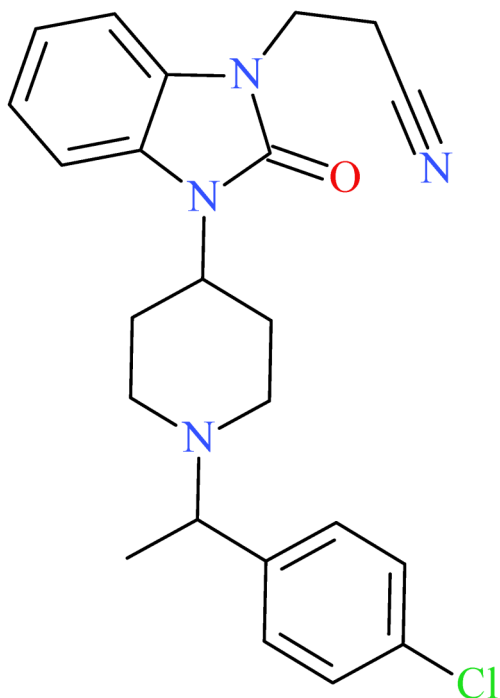




## N-Propionitrile Chlorphine



NPS SUBCLASS	Opioid
REPORT DATE	December 17, 2024
SAMPLE RECEIVED	August 12, 2024
SAMPLE TYPE	Drug Material

Preferred Name	N-Propionitrile Chlorphine
Synonyms	Cychlorphine, N-Propionitrile Chlorphine, Cychlorphine
Formal Name	3-[3-[1-[1-(4-chlorophenyl)ethyl]-4-piperidyl]-2-oxo-benzimidazol-1-yl]propanenitrile
InChI Key	SWWAVNFEFVMDAG-UHFFFAOYSA-N
CAS Number	16145-71-4
Chemical Formula	C <sub>23</sub> H <sub>25</sub> ClN <sub>4</sub> O
Molecular Weight	408.9
Molecular Ion [M <sup>+</sup> ]	408
Exact Mass [M+H] <sup>+</sup>	409.1790

## Characterization & Intelligence

The following information was compiled in December 2024 and is subject to change as new research is conducted and as new information becomes available:

**Description:** N-Propionitrile chlorphine is a novel synthetic opioid bearing structural similarity to other benzimidazolones (e.g., brorphine, chlorphine, florphine). N-Propionitrile chlorphine was first identified by our laboratory in August 2024 and confirmed in September 2024 via standard reference material.

**Sample Source:** Tapestry in Collaboration with StreetCheck

**Sample Appearance:** White material

**Pharmacology:** There is no pharmacological data currently available for N-propionitrile chlorphine; however, based on *in vitro* pharmacological evaluation of chlorphine, it is assumed that N-propionitrile chlorphine would retain mu-opioid receptor agonist activity.<sup>1</sup>

**Toxicology:** N-Propionitrile chlorphine has identified in one toxicology case to date at the CFSRE.

**Drug Materials:** N-Propionitrile chlorphine has been detected in one drug material to date at the CFSRE.

**Demographics / Geographics:** The drug material positive for N-propionitrile chlorphine originated from Connecticut and was identified alongside its benzimidazolone counterpart chlorphine. The toxicology case positive for N-propionitrile chlorphine originated from New York and was identified alongside the designer benzodiazepine phenazepam.

**Legal Status:** N-Propionitrile chlorphine is not currently a scheduled drug in the United States.

### References:

- ▶ Cayman Chemical: [N-Propionitrile Chlorphine](#)
- ▶ <sup>1</sup>Vandeputte et al. (2024) [Elucidating the harm potential of brorphine analogues as new synthetic opioids...](#)

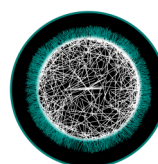
**About:** In collaboration with medical examiner and coroner offices, crime laboratories, clinical partners, and other stakeholders, the Center for Forensic Science Research and Education (CFSRE) is documenting first confirmations of NPS through analysis of drug materials and/or toxicology samples. 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 (GC-MS and LC-QTOF-MS) in comparison to analysis of acquired reference material.

**Acknowledgements:** This report was prepared by Sara E. Walton, Kyle Harrington, Ivy Sabal, Cole Altomare-Jarczyk, Abigail Edelmann, Jamie Davis, Max T. Denn, Alexis D. Quinter, Angel McDowell, Joshua S. DeBord, Donna M. Iula, Traci Green, Barry K. Logan, and Alex J. Krotulski at the Center for Forensic Science Research and Education (CFSRE) at the Fredric Rieders Family Foundation. The authors acknowledge scientists at the CFSRE for their involvements and contributions. For more information, contact [npsdiscovery@cfsre.org](mailto:npsdiscovery@cfsre.org) or visit [www.npsdiscovery.org](http://www.npsdiscovery.org).

