3,4-methylenedioxymethylamphetamine (MDMA) concentrations in Emergency Department presentations enrolled in the Emerging Drugs Network of Australia

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Introduction: High dose 3,4-methylenedioxymethylamphetamine (MDMA) products have been increasingly identified in Australia. Clinical and analytical data from emergency department (ED) presentations involving confirmed MDMA exposure remain limited. We present demographic, outcome and concentration data on ED presentations with confirmed MDMA exposure and explore the proportion with 3,4-methylenedioxyamphetamine (MDA):MDMA concentration ratios suggestive of MDA co-ingestion (ratio >1).

Methods: Data were extracted from the Emerging Drugs Network of Australia (EDNA) clinical registry for ED presentations with confirmed MDMA exposure identified via comprehensive analytical testing between April 2020-March 2026. Data were summarised and where available, MDA:MDMA concentration ratios calculated.

Results: MDMA was confirmed in 322 ED presentations: 205/322 (64%) were male with a median age of 24 years (range, 16-59). MDA was co-detected in 194/322 (60%). Additional illicit and/or novel psychoactive substances were detected in 215/322 (67%, excluding cannabis); most frequently methylamphetamine (38%), cocaine (29%), gamma-hydroxybutyrate (23%) and bromazolam (7%).

MDMA concentrations were available in 262/322 (81%) presentations. Median concentration was 0.30 mg/L (Q1-Q3, 0.08-0.67). MDA concentrations were available in 165/262 (63%) presentations. Median MDA concentration was 0.02 mg/L (Q1-Q3, 0.02-0.05). Among these, 8/165 (5%) had an MDA:MDMA ratio >1.0, and 5/165 (3%) had a ratio between 0.2-1.0.

Discussions and Conclusions: Over half of EDNA-enrolled ED presentations with quantitative MDMA testing had concentrations ≥0.25 mg/L, suggested as the upper limit of

recreational MDMA concentration [Kalant 2001]. 5% had MDA:MDMA ratios suggestive of MDA ingestion, rather than co-detection due to MDMA metabolism. Interpretation is limited by unknown time of ingestion.

Implications: MDMA concentrations appear relatively higher than other reported series, potentially reflecting higher-dose products, timing of blood sampling, individual pharmacokinetic variability, or cohort selection criteria of severe/unusual acute toxicity. Concentration data (with time of ingestion) may provide additional value to harm reduction approaches.

Disclosure of Interest Statement:
EDNA is supported by a National Health and Medical Research Council Ideas Grant (GNT2001107).

References:
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