13 June 2023

Register number FIMEA/ 2023/003523
Annex 1

Narcotics Act (373/2008), section 3a

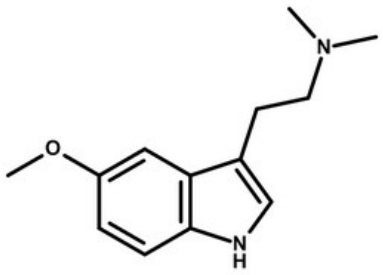
**SUBSTANCE**

5-MeO-DMT (5-methoxymethyltryptamine, 2-(5-methoxy-1*H*-indol-3-yl)-*N,N*-dimethylethaneamine)
5-MeO-DMT (5-metoxidimetyltryptamin, 2-(5-metoxi-1*H*-indol-3-yl)-*N,N*-dimetyletanamin)

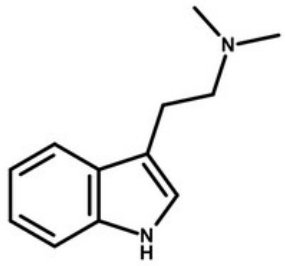
## 1. Name, synonyms, street names, CAS number

IUPAC: 2-(5-methoxy-1*H*-indol-3-yl)-*N,N*-dimethylethaneamine
Other names: 5-methoxymethyltryptamine, 5-methoxy-*N,N*-dimethyltryptamine, 5-methoxy-3-[2-(dimethylamino)ethyl]indole, *N,N,O*-dimethylserotonin, bufotenin methyl ether, *O*-methylbufotenine, methoxybufotenin
CAS: 1019-45-0
InChI Key: ZSTKHSQDNIGFLM-UHFFFAOYSA-N

## 2. Chemical structure




a)




b)

$C_{13}H_{18}N_2O$

In image (b) next to image (a) of 5-MeO-DMT is dimethyltryptamine (DMT), which is classified as a psychotropic substance in the 1971 Convention on Psychotropic Substances.

## 3. Physical properties

Physical state: The substance has been confiscated in the form of powders, capsules and solutions of different colours, which may be intended to be administered with electronic smoking devices, for example.
Molecular weight: 218.29 g/mol

## 4. Mechanism of action

5-methoxy-*N,N*-dimethyltryptamine (5-MeO-DMT) is a tryptamine derivative or indolealkylamine with hallucinogenic properties. 5-MeO-DMT can also be found naturally in various plant species, and of amphibian species, the Colorado River toad (*Incilius alvarius*) secretes it.

5-MeO-DMT is a potent, fast- and relatively short-acting, hallucinogenic substance that acts as a serotonin 5-$HT_{1A}$/5-$HT_{2A/C}$ receptor agonist. Its effect on the 5-$HT_{2A}$ receptor is typical for hallucinogenic substances in particular. Not all hallucinogens, such as 5-MeO-DMT and LSD, have similar effects in similar intensities because of differences in sites of action. 5-MeO-DMT is more potent than DMT, which is classified as a psychotropic substance, and it has a particularly strong effect as a 5-$HT_1$ receptor agonist, which shapes its effects.

According to user reports, 5-MeO-DMT causes hallucinogen-like hallucinations, meaning that its use results in changes in vision, sensation, hearing and perception of time as well as in changes in mood and thinking, for example. Sometimes the user experience is described as ‘mystical’ and the users experience a ‘breakdown of self’. These user experiences have been studied with volunteer subjects that have smoked secretions of the Colorado River toad, for example [5]. 5-MeO-DMT has also been studied in animals and in these studies, consumption of the substance has been found to also have other effects through the serotonergic system, such as increased body temperature, hyperactivity and different behavioural changes.

## 5. Manufacture

The synthesis of 5-MeO-DMT was already described in the 1930s and later in the Shulgins’ book *Tihkal: The Continuation*, for example.

## 6. Effective dose, recreational dose

User reports describe recreational doses as follows: by smoking 10–20 mg, 5–10 mg through nasal mucosa or the membrane under the tongue, and 2–3 mg intravenously. If administered orally, the metabolization (degradation) of 5-MeO-DMT is rapid, but the dose has been described as approximately 30 mg in combination with an inhibitor of this metabolism. One 15-second inhalation has been described to result in a 20- to 40-minute psychedelic/hallucinogenic experience.

