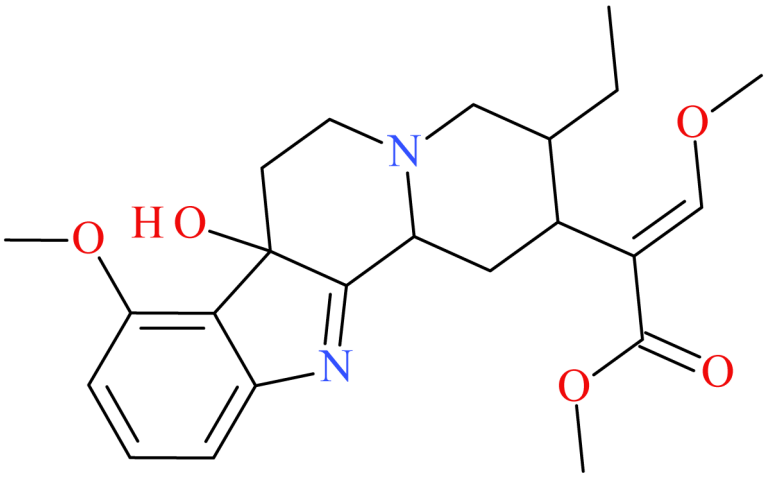
7-Hydroxy Mitragynine



NPS SUBCLASS
Miscellaneous
REPORT DATE
June 25, 2025
SAMPLE RECEIVED
February 12, 2025
SAMPLE TYPE
Drug Material

Preferred Name	7-Hydroxy Mitragynine
Synonyms	7-Hydroxymitragynine, 9-methoxy Corynantheidine Hydroxyindolenine, 7OHM
Formal Name	methyl (E)-2-(3-ethyl-7a-hydroxy-8-methoxy-2,3,4,6,7,12b-hexahydro-1H-indolo[2,3-a]quinolizin-2-yl)-3-methoxy-prop-2-enoate
InChI Key	RYENLSMHLCNXJT-DTQAZKPQSA-N
CAS Number	174418-82-7
Chemical Formula	$C_{23}H_{30}N_2O_5$
Molecular Weight	414.5
Molecular Ion [M⁺]	414
Exact Mass [M+H]⁺	415.2227

Characterization & Intelligence

The following information was compiled in June 2025 and is subject to change as new research is conducted and as new information becomes available:

Description: 7-Hydroxy mitragynine is an alkaloid found at small amounts in *Mitragyna speciosa* (Kratom). It is also an active metabolite of the alkaloid mitragynine, the primary psychoactive component in Kratom. In late 2024, 7-hydroxy mitragynine emerged as the primary component in drug products being marketed and sold as "Kratom" or "7OHM".[1,2] 7-Hydroxy mitragynine was first identified in drug products by our laboratory in February 2025 and confirmed via standard reference material.

Sample Source: Purchased from smoke shop (Pennsylvania)

Sample Appearance: Tablets, solid orange material

Pharmacology: 7-Hydroxy mitragynine is reported to be a highly selective partial agonist of the mu-opioid receptor and is approximately 10x more potent than mitragynine.[2,3]

Toxicology: 7-Hydroxy mitragynine has been detected in one toxicology case to date at the CFSRE.

Drug Materials: 7-Hydroxy mitragynine has been detected in six drug materials to date at the CFSRE.

Demographics / Geographics: The toxicology specimen originated from Michigan and drug materials originated from Pennsylvania and Illinois. 7-Hydroxy mitragynine has been identified alongside mitragynine and related alkaloids, as well as other NPS (e.g., flubromazepam, 2F-2oxo-PCE).

Legal Status: 7-Hydroxy mitragynine is not explicitly scheduled in the United States.

References:

- Evaluation of Commercially Available Smoke Shop Products Marketed as "7-Hydroxy Mitragynine" & Related Alkaloids
- Cayman Chemical: 7-Hydroxy Mitragynine
- [1]Smith *et al.* The rise of novel, semi-synthetic 7-hydroxymitragynine products
- [2]Hill *et al.* De facto opioids: characterization of novel 7-hydroxymitragynine and mitragynine...
- [3]Kruegel *et al.* 7-Hydroxymitragynine is an active metabolite of mitragynine and...

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., GC-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 (GC-MS and LC-QTOF-MS) in comparison to analysis of acquired reference material.

