very few people have been found who take it more than a dozen times. Peroutka hypothesized that MDMA might destroy the very regions of the brain which it acts upon to produce its "high."

- The fact that the first dose of MDMA is reported to be almost always different and almost always better than any others.

- The fact that MDMA loses its potency with increased use. One Stanford student was reported to say that "freshmen love it, sophomores like it, juniors are indifferent to it and seniors are afraid of it."

"What does it mean if somebody is knocking off 80 percent of their 5HT terminals at age 25? Will they just sprout and you'll have enough to get you through your life?" Medical science just doesn't know, he said.

Calls for more studies ignored

Research findings such as these — as well as the largely anecdotal accounts of MDMA's helpfulness in psychotherapy — loudly call out for the need of further research, particularly research in humans. Many researchers present at the symposium said that the Drug Enforcement Agency and the Food and Drug Administration have made such research impossible.

The FDA has rejected all applications to study the drug in humans because of the unresolved question of human neurotoxicity, said Jerome Beck, a researcher at the University of California School of Public Health. Even studies which would use terminally ill cancer patients have been rejected, on the grounds that people who are about to die are entitled to the same protection under the law as healthy people.

Nevertheless, the FDA allows drugs with similar toxicity on the market. One such drug, fenfluramine, is commonly used for long periods of time for the treatment of obesity, said Reese Jones, who directs a laboratory which tests Schedule 1 drugs at the University of California at San Francisco.

"The main problem with MDMA is that many people in power feel that it [is so heavily abused] that it needs to be treated in a very special way," he said.



Ognen J. Nastov/T

An exhibition of giant origami was displayed in L 7. The life-size birds, animals, and flowers were featured in the last of four IAP workshops.

Conference discusses Mexican economic situation

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government will have to "dance" with American banks in order to find an appropriate solution.

Deregulation and privatization are also being explored; the government is currently trying to privatize its telecommunications and transportation sectors. Import permits and tariffs decreased considerably last year, according to Berenstein.

Economics and social unrest

Nevy warned against the social instability that might emerge from the Mexican economic crisis. Workers' real wages have dropped 40 percent in the past years, and social service expenditures have been cut in order to trim the budget, Nevy said.

There have been threats of a general strike by the leading labor union, Confederacion de Trabajadores Mexicanos (CTM), and other instances of social unrest, according to Tellez.

In a unifying measure, the government late last year produced a social pact, "Pacto de Solidaridad," among government officials, workers and business leaders. These sectors agreed not to raise prices or wages beyond certain limits in order to stop inflation.

For this pact to succeed, Mexico must settle its debt, which takes approximately six percent of the GDP every year, Tellez remarked.

Nevy believed that Mexico

tucional (PRI), said that democracy are the major problems facing Mexico. He said that these three factors are connected with the United States, the major consumer of drugs and the principal of the Mexican debt.

Heróles, a supporter of position party Frente Der Nacional (FDN), said that Mexico must change its electoral system if it is to become a plural democracy. He argued that the Mexican presidential election should have been nullified because of fraudulent means used by governors, PRI officials and union leaders.

The PRI has been out of power with Mexican society, and it complains the party's growing unpopularity, according to Heróles.

He claimed that the PRI's fall down when Cuauhtémoc Cárdenas began to ask for democratic reforms, which other PRI officials refused. Cardenas later formed the FDN, which Heróles believes is the ultimate challenge to the PRI.

According to Zebadua, the different pressures the Mexican government now face come from abroad (banks and multinational industries), below (the growing middle class and the working and inside (Cardenas and his leaders). The government, said, must deal with these pressures.

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