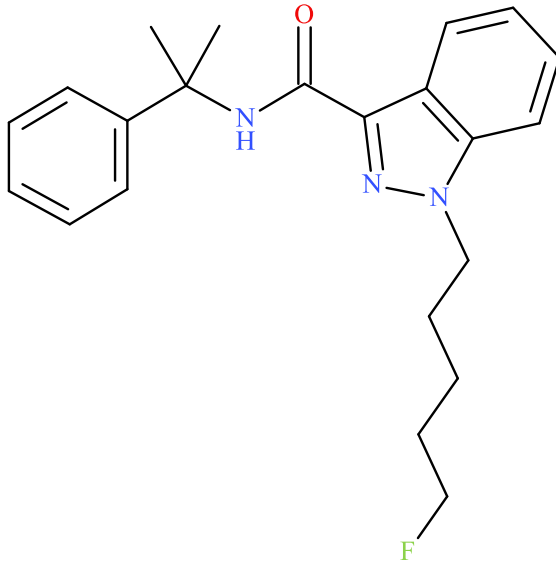


5F-CUMYL-PINACA

Sample Type: **Seized Material**



Latest Revision: **May 29, 2020**

Date Received: **March 3, 2020**

Date of Report: **May 29, 2020**

1. GENERAL INFORMATION

IUPAC Name:	1-(5-fluoropentyl)-N-(1-methyl-1-phenyl-ethyl)indazole-3-carboxamide
InChI String:	InChI=1S/C22H26FN3O/c1-22(2,17-11-5-3-6-12-17)24-21(27)20-18-13-7-8-14-19(18)26(25-20)16-10-4-9-15-23/h3,5-8,11-14H,4,9-10,15-16H2,1-2H3,(H,24,27)
CFR:	21 CFR 1308: Temporary Placement of ... 5F-CUMYL-PINACA ... into Schedule I (04/16/2019)
CAS#	1400742-16-6
Synonyms:	5-fluoro CUMYL-PINACA, CUMYL-5F-PINACA, SGT-25
Source:	Department of Homeland Security
Appearance:	Plant-like Material

Important Note: All identifications were made based on evaluation of analytical data (GC-MS and LC-QTOF) in comparison to analysis of acquired reference material.

Prepared By: Alex J. Krotulski, PhD, Melissa F. Fogarty, MSFS, D-ABFT-FT, and Barry K. Logan, PhD, F-ABFT

2. CHEMICAL AND PHYSICAL DATA

2.1 CHEMICAL DATA

Form	Chemical Formula	Molecular Weight	Molecular Ion [M ⁺]	Exact Mass [M+H] ⁺
Base	C ₂₂ H ₂₆ FN ₃ O	367.5	367	368.2133

3. BRIEF DESCRIPTION

5F-CUMYL-PINACA is classified as a synthetic cannabinoid. Synthetic cannabinoids have been reported to cause psychoactive effects similar to delta-9-tetrahydrocannabinol (THC). Synthetic cannabinoids have caused adverse events, including deaths, as described in the literature. 5F-CUMYL-PINACA is an active and potent synthetic cannabinoid.¹ The synthesis of 5F-CUMYL-PINACA was patented in 2013 by researchers in New Zealand.² 5F-CUMYL-PINACA was first reported in seized drug casework by Sweden in 2014.³ Subsequently, this emerging synthetic cannabinoid was identified in e-cigarette liquid.⁴ Forty-five cases involving 5F-CUMYL-PINACA have been uploaded into the [United Nations Office of Drugs and Crime \(UNODC\) Early Warning Advisory on New Psychoactive Substances Portal](#) dating back to 2014; one case was submitted from an agency in the United States in 2018. Through our monitoring program for synthetic cannabinoids in toxicology casework, [NPS Discovery](#) has not identified any positive cases for 5F-CUMYL-PINACA in the United States since our program began in mid-2018 – this is our first encounter with this substance, for which no reference monograph is available. CUMYL-PINACA, 4CN-CUMYL-BINACA, and other “CUMYL-” analogues are structurally similar synthetic cannabinoids. 5F-CUMYL-PINACA and 4-CN-CUMYL-BINACA are Schedule I substances in the United States.⁵

