EUDA
EUROPEAN UNION DRUGS AGENCY

EU Early Warning System: Formal Notification

Formal notification of methyl 6,6,9-trimethyl-3-pentyl-6a,7,8,10a-tetrahydro-6*H*-dibenzo[*b*,*d*]pyran-1-yl carbonate (delta-9-THC-methylcarbonate) by Sweden as a new psychoactive substance under the terms of Regulation (EU) No 2023/1322 and Council Framework Decision 2004/757/JHA

Date issued	**RCS ID**
18.12.2024	EU-EWS-RCS-FN-2024-0047
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 methyl 6,6,9-trimethyl-3-pentyl-6a,7,8,10a-tetrahydro-6*H*-dibenzo[*b*,*d*]pyran-1-yl carbonate (delta-9-THC-methylcarbonate) 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

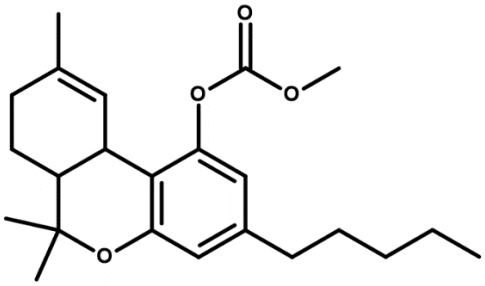
As with all formal notifications issued by the EU Early Warning System (EWS), remember that they may contain information that could be regarded as sensitive. Should you provide some of the information in this notification to other groups we would ask that you exercise your best judgment on what information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

3. Names of substance and other identifiers

- **IUPAC name:** methyl 6,6,9-trimethyl-3-pentyl-6a,7,8,10a-tetrahydro-6*H*-dibenzo[*b*,*d*]pyran-1-yl carbonate
- **Chemical names:** methyl (6,6,9-trimethyl-3-pentyl-6a,7,8,10a-tetrahydrobenzo[c]chromen-1-yl) carbonate; methyl-(6a,7,8,10a-tetrahydro-6,6,9-trimethyl-3-pentyl-6*H*-dibenzo[*b*,*d*]pyran-1-yl)carbonate
- **Common name:** delta-9-THC-methylcarbonate
- **Other names:** delta-9-tetrahydrocannabinol-methylcarbonate; Δ9-THC-methylcarbonate; Δ9-tetrahydrocannabinol-methylcarbonate; delta-9-THC-O-methylcarbonate; Δ9-THC-O-methylcarbonate
- **Chemical Formula:** $C_{23}H_{32}O_4$
- **Molecular weight:** 372.50
- **CAS Registry number:** not registered

- **InChIKey:** OCIMDWOTFKKSJV-UHFFFAOYSA-N

Molecular structure:



4. Substance classification

Cannabinoid

5. Detection

Type: Seizure

Case Report identifier: EDND-CR-2024-1221

Details: delta-9-THC-methylcarbonate was identified in yellow viscous liquid inside 20 e-cigarettes (each containing 1 millilitre) seized by Swedish customs on 4 September 2024.

The substance was analytically confirmed using GC-MS and NMR by Swedish National Forensic Centre (NFC).

Other detections

Type: Seizure

Case Report identifier: EDND-CR-2024-1224

Details: delta-9-THC-methylcarbonate was identified in 120 branded e-cigarettes seized by Swedish Customs, in Göteborg on 5 September 2024. Four different labels were observed on the seized vapes (95% 10-OH-HHCP VAPE, Vol: 1 ml, CANAPUFF).

The substance was analytically confirmed using GC-MS by Swedish Customs and NMR by the European Commission Joint Research Centre (JRC).



Type: Seizure

Case Report identifier: EDND-CR-2024-1296

Details: delta-9-THC-methylcarbonate was identified in five grams of plant/herbal material, seized by Carabinieri in Bolzano, Italy, on 20 October 2024. The substance was identified in a branded product missold as "Canapuff THCV".

The substance was identified using GC-MS by the Reparto Investigazioni Scientifiche Carabinieri di Roma, confirmed by comparison with the analytical data provided by the European Commission Joint Research Centre (JRC). CBD (not quantified) and delta-9-THC (traces) were also identified in the product.





Type: Seizure

Case Report identifier: EDND-CR-2024-1353

Details: delta-9-THC-methylcarbonate was identified in 102 grams of plant/herbal material seized by Swedish Customs on 14 August 2024 at UPS (Veddesta-International Mail Center). The material which was contained in a foil bag labelled as “THP 420, 100g” (hand written), was en-route to Sweden from Czechia.

The substance was identified using GC-MS by Swedish Customs and spectral data compared with the GC-MS data of the substance identified in EDND-CR-2024-1224.



6. Chemistry and Analysis

Chemical classification: unclassified

Delta-9-THC-methylcarbonate is a semi-synthetic cannabinoid and the methyl carbonate derivative of the internationally controlled delta-9-THC (Schedule I of the 1971 United Nations Single Convention on Psychotropic substances).

Delta-9-THC-methylcarbonate is also structurally related to delta-9-THC-O-acetate, formally notified in December 2024, differing by the substitution on the acetyl by a methyl carbonate group attached to the phenol moiety. Delta-9-THC-methylcarbonate is also structurally related to other semi-synthetic cannabinoids monitored by the EUDA, such as delta-8-THC-O-acetate, formally notified in August 2024, and hexahydrocannabinol acetate (HHC acetate), formally notified in December 2022 and under intensive monitoring as of 9 September 2024.

The synthesis of delta-9-THC-glycolate (*compound ALL00154*), an isomer of delta-9-THC-methylcabonate not currently monitored by the EUDA, was described in a 2012 patent on methods of making delta-9-THC prodrugs [1]. 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, in addition to GC-MS, other analytical techniques, such as FTIR or NMR, may be required.

Delta-9-THC-methylcarbonate has two stereogenic centres therefore four stereoisomers may exist.

7. Pharmacology and toxicology

Pharmacological classification: cannabinoid

There is no information available on the pharmacology and toxicology of delta-9-THC-methylcarbonate. Based on its structural similarity to delta-9-THC and delta-9-THC-O-acetate, delta-9-methylcarbonate is expected to act as a prodrug ester of delta-9-THC.

As with the acetate esters of delta-8-THC and delta-9-THC, other acyl derivatives of cannabinoid phenols are expected to be prodrugs of the parent cannabinoid, requiring spontaneous or enzymatic hydrolysis *in vivo* to release the bioactive phenol [2].

8. Further information

Further information on this substance is available on the EDND profile:
https://ednd2.emcdda.europa.eu/ednd/substanceProfiles/1561

9. Acknowledgements

The Swedish National Focal Point, Swedish Customs, the Swedish National Forensic Centre (NFC), the European Commission Joint Research Centre (JRC), the Italian National Focal Point, the Carabinieri and the Reparto Investigazioni Scientifiche Carabinieri di Roma are kindly acknowledged by the information and analytical data provided.

10. Attachments

None.

11. References

[1] Stinchcomb, A.L. et al. Prodrugs of tetrahydrocannabinol, compositions comprising prodrogs of tetrahydrocannabinol and methods of using the same. 24 July 2012; US 8227627 B2

[2] EMCDDA. Technical Report: Hexahydrocannabinol (HHC) and related substances. 2023. https://www.euda.europa.eu/publications/technical-reports/hhc-and-related-substances_en