## 7. Polysubstance use

Similar to DMT, 5-MeO-DMT has a strong first-pass effect in metabolization, which is why an inhibitor (MAO-A inhibitor) such as harmaline is often taken to enhance its potency when the substance is administered orally.

## 8. Health risks

<u>Health risks to the individual</u>
The hallucinogenic effect of 5-MeO-DMT begins very quickly after administration, e.g. evaporation and inhalation, which is why it is important that the user is in a safe environment. In particular, co-administration with an MAO-A inhibitor such as harmaline, which also acts serotonergically, can lead to serotonin syndrome and life-threatening toxicity.

Hallucinogens are mainly divided into traditional or serotonergic hallucinogens, which include 5-MeO-DMT, LSD and psilocybin, and ‘dissociatives’ such as PCP. The common effects of traditional hallucinogens in the body include changes in mood, sensory perceptions, perception of time, cognition and possibly sexual behaviour. In addition, body temperature may increase and bowel function and appetite may change. These effects are the result of the serotonergic effect of these substances in the body. The effects of hallucinogens on mental functioning and cognition vary depending on the user, the user’s initial mental state and the use environment, and the effects on emotions and cognition can be long-lasting even after a single dose. Thus, the conse-

quences of an unpleasant user experience (or a 'bad trip') that hamper the quality of life can be far-reaching. Unpleasant experiences with tryptamines have been reported to have occurred several days after the actual day of use ('flashback').

Hallucinogens are usually used occasionally and their discontinuation does not normally result in physical withdrawal symptoms. Addiction is typically not developed, but as the number of uses increases users may build a tolerance, i.e. require increasingly larger doses to achieve the desired effects,. Users may also develop a psychological dependence to hallucinogens.

5-MeO-DMT has been or is currently the subject of independent initial clinical trials using volunteer human patients. It is not yet clear whether 5-MeO-DMT is a sufficiently safe substance for use as a medicinal product, but it being fast- and short-acting has attracted interest in the possibility of its pharmacotherapeutic use in combination with therapy for certain treatment-resistant mental health-related conditions. For example, an ongoing early human study aims to determine the pharmacokinetics, safety and tolerability of the substance when administered intramuscularly as single doses of 0.5–16 mg (i.m.).

Public health risks and social risks
The public health and social risks arising from the use of 5-MeO-DMT are comparable to those posed by other hallucinogens classified as narcotic drugs.

**9. Connection with other forms of crime**

No data available.

**10. Documented observations on use of the substance**

Medical and industrial use

5-MeO-DMT has no medicinal or industrial use in Finland.

Reported observations in Finland

5-MeO-DMT has been reported very occasionally in Finland and small amounts have already been reported since 2010 at least. The number of confiscation reports from the supervisory authorities has varied from zero to a few reports annually. 5-MeO-DMT has not been detected in biological samples taken from deceased persons.

Reporting to the EMCDDA Early Warning System (EWS)

5-MeO-DMT was reported to the EWS system already in 2003 in France. Since then, observations of the substance have been reported from several other countries.

**11. Availability**

5-MeO-DMT is available as an analytical reference substance and has also been marketed elsewhere in online stores.

**12. Use profile**

Hallucinogens are most commonly used occasionally.

**13. Current status**

5-MeO-DMT is controlled in Finland as a psychotropic substance prohibited from the consumer market. In the United States, the substance was classified as a psychotropic substance in 2009 and in many countries, such as the United Kingdom, it is controlled as a psychotropic substance under generic legislation and based on the substance's tryptamine structure.

