



E30 Spicing Things Up: Death Due to the Use of the Synthetic Cannabinoid ADB-FUBINACA

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Learning Overview: After attending this presentation, attendees will be able to apply their understanding of thorough medicolegal death investigation practices to suspected Novel Psychoactive Substance (NPS) exposures. Attendees will be able to describe the elements of a multidisciplinary approach in NPS-related death investigations in order to facilitate effective communication and collaboration with law enforcement and medical, forensic, and public health providers.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by contributing to the literature regarding fatal synthetic cannabinoid exposure while underscoring the need for ongoing identification of these compounds in both postmortem specimens and drug paraphernalia.

Synthetic Cannabinoids (SC) are characterized as NPS and have been available for the past decade in the United States' illicit drug market. They are typically promoted as herbal preparations, branded as "not for human consumption," and sold in association with a variety of creative packaging and product names, such as "Spice," "K2," "Black Mamba," etc. Synthetic cannabinoids act as full agonists at the CB1 and CB2 receptors and as such they may be used as a substitute for cannabis.¹⁻³ Ever-shifting changes in NPS chemistry, manufacture, and distribution have continued to present challenges to the identification and interdiction of these compounds as well as the treatment of exposures and public health education strategies to combat their use.

This study presents the case of a 31-year-old male who was transported to an emergency department after he was found on the ground in a postictal state at a city park. A bystander witnessed him smoking an unknown substance in a glass pipe. He admitted to emergency medical services personnel that he had smoked "Spice" but was otherwise uncooperative. Clinical presentation included a severe tachycardia with an initial heart rate of 170 beats per minute and diaphoresis. He received symptomatic and supportive care and was discharged after approximately five hours of observation. Forty-eight hours later, friends found him unresponsive on the balcony of a house that had been rented for a bachelor party. He was pronounced dead at the scene. A black foil package labeled "Spanish Devil AKA Diablo" was found in his pants pocket, and a glass pipe was located near the body. Each item appeared to contain brown plant material.

In acute exposure, synthetic cannabinoids have been reported to produce nausea, agitation, tachycardia, hypertension, hyperthermia, delirium, seizures, renal failure, myocardial injury, and death.¹⁻³ Drug variability, dose, and potency as well as the presence of other licit or illicit substances may intensify the toxic effects of these compounds.

ADB-FUBINACA was identified in the postmortem peripheral blood specimen and in the drug paraphernalia. In 2018, Shanks et al. published the first case report of a death attributed to use of ADB-FUBINACA.³ In 2019, this compound was among several synthetic cannabinoids to receive permanent Schedule I status by the United States Drug Enforcement Administration.⁴ Structurally related to AB-FUBINACA, ADB-FUBINACA has a strong affinity for the CB1 receptor, which explains its clinical effects. Pathology, toxicology, and drug chemistry findings specific to this case will be presented in the context of previously published ADB-FUBINACA toxic exposures and fatalities. Based on the circumstances surrounding the victim's social history, clinical presentation, temporal relationship of SC use as well as the toxicology, drug analysis, and autopsy findings, the cause of death was attributed to ADB-FUBINACA intoxication. The manner of death was classified as accident.

Reference(s):

1. World Health Organization. *Critical review report: ADB-FUBINACA*. Expert Committee on Drug Dependence, Forty-first Meeting. Geneva, 2018 Nov:12-16.
2. Brandehoff N., Adams A., McDaniel K., Banister S.D., Geron R., Monte A.A. Synthetic cannabinoid "Black Mamba" infidelity in patients presenting for emergency stabilization in Colorado: A P SCAN Cohort. *Clin Toxicol (Phila)*. 2018 Mar;56(3):193-198.
3. Shanks K.G., Clark W., Behonick G. Death associated with the use of the synthetic cannabinoid ADB-FUBINACA. *J Anal Toxicol*. 2016;40:236-239.
4. https://www.deadiversion.usdoj.gov/fed_regs/rules/2019/fr0408_2.htm.

Synthetic Cannabinoids, ADB-FUBINACA, Death