

Dear Science Editors,

Ricaurte and colleagues report dopamine neurotoxicity in primates injected repeatedly with MDMA (1). Since human MDMA users very rarely die from MDMA use (2, 3), the high mortality in Ricaurte's primates suggests they failed to administer a "common recreational dose regimen," further calling into question their interspecies scaling model (4, 5, 6). Ricaurte previously reported subcutaneous injection in squirrel monkeys was twice as neurotoxic as oral administration (7), yet now claims oral administration offers "little or no" neuroprotection. Ricaurte and colleagues nonetheless suggest that even one night's recreational use of MDMA may result in dopamine toxicity and increased risk of Parkinson's Disease. Curiously, they fail to cite studies finding normal dopamine (but reduced serotonin) levels, in heavy MDMA users. Two reports used in vivo imaging to estimate brain dopamine transporter levels (8, 9); another conducted postmortem analysis of an individual (10). Furthermore, previous studies in heavy MDMA users conducted by Drs. Ricaurte and McCann failed to find reduced dopamine metabolites in cerebrospinal fluid (11, 12, 13). The dopamine changes produced by MDMA in this study have long been known as potential effects of d-amphetamine and d-methamphetamine, two prescription drugs that have been available for over eighty years (14). There is no credible evidence linking these drugs or the monoaminergic changes they can produce in animals (and, perhaps, humans) to Parkinson's Disease, nor is there any evidence of increased incidence of early-onset Parkinson's (15). We hope the theoretical risks suggested by this study are not inappropriately generalized to clinical MDMA research, which has been conducted without evidence of toxicity (including no detectable changes in serotonin transporter or memory) (4, 16, 17).

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