## 14. Other information

## 15. References


1. 5-MeO-DMT Substance profile, EDND, European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). Password-protected database. (Accessed 27 January 2023)
2. Pubchem, 5-MeO-DMT, https://pubchem.ncbi.nlm.nih.gov/compound/1832. (Accessed 30 January 2023)
3. Shulgin A and Shulgin A. Tihkal – The Continuation. Entry #38, Transform Press, Berkeley, USA, 1997 1. edit., p. 531–538.
4. Drugbank Online, 5-MeO-DMT. https://go.drugbank.com/drugs/DB14010 (Accessed 30 January 2023)
5. Uthaug MV., Lancelotta R., et al. A single inhalation of vapor from dried toad secretion containing 5-methoxy-*N,N*-dimethyltryptamine (5-MeO-DMT) in a naturalistic setting is related to sustained enhancement of satisfaction with life, mindfulness-related capacities, and a decrement of psychopathological symptoms. *Psychopharmacol*. 2019;**236**:2653–2666.
6. Krebs-Thomson K., Ruiz EM. et al. The roles of 5-$HT_{1A}$ and 5-$HT_2$ receptors in the effects of 5-MeO-DMT on locomotor activity and prepulse inhibition in rats. *Psychopharmacol*. 2006;**189**:319–329.
7. Shen H-W., Jiang X-L., et al. Psychedelic 5-Methoxy-*N,N*-dimethyltryptamine: Metabolism, Pharmacokinetics, Drug Interactions, and Pharmacological Actions. *Curr. Drug Metab.* 2010;**11**:659–666.
8. Araújo AM., Carvalho F., et al. The hallucinogenic world of tryptamines: an updated review. *Arch. Toxicol.* 2015;**89**:1151–1173.
9. Hoshino T., Shimodaira K. Über Die Synthese Des Bufotenin-Methyl-Äthers (5-Methoxy-*N*-Dimethyl-Tryptamin) Und Bufotenins (Synthesen In Der Indol-Gruppe. Xv). *Bull. Chem. Soc. Japan* 1935;**11**:221–224.
10. User experiences on the substance in internet discussion forums, such as (accessed 31 January 2023): https://drugs.tripsit.me/5-meo-dmt, https://dancesafe.org/5-meo-dmt/
11. DEA-2009-0008. Placement of 5-Methoxy-*N,N*-Dimethyltryptamine Into Schedule I of the Controlled Substances Act. http://edocket.access.gpo.gov/2009/E9-20204.htm (Accessed 31 January 2023)
12. Pharmacokinetics, Safety, and Tolerability of Intramuscular 5-MeO-DMT in Healthy Volunteers, Phase I study. https://clinicaltrials.gov/ct2/show/NCT05698095?term=5-Meo-dmt&draw=1&rank=1, (Accessed 13 June 2023).
13. Callaway JC., Raymon LP., et al. Quantitation of *N,N*-dimethyltryptamine and harmala alkaloids in human plasma after oral dosing with Ayahuasca. *J. Anal. Toxicol.* 1996:**20**:492–497.
14. Sklerov J., Levine B., et al. A fatal intoxication following the ingestion of 5-methoxy-N,N-dimethyltryptamine in an ayahuasca preparation. *J. Anal. Toxicol.* 2005;**29**:838–841.
15. The Centre for Addiction and Mental Health (CAMH), information on hallucinogens on the website of a Canadian teaching hospital: https://www.camh.ca/en/health-info/mental-illness-and-addiction-index/hallucinogens and NIDA. 2019, April 22. Hallucinogens DrugFacts. https://nida.nih.gov/publications/drugfacts/hallucinogens (Accessed 7 June 2023)
16. Advisory Council of Misuse of Drugs legislation (ACMD) Report, Update of the Generic Definition for Tryptamines. UK Government publications, 2014.
17. Database of clinical studies: https://clinicaltrials.gov (information on 5-MeO-DMT accessed on 1 February 2023)
18. Ermakova AO., Dunbar F., et al. A narrative synthesis of research with 5-MeO-DMT. J. Psychopharmacol. 2022;36:273–294.
19. National Institute for Health and Welfare, Customs Laboratory and Forensic Laboratory. Written notification 7 February 2023.
20. Web shops, for example (accessed 7 February 2023)
    https://www.trc-canada.com/product-detail/?M262475
    https://www.bioscience.co.uk/product~955956
    https://www.exportersindia.com/product-detail/5-meo-dmt-3393386.htm
    https://www.tradeindia.com/products/5-meo-dmt-5-methoxy-n-n-dimethyltryptamine-2889199.html
    https://funcaps.com/research-chemicals/tryptaminen/5-meo-dmt.html
21. Misuse of Drugs Act 1971, https://www.legislation.gov.uk/ukpga/1971/38/schedule/2 (Accessed 1 February 2023)

## 16. Alternatives to classification as a narcotic and a classification proposal following the assessment

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| Based on the data collected on the substance, the Finnish Medicines Agency assesses that it should be included in *Annex IV* of the Government Decree on narcotic substances, preparations and plants (543/2008). |