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On April 2015

I-TREND Substance briefing: 3,4-DMMC

This technical folder provides information on: 3,4-DMMC. The information provided is based on a number of existing data sources and work undertaken as part of the I-TREND project. Research informing the folder includes an analysis of user discussions on popular Polish drug forums, an analysis of marketing on popular Polish web shops selling the substance and scientific laboratory analysis of the compound through test purchasing of the substance from Polish web shops.

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1. Substance name(s)

1.1.Chemical name:

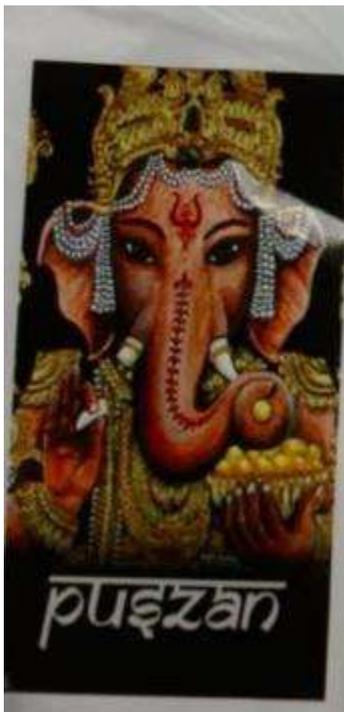
(±)-1-(3,4-dimethylphenyl)-2-(methylamino)propan-1-one

1.2.Other names (e.g. popular/street/slangname(s)):

None other names have been recorded.

1.3.Branded products containing the compound: Puszan

Puznan was the only one commercial name recording.



Source: National Institute of Medicines in Poland

2. Classification and effect

2.1. EMCDDA substance group classification

Cathinones

2.2. Substance analysis results:

Instead of 3,4 DMMC was Pentedrone 70% and Pentedron 71%.

2.3. Polish drug forum monitoring

In one Polish forum the substance is classified as alpha-amino ketones (beta-ketones).

2.4. Polish web shops marketing: 3,4-DMMC

Poland web shop analysis found no web shop advertised branded products as containing 3,4-DMMC substance.

3. Legal status and identification of the substance

3.1. Legal status/acts/laws in Poland

Not controlled as a narcotic drug or psychotropic substance by Polish law. As such, it is not listed in the schedules of drugs of act of counteracting drug addiction (the main drug law). The possession and trafficking is not punishable by criminal sanctions.

But the substance, as all NPS is controlled as substitute drug (*środek zastępczy*). Its manufacturing and introducing to trade is forbidden in territory of Poland under punishment of fine ranging from

20000PLN (~4600 euro) to 1000000 PLN (~230.000 euro).

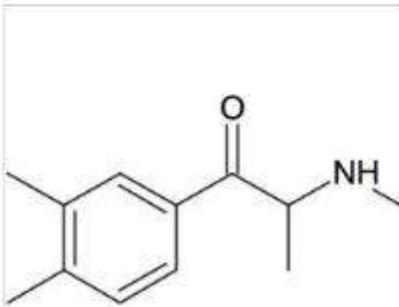
3.2.EMCDDA Notifications of

3,4-DMMC was first reported at the European level by Hungarian authorities and notified by the EMCDDA in 2010. The substance was first identified in Poland in June 2012. 3,4-DMMC has been notified by the EMCDDA within the following EU countries:

Country	Date
Hungary	October 2010
Croatia	August 2011
Bulgaria	August 2011
Norway	September 2011
Sweden	December 2011
Czech Republic	January 2012
Germany	February 2012
Poland	June 2012
Slovenia	August 2014

4. Photographs of the substance

4.1.Images used in the marketing of the product on the web shops the compound was purchased:



3,4-DMMC

3,4-DMMC czyli 1-(3,4-dimetylofenylo)-2-(metyloamino)propan-1-on – jest to odczynnik chemiczny o białej i krystalicznej postaci. Jego inną nazwą to 3,4-dimetyloamfetaminon. Jeśli chodzi o jego skład to wyróżnia się tutaj fenetyloaminę, grupę alkilową (przyłączoną do węgla alfa) oraz grupę ketonową (przyłączoną do węgla beta). Produkt ten jest przeznaczony do użytkowania laboratoryjnego (badania medyczne oraz naukowe). Przestrzegaj przed jego spożyciem, ponieważ może być to niebezpieczne dla organizmu.

