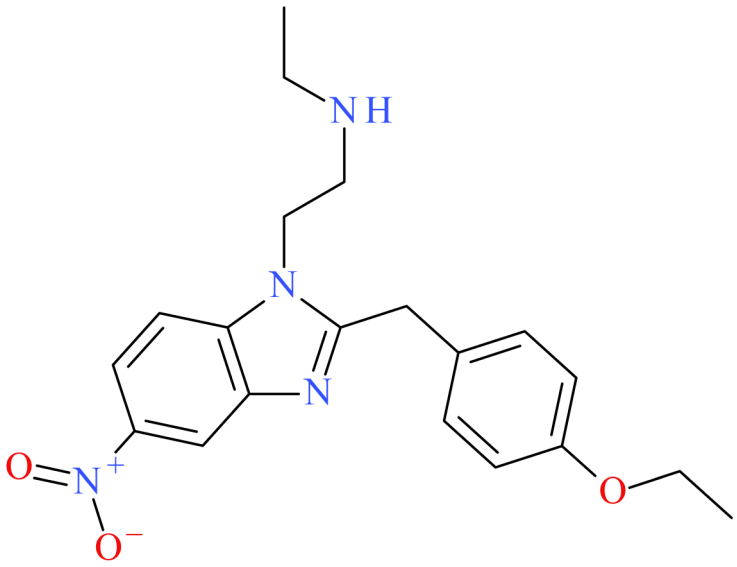
N-Desethyl Etonitazene



NPS SUBCLASS
Opioid
REPORT DATE
November 30, 2023
SAMPLE RECEIVED
October 19, 2023
SAMPLE TYPE
Toxicology

Preferred Name	*N*-Desethyl Etonitazene
Synonyms	Not Applicable
Formal Name	2-[2-[(4-ethoxyphenyl)methyl]-5-nitro-benzimidazol-1-yl]-N-ethyl-ethanamine
InChI Key	RESPFUMJVJRUMB-UHFFFAOYSA-N
CAS Number	2732926-26-8
Chemical Formula	$C_{20}H_{24}N_4O_3$
Molecular Weight	368.43
Molecular Ion [M⁺]	368
Exact Mass [M+H]⁺	369.1921

Characterization & Intelligence

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

Description: *N*-Desethyl etonitazene is a novel synthetic opioid bearing structural resemblance to etonitazene, *N*-desethyl isotonitazene, and other nitazene (2-benzylbenzimidazole) analogues. In November 2023, *N*-desethyl etonitazene was detected for the first time in the United States. *N*-Desethyl etonitazene is a metabolite of etonitazene; however, it was detected in the absence of etonitazene and is now being sold as a drug on its own, as observed through sales on online gray market sites.

Sample Source: Boulder County Coroner's Office, NMS Labs – Toxicology Laboratory

Sample Appearance: Blood and urine specimens

Pharmacology: *In vitro* pharmacological data show that *N*-desethyl etonitazene is an active mu opioid agonist with similar potency to etonitazene, and is approximately 10 times more potent than fentanyl.[1]

Toxicology: *N*-Desethyl etonitazene has been detected in two toxicology cases at the CFSRE.

Drug Materials: *N*-Desethyl etonitazene has not been identified in drug materials to date at the CFSRE.

Demographics / Geographics: Toxicology specimens originated from the states of Colorado and Missouri. In one case, *N*-desethyl etonitazene was identified alongside the NPS benzodiazepine flubromazepam.

Legal Status: *N*-Desethyl etonitazene is not explicitly scheduled in the United States.

References:

- Cayman Chemical: *N*-Desethyl Etonitazene
- [1]Vandeputte *et al.* (2021) Synthesis, Chemical Characterization, and μ-Opioid Receptor Activity Assessment of the Emerging Group of "Nitazene" 2-Benzylbenzimidazole Synthetic Opioids

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

Acknowledgements: This report was prepared by Alex J. Krotulski, Katie Becker, Sara E. Walton, Donna M. Papsun, 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 scientists at the CFSRE and NMS Labs for their involvements and contributions. For more information, contact npsdiscovery@cfsre.org or visit 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
GC-MS Method Details

GC-MS: Mass Spectrum (EI 70 eV)

