

The emergency scheduling of MDMA was based on the contention by DEA that MDMA represents an imminent danger to the public health. This assessment by DEA was based largely on so-far unpublished findings by researchers at the University of Chicago. While our review of their methods ~~shows this work to be sound, and an extension of similar studies done by those scientists on amphetamine and methylamphetamine, their study focused on the hallucinogenic drug MDA, and not on the substance MDMA, which is the subject of the present controversy.~~ 159

First of all, we would like to point out that we do not take lightly the possibility that MDMA might cause some form of neurotoxicity in humans. In fact, we are aware of studies now underway to examine this very question. Preliminary data from that study, in a limited number of rats, have failed to reveal brain damage at doses twenty-fold higher than those employed in the University of Chicago study. Furthermore, oral administration of MDMA to rats leads to death only at doses approximately 100 times higher than those that are effective in producing behavioral effects, indicating that MDMA ~~may in fact have relatively low toxicity.~~ In an earlier scientific study, MDMA was reported to be considerably more toxic. However, in that study the material was administered by injection into the peritoneal cavity of rats, whereas this more recent toxicity data was ~~gathered~~ ^{generated} by administering the substance orally, ~~as it is used by therapists.~~
the route used

in so far as these results can be extrapolated to humans

The University of Chicago study ^{What studies} fails to demonstrate that MDMA causes brain damage, either in rats or in any other animal, and uses experimental designs that do not reflect the actual observed patterns of therapeutic use of MDMA.

With regard to the University of Chicago study, certain aspects of that work need to be emphasized and clarified. For example, that study:

1. Employed only the hallucinogenic drug MDA, and not MDMA. ~~This is a very important point.~~
2. Employed rats as the experimental animal, and not higher mammals that might be expected to be similar to humans.
3. Employed as the lowest dose of MDA that produced a significant change in rat brain chemistry, 5 mg/kg, approximately 2-3 times the dose of MDA that is hallucinogenic in man.
4. Reported on three (3) rats that were administered 10 mg/kg of MDA. This dose is approximately 4-6 times higher than the dose of MDA that is hallucinogenic in humans. These rats were given this dose of MDA each day for four days. It is in these three rats that evidence for degeneration of serotonin-containing rat brain neurons was observed.

The authors of the University of Chicago study, in their paper, state "Given differences in species, dose, frequency, and route of administration, as well as differences in the way in which rats and humans metabolize amphetamine, it would be premature to extrapolate the present findings to humans." We ~~must reiterate~~ ^{emphasize} that these statements all apply, NOT to MDMA, but to the hallucinogenic drug MDA.

We have provided arguments to the DEA that MDMA is a different substance than MDA. We have repeatedly pointed out that whereas MDA is hallucinogenic, MDMA is not. Even though the chemical structures of MDA and MDMA differ by

methyl group
only one ~~carbon atom~~, there is ample precedent in the scientific literature that such a small change can completely alter the pharmacology of a substance. We have argued that this is exactly the situation with MDA and MDMA. Furthermore, if the neurotoxic properties of MDA in rats are in any way related to its hallucinogenic action, the lack of hallucinogenic effect for MDMA would imply that such neurotoxicity in rats might be absent.

The arguments presented by both DEA and the workers from the University of Chicago rely on analogies. It is suggested that since one observes similar pharmacology and toxicology of amphetamine and methylamphetamine, that similarities will therefore exist between MDA and MDMA. However, both amphetamine and methylamphetamine have similar effects in humans; they are both central stimulants and their effects are essentially indistinguishable. They both act primarily in catecholamine pathways in the brain, with major effects on brain dopamine systems. On the other hand, the University of Chicago study focused on the effects of MDA on serotonin systems in the rat brain. There is no evidence that the addition of the N-methyl to MDA, to give MDMA, gives rise to similar toxicology. Indeed, it has been our argument all along that this transformation gives rise to a completely different effect for MDMA, when compared to MDA. Similarly, arguments that MDMA will display neurotoxicity in rodents similar to MDA are conjecture at this point. We strongly feel that such conjectures do not comprise that sort of hard evidence that ought to be necessary to empower DEA with the authority to bypass the normal review process that was already underway, and to conclude that the use of MDMA represents an imminent danger to the public health.