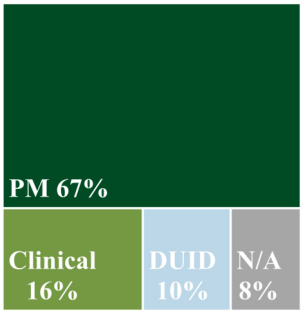
October 2020

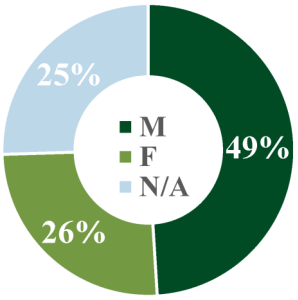
Prevalence of Synthetic Cannabinoid MDMB-4en-PINACA Continues to Increase in the United States and Internationally

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 **MDMB-4en-PINACA**.

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: MDMB-4en-PINACA was first identified in toxicology casework in the United States in September 2019; however, its emergence dates back earlier to seized drug testing from Europe in June 2018. MDMB-4en-PINACA is structurally similar to the popular synthetic cannabinoid 5F-ADB (5F-MDMB-PINACA), differing by the removal of the fluorine atom and replacement with a terminal alkene. MDMB-4en-PINACA is a potent activator of the cannabinoid receptor system and its toxicity has been demonstrated through medicolegal death investigations paired with comprehensive toxicology findings. In the United States, MDMB-4en-PINACA has been identified in at least 51 toxicology specimens associated with post-mortem (PM) death investigations, driving under the influence of drugs (DUID) investigations, and clinical investigations. Internationally, MDMB-4en-PINACA has been identified on several continents including North America, Europe, Asia, and Oceania.





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

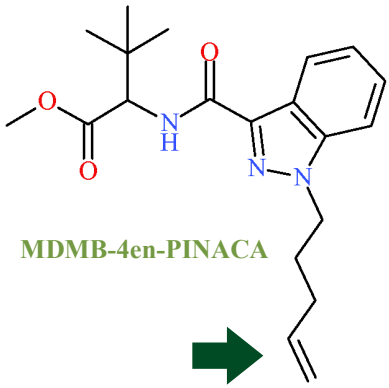
- Become familiar with the signs and symptoms associated with synthetic cannabinoid use (e.g. profound agitated delirium, sedation, difficulty in arousal, bradycardia), which may alternate or overlap.
- Be mindful that illicit drugs may contain undeclared and/or adulterating substances that impact the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

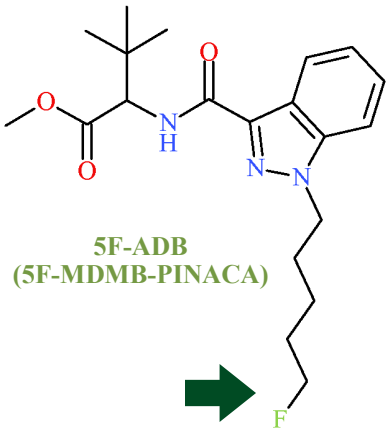
Recommendations for ME's & Coroners

- 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.

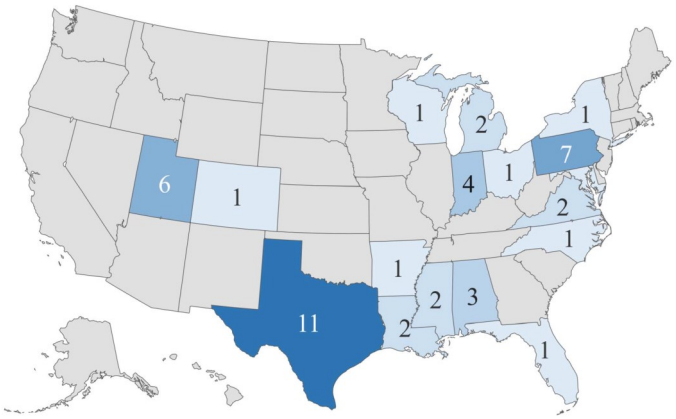
Recommendations for Laboratories

- Review analytical data for MDMB-4en-PINACA 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.





MDMB-4en-PINACA Toxicology Positivity



MDMB-4en-PINACA Toxicology Combinations	Occurrence
5F-MDMB-PICA	8
4F-MDMB-BINACA	8
5F-MDMB-PICA & 4F-MDMB-BINACA	6
Fentanyl	3
Delta-9-Tetrahydrocannabinol (THC)	2
MMB-FUBINACA (FUB-AMB)	1

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References and Related Articles:

• Krotulski, AJ; Cannaert, A; Stove, C; Logan, BK. (2020) The next generation of synthetic cannabinoids: Detection, activity, and potential toxicity of pent-4en and but-3en analogues including MDMB-4en-PINACA. *Drug Testing and Analysis*, doi.org/10.1002/dta.2935.
• WHO: Critical Review Report: MDMB-4en-PINACA
• MDMB-4en-PINACA New Drug Monograph

Rapid NPS Testing Now Available:

If your agency suspects synthetic cannabinoid 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; a non-profit organization in collaboration with DOJ and CDC which has received funding to provide rapid testing of novel drug outbreaks in the United States.

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