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## I-TREND Substance briefing: Pentedrone

This technical folder provides information on Pentedrone. 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

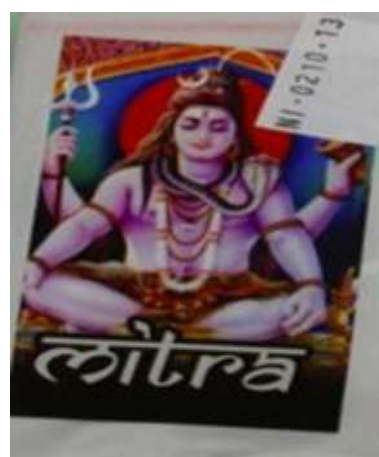
2-(methylamino)-1-phenylhexan-1-one

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

(RS)-1-Phenyl-2-(methylamino)pentan-1-on; rac-1- Phenyl-2-(methylamino)pentan-1-on,  $\alpha$ -methylaminovalerophenone, 1-phenyl-2-methylaminopentan-1-one

### 1.3. Branded products containing the compound:

1. Product Imitation - Bidet freshener with cherry scent
2. Mitra



Source: National Institute of Medicines in Poland

## 2. Classification and effect

### 2.1. EMCDDA substance group classification:

Cathinones

### 2.2. Substance analysis results

Pentedrone 19%, Pentedrone 48%

### 2.3. Polish drug forum monitoring

alpha-aminoketones (beta-ketones)

### 2.4. Polish web shops marketing:

The product is presented in a context of marketing "for adults" and is related to symbols of sex (see picture below).

Marketing text attached to "Pentedrone Big Crystal" is warning before side effects:

"The product for adults. The product for laboratory tests. Not for consumption. Keep away from children!" ( Research chemical shop 1).

Waga	Cena
1g	25.00zł
5g	90.00zł
10g	140.00zł
30g	360.00zł
50g	550.00zł
100g	1.000.00zł
200g	1.600.00zł
300g	2.500.00zł
500g	4.200.00zł
1000g	8.000.00zł

PRODUKT DLA UŻYTKU PEŁNOLETNICH  
PRODUKT DO BADAŃ LABORATORYJNYCH  
Nie do spożycia. Chronić przed dziećmi!

## 3. Legal status and identification of the substance

### 3.1. Legal status/acts/laws in Poland

Not controlled as a narcotic drugs or psychotropic substances 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).

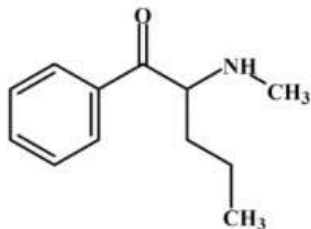
### 3.2. EMCDDA Notifications of Pentedrone:

Pentedrone was reported for the first time at the European level by Austria in 2010. In Poland the substance was identified for the first time in 2011. Pentedrone has been notified by the EMCDDA within the following EU countries:

Country	Date	Country	Date
Austria	September 2010	Croatia	January 2012
Czech Republic	November 2010	Bulgaria	February 2012
Poland	March 2011	Belgium	February 2012
France	March 2011	Latvia	April 2012
Hungary	June 2011	United Kingdom	August 2012
Germany	July 2011	Denmark	September 2012
Italy	November 2011	Slovakia	May 2013
Norway	November 2011	Slovenia	December 2013
Sweden	December 2011	Lithuania	December 2014

## 4. Photographs of the substance

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

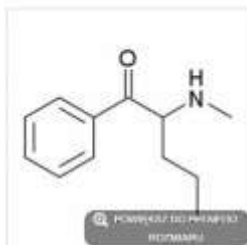


PENTEDRONE BIG CRYSTAL

**29,00 zł**



• Odczynnik Chemiczny • Katalizatory • Pentedrone Big Cristal



**PENTEDRONE BIG CRISTAL**

Pentedron, czyli 1-fenyl-2-metyloamino-3-pentylpropan-1-on, jest organicznym związkem chemicznym. Jeśli chodzi o fizyczną postać to jest to białe proszki. Wszystkie produkty dostępne w naszym sklepie mają charakter produktów laboratoryjnych, ich przeznaczenie nie może być związane z użyciem innym, niż badawcze o charakterze medycznym i naukowym. Piszemy i informujemy, iż skontaktowanie się z nami może być niebezpieczne dla zdrowia osoby. Gwarantujemy bezpieczną obsługę i szybką dostawę.