**Funding:** CFSRE's NPS Discovery is supported by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice (Award Number 15PNIJ-22-GG-04434-MUMU, "Implementation of NPS Discovery – An Early Warning System for Novel Drug Intelligence, Surveillance, Monitoring, Response, and Forecasting using Drug Materials and Toxicology Populations in the US"). The opinions, findings, conclusions and/or recommendations expressed in this publication are those of the author(s) and do not necessarily represent the official position or policies of the U.S. Department of Justice.

**Suggested Citation:** Walton, SE; Harrington, K; Sabal, I; Altomare-Jarczyk, C; Edelmann, A; Davis, J; Denn, MT; Quinter, AD; McDowell, A; DeBord, JS; Iula, DM; Green, T; Logan, BK; Krotulski, AJ. (2024) *N-Propionitrile Chlorphine — NPS Discovery New Drug Monograph*, Center for Forensic Science Research and Education, United States.



**STREET CHECK  
COMMUNITY  
DRUG CHECKING**

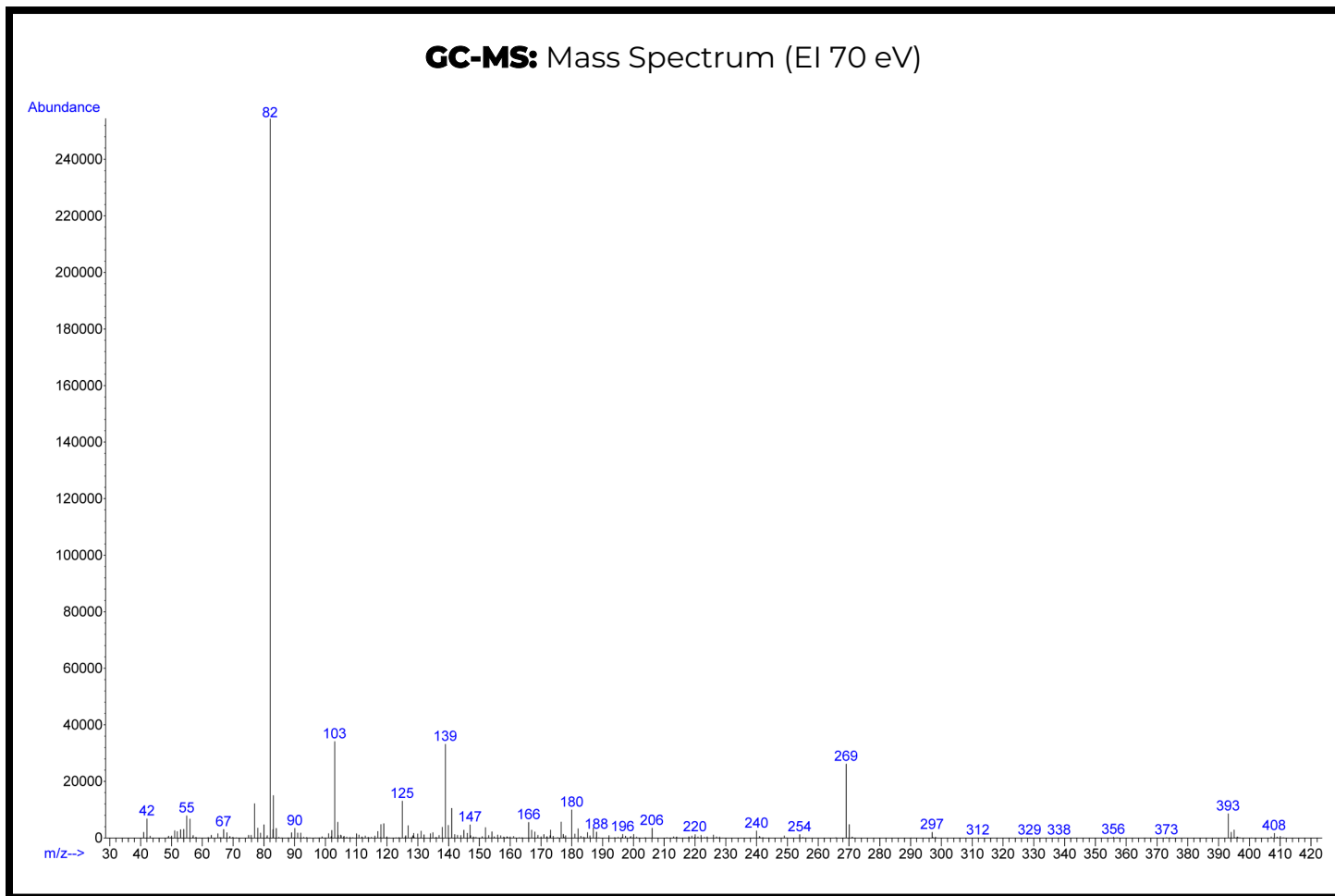
## Gas Chromatography Mass Spectrometry (GC-MS)

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

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

**Methods:** [GC-MS Method Details](#) & [Monographs](#)

**Sample Preparation:** Acid/base extraction



**Confirmation Using Drug Standard:** Reference material (Batch: 0701514-2) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be N-propionitrile chlorphine based on retention time (sample: 9.47 min vs. standard: 9.44 min) and mass spectral data comparisons.

