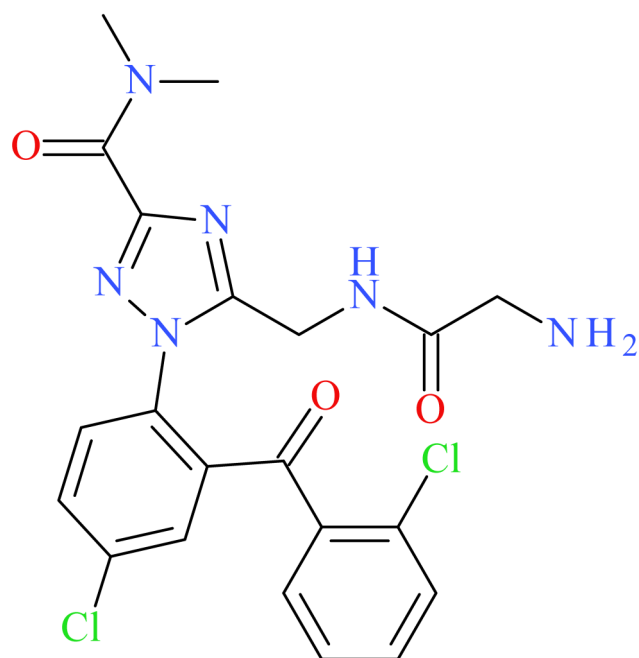


Rilmazafone



NPS SUBCLASS	Benzodiazepine
REPORT DATE	November 29, 2023
SAMPLE RECEIVED	September 21, 2023
SAMPLE TYPE	Drug Material

Preferred Name	Rilmazafone
Synonyms	450191-S
Formal Name	5-[[[2-aminoacetyl)amino]methyl]-1-[4-chloro-2-(2-chlorobenzoyl)phenyl]-N,N-
InChI Key	KYHFRCLIGODFH-UHFFFAOYSA-N
CAS Number	99593-25-6
Chemical Formula	C ₂₁ H ₂₀ Cl ₂ N ₆ O ₃
Molecular Weight	475.33
Molecular Ion [M ⁺]	474
Exact Mass [M+H] ⁺	475.1047

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:

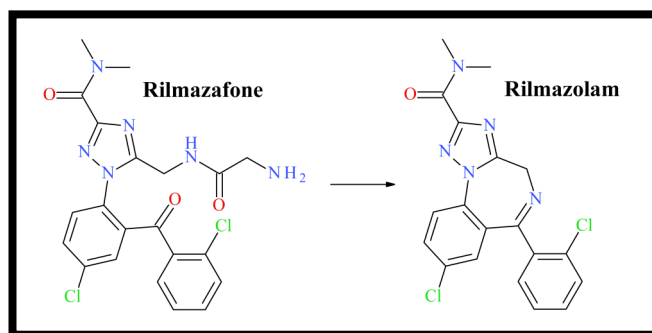
Description: Rilmazafone is a benzodiazepine-type drug that has recently emerged in the recreational drug supply. As a prodrug, rilmazafone is converted in the body to the benzodiazepine rilmazolam (below), which is the analyte expected to appear in toxicology specimens; however, standard reference material for rilmazolam is not currently available. Rilmazafone and its metabolites were reported in two fatal intoxications involving the drug in Europe.¹

Sample Source: [PA Groundhogs](#) (Pennsylvania)

Sample Appearance: Pills

Pharmacology: The pharmacology of rilmazafone is extensively published in the literature.²

Toxicology: As expected, rilmazafone has not been detected in toxicology cases at the CFSRE.



Drug Materials: Rilmazafone has been detected in two drug materials at the CFSRE.

Demographics / Geographics: Drug materials originated from the state of Pennsylvania.

Legal Status: Rilmazafone is not explicitly scheduled in the United States.

References:

- ▶ Toronto Research Chemicals: [Rilmazafone](#)
- ▶ ¹Kronstrand *et al.* (2023) [Rilmazafone: A designer benzodiazepine pro-drug involved in fatal intoxications](#)
- ▶ ²NIH/NCATS Inxight Drug: [Rilmazafone](#)

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. Analysis by GC-MS resulted in the breakdown of rilmazafone; therefore, no GC-MS data is included herein.

Acknowledgements: This report was prepared by Alex J. Krotulski, Christopher Moraff, Joshua S. DeBord, Max T. Denn, Alexis D. Quinter, 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 scientists at the CFSRE and NMS Labs for their involvements and contributions. For more information, contact npsdiscovery@cfsre.org or visit 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: Krotulski, AJ; Moraff, C; DeBord, JS; Denn, MT; Quinter, AD; Walton, SE; Fogarty, MF; Logan, BK. (2023) *Rilmazafone* — *NPS Discovery New Drug Monograph*, Center for Forensic Science Research and Education, United States.