Wyświetl w skali: 100% Cię interesują: 100% do koszyka, a nasz przycisk się automatycznie.

ilość: 1

**35,00 zł**

**DODAJ DO KOSZYKA**

## 4.2. Photograph of the substance purchased for laboratory analysis:



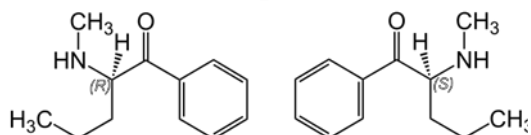
## 5. Chemistry

### 5.1. Chemical Abstracts Service (CAS) registry number

879669-95-1

### 5.2. Chemical information (other chemical names or variants)

### 5.3. Structure (picture of structural formula):



### 5.4. Molecular formula

C<sub>12</sub>H<sub>17</sub>NO

### 5.5. Molecular weight

191,138 g/mol

### 5.6. Structural comparison with a related substance

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

(PL IPIP address web shops)

### 6.1. Details of laboratory analysis technique used:

Web shop	Date of purchase	Form	Substance named on package/web shop	Confirmed substances
Research chemical shop 2	23.03.14	<b>Cristal</b>	Pentedrone Big Cristal	Pentedrone 19%
Research chemical shop 3	23.03.14	<b>powder</b>	Pentedrone	Pentedrone 48%

## 7. Price and marketing strategies on Polish web shops selling pentedrone:

The specific marketing for *Pentedrone* substance was provided by five web shops. The discount on offer was applicable only for some sizes of Pentedrone and usually bigger than 3 gram packages.

### 7.1.Compound Prices: Powder

	Polish zloty	Quantity
Minimum price	ZL 35 (cristal)	1.5 gram
Maximum price	ZL 35 (powder)	1 gram

### 7.2.Description of availability and marketing strategies on Polish web shops selling Pentedrone

*Polish web shop analysis found no web shop advertised branded products as containing Pentedrone substance.*

The specific marketing for Pentedrone substance was provided by five web shops. The discount on offer was applicable only for some sizes of Pentedrone and usually bigger than 3 gram packages  
Description of availability and marketing strategies on Polish web shops selling the substance:

The Pentedrone was available to purchase (1.6.2015) in 9 web shops where substance was found<sup>11</sup> Polish web shop marketing analysis indicated two shops which offered discount for orders. First shop offered two discounts. One was limited for new customers only.The average level of discount was 25%. Second discount was available for all customers and all orders. The average level of discount was 20%.

Second shop offered discount for customers who met several condition only. The shop did not specified level of discount. Free gift was not promoted by any web shop. Free shipping was provided by three web shops. Shops offered free shipping with conditions on a minimum amount of order. The guarantee of “free reship” for orders was provided by any web shop. The same day dispatch was supported by five web shops. Information about ‘new’ products or ‘bestsellers’ was mentioned

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<sup>1</sup> The total number of web shops selling new synthetic drugs for Poland (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 Poland 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

on eight web shop. Loyalty program or Reward Point program for customers was available on three web shops. Customer reviews was support on two web shops.

### 7.3. Number and type of websites selling the product (5 of top 5 top Polish shops)

	Number of shops (23.03.2014)	Number of shops (27.10.2014)
<b>RC shops</b>	3	3
<b>Commercial shops</b>	1	0
<b>Other</b>	1	1

## 8. Law enforcement and health data

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

575 in 2013 and 578 in 2014

### 8.2. EMCDDA health alerts in the Poland

0

### 8.3. Confirmed deaths and acute cases reported in Poland

0

## 9. User experiences of the substance: results from an analysis of discussions on Pentedrone Polish Drug Forums

(98 references by 46 users)

There were two topics affiliated with Pentedrone. One topic was specifically related to Pentedrone and the other was a discussion on the combination of Pentedrone and Ethylphenidate. The first topic was created in September 2011 was still active in 2014. The number of posts increased from 1725 in September 2013 to 2483 in December 2014. The number of views increased from 142101 in September 2013 to 254371 in December. The material selected for qualitative analysis contained 1685 posts and was captured in August 2013.