Wprowadź w okienko ilość jaka Cię interesuje, dodaj do koszyka, a rabat przydziel się automatycznie.

ilość:



3,4-DMMC

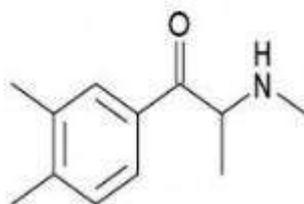
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Wprowadź w okienko ilość jaka Cię interesuje, dodaj do koszyka, a rabat przydziel się automatycznie.

Ilość:



3,4-DMMC



IUPAC: 1-(3,4-dimethylphenyl)-2-(methylamino)propan-1-one

Nazwa chemiczna: 3,4-Dimethylmethcathinon, 3,4-DMMC

CAS: 1081772-06-6

Czystość: 98,9%

Postać: biały krystaliczny puder

Symbol ostrzegawczy: Xn

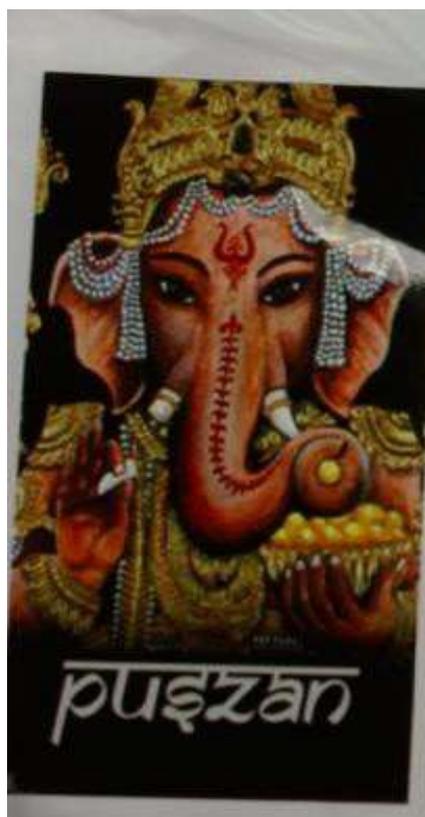
R: 20/21/22; 36

S: 1/2; 13; 20; 22; 24/25; 26; 38; 4

4.2. Photograph of the substance purchased for laboratory analysis



Source: I-Trend project



Source: National Institute of Medicines in Poland



Source: I-Trend project

5. Chemistry

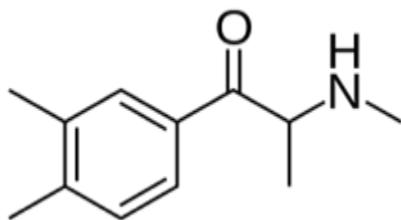
5.1. Chemical Abstracts Service (CAS) registry number

1081772-06-6

5.2. Chemical information (other chemical names or variants)

None information.

5.3. Structure (picture of structural formula):



5.4.Molecular formula

C₁₂H₁₇NO

5.5.Molecular weight

191.269 g/mol

5.6.Structural comparison with a related substance

None information.

6. Analytical composition: results of substance analysis carried out on samples purchased online

Web shop	Date of purchase	Form	Substance named on package/web shop	Confirmed substances
Research Chemical shop 1	20.03.14	powder	3,4-DMMC	Pentedrone , 70%
Research Chemical shop 2	24.07.14	powder	3,4-Dimethylmetcathinon e (3,4-DMMC)	Pentedrone , 71%

7. Price and marketing strategies on Polish web shops selling 3,4-DCMMC:

The 3,4-DMMC was classified as a research chemical according to an analysis of Poland web shops. Poland web shop analysis found one web shop which classified 3,4-DMMC as a Cathinone.

Information about effects was not provided by any web shop.

The price marketing for 3,4-DMMC substance was provided by two web shops. The discount on offer was applicable only for some sizes of 3,4-DMMC. The web shops did not specified level of discount for substance.