4. ADDITIONAL RESOURCES

1. Longworth M, Banister SD, Boyd R, Kevin RC, Connor M, McGregor IS, Kassiou M (2017). Pharmacology of Cumyl-Carboxamide Synthetic Cannabinoid New Psychoactive Substances (NPS) CUMYL-BICA, CUMYL-PICA, CUMYL-5F-PICA, CUMYL-5F-PINACA, and Their Analogues. *ACS Chemical Neuroscience*. **8** (10): 2159–2167.
2. Bowden MJ, Williamson, JPB. (2013). Patent WO 2014167530 - Cannabinoid compounds. New Zealand Patent Application 623626. International Publication Number WO2014/167530A. <https://patents.google.com/patent/WO2014167530A1>

4. ADDITIONAL RESOURCES (CONTINUED)

3. European Monitoring Centre for Drugs and Drug Addiction (2015), EMCDDA–Europol 2014 Annual Report on the implementation of Council Decision 2005/387/JHA, Implementation reports, Publications Office of the European Union, Luxembourg.
<http://www.emcdda.europa.eu/system/files/publications/1018/TDAN15001ENN.pdf>
4. Angerer V, Franz F, Moosmann B, Bisel P, Auwärter V. (2019) 5F-Cumyl-PINACA in 'e-liquids' for electronic cigarettes: comprehensive characterization of a new type of synthetic cannabinoid in a trendy product including investigations on the in vitro and in vivo phase I metabolism of 5F-Cumyl-PINACA and its non-fluorinated analog Cumyl-PINACA. *Forensic Toxicology*, **37** (1): 186-196.
5. Drug Enforcement Administration. (April 16, 2019) Schedules of Controlled Substances: Temporary Placement of 5F-EDMB-PINACA, 5F-MDMB-PICA, FUB-AKB48, 5F-CUMYL-PINACA, and FUB-144 into Schedule I. *Federal Register*, **84**, 15505-15511.
https://www.deadiversion.usdoj.gov/fed_regs/rules/2019/fr0416.htm

https://www.policija.si/apps/nfl_response_web/0_Analytical_Reports_final/CUMYL-5F-PINACA-ID-1155-report_final.pdf

[https://www.caymanchem.com/product/17726/5-fluoro-cumyl-pinaca-\(crm\)](https://www.caymanchem.com/product/17726/5-fluoro-cumyl-pinaca-(crm))

<https://en.wikipedia.org/wiki/5F-CUMYL-PINACA>

5. QUALITATIVE DATA

5.1 GAS CHROMATOGRAPHY MASS SPECTROMETRY (GC-MS)

Testing Performed At:	NMS Labs (Willow Grove, PA)
Sample Preparation:	Acid/Base extraction
Instrument:	Agilent 5975 Series GC/MSD System
Column:	Zebron™ Inferno™ ZB-35HT (15 m x 250 µm x 0.25 µm)
Carrier Gas:	Helium (Flow: 1 mL/min)
Temperatures:	Injection Port: 265 °C
	Transfer Line: 300 °C
	MS Source: 230 °C