The second mentioned topic was relatively short (24 posts) and inactive (no increase in number of posts and low increase in number of views), and did not contain any relevant information. The second topic was created in July 2012 and had a total of 24 posts, this did not increase between September 2013 and December 2014. The number of views increased from 3646 in September 2013 to 5383 in December 2014.

Only the first topic was kept for analyzes.



## 9.1. Dosage specified by drug forum users (n =50 references by 31 users)

### 9.1.1. Light (5 references by 4 users) 10-35 mg,

9.1.2. Common (9 references by 8 users)  
35-50mg (users did not advised dosing over 50mg due to reported side effects of insomnia),

9.1.3. Strong (11 references by 9 users)  
100-250mg (users advised such doses to be too strong and not recommended).

9.1.4. Initial (20 references by 18 users)  
40-50mg (taking more than 50 mg as initial dose not impact on the psychoactive effects, but reportedly increases the undesired effects (for example, users report experiencing pains in the chest, increased pressure on the heart and tolerance development),

9.1.5. Boosting (18 references by 15 users)  
40-50mg (boosting was often reported to be the same as or similar to the initial dosing amount; boosting dose was commonly taken between 1,5h and 3-5h after initial dose. Due to the rapid development of tolerance and effects of insomnia the total number of re-doses was usually limited to 3 or 4),

9.1.6. Threshold (6 references by 4 users)  
up to 50mg.  
Users reported that dosing was depended on existing tolerance for stimulants. and also suggested that dosing should be similar to MDPV and 33-50% lower than Bupherdone. Some users reported initially dosing small and then boosting, rather than initially dosing with a large amount.

## 9.2. Duration (n = 29 references by 17 users)

9.2.1. Onset (3 references by 3 users)  
15-20 min

9.2.2. Coming up (12 references by 10 users)  
1-1,5 hour

9.2.3. Plateau/peak (3 references by 3 users)  
1-1,5 to 3-5 hours (there was no clear description of the length and quality of the effects of the substance. Users commonly reported that the desired effects last from 1-1,5h to 3-5h, after which the compulsion to re-dose is high.

9.2.4. Coming down (16 references by 11 users)  
from 3-5 hours

9.2.5. • After effects (9 references by 7 users)  
users reported experiencing after effects from 3-5 hours after initial dose, following into the next morning. Users made no clear distinction between coming down and the after effects, the

come down was described in combination of when the after effects began. Users also commonly reported the after effects as being unpleasant, experiencing increased problems of insomnia, having a general bad feeling, repressed mood states and physical pains in the chest. The number of unpleasant physical symptoms as well as the duration of after effects was reportedly dependent on the dose consumed, users commonly discussed effects lasting until the next morning and extended periods of sleep problems.

#### 9.2.6. Hangover(9 references by 7 users)

most of the users point out that the substance has strong and unpleasant coming down effects, but no significant hangover the next day.

### 9.3.Effects of Pentedrone reported by forum users (n = 68 references by 34 users)

Users described Pentedrone as a stimulant and have commonly compared effects similar to that of Amphetamine, however they are no reported effects of euphoria. Users also commonly report undesirable come down effects, which for stimulant substances is quite common along with experiencing increased sleep problems (insomnia). However, there are some conflicting experiences reported by users, some report experiencing mild after effects whilst others report experiencing extremely unpleasant after effects. This substance seems to act different on different individuals. Some report euphoria, pleasant stimulation and no come down or after effects, when others report terrible come down effects, no euphoria (pure stimulation), *nieogar*<sup>2</sup>, pressure to do anything and lack of concentration or unwillingness. The inconsistency reported from user effects are likely to be a result of several factors a) the dosage (higher dosing seems to give more adverse effects), b) existing tolerance for stimulants and c) personal taste, preferences and effects which are sought after by users.

