

May Cause Brain Damage

Ecstasy, a "designer drug" once touted as a breakthrough aid to psychotherapy, depletes a key chemical in the brain and may cause permanent neurological damage, a study on monkeys suggests.

Squirrel monkeys injected with 3,4-methylenedioxymethamphetamine, or MDMA, showed a marked decrease in the serotonin, a brain chemical that is poorly understood but believed to be vital, as well as damage to nerve pathways involving the chemical, researchers from Johns Hopkins University in Baltimore reported last week in the *Journal of the American Medical Association*.

The researchers said their finding is the first to show such effects in primates and should serve as a warning to anyone who decides to take the drug.

"It remains to be determined if administration of MDMA to monkeys in a pattern identical to that used by humans produces similar toxicity," the researchers said, but they cautioned, "Humans are generally regarded as being more sensitive than monkeys to the toxic effects of drugs."

"In view of these considerations," they concluded, "it would seem prudent for humans to exercise caution in the use of MDMA."

MDMA, alternatively known on the street as "Adam" or "XTC," is one of the more popular recreational drugs, with more than 30,000 capsules sold monthly during 1985. In some psychiatric circles, MDMA has been suggested as an adjunct to psychological therapy because of its reported ability to improve communication and enhance emotional awareness.

However, in 1985 the United States Drug Enforcement Agency placed MDMA on its list of controlled substances because studies showed that the drug caused brain damage in rats.

Because rat experiments do not always accurately predict the effects of drugs on the human brain, the Hopkins researchers gave eight squirrel monkeys injections of MDMA twice daily for four consecutive days.

Two weeks later, the brains of the monkeys were examined. The researchers found severe depletion of the brain chemical serotonin. Further, they found damage to brain cells involved in the production of the chemical.

The researchers speculated that depletion of the chemical resulted from damage to the secreting nerve cells, but they do not know whether the effect was permanent.

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'Ecstasy' May Harm Brain, Study Shows

By David Perlman
Chronicle Science Editor

Ecstasy, a "designer drug" that some psychiatrists claim is a major aid in psychotherapy, depletes a key chemical in the brain and may cause permanent neurological damage, a study on animals indicated yesterday.

Monkeys injected with the drug that is also known on the street as Adam, XTC and MDMA, showed marked damage to nerve pathways and lowered the brain's content of serotonin, a vital chemical that transmits impulses from cell to cell in the brain, according to researchers from Palo Alto, San Jose and Baltimore.

The report by Dr. William Lishman of the Institute for Medical Research in Palo Alto, Dr. George A. Ricaurte of Johns Hopkins University and a group of colleagues was published in the *Journal of the American Medical Association*.

The researchers said their study is the first to show the effects of the drug on brain chemistry in primates and should provide a warning to anyone who decides to take the drug.

The experiments showed that Ecstasy injected into 17 monkeys of three different species severely

damaged the brain cells that secrete serotonin and made the animals "highly vulnerable to the toxic effects" of the drug. Whether the drug's damaging effects are reversible or permanent is still unknown, the researchers said.

Although the research cannot be deliberately repeated in humans, the study's authors warned that "humans are generally regarded as being more sensitive than monkeys to the toxic effects of drugs." They urged careful study of humans who have taken Ecstasy to see whether their nerve cells are damaged and whether their behavior is impaired.

The medical use of Ecstasy is tightly controlled by the federal Drug Enforcement Administration. But a group of widely known psychiatrists, led by Dr. Lester Grinspoon of Harvard University, is seeking a court order allowing them to prescribe it more easily because they claim it enables patients to develop heightened insight during psychotherapy.

Although Ecstasy is legally manufactured, it is also relatively easy for underground chemists to make, and an estimated 30,000 illegal capsules are sold on the street nationwide every day.