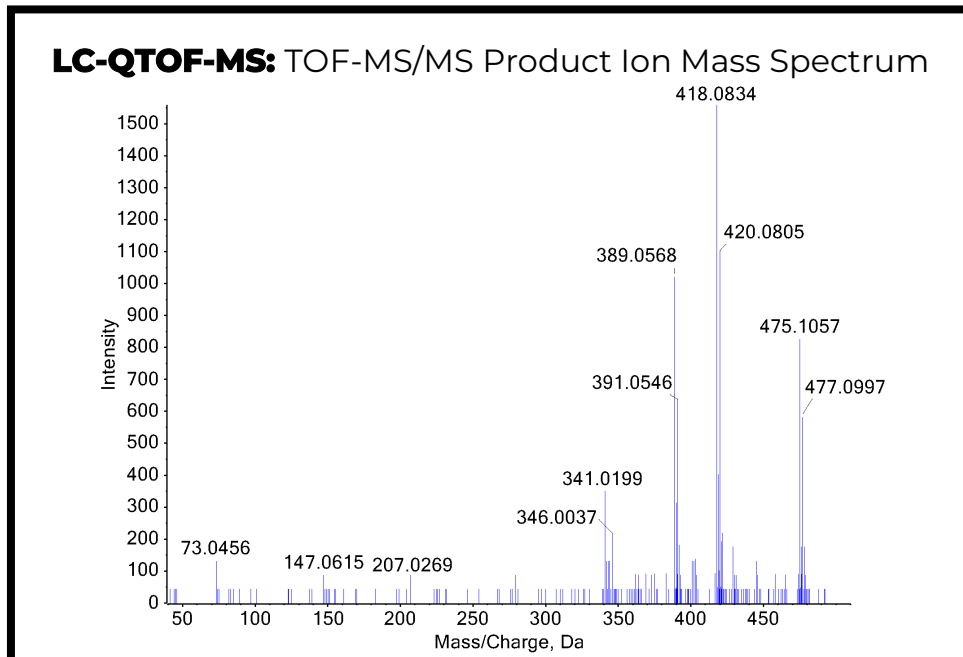
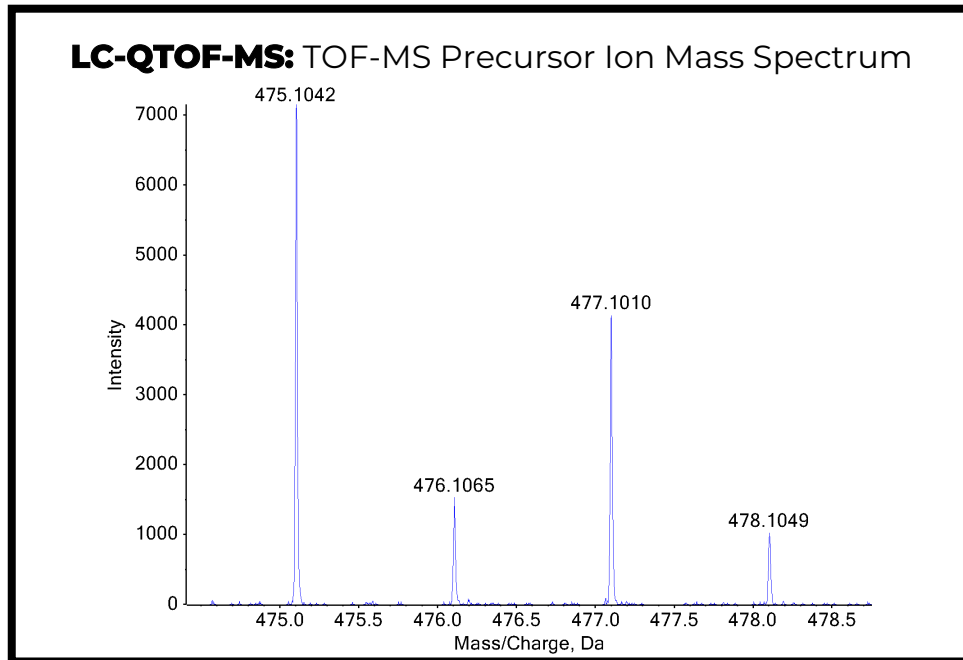
Liquid Chromatography Quadrupole Time-of-Flight Mass Spectrometry (LC-QTOF-MS)

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

Instrument: Sciex TripleTOF® 5600+ LC-QTOF-MS

Sample Preparation: Dilution in solvent

Methods: www.cfsre.org/nps-discovery/monographs
[LC-QTOF-MS Method Details](#)



Confirmation Using Drug Standard: Reference material (Batch: 15-SBK-39-1) was purchased from Toronto Research Chemicals (Ontario, Canada). The analyte was confirmed to be rilmazafone based on retention time (sample: 6.55 min vs. standard: 6.58 min) and mass spectral data comparisons.