The undesired effects are most commonly reported during the come down and after effects. On the contrary however, several users also reported the lack of intense hangover. One user explained; "Strange that after sleepless night I get up in the morning and was functioning without problem for whole day till midnight(..)".

Users have discussed perceiving the physical form of Pentedrone as having a considerable influence on the effects experienced. Although there is no difference in the mechanism of action, users have reported the form to influence intensity. Users discussed the big crystals to have the strongest effect, the small crystals having a weaker effects and the powder was considered to be the weakest.

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<sup>2</sup> „nieogar“ comes from polish word „nie oraniać“ which could be translated directly as “do not engulf” It is a slang term referring to racing thoughts, willingness to do many things, but not being able to concentrate on one single activity. It is typical for over stimulation caused by drug

### 9.3.1. Physical (n=42 references by 24 users)

- *Desired*

Users reported the following effects to be most desirable: No undesirable after effects, no heavy effects on the heart, the come up was reported to be less physical and more psychological, no noticeable physical effects like change in behavior or dilated pupils

- *Undesired*

Users reported the following effects as the most undesirable: unpleasant come down, increased respiratory problems (breathless), pains in chest and the ribs, insomnia, deprivation of appetite, dehydration, nausea, headache, jaw pain, tics and twitches slight pain in eyeballs, problems with erection (this was reported after users dosed 2x100mg), hard impact on the heart and kidneys, users also described the substance as caustic ("*żrąca*") just after the intake, destructive to the mucous ("*śluzówka*") (sniffing).

### 9.3.2. Psychological (n=43 references by 26 users)

- *Desired*

Users reported several desirable psychological effects, these include: stimulation, increased confidence and positive attitude to the world, positive increase in mood, gentle stimulation, sharpened color vision, short acting euphoria. Users commonly reported more desirable psychological effects than physical stimulation for example: no overstimulation, *feeling a sense of* purity and clarity of thoughts, pleasurable come down effects and no disruption to users general mentality, users describe desirable psychological effects as "Even with boosting there is no tragedy in the head", users also described sexual excitation and considered pentedrone as a desirable drug for intellectual work when administering low to medium doses. Users also report a sense of freshness in the head, increased concentration, energy and motivation.

- *Undesired*

Users reported the undesirable psychological effects a having a lack of euphoria, overstimulation decreased concentration, apathy, unpleasant speed and decomposed thoughts and general psychological state that users described as '*nieogar*'<sup>3</sup>. Users also commonly described experiencing an overall bad feeling, dissatisfaction, negative state of mood (noticeable during the come down), users also discussed Pentedrone to have "terrible dissatisfaction characteristic for dopaminergics – feeling the pressure to do anything – like taking another line" and commonly reported psychosis from lack of sleep.

### 9.3.3. Tolerance (n=14 references by 9 users)

Users report a rapid tolerance development for Pentredone, however users do not consider this as a problem as the substance effects are long lasting. Users also commonly discussed tolerance issues in the discussion regarding dosing. Some users recommend that it is better to dose a small amount of the substance instead of using large doses. Large doses increase the unpleasant effects and are considered responsible for any rapid tolerance development.

### 9.4.Route of administration (n = 25 references by 18 users)

Various route of administration were reported. Two of the most frequently mentioned were **sniffing (18 references by 13 users)** and **ingesting (12 references by 11 users)**. Sniffing was described as unpleasant producing short duration pains to the nose. The local anesthetic properties while sniffing were also reported. The substance was described by some users as corrosive and destructive to the mucous. Ingesting was second most commonly discussed route of administration, most users referred to this route of administration as oral, however some users reported sublingual and lingual administration. The route of administration used was often reported to be dependent of the form of the substance. For example some users reported consuming the substance in form of crystal and often “.....took the large crystal into mouth and suck it like a candy”. Users reported that ingestion (oral form) is preferable route of administration, as the effects are much more desirable. Some users reported that snorting the substance did not produce the expected effects sought. The other less frequently mentioned route of administrations was **interventions injection (2 references by 1 users) and rectal (1 references by 1 user)**.