MS Quad: 150 °C

Oven Program: 60 °C for 0.5 min, 35 °C/min to 340 °C for 6.5 min

Injection Parameters: Injection Type: Splitless

Injection Volume: 1 µL

MS Parameters: Mass Scan Range: 40-550 m/z

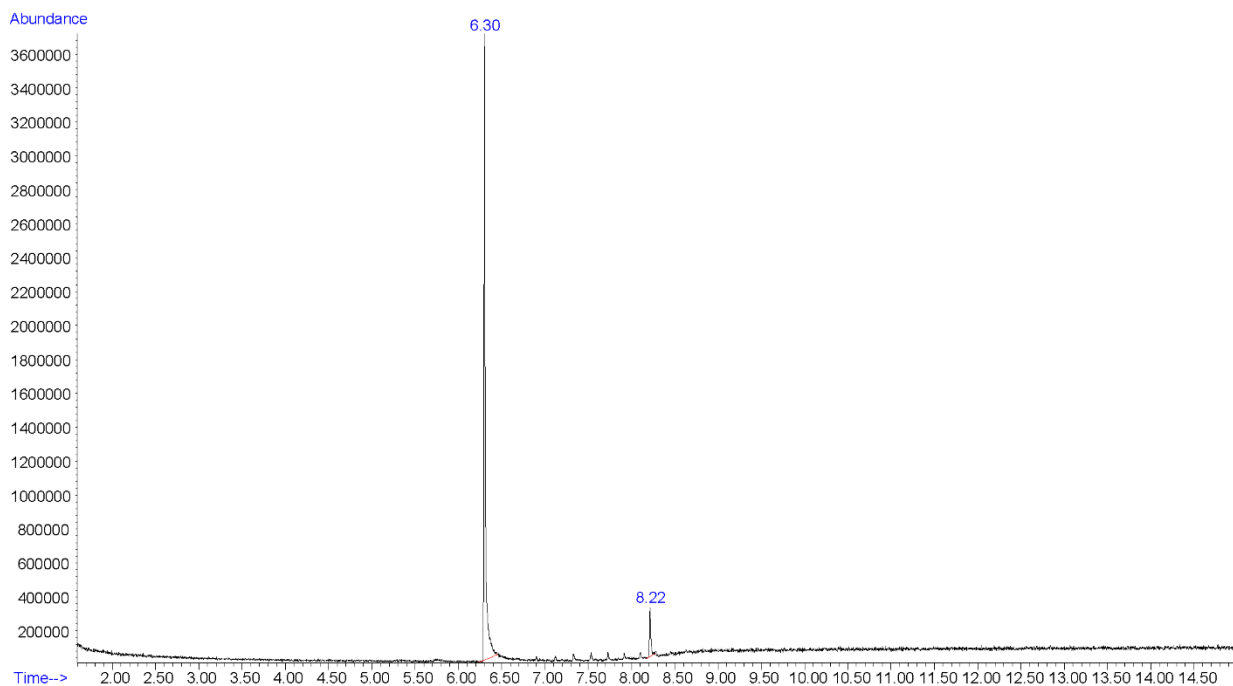
Threshold: 250

Retention Time: 8.22 min

Standard Comparison: Reference material for 5F-CUMYL-PINACA (Batch: 0493225) was purchased from Cayman Chemical (Ann Arbor, MI, USA). Analysis of this standard resulted in positive identification of the analyte in the exhibit as 5F-CUMYL-PINACA, based on retention time (8.22 min) and mass spectral data.

