EUDA
EUROPEAN UNION DRUGS AGENCY

EU Early Warning System: Formal Notification

Formal notification of 1-(bicyclo[4.2.0]octa-1,3,5-trien-3-yl)-2-(pyrrolidin-1-yl)pentan-1-one (3,4-EtPV) by Germany as a new psychoactive substance under the terms of Regulation (EU) No 2023/1322 and Council Framework Decision 2004/757/JHA

Date issued	**RCD ID**
25.07.2024	EU-EWS-RCS-FN-2024-0016
Issued by	**Transmitted by**
EUDA	Action on New Drugs Sector, EUDA

1. Read me first

This document provides formal notification of the analytical identification of 1-(bicyclo[4.2.0]octa-1,3,5-trien-3-yl)-2-(pyrrolidin-1-yl)pentan-1-one (3,4-EtPV) for the first time in Europe.

Please report any additional data you have on this substance to: ews@euda.europa.eu

2. Data use restrictions

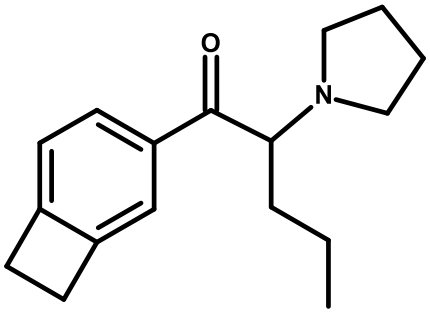
As with all formal notifications issued by the EU Early Warning System (EWS), remember that they may contain information that could be regarded as sensitive. Should you provide some of the information in this notification to other groups we would ask that you exercise your best judgment on what information needs to be provided. If you have any questions in this respect, please contact us.

3. Names of substance and other identifiers

- **IUPAC name:** 1-(bicyclo[4.2.0]octa-1,3,5-trien-3-yl)-2-(pyrrolidin-1-yl)pentan-1-one
- **Chemical names:** 1-(3-bicyclo[4.2.0]octa-1,3,5-trienyl)-2-pyrrolidin-1-yl-pentan-1-one
- **Common name:** 3,4-EtPV
- **Other names:** 3,4-dimethylene-α-pyrrolidinopentiophenone, 3,4-dimethylene-alpha-pyrrolidinopentiophenone, cB-α-PVP, cB-alpha-PVP, 3,4-dimethylene-α-PVP, 3,4-dimethylene-alpha-PVP, 3,4-dimethylene-α-pyrrolidinovalerophenone, 3,4-dimethylene-alpha-pyrrolidinovalerophenone, 3,4-cyclobutanepyrovalerone
- **EMCDDA framework name [1]:** α-P-valerobenzocyclobutene, alpha-P-valerobenzocyclobutene, αP-VBCB

- **Chemical formula:** $C_{17}H_{23}NO$
- **Molecular weight:** 257.371
- **CAS Registry number:** not registered
- **InChIKey:** GJPHTMBPBAUZGR-UHFFFAOYSA-N

Molecular structure:



4. Substance classification

Cathinone

5. Detection

Type: Collected sample

Case Report identifier: EDND-CR-2024-369

Details: 3,4-EtPV was identified in a test-purchase of 200mg of white powder, collected by University Medical Center Freiburg, Institute of Forensic Medicine, Forensic Toxicology Department on 1 December 2023.

The substance was analytically confirmed using GC-MS, (HR)-LC-MS, ATR-IR, GC-sIR, Raman spectroscopy and NMR by the EU-project NETZWERK ADEBAR [2]. The hydrochloride salt form of 3,4-EtPV was identified in the collected sample.

Other detections

Type: Seizure

Case Report identifier: EDND-CR-2024-391

Details: 3,4-EtPV was identified in 0.3 grams of white powder seized by Police on 22 January 2024. The Joint Research Centre allowed the identification of the molecule.

The substance was analytically confirmed using GC-MS, FT-IR, and Raman spectroscopy. The hydrochloride salt form of 3,4-EtPV was identified in the sample.

6. Chemistry and Analysis

Chemical classification:

Chemical classification: arylalkylamine; cathinone

3,4-EtPV is a structural isomer of 5-PPDi, formally notified in 2015 and is structurally related to α-pyrrolidinovalerophenone (α-PVP) (Schedule II of the 1971 United Nations Single Convention on Psychotropic Substances), with addition of a 3,4-ethylene bridge to the phenyl ring.

There are mentions of 3,4-EtPV in online forums since 2021 [3]. However, in 2022, chemical analysis by the ADEBAR Project [2] of samples mislabelled as 3,4-EtPV, revealed the presence of the analogue synthetic cathinone 3,4-Pr-PipVP (formally notified in 2022) [3].

3,4-EtPV contains a stereogenic centre and therefore two possible enantiomers may exist.

The identification and discrimination of isomers can pose analytical challenges due to the fact that these substances have the same molecular weight and may have similar fragmentation patterns. As a result, other analysis techniques, in addition to GC-MS, such as FTIR or NMR may be required.

A reference standard is available for the hydrochloride salt of 3,4-EtPV as a crystalline solid. It is reportedly soluble in Acetonitrile (≥ 10 mg/ml), DMSO (≥ 10 mg/ml), ethanol ((≥ 10 mg/ml), and in Methanol ((≥ 10 mg/ml) [4].

7. Pharmacology and toxicology

Pharmacological classification: Psychostimulant

There is no information on the pharmacology and toxicology of 3,4-EtPV. Based on its chemical structure and on its chemical similarity to α-PVP, 3,4-EtPV is expected to have stimulant effects.

8. Further information

Further information on this substance is available on the EDND profile:
https://ednd2.emcdda.europa.eu/ednd/substanceProfiles/1496

9. Acknowledgementsd

The German National Focal Point, the Bavarian State Police State Bureau of Criminal Investigation Schleswig-Holstein, the University Medical Center Freiburg, Institute of Forensic Medicine, Forensic Toxicology Department, and EU-project NETZWERK ADEBAR are kindly acknowledged for the information and analytical data provided.

10. Attachments

None.

11. References

[1] Pulver B, et al. EMCDDA framework and practical guidance for naming cathinones. Drug Test Anal. 2024.

[2] Pulver B, et al. The ADEBAR project: European and international provision of analytical data from structure elucidation and analytical characterization of NPS. Drug Test Anal.2022;14(8):1491-1502.

[3] Pulver B, et al. A new synthetic cathinone: 3,4-EtPV or 3,4-Pr-PipVP? An unsuccessful attempt to circumvent the German legislation on new psychoactive substances. Drug Test Anal.2023;15:84-96

[4] https://www.caymanchem.com/product/36830/3%2C4-dimethylene-%CE%B1-pyrrolidinovalerophenone-(hydrochloride)