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Gas Chromatography Mass Spectrometry (GC-MS)

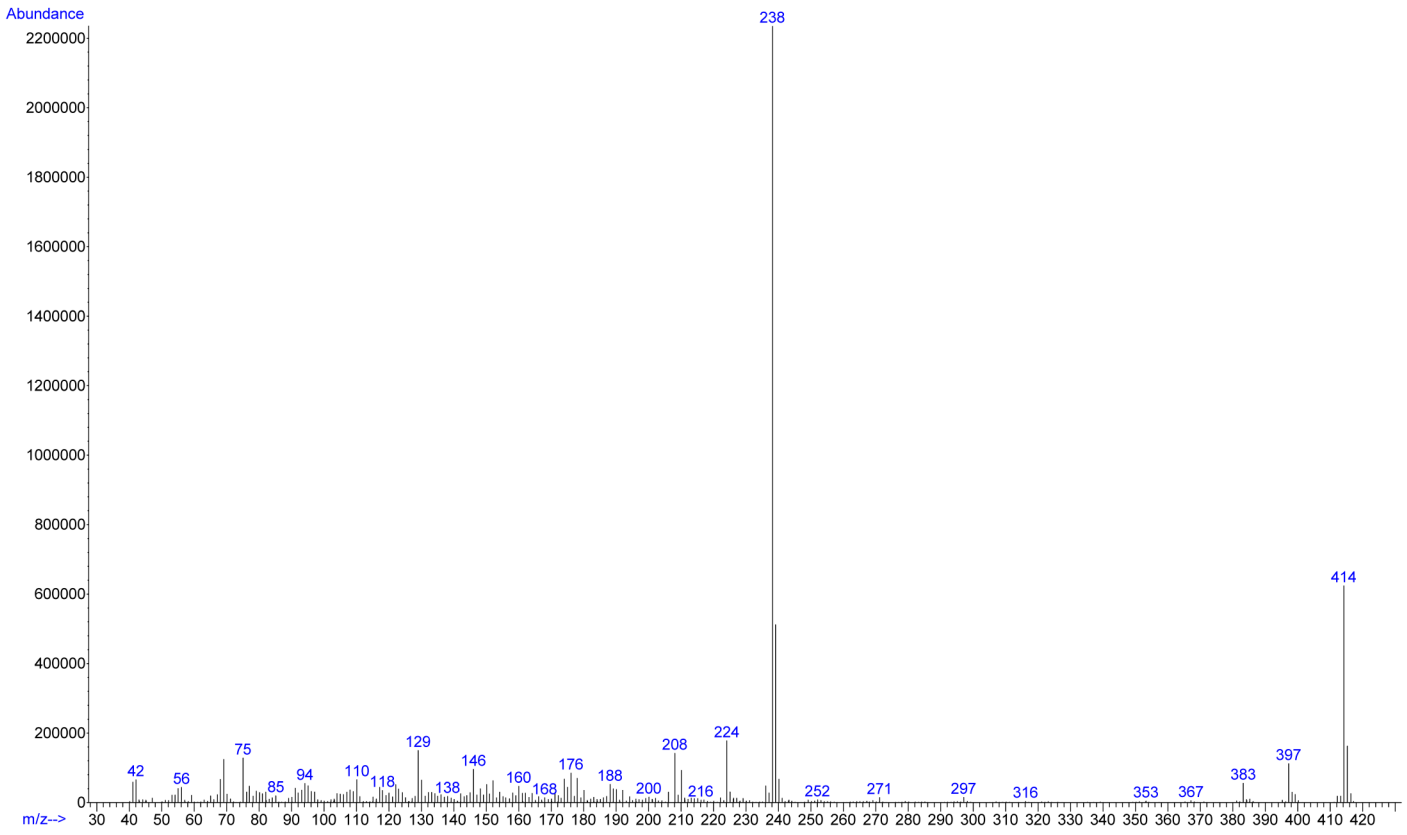
Laboratory: Center for Forensic Science Research and Education (CFSRE, Horsham PA, USA)

Sample Preparation: Acid-base extraction

Instrument: Agilent 5975 Series GC/MSD

Methods: GC-MS Method Details & Monographs

GC-MS: Mass Spectrum (EI 70 eV)



Confirmation Using Drug Standard: *Reference material for 7-hydroxy mitragynine (Batch: 0498177-12) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be 7-hydroxy mitragynine based on retention time (sample: 8.51 min vs. standard: 8.51 min) and mass spectral data comparisons.*

