



Toxicology Section - 2016

K1 Driving Under the Influence of 5-MAPB: A Case Report

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After attending this presentation, attendees will better understand the novel psychoactive substances 5-APB and 5-MAPB and their effects on driving performance. An impaired driving case is presented in which 5-MAPB was the only drug detected and the observations made by the arresting officer suggested the presence of a stimulant drug.

This presentation will impact the forensic science community by providing law enforcement, toxicologists, and those in the medical community with observations of an individual under the influence of 5-MAPB and detection methods used to screen for 5-MAPB in whole blood.

5-MAPB is the N-methyl derivative of 5-APB. Both compounds are analogues of amphetamine and methamphetamine and are considered novel psychoactive substances. Their benzofuran ring also makes them analogues of MDA and MDMA. Similar to MDA and MDMA, they are consumed as stimulating or entactogenic drugs with euphoric and empathogenic effects.^{1,2} Sold as so-called “research chemicals” via the internet, these compounds first appeared in 2010 and 2012, when users started discussing their effects on internet drug forums.

In this case, a 19-year-old male was stopped at 3:00 a.m. for driving erratically. He reportedly was drifting back and forth across the center skip line and the fog line. When he was contacted by the officer, he indicated the reason for his poor driving was that he and his passenger were in a “heated debate and he was distracted.” The subject stated he was coming from a concert and had worked a 19-hour day.

According to the officer’s report, the subject was very energetic, unable to hold still, talked excessively, and spoke very quickly. His eyes were reportedly wide open, his pupils were dilated, and didn’t react to the officer’s flashlight. The subject reportedly admitted to using heroin, marijuana, and an unknown anti-psychotic medication.

Ethanol and immunoassay drug screens were negative. Routine testing for stimulant drugs and opiates were also negative. A basic drug screen by Gas Chromatography/Mass Spectrometry (GC/MS) revealed the presence of a significant peak (RT=7.453min) with the following (m/z) fragments: 58 (base peak), 131, 77, 102, 42, 174, 207, 327. A similar fragmentation pattern was observed in the Cayman Spectral Library for the compound 5-MAPB. Further confirmation testing was performed using liquid-liquid extraction followed by derivatization with heptafluorobutyric anhydride; comparison of a purchased standard to the unknown sample confirmed the presence of 0.44mg/L of 5-MAPB in the blood by GC/MS Selected Ion Monitoring (SIM).

Limited information about 5-APB and 5-MAPB exists in the literature, particularly in relation to impaired driving. Knowledge of the effects of these drugs is mostly limited to self reports by users on online discussion boards.

Reference(s):

1. Welter J., Kavanagh P., Meyer M.R., Maurer H.H. (2015). Benzofuran analogues of amphetamine and methamphetamine: studies on the metabolism and toxicological analysis of 5-APB and 5-MAPB in urine and plasma using GC-MS and LC-(HR)-MSⁿ techniques. *Anal Bioanal Chem.* Doi:10.1007/s00216-014-8360-0
2. Welter J., Brandt S.D., Kavanagh P., Meyer M.R., Maurer H.H. (2015). Metabolic fate, mass spectral fragmentation, detectability, and differentiation in urine of the benzofuran designer drugs 6-APB and 6-MAPB in comparison to their 5-isomers using GC-MS and LC-(HR)-MSⁿ techniques. *Anal Bioanal Chem.* Doi:10.1007/s00216-015-8552-2.

5-MAPB, Designer Drugs, DUID