### 9.5.Other substances referred to when discussing Pentredone (n = 51 references by 29 users)

#### 9.5.1. • Comparable effects (n=40 references by 23 users):

- Amphetamine and Methamphetamine (because of its stimulating psychoactive properties and long lasting effects),
- Eth-cat and MDPV (psychoactive effects are considered to be comparable to Eth-cat and MDPV, users reported very similar effects between these substances but with Pentredone having less undesired effects),
- Buphedrone,
- Coffee (simply due to its simulant psychoactive effects)
- Other substances: Brephedrone, Alpha-PPP, Ethylphenidate

### 9.5.2. Other substances in the same episode (*n=11 references by 11 users*):

- 5-MeO-DIPTA,
- DMMC,
- MeOPP,
- buphedrone,
- ACO,
- APB,
- Codeine,
- MXE ,
- Alcohol (bier),
- Marijuana.

When users discussed combining substances within the same episode, there was no clear pattern or controlled way of consuming the substances. Users often reported that the combination of substances are taken “by accident”, meaning that they are not taken with the purpose of seeking specific desirable effects.

### 9.5.3. To manage a coming down effects (*n= 4 references by 3 users*):

- Alcohol
- Marihuana
- Diazepam
- GBL

Most users report combining other substances with the purpose of helping to manage side effects such as, insomnia.

### 9.5.4. Quoted as agonist/antagonist (*n=2 references by 2 users*):

There is no specific information about antagonistic action of other substances with Pentedrone. However users do not recommended combining it with alcohol or tryptamines.

### 9.5.5. To increase the effects (*n=0*)

## 9.6.Appearance and preparation

### 9.6.1. APPERENCE OF THE SUBSTANCE (*n= 29 references by 17 users*)

- **structure:** users have reported the substance as a dry powder, moist (wet) powder and also variations of small and large crystals (similarly compared to kitchen salt). The substance is odorless. It is not clear if the appearance of the

substance might influence the effects of the substance. The large crystal is considered by most of users as the form giving better psychoactive effects. At the same time other report that they prefer the powder or did not felt any difference in the mechanism of action. It seems that the large crystal is the purest form of the substance and the other forms are the effect of disintegration of the substance.

### 9.6.2. COOK/PREPARATION (how users prepare a product before a specific use)(n=1 references by 1 user)

Little reference was made on the preparation of Pentedrone for user consumption. However several users reported the substance to come in crystal form (large and small). One user discussed preparing Pentedrone for sniffing and reported grinding the crystal and snorting the powder form. When users discussed ingesting the substance, no specific preparation was reported. Users commonly discussed administering the substance orally and simply sucking on the big crystals, no other method of preparation was involved.

## 9.7. Patterns/Frequency of use

### FREQUENCY OF USE (n=17 references by 15 users)

#### 9.7.1. During the days

Users made no reference to the use of Pentedrone during the week. Some users reported using this compound for maximizing performance at work but did not clearly refer to frequency of use during the week.

#### 9.7.2. During the event

The frequency of use during an episode varied between users. Users reported two basic strategies, these were discussed as either consuming one high dose (about 100mg or higher) at the beginning or dosing several times at a lower amount (about 50mg) during the event (boosting). Boosting was often reported to be taken between 1,5h or 3-5h after the initial dose. Users reported the total duration of an event lasting up to 12h.

## 9.8. User's views and experiences on the online market use - online-survey (n= 221 )

Did you use any of the following new psychoactive substances?

<b>Pentedron</b>	221	16,0%
------------------	-----	-------

What was the new psychoactive substance you used last time?

<b>Pentedron</b>	31	2,9%
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8.1 During the last twelve months, on how many days have you taken selected new psychoactive substance?