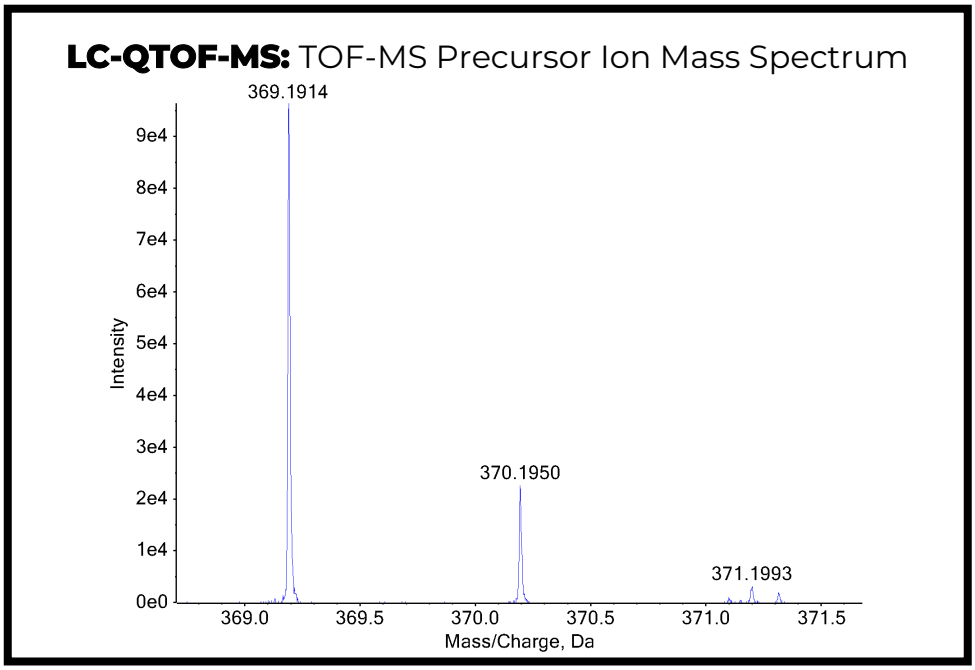
Liquid Chromatography Quadrupole Time-of-Flight Mass Spectrometry (LC-QTOF-MS)

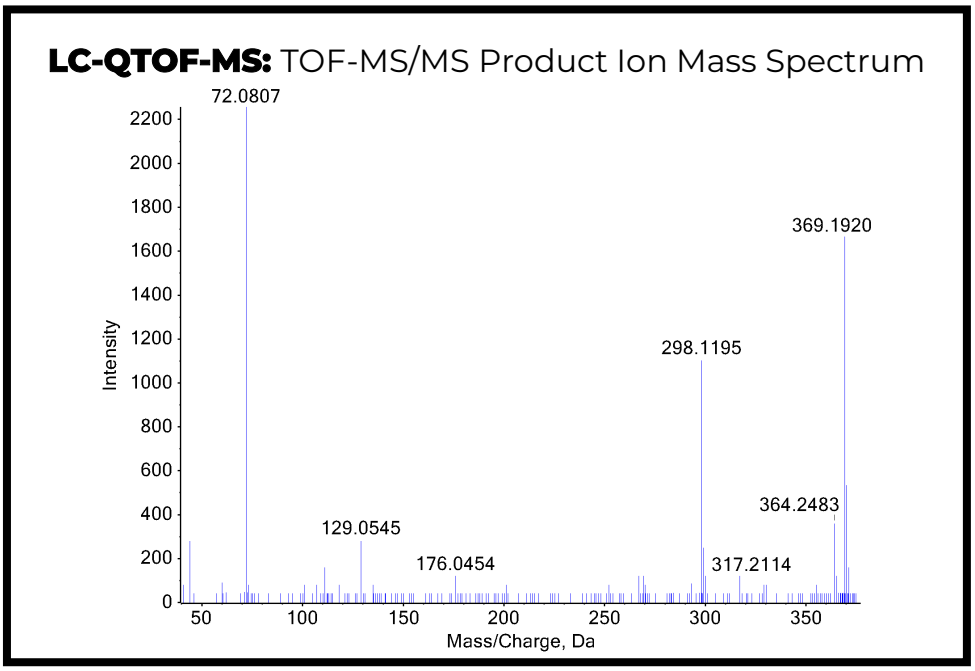
Laboratory: Center for Forensic Science Research and Education (CFSRE, Willow Grove, PA, USA)

Sample Preparation: Liquid-liquid extraction

Instrument: Sciex X500R LC-QTOF-MS

Methods: www.cfsre.org/nps-discovery/monographs
LC-QTOF-MS Method Details





Confirmation Using Drug Standard: *Reference material (Batch: 0603955-2) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be N-desethyl etonitazene based on retention time (sample: 6.31 min vs. standard: 6.46 min) and mass spectral data comparisons.*