7.1.Compound Prices: Powder

	Polish zloty	Quantity
Minimum price <ul style="list-style-type: none"> • retail • wholesale 	PLN 19 PLN 650	1 gram 50 grams
Maximum price (retail)	PLN 35	1 gram

7.2. Description of availability and marketing strategies on Polish web shops selling the 3,4-DMMC:

The 3,4-DMMC was available to purchase (1.6.2015) in 3 web shops of 4 web shops where substance was found¹. Poland web shop marketing analysis indicated one shop which offered discount for orders. Web shop offered discount for customers who choose pay their orders by Bitcoins. The level of discount was 10%. Free gift was promoted by one web shop. Shop provided gift for each order above 350 zł. As a gift was added 0.2gr AM2201. Free shipping was provided by no web shops. The guarantee of “free reship” for orders was provided by no web shop. The same day dispatch was supported by one web shops. Information about ‘new’ products or ‘bestsellers’ was mentioned on three web shops. Loyalty program or Reward Point program for customers was available on two web shops. Customer reviews did not support on any web shop.

8. Law enforcement and health data

8.1. Number of law enforcement seizures in Poland in 2013/2014

131 in 2013 and 9 in 2014

8.2. EMCDDA health alerts in Poland

0

8.3. Confirmed deaths and acute cases reported in Poland

0

¹ The total number of web shops selling new synthetic drugs for PL (16.3.2015) was 74. (For detail information about methodology of monitoring and selecting the web shops see methodology on <http://www.i-trend.eu/>).

For the marketing analysis we chose 15% of the most popular web shops from PL list of shops. The shops operating on platform otwarte24.pl and shops which provide just bulk/wholesale order were removed from our selection. In addition another 6 web shops, previously chosen for the purchase of substances, were added to the marketing analysis. The final number of web shops used for analysis was 15. For latter analysis, we use only shops where product was available.

9. User experiences of the substance: results from an analysis of discussions in two Polish Drug Forums

(200 posts by 69 users)

There was only one active topic affiliated with this substance (and it came from forum <http://hyperreal.info/talk/>), according to which coding was spread and the first 200 posts were taken under analysis. There was limited user discussions in relation to 'tolerance' therefore, coding was expanded once again to the amount of 700 posts.

The topic was created on 13.03.2010 and contained 863 posts when downloaded. From September 2013 to December 2014 number of posts increased from 863 to 937, while number of views increased from 93842 in September to 118994 in December 2014 .

9.1. Dosage specified by drug forum users (n = 46 references by 19 users)

9.1.1. Light (9 references by 7 users)

100 - 150 mg

9.1.2. Common (19 references by 12 users)

half pill (350 - 375 mg) or about 200 - 300 mg when powdered

9.1.3. Strong (3 references by 3 users)

400 - 700 mg (these amounts are too strong, not recommended)

9.1.4. Initial (6 references by 5 users)

the same amount as common (200 - 300 mg), for new users the same light amount (100 - 150 mg).

9.1.5. Boosting (15 references by 10 users)

another initial amount (200 - 300 mg for advanced and 100 - 150 mg for new users)

9.1.6. Threshold (0 references by 0 users)

no information found

As tolerance develops users discuss difficulty to define an upper dosage level, especially when boosting. Each boost leads to the same effects (or even weaker) than the first initial dose, as it only prolongs and not strengthens the phase.

9.2. Duration (n = 33 references by 16 users)

Total duration of 3,4-DMMC is being described as between 120-240 minutes (after 360 minutes users claim to be sober or to feel only stimulation); after snorting (all users agree it's not a preferable route of administration) total duration lasts about 30 minutes.

9.2.1. Onset (22 references by 14 users)

15 - 30 minutes (first effects, "like the feeling of falling in love")

9.2.2. Coming up (21 references by 12 users)

30 minutes - 1 hour (increasing euphoria with a little stimulation, the moment is hard to define as the onset effects are smooth and slow).

9.2.3. Plateau/peak (20 references by 12 users)

about 1 hour (euphoria)

9.2.4. Coming down (21 references by 13 users)

1 hour - 3 hours (decreased euphoria)

9.2.5. After effects (12 references by 9 users)

3 hours - 4 hours (nothing but "pure" stimulation; some users reported prolonged insomnia even over a dozen of hours after taking the substance, other users reported consuming alcohol or other substances to manage the coming down and induce asleep).

9.2.6. Hangover (6 references by 5 users)

one day after (headaches, exhaustion and sleepiness, problems in focusing attention).