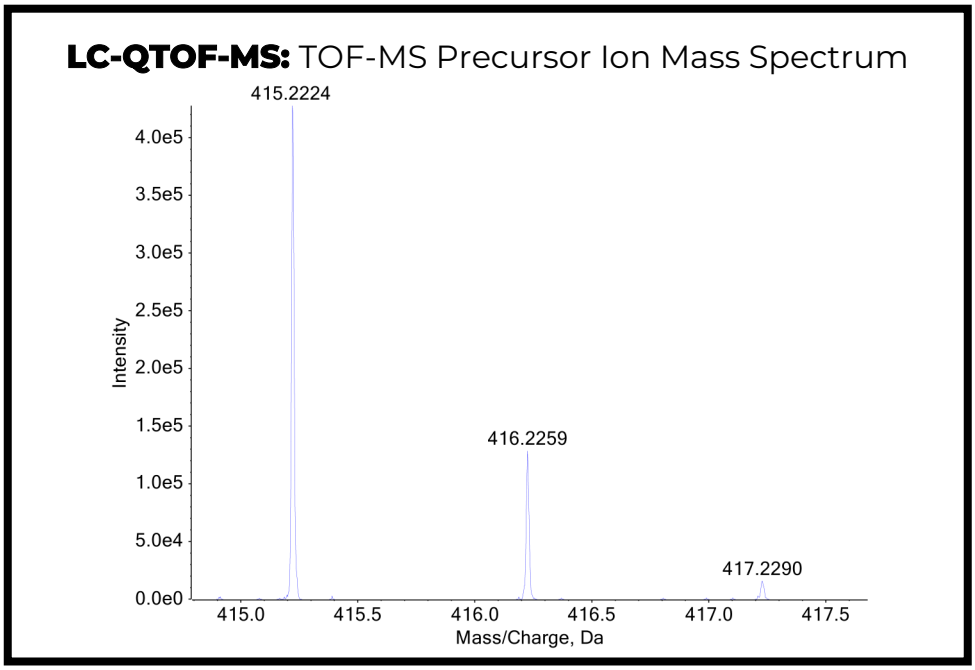
Liquid Chromatography Quadrupole Time-of-Flight Mass Spectrometry (LC-QTOF-MS)

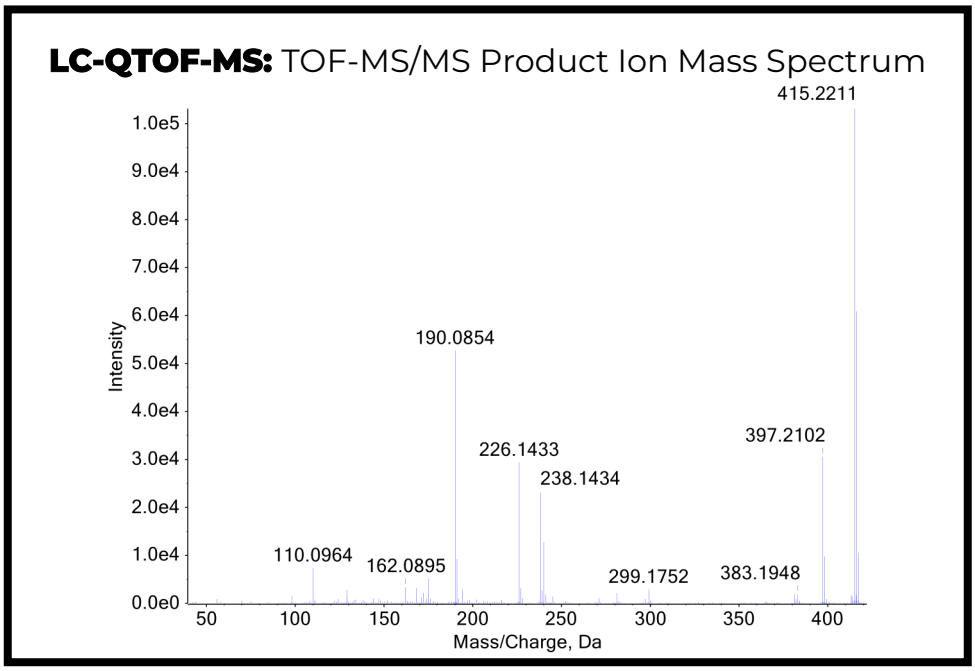
Laboratory: Center for Forensic Science Research and Education (CFSRE, Horsham, PA, USA)

Sample Preparation: Dilution in mobile phase

Instrument: Sciex 5600+ LC-QTOF-MS

Methods: LC-QTOF-MS Method Details & Monographs





Confirmation Using Drug Standard: *Reference material for 7-hydroxy mitragynine (Batch: 0498177-12) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be 7-hydroxy mitragynine based on retention time (sample: 5.22 min vs. standard: 5.29 min) and mass spectral data comparisons.*