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.

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2. CHEMICAL AND PHYSICAL DATA

2.1 CHEMICAL DATA

<table>
<thead>
<tr>
<th>Form</th>
<th>Chemical Formula</th>
<th>Molecular Weight</th>
<th>Molecular Ion [M⁺]</th>
<th>Exact Mass [M+H]⁺</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>C₂₀H₂₇FN₂O₃</td>
<td>362.4</td>
<td>362</td>
<td>363.2078</td>
</tr>
</tbody>
</table>

3. BRIEF DESCRIPTION

4F-MDMB-BICA 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. 4F-MDMB-BINACA and 5F-MDMB-PICA are structurally similar synthetic cannabinoids. 5F-MDMB-PICA is explicitly a Schedule I substance in the United States; 4F-MDMB-BINACA and 4F-MDMB-BICA are not explicitly scheduled but may be considered analogues of other Schedule I substances.

4. ADDITIONAL RESOURCES

https://www.caymanchem.com/product/31075/4-fluoro-mdmb-butica

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:**
7.96 min

**Standard Comparison:**
Reference material for 4F-MDMB-BICA (Batch: 0589507-1) was purchased from Cayman Chemical (Ann Arbor, MI, USA). Analysis of this standard resulted in positive identification of the analyte in the exhibit as 4F-MDMB-BICA based on retention time (7.96 min) and mass spectral data.

(https://www.caymanchem.com/product/31075/4-fluoro-mdmb-butica)

**Chromatogram:** 4F-MDMB-BICA

*Additional peaks present in chromatogram: internal standard (6.28 min), 5F-MDMB-PICA (8.14 min), and 5F-EMB-PICA (8.21 min)*
EI (70 eV) Mass Spectrum (Top) and 10x (Bottom): 4F-MDMB-BICA
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: Collison Energy Spread (35±15 eV)
MS/MS Scan Range: 50-510 Da

Retention Time: 9.03 min

Standard Comparison: Reference material for 4F-MDMB-BICA (Batch: 0589507-1) was purchased from Cayman Chemical (Ann Arbor, MI, USA). Analysis of this standard resulted in positive identification of the analyte in the exhibit as 4F-MDMB-BICA based on retention time (9.04 min) and mass spectral data. (https://www.caymanchem.com/product/31075/4-fluoro-mdmb-butica)
Additional peaks present in chromatogram: internal standard (7.31 min), 5F-EMB-PICA (9.27 min), and 5F-MDMB-PICA (9.33 min)
TOF MS (Top) and MS/MS (Bottom) Spectra: 4F-MDMB-BICA