9.3. Effects of 3,4-DMMC reported by forum users (n = 72 references by 25 users)

9.3.1. Physical (n=48 references by 22 users)

- *Desired*

Users reported two desirable effects when comparing the after effects of using Mephedrone, the effects mentioned include: smaller cardiological problems and lower blood pressure.

- *Undesired*

High blood and intracranial pressure (feeling like in cerebral haemorrhage), stinging pain in the chest, flushing, headaches, clenched throat, enlarged pupils, insomnia and tiredness, nausea and vomiting, feeling of fainting, lack of appetite, dehydration and dry mouth, sweats (strong smell of vinegar), problems with erection.

9.3.2. Psychological (n=38 references by 19 users)

- *Desired*

Strong euphoria, excitement, energy and willingness to action, calm, empathy, good mood, happiness, love of the world ("feeling of falling in love"), sense of connectedness, willingness to conduct conversations and philosophize, different perspective of thinking, increased awareness and self-knowledge, higher intelligence, feeling that everything is simple and obvious.

- *Undesired*

Senseless stimulation and hyperactivity, inadvertence, impatience, inability to concentrate, feeling of marasmus, speech difficulties and stuttering.

After effects: malaise, sadness, indecision, fear, paranoia, mental breakdown.

Sought (n=1 reference by 1 user)

Euphoria, energy and willingness for acting, moderate stimulation.

9.3.3. Tolerance (n= 15 references by 13 users)

As tolerance wasn't sufficiently described in 200 posts previously taken under analysis (*only 3 references by 3 users*), 500 more posts were coded (*which gave an additional 12 references and 10 users*).

Many users reported rapid tolerance development during bingeing and when the substance has been taken in short continual periods (few days –consecutively). Users discussed 3-4 days after continual dosing a noticeable decrease in positive effects of ingesting 3,4-DMMC, while side effects were multiplied. To retain desirable effects users report that the substance should not be used more than once in two weeks. Cross-tolerance with mephedrone and other beta-ketones was also mentioned.

9.4.Route of administration (n = 16 references by 12 users)

There is only one recommended method of using 3,4-DMMC –

9.4.1. ingestion/oral (9 references by 8 users).

Users report that oral ingestion produces the best effects and duration. Powdered pill or powder itself can be put into the capsule or rolled in a tissue and then swallowed. Other methods include dissolving the powder or pill in water or juice and then swallowing it. Administering the substance directly into mouth is not recommended as it dries the mucous, anesthetizes the tongue and causes temporary insipidness.

The other mentioned method is

9.4.2. snorting/sniffing (8 references by 7 users),

however users report that it is less effective describing effects such as; the duration lasting shorter (not more than 30 minutes) and the feeling of euphoria are less apparent. Users also report this ROA to be painful, as the powder locates deeply in nose it's also hard to blow the nose.

Few users discussed the possibility of injecting 3,4-DMMC and speculate that everything can be

9.4.3. injected (3 references by 3 users),

however one particular users reporting injecting into vein (**IV -1 reference by 1 user**) to be equally ineffective as snorting.

9.5.Other substances referred to when discussing 3,4-DMMC (n = 52 references by 25 users)

9.5.1. Comparable effects (n=35 references by 20 users):

- As Mephedrone became illegal users perceived 3,4-DMMC to be the best alternative. Users discussed its properties and side effects to be similar, but smoother as 3,4- DMMC caused less cardiologic problems, weaker jaw clenching and lower blood pressure. Users also

reported the desire of boosting is reduced, the desirable effects induce 70% of mephedrons' euphoria, the same lack of appetite and dehydration and reduced insomnia. Pharmacologically its synthesis is also similar, only o-xylene is used instead of toluene).

- MDMA (similar euphoria, the same fever and desire of boosting, increase of undesirable side effects after using in a binge).
- Methylone (similar euphoria - described as 150% of methylone, similar onset users describe as having feeling nauseous and stomachache, lesser speed, smaller after effects).
- A further three substances were also mentioned in comparison: 2c-d, brephedrone, MDPV.

9.5.2. Other substances in the same session (n=7 references by 7 users)
alcohol (jointly), mephedrone and methylone (alternately).

