

Date of Release: July 25, 2018

Information Regarding “Santa Muerte” Stamped Drug Seizures Causing Hospitalizations in the Greater Philadelphia Area



Images depict a “bundle” of fourteen small dime-bags incasing blue wax-bags, stamped in black or red ink with the words “Santa Muerte,” containing a light tan powder. These drug exhibits were seized following response to a residence for suspected drug overdose.

The Center for Forensic Science Research and Education at the Fredric Rieders Family Foundation received notification over the weekend from July 20 to 22, 2018, that hospitals in the Greater Philadelphia Area were seeing increased numbers of admitted patients for suspected opioid overdose. Media reports estimated more than 160 individuals were admitted to area hospitals for overdose during this time and user reports noted a new street drug called “Santa Muerte” or “Perfect 10.” Emergency medical personnel reported successful use of naloxone to reverse adverse respiratory effects. Upon revival of drug users, agitation and confusion were observed. These clinical features lead to the initial diagnosis by public health officials that the street drug material could contain a possible anticholinergic agent (e.g. scopolamine).

Through collaborations with local law enforcement and public health officials in Philadelphia and surrounding areas, our laboratory acquired a seized drug exhibit from Montgomery County, PA, a neighboring county to the city of Philadelphia, to analytically confirm the drug(s) present. The exhibits (shown above) were stamped with “Santa Muerte” and consistent in appearance with a suspected heroin-like drug preparation. The seized drug material was prepared using an acid/base extraction. Instrumental analysis was performed via gas chromatography mass spectrometry (GC-MS) and liquid chromatography quadrupole time-of-flight mass spectrometry (LC-QTOF). The “Santa Muerte” exhibits, stamped with black or red ink, were found to contain **heroin, fentanyl, and 5F-ADB**. This combination of opioids and a synthetic cannabinoid is consistent with clinical reports of respiratory depression and agitated behavior.

5F-ADB (or 5F-MDMB-PINACA) is a popular synthetic cannabinoid appearing in current forensic chemistry and forensic toxicology casework. The toxicity of 5F-ADB has been demonstrated through case reports involving intoxications and fatalities in recent literature (1–3). *In vivo* cannabimimetic studies show that 5F-ADB is active at CB₁ and CB₂ receptors (4), and *in vitro* human case studies show adverse clinical effects can include agitation, confusion, anxiety, psychosis, and tachycardia (3).

References:

1. Angerer, V., Jacobi, S., Franz, F., Auwärter, V. and Pietsch, J. (2017) Three fatalities associated with the synthetic cannabinoids 5F-ADB, 5F-PB-22, and AB-CHMINACA. *Forensic Science International*, **281**, e9–e15.
2. Kusano, M., Zaitzu, K., Taki, K., Hisatsune, K., Nakajima, J., Moriyasu, T., et al. (2018) Fatal intoxication by 5F-ADB and diphenidine: Detection, quantification, and investigation of their main metabolic pathways in humans by LC/MS/MS and LC/Q-TOFMS. *Drug Testing and Analysis*, **10**, 284–293.
3. Barceló, B., Pichini, S., López-Corominas, V., Gomila, I., Yates, C., Busardò, F.P., et al. (2017) Acute intoxication caused by synthetic cannabinoids 5F-ADB and MMB-2201: A case series. *Forensic Science International*, **273**, e10–e14.
4. Banister, S.D., Longworth, M., Kevin, R., Sachdev, S., Santiago, M., Stuart, J., et al. (2016) Pharmacology of Valinate and tert-Leucinate Synthetic Cannabinoids 5F-AMBICA, 5F-AMB, 5F-ADB, AMB-FUBINACA, MDMB-FUBINACA, MDMB-CHMICA, and Their Analogues. *ACS chemical neuroscience*, **7**, 1241–1254.

Accompanying News Articles:

<https://www.nbcphiladelphia.com/news/local/Overdose-Spike-Drugs-Heroin-Philadelphia-Area-Montgomery-County-Hospital-488847911.html>

<http://www.philly.com/philly/health/addiction/drug-overdose-toll-rises-in-philadelphia-as-heroin-prized-for-purity-turns-out-to-be-contaminated-20180724.html>

<http://www.philly.com/philly/health/addiction/police-report-significant-overdose-spike-around-philadelphia-20180722.html>

About the Center:

The Center for Forensic Science Research and Education is a nonprofit 501(c)(3) research and educational foundation, creating partnerships with academic institutions, crime laboratories, and instrument manufacturers, to promote excellence in forensic science by conducting cutting edge research, offering graduate forensic science education, and continuing professional education for forensic professionals. The Center for Forensic Science Research and Education maintains a list of NPS first reported in the United States:

<https://www.forensicscienceeducation.org/resources/nps-discovery/>
www.forensicscienceeducation.org

For More Information Contact:

Dr. Barry K. Logan, F-ABFT

Phone: (215) 366-1591

Email: contact@frfoundation.org

This report was prepared by Alex J. Krotulski, MSFS, Melissa F. Fogarty, MSFS, Amanda L.A. Mohr, MSFS, and Barry K. Logan, PhD, F-ABFT, at the Center for Forensic Science Research and Education.