Positivity of New Synthetic Cannabinoid 4F-MDMB-BICA Increasing in U.S. as Prevalence of 5F-MDMB-PICA Wanes

Purpose: The objective of this public announcement is to notify public health and public safety, law enforcement, clinicians, medical examiners and coroners, laboratory personnel, drug treatment providers, and other related communities about new information surrounding the emergent synthetic cannabinoid **4F-MDMB-BICA**.

Background: Synthetic cannabinoids ("Spice" or "K2") are chemically manufactured drugs, often associated with unknown biological effects and health risks. Synthetic cannabinoids can be prepared (e.g. plant material, powder) and packaged in a variety of forms (e.g. foil packaging). Adverse effects reported in association with synthetic cannabinoid use include neurological abnormalities (e.g., psychosis, agitation, irritability, paranoia, confusion, anxiety, etc.), psychiatric episodes (e.g., hallucinations, delusions, self-harm, etc.), other physical ailments (e.g., tachycardia, hypertension, arrhythmia, chest pain, tachypnea, gastrointestinal distress, acute kidney injury, nausea, vomiting, fever, hyperglycemia, hypokalemia, sedation, etc.), and death.

Summary: 4F-MDMB-BICA was first identified in the United States (U.S.) in plant-like material seized by law enforcement in May 2020 and soon after in toxicology casework in July 2020, with concurrent emergence in European countries. 4F-MDMB-BICA is structurally similar to the synthetic cannabinoid **4F-MDMB-BINACA**, differing by an indole vs. indazole core, respectively. 4F-MDMB-BICA is an activator of the cannabinoid receptor system and its toxicity can be demonstrated through medicolegal death investigations paired with comprehensive toxicology findings. In the U.S., 4F-MDMB-BICA has been identified in at least 26 toxicology cases associated with postmortem (PM) and driving under the influence of drugs (DUID) investigations. In Europe, 4F-MDMB-BICA has been identified in several countries, including Hungary, the United Kingdom, Belgium, and Slovenia. Eleven deaths were attributed to the use of 4F-MDMB-BICA in Hungary between May and August 2020.

Recommendations for Public Health

- Implement surveillance for rapid identification of drug overdose outbreaks.
- Track and monitor geographical drug distribution and trends for emerging drugs.
- Raise awareness about the risks and dangers associated with synthetic cannabinoid use.

Recommendations for Clinicians

- Become familiar with the signs and symptoms associated with synthetic cannabinoid use (e.g. profound agitated delirium, sedation, difficulty in arousal, bradycardia), which may alternate or overlap.
- Be mindful that illicit drugs may contain undeclared and/or adulterating substances that impact the expected clinical effects or findings.
- Counsel about the dangers of synthetic cannabinoid products and other drugs.

Recommendations for ME's & Coroners

- Test for new synthetic cannabinoids and their biomarkers in suspected drug overdose cases.
 Consider testing for synthetic cannabinoids if circumstances result in an unspecified drug fatality.
- Be aware that screening procedures (e.g. ELISA) for synthetic cannabinoids may not be specific or targeted to the newest generation of compounds; consider comprehensive mass spectrometry-based screening.

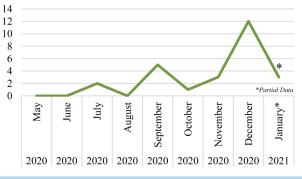
Recommendations for Laboratories

- Review analytical data for 4F-MDMB-BICA available from NPS Discovery.
- Prioritize analysis of seized drug samples taken from drug overdose investigations.
- Share data on synthetic cannabinoid drug seizures with local health departments, medical examiners, coroners, and other forensic practitioners.

4F-MDMB-BICA Geographical Distribution



4F-MDMB-BICA Toxicology Positivity



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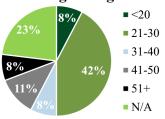


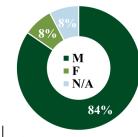
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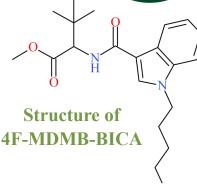
■ PM ■ DUID ■ Unknown



Age Range







4F-MDMB-BICA Combinations	Occurrence
MDMB-4en-PINACA	10
4F-MDMB-BICA Only	7
MDMB-4en-PINACA & 5F-MDMB-PICA	6
5F-MDMB-PICA	3

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References and Related Articles:

- Cannaert et al. (2020) <u>Synthesis and in Vitro Cannabinoid Receptor</u>
 Activity of <u>Recently Detected Synthetic Cannabinoids</u>
 <u>4F-MDMB-BICA...</u>
 ACS Chemical Neuroscience. 11, 4434–4446.
- EMCDDA: Initial Report on NPS 4F-MDMB-BICA
- NPS Discovery: 4F-MDMB-BICA Drug Monograph

Rapid NPS Testing Now Available:

If your agency suspects synthetic opioid toxicity with no identifiable cause of death or your jurisdiction is noticing an increase in overdose patients requiring analytical testing, contact NPS Discovery at the Center for Forensic Science Research and Education (CFSRE); a non-profit organization in collaboration with local and federal agencies which can provide rapid testing after novel drug outbreaks in the United States.

Website: www.npsdiscovery.org Email: npsdiscovery@cfsre.org