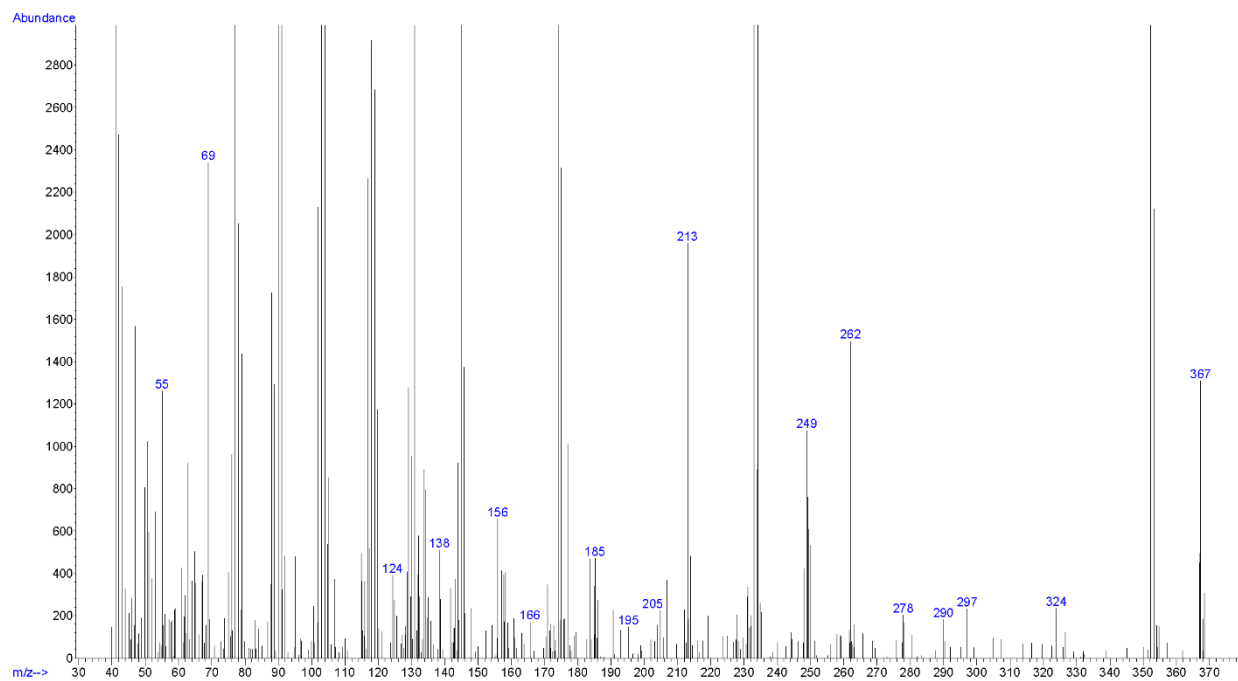
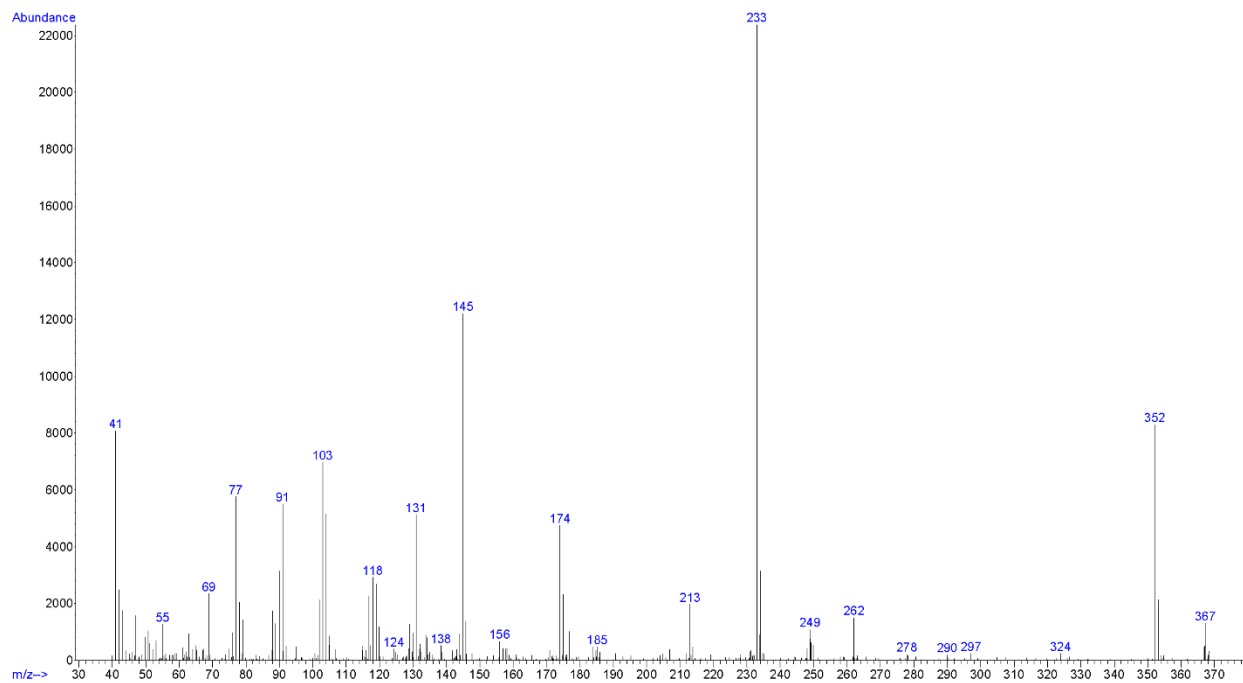
[https://www.caymanchem.com/product/17726/5-fluoro-cumyl-pinaca-\(crm\)](https://www.caymanchem.com/product/17726/5-fluoro-cumyl-pinaca-(crm))

Chromatogram: 5F-CUMYL-PINACA



Additional peaks present in chromatogram: internal standard (6.30 min)