	N	1	4	10 to 19 days	20 days or more
<b>Pentedron</b>	9,7%	25,8%	19,4%	19,4%	25,70%

During the last 30 days, on how many days have you taken selected it

No answers

### 9.8.1. Effects

Did you feel anything unpleasant after you used the substance last time?  
What were the unpleasant feelings after you used the substance? (*several answers are possible*)

<b>Pentredone</b>	
3,2%	unpleast,intensive hallucinations, delusions
9,7%	strong craving to use more
38,7%	depression, dejection
32,3%	strong paranoia, fear, anxiety
35,5%	aggression
16,1%	extreme agitation and excitement, sleeplessness
35,5%	fatigue, exhaustion, sleepiness
22,6%	muscle ache, cramps, jaw clenching
32,3%	tremors
25,8%	seizures

### 9.9.Context of consumption

Last time when using the substance which you selected, what were circumstances?

	Alone at home	With friends at your or their home	Alone in a club, pub or at a party	With friends in a club, pub or at a party	Alone outside/in the countryside	With friends outside/in the countryside	At school/work	Other circumstances
<b>Pentredone</b>	16,1%	29,0%	3,2%	16,1%	0%	19,4%	9,7%	6,5%

What are the most important intended effects that you seek when you used the substance which you selected? (*several answers are possible*)

	To bond with others, to socialize	To get high	To provides me with energy (sexual performances not)	To improve sexual intercourse	To increase the positive effects of another drug	To reduce the negative effects of another drug	To modify perception	To soothe pain	To allay or alleviate anxiety	To fight sleeplessness	To fight tiredness	To relax	to stimulate the brain activity for learning or work	others
<b>Pentadron</b>	64,5%	48,4%	25,8%	19,4%	12,9%	6,5%	25,8%	3,2%	29,0%	3,2%	25,8%	25,8%	41,9%	3,2%

### 9.10. Route of administration

Last time when using the substance which you selected, what were the typical ways of administration for you? (*several answers are possible*)

	Smoking	Waterpipe	Bong	Vaporizer	Chasing the dragon	Sublingual	Ingestion	Snorting	Rectal	Injection
<b>Pentadron</b>	6,5%	,0%	,0%	,0%	,0%	6,5%	6,5%	93,5%	,0%	,0%



## 9.11. User's views and experiences on the online market

During the last 12 months, on how many different online shops have you ordered?

	F	P
1	8	5
2 to 5	6	4
5 to 10	0	0
More than 10	1	6
Total	1	

Which were the most important criteria for you when you selected the shops in the last 12 months? (*no more than 5*)

	F	P
I followed the advice of other users	9	2
I had a good experience with the shop already	5	1
Its use the site of a Secure payment method	3	9
Good profile at pages where client share their experience (fe.;	5	1 6
It is specialized into one substance	3	9
this was cheaper than other online shops	3	9
The New Psychoactive Substance are of better quality than other	4	1 2
The New Psychoactive Substance are shipped in	4	1
The shipment was more reliable than other sites	2	6
The New Psychoactive Substance I was looking for was not available in other online shops	1	3
No o online shop sends to my country the New Psychoactive	0	0
No specific criterion	3	9
Other	0	0

Population: only users, who ordered NPS during last 12 months

Where did you look for information about New Psychoactive Substance? (*several answers are possible*)

	F	P
from an online shop	2	6
from a web forum	1	5
from friends / family / acquaintances	6	1
I don't need any information	5	1
from my dealer	3	9
from TV/radio	1	3
from newspapers, magazines	0	0
I don't have any information	5	1
Other	2	6

Population: only users, who ordered NPS during last 12 months

## 9.12. Harm reduction advice provided by online peers (n=3 references by 3 users)

### 9.12.1. Warnings

- Compulsion to re-dose
- Easy to overdose
- Produces side effects of Insomnia
- Increased heart rate
- Particularly dangerous when mixed with dextromethorphan, may cause serotonin syndrome

### 9.12.2. Advice

- Drink a lot of water
- Ensure to eat something
- Supplement with magnesium
- Ensure to get some sleep after effects have subsided
- Avoid continual daily consumption
- Limit the doses to 50mg or below

## 10. Relevant literature

1. Wikipedia, the free encyclopedia
2. PubChem, Public Chemical Database
3. 7. Karty Charakterystyki substancji zidentyfikowanych w „dopalaczach” badanych w Narodowym

Instytucie Leków w 2010 r., Warszawa 2011