K9 MDMA in Four Medical Examiner's Cases in the City and County of San Francisco

Nikolas P. Lemos, PhD, Steven B. Karch, MD, Elin Lin, MS, Glenn Nazareno, MD, Venus Azar, MD, Jon Smith, MD, Amy P. Hart, MD, and Boyd G. Stephens, MD, Office of Chief Medical Examiner, Hall of Justice, North Terrace, 850 Bryant Street, San Francisco, CA 94103*

The goal of this presentation is to alert the general community on the apparent risks of MDMA use and will also aid forensic toxicologists in the interpretation of postmortem and antemortem MDMA levels.

This presentation will impact the forensic community and/or humanity by alerting the general community of the apparent risks of MDMA use and will also aid forensic toxicologists in the interpretation of postmortem and antemortem MDMA levels.

3,4-methylenedioxymethamphetamine (MDMA or 'ecstasy') is a 'psychedelic amphetamine' tied to the underground rave and dance club scenes throughout the world, but is also being considered for use by therapists as an adjunct agent. The Office of the Chief Medical Examiner for the City and County of San Francisco serves a population of approximately 750,000 and this number has remained stable for several decades. In 2002, 1,463 cases came under the jurisdiction of the SFOCME; MDMA was detected in blood, urine, and/or tissue of four cases, giving an incidence of 0.5 per 100,000 people. The data presented herein is the result of a retrospective analysis of all death investigations carried out by the SFOCME, from January 1, 2002 until December 31, 2002. The median age of decedents was 22 years (SD=3, range 18-25 years). Decedents were overwhelmingly male (75%) and mostly black (50%). Gunshot wound was the cause of death in two cases, and asphyxia due to hanging in one. In only one instance, a case of anoxic-ischemic encephalopathy secondary to acute MDMA intoxication was MDMA actually considered the cause of death. Benzoylecgonine was detected in the urine of one, and dextromethorphan was detected in the blood and urine of the second of the two decedents who died due to gunshot wounds. Amphetamines were screened in the biological specimens of these cases using EMIT. MDMA and other amphetamines were then extracted from biological specimens using liquidliquid extraction for alkaline drugs using reconstitution in chloroform, derivatization with acetic anhydride, and reconstitution in methanol prior to identification and confirmation/quantitation by gas chromatography–mass spectrometry (GC-MS) in the electron impact ionization mode. In three of the four cases, where death was immediate (i.e. gunshot wounds and asphyxia due to hanging) the mean MDMA postmortem femoral blood concentration was 0.30 ± 0.07lg/mL and the mean postmortem urine concentration was 13.1 ± 7.6 lg/mL. In the case where death was actually due to MDMA intoxication, the antemortem serum MDMA concentration was 0.7 lg/mL near the time of admission, falling to 0.3 lg/mL seven and a half hours later; the respective antemortem serum MDA concentrations were 0.02 lg/mL, and 0.01 lg/mg. Both MDMA and MDA were present in the antemortem urine specimen (at concentrations of 10.4 and 0.45 lg/mL, respectively). For comparison, a review from another Medical Examiner's Department where a 24-year-old white male died of acute polysubstance toxicity involving alcohol, cocaine, heroin, and MDMA, where the postmortem MDMA blood concentration was 1.7 lg/mL and the postmortem MDA blood concentration was 0.14 lg/mL. The expectation is that this study will alert the general community on the apparent risks of MDMA use and will also aid forensic toxicologists in the interpretation of postmortem and antemortem MDMA levels.

MDMA, Ecstasy, Postmortem

 ** Presenting Author*