9.5.3. Substances used to enhance effects (n=2 references by 2 users)
only ethanol is mentioned as the substance to increase effects, some users claim mixing these substances to be the best effects.

9.5.4. Substances used to manage negative effects (n=11 references by 9 users):

- natural methods: supplementation with vitamins during the course of using and drinking melissa (lemon balm) after usage to aid asleep.
 - The majority of users strongly recommend alcohol (especially beer) in the course of using or after to aid asleep.
 - 4-HO-MET (15 mg)
 - benzodiazepines
 - γ -Butyrolactone (GBL)
 - 4-AcO-DMT
- Buphedrone is quoted as an **antagonist (n=1 reference by 1 user)** - not recommended or even forbidden to use jointly, as it multiplies side effects of usage: cardiological problems, high blood and intracranial pressure (feeling like in cerebral haemorrhage), exhaustion.

9.6. Appearance and preparation

9.6.1. APPEARANCE OF THE SUBSTANCE (n= 6 references by 5 users)



<http://privatechemistsupply.en.hisupplier.com/product-1104679-3-4-dmmc.html>

<http://forum.dopalamy.com/topic/1929-34-dmmc-34-dimetylometkatynon-w%C4%85tek-og%C3%B3lny/>

- color: white or very light pink
- structure: pill (with no logo, less convex than ibuprofen, powdered) or powder (fine, pure)
prepared to be swallowed in a capsule or rolled in a tissue (described as a "bomb")

available only in one internet shop). However, as the discussion developed, there was more information about powder found.

9.6.2. COOK/PREPARATION (n=8 references by 8 users)

There are two main ways the substance can be prepared to use:

- Powder (or powdered pill) can be put into the capsule or rolled in a tissue (described as a "bomb") and then swallowed
- The substance can also be dissolved in water or in juice and then swallowed

Taking the substance directly into mouth is not recommended as it dries the mucous, anesthetizes the tongue and causes temporary insipidness.

9.7. Patterns/Frequency of use (n= 7 references by 5 users)

9.7.1. During the days (week)

Most of the users claim to use 3,4-DMMC occasionally due to the fact the substance used continual develops increased side effects. Using it in a binge can cause malaise and paranoia while the positive effects fade away in time. The substance seems to exert on serotonin receptors and these have lower ability to regenerate than dopamine receptors. Users recommended (and applied) that frequency of use should not be more than once every two weeks.

9.7.2. During one event

Usage of 3,4-DMMC increases user desire to re-boost due to the desirable euphoric properties. Users do not recommend boosting more than the total dosage of 500 mg in one episode, as such, one user advises to avoid possessing anything more than 500mg "in the pocket".

9.8. User's views and experiences on the online market use – online-survey (n= 111)

Did you use any of the following new psychoactive substances?

3,4-DMMC	111	8,0%
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What was the new psychoactive substance you used last time?

3,4-DMMC	2	,2%
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The population is too small to conduct further analysis.

9.9. Harm reduction advice provided by online peers (n=6 references by 3 users)

Harm reduction messages oscillate between advice and warnings about using the substance during a binge and controlling blood and intracranial pressure as well as pulse.

9.9.1. Warnings (n=3 references by 2 users)

Users report a resting heart rate after usage to be high (about 120 beats per minute), this is also prone to increase to 160-180 during simple exercise, for example walking. Furthermore, users also report blood and intracranial pressure increases (sometimes giving a feeling like during cerebral haemorrhage). People suffering from cardiovascular diseases are strongly discouraged to use the substance.

9.9.2. Advice (n=4 references by 2 users)

As serotonin (the neuroreceptor which the substance affects) regenerates much slower than dopamine, users recommend not to use the substance more than once a week and to avoid binges. If used more frequently – the sought effect is reduced.

Users have also advised to remember to drink plenty of water and to eat during the course of using the substance, even though a person feels no thirst or hunger, it is important not to get dehydrated.

10. Relevant literature

1, EMCDDA Annual Report 2010

2. Jump up ^ Locos, O.; Reynolds, D. (2012). "The Characterization of 3,4-Dimethylmethcathinone (3,4-DMMC)". *Journal of Forensic Sciences* 57 (5): 1303–1306. doi:10.1111/j.1556-4029.2012.02142.x. PMID 22564211