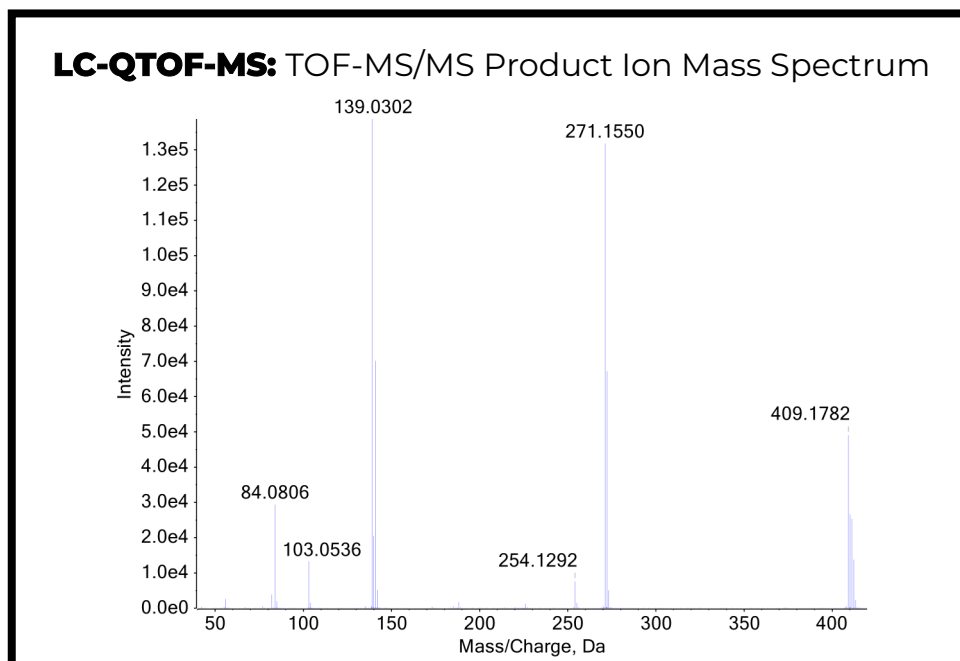
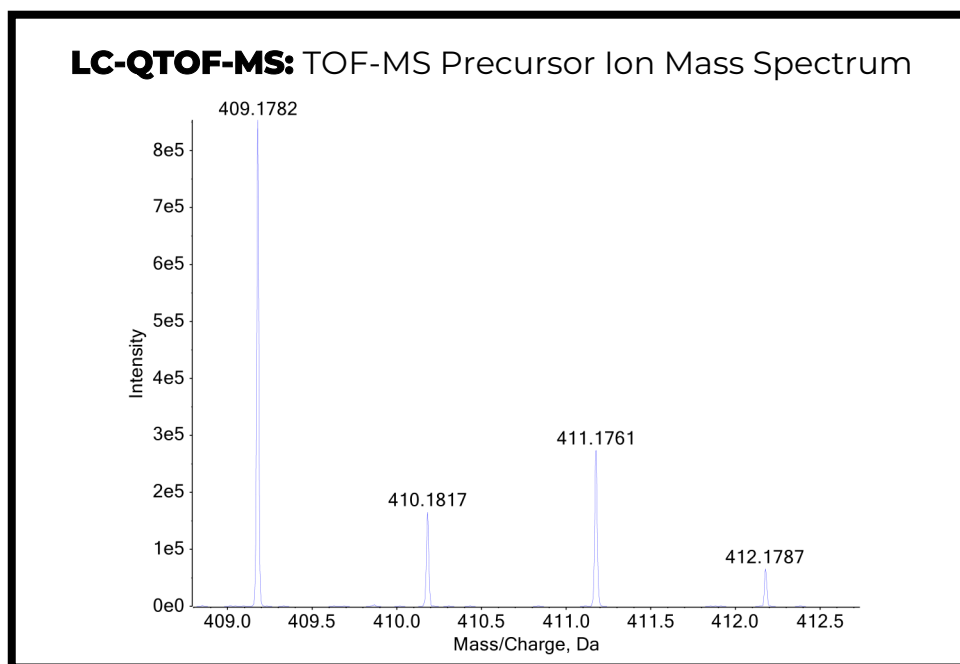
## Liquid Chromatography Quadrupole Time-of-Flight Mass Spectrometry (LC-QTOF-MS)

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

**Instrument:** Sciex 5600+ LC-QTOF-MS

**Methods:** [LC-QTOF-MS Method Details](#) & [Monographs](#)

**Sample Preparation:** Dilution in mobile phase



**Confirmation Using Drug Standard:** Reference material (Batch: 0701514-2) was purchased from Cayman Chemical (Ann Arbor, MI, USA). The analyte was confirmed to be N-propionitrile chlorphine based on retention time (sample: 6.43 min vs. standard: 6.47 min) and mass spectral data comparisons.