NPS Discovery — New Drug Monograph

MDMB-BINACA

NPS SUBCLASS
Synthetic Cannabinoid

REPORT DATE
June 27, 2023

SAMPLE RECEIVED
April 12, 2023

SAMPLE TYPE
Toxicology

Preferred Name | MDMB-BINACA
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Synonyms | MDMB-BUTINACA
Formal Name | methyl 2-[[1-butylindazole-3-carbonyl]amino]-3,3-dimethyl-butanoate
InChI Key | YHAWFWPNIXPRDT-UHFFFAOYSA-N
CAS Number | Not Available
Chemical Formula | C_{19}H_{27}N_{3}O_{3}
Molecular Weight | 345.43
Molecular Ion [M^+] | 345
Exact Mass [M+H]^+ | 346.2125
Characterization & Intelligence

The following information was compiled in June 2023 and is subject to change as new research is conducted and as new information becomes available:

**Description:** MDMB-BINACA (also referred to as MDMB-BUTINACA) is a novel synthetic cannabinoid with structural similarity to MDMB-PINACA, 4F-MDMB-BINACA, ADB-BINACA (ADB-BUTINACA) and other synthetic cannabinoids. MDMB-BINACA was first detected in April 2023 by our laboratory in the United States in a blood sample submitted from the United Kingdom.

**Sample Source:** Toxicology case – United Kingdom.

**Sample Appearance:** Toxicology specimen – blood.

**Pharmacology:** The activity and potency of MDMB-BINACA are unknown. Based on structural similarity, MDMB-BINACA is expected to have similar effects to other biologically active synthetic cannabinoids.

**Toxicology:** MDMB-BINACA has been detected in one toxicology case at the CFSRE.

**Drug Materials:** MDMB-BINACA has not been identified in drug materials at the CFSRE to date. Reports from partnering laboratories indicate that MDMB-BINACA has been detected in samples collected in the United States.

**Demographics / Geographics:** Limited information is available at this time; however, communications with colleagues indicate that MDMB-BINACA has been identified in North America, Europe, and Asia.

**Legal Status:** MDMB-BINACA is not explicitly scheduled in the United States. MDMB-BINACA is within the scope of the national class-wide synthetic cannabinoid scheduling action imposed by China in July 2021.

**References:**
- Cayman Chemical: [MDMB-BUTINACA](#)
- National Forensic Laboratory (Slovenia): [MDMB-BUTINACA (reference material)](#)

**About:** In collaboration with medical examiner and coroner offices, crime laboratories, clinical partners, and other stakeholders, the Center for Forensic Science Research and Education (CFSRE) is documenting first confirmations of NPS through analysis of drug materials and/or toxicology samples. These reports are generated using comprehensive analytical techniques (e.g., CC-MS, LC-QTOF-MS, NMR) and include available information about the new substances identified at the time of reporting, as well as the analytical data generated during testing. Our new drug monographs are intended to assist with the rapid identification of NPS in forensic casework and related disciplines, and should not be used for confirmatory purposes alone.

**Analytical Notes:** All identifications were made based on evaluation of analytical data (LC-QTOF-MS) in comparison to analysis of acquired reference material.

**Acknowledgements:** This report was prepared by Alex J. Krotulski, Simon Elliott, Kerry Taylor, Sara E. Walton, Melissa F. Fogarty, and Barry K. Logan at the Center for Forensic Science Research and Education (CFSRE) at the Fredric Rieders Family Foundation. The authors acknowledge colleagues for their involvements and contributions. For more information, contact npsdiscovery@cfsre.org or visit [www.npsdiscovery.org](http://www.npsdiscovery.org).

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Gas Chromatography Mass Spectrometry (GC-MS)

**Laboratory:** Center for Forensic Science Research and Education (CFSRE, Willow Grove, PA, USA)

**Sample Preparation:** Standard diluted in methanol

**Instrument:** Agilent 5975 Series GC/MSD

**Methods:** [www.cfsre.org/nps-discovery/monographs](http://www.cfsre.org/nps-discovery/monographs)

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**GC-MS:** Mass Spectrum (EI 70 eV)
**Liquid Chromatography Quadrupole Time-of-Flight Mass Spectrometry (LC-QTOF-MS)**

**Laboratory:** Center for Forensic Science Research and Education (CFSRE, Willow Grove, PA, USA)

**Sample Preparation:** Liquid-liquid extraction

**Instrument:** Sciex X500R LC-QTOF-MS

**Methods:** [www.cfsre.org/nps-discovery/monographs](http://www.cfsre.org/nps-discovery/monographs)

**Confirmation Using Drug Standard:** Reference material (Batch: 0573684-15) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be MDMB-BINACA based on retention time (sample: 9.84 min vs. standard: 9.94 min) and mass spectral data comparisons.