



K13 “Benzofury” Also Known as 6-APB (6-(2- Aminopropyl)-2,3-Dihydrobenzofuran): A Recent Fatality Involving an Unusual Drug

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After attending this presentation, attendees will be alerted to a popular new “research chemical” being sold over the internet, 6-(2-aminopropyl)-2,3-dihydrobenzofuran or 6-APB, commonly referred to as “Benzofury” and being used as an ecstasy substitute. This presentation will aid forensic toxicologists in the identification of this unusual compound and provide quantitation data from a recent postmortem case.

This presentation will impact the forensic science community by providing scientific literature from a recent postmortem case involving 6-APB. There is little to no toxicological data available at this time and the presentation of this case may help in compiling such data.

Benzofury (6-(2-Aminopropyl)-2,3-dihydrobenzofuran) or 6-APB, has become a popular “research chemical” available for sale over the internet. It is being marketed as “plant food” and has recently become available in its pure powder form. It is gaining popularity among recreational users for its reported euphoric and psychedelic properties, which are thought to be similar to Methylenedioxyamphetamine (MDA). It is in the phenethylamine class of drugs and an analog of 3,4- MDA, with an oxygen atom within the methylenedioxy portion of MDA being replaced with a methylene group. It is thought to be an entactogen, stimulant, and psychedelic drug and is currently unscheduled in the United States. However, it may be covered in the Federal Analog Act and is still currently legal in several other countries. Dr. David Nichols and his team first investigated 6-APB around 1993 at Purdue as a potential antidepressant which could also possibly be used in conjunction with psychotherapy.

A 21-year-old male had been drinking and using drugs over the course of an evening with two friends at a local motel in Peoria, AZ. They purchased nine pills of what they thought were ecstasy, each consuming three of the pills. During the night, the decedent became aggressive and violent and the friends feared they would be removed from the property. One of the friends put the decedent face down on the bed and straddled him in an effort to calm him. The attempt to restrain him lasted approximately 15 minutes and ended with the friend putting the decedent in a choke hold. The decedent was then found to be unresponsive and emergency medical services were summoned. He was transported to a local hospital where his death was pronounced in the emergency department.

The decedent was transported to the medical examiner’s office where a full autopsy was performed. The only notable findings were contusions from the restraint. Multiple postmortem samples including vitreous, cardiac blood, urine, bile, and gastric contents were collected and sent to the toxicology laboratory for testing. Blood and urine specimens were subjected to a qualitative analysis using a basic pH screen with a liquid/liquid extraction and analyzed by Gas Chromatography/Nitrogen Phosphorus Detection (GC/NPD), then confirmed by Gas Chromatography/Mass Spectrometry (GC/MS). Volatiles were assayed on vitreous and cardiac blood using Gas Chromatograph/Flame Ionization Detector (GC/FID). The blood was also screened by Enzyme-Linked Immuno-Sorbent Assay (ELISA) for barbiturates, benzodiazepines, benzoyllecgonine, opiates, methamphetamine, and fentanyl. The methamphetamine screen reacted at a low positive level. A sympathomimetic amine quantitation was performed on the cardiac blood by GC/MS Selected Ion Monitoring (SIM), with a large unidentified peak seen on the Thermal Imaging Camera (TIC). A significant peak was also seen on the GC/NPD screen as well as the GC/MS/TIC, which also was unidentified. The peak was subsequently identified as 6-APB and a known standard was obtained courtesy of the DEA Special Testing Laboratory. The 6-APB was quantitated using a sympathomimetic amine method and the concentration was determined by comparing the peak area ratios of 6-APB to the internal standard (MDA-D5) against a standard curve, with linearity demonstrated up to 1.0mg/L. Fractional volumes were used for samples exceeding linearity. The concentration of 6-APB in the decedent’s cardiac blood was found to be 2.15mg/L. Ethanol was found in the decedent’s cardiac blood and vitreous at 0.05mg% and 0.09 mg%, respectively.

The cause of death was listed as external compression of the neck and the manner of death was homicide. Benzofury (6-APB) was listed a contributing factor. In its pure powder form, 6-APB is usually ingested orally with the onset of effects reported within 30 – 90 min after ingestion. Scant information regarding this drug is available; therefore, little is known about its dosing and toxicity.

Benzofury, MDA, Postmortem