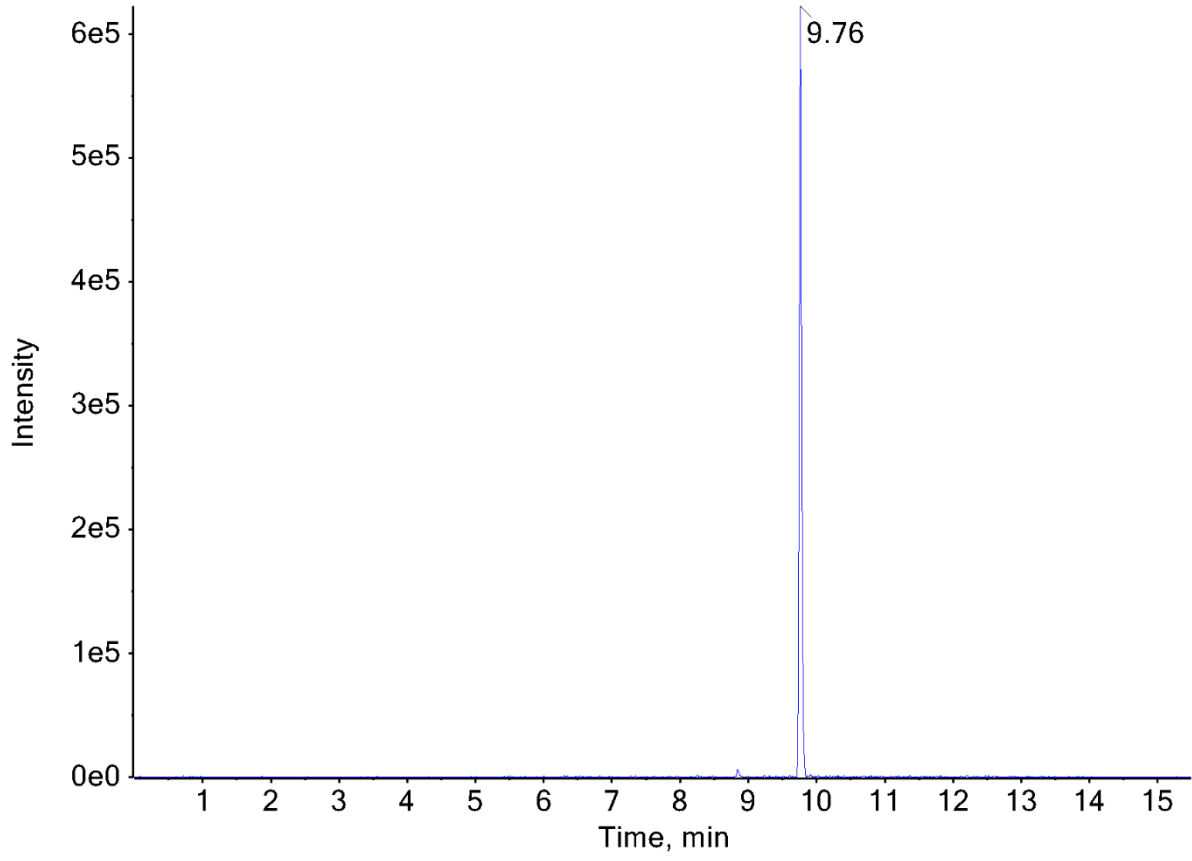
EI (70 eV) Mass Spectrum (Top) and 10x (Bottom): 5F-CUMYL-PINACA



5.2 LIQUID CHROMATOGRAPHY QUADRUPOLE TIME OF FLIGHT MASS SPECTROMETRY (LC-QTOF)

Testing Performed At:	The Center for Forensic Science Research and Education at the Fredric Rieders Family Foundation (Willow Grove, PA)
Sample Preparation:	1:100 dilution of acid/base extraction in mobile phase
Instrument:	Sciex TripleTOF® 5600+, Shimadzu Nexera XR UHPLC
Column:	Phenomenex® Kinetex C18 (50 mm x 3.0 mm, 2.6 µm)
Mobile Phase:	A: Ammonium formate (10 mM, pH 3.0) B: Methanol/acetonitrile (50:50) Flow rate: 0.4 mL/min
Gradient:	Initial: 95A:5B; 5A:95B over 13 min; 95A:5B at 15.5 min
Temperatures:	Autosampler: 15 °C Column Oven: 30 °C Source Heater: 600 °C
Injection Parameters:	Injection Volume: 10 µL
QTOF Parameters:	TOF MS Scan Range: 100-510 Da Precursor Isolation: SWATH® acquisition (27 windows) Fragmentation: Collision Energy Spread (35±15 eV) MS/MS Scan Range: 50-510 Da
Retention Time:	9.76 min
Standard Comparison:	Reference material for 5F-CUMYL-PINACA (Batch: 0520119) was purchased from Cayman Chemical (Ann Arbor, MI, USA). Analysis of this standard resulted in positive identification of the analyte in the exhibit as 5F-CUMYL-PINACA, based on retention time (9.73 min) and mass spectral data. (https://www.caymanchem.com/product/17726/5-fluoro-cumyl-pinaca-(crm))

Extracted Ion Chromatogram: 5F-CUMYL-PINACA



TOF MS (Top) and MS/MS (Bottom) Spectra: 5F-CUMYL-PINACA

