

Created by : SWPS team, Poland  
On April 2015

## I-TREND Substance briefing: alpha- PVP

This technical folder provides information on alpha-PVP. 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

(RS)- 1-Phenyl-2-(pyrrolidin-1-yl)pentan-1-one

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

$\alpha$ -Pyrrolidinopentiophenone (*alpha*-pyrrolidinovalerophenone,  $\alpha$ -PVP, alpha-PVP, O-2387,  $\beta$ -ketone-prolintane.

### 1.3. Popular/ street/ slangnames

„a-pvp“, „PVP“, „aPVP“,

## 1.4. Branded products containing the compound

1. E21
2. G-Y
3. S1 Turbo
4. GIE-ES M



Source: National Institute of Medicines in Poland

## 2. Classification and effect

### 2.1. EMCDDA substance group classification

Cathinones

### 2.2. Substance analysis results

Alpha-PVP 57%, Alpha-PVP 92%

$\alpha$ -Pyrrolidinopentiophenone (*alpha*-pyrrolidinovalerophenone,  $\alpha$ -PVP, alpha-PVP, O-2387,  $\beta$ -ketone-prolintane) is a stimulant compound developed in the 1960s and related to pyrovalerone and is the ketone analog of prolintane.<sup>[1]</sup>

The mechanism of action is unknown for  $\alpha$ -pyrrolidinopentiophenone.  $\alpha$ -PVP is believed to act similarly to the designer drug MDPV, which acts as a norepinephrine-dopamine reuptake inhibitor (NDRI), although no substantial research on this compound has been conducted.

$\alpha$ -PVP is sometimes the active ingredient in a drug often referred to colloquially as "bath salts".

### 2.3. Polish drug forum monitoring

alpha-pyrrolidine ketones (Alfa-pirolidynoketony)

### 2.4. Polish web shops marketing

Alpha -PVP is present in most stores as one of the most popular substances. It is presented primarily as a "chemical reagent" without the specific context of marketing.

### 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 alpha-PVP

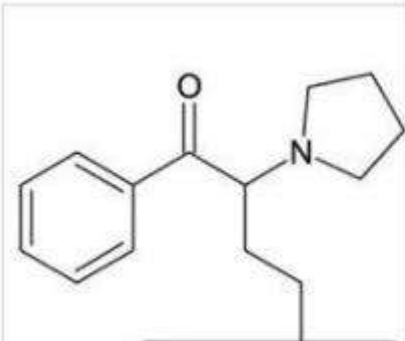
Alpha-PVP was first notified to EMCDDA by French authorities in 2011. In December 2012 the substance was identified in Poland for the first time. Alpha-PVP has been notified to EMCDDA by the following EU countries:

Country	Date
France	April 2011
Turkey	April 2011
Germany	April 2011
Hungary	June 2011
Greece	August 2011
Belgium	August 2011
Italy	November 2011
Sweden	December 2011
Czech Republic	January 2012
United Kingdom	March 2012
Latvia	November 2012
Slovenia	December 2012
Poland	December 2012
Croatia	June 2013
Romania	November 2013
Luxemburg	January 2014
Spain	February 2014
Lithuania	April 2014
Malta	July 2014

Ireland	September 2014
Norway	October 2014

## 4. Photographs of the substance

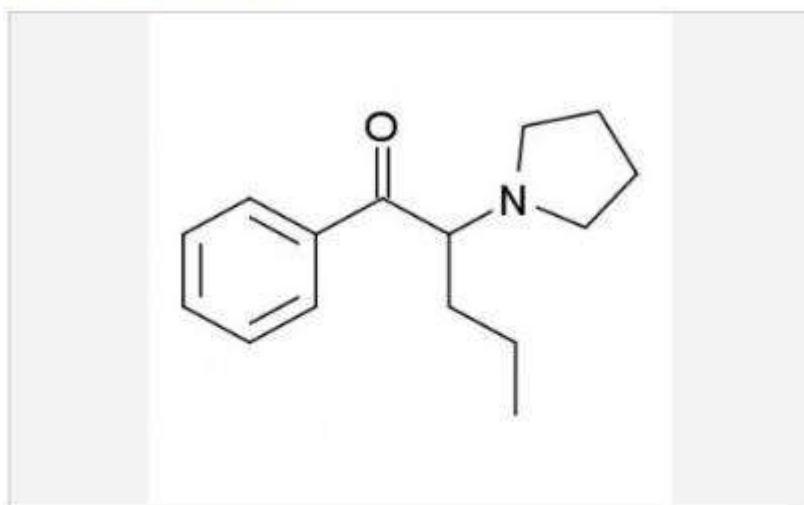
### 4.1. Images used in the marketing of the product on the web shops the compound was purchased:



**A-PVP**

α-PVP - α-Pirolidynopeniofenon, czyli 1-fenyl-2-(1-pyrolidynyl)-1-pentanon, to organiczny związek chemiczny, pirolidynowa pochodna walerofenonu. Przybiera postać białego kryształu. Produkt przeznaczony jest jedynie do badań laboratoryjnych o charakterze naukowym lub medycznym. Przestrzegamy przed jego zażyciem, ponieważ może być to niebezpieczne dla zdrowia człowieka. Przygotowaliśmy ciekawe warunki cenowe oraz rabaty. Zachęcamy do zapoznania się z całą ofertą naszej firmy.

### α-PVP HCl 1gr



Powiększ

α-PVP odczynnik chemiczny przeznaczony do badań oraz analiz.

**Produkt nie do spożycia przez ludzi**

Wyrzucić

40,00 zł

Ilość : 1

Dodaj do koszyka

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



Source: I-Trend project

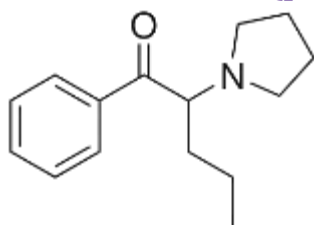
## 5. Chemistry

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

14530-33-7; 5485-65-4 (HCl); 14859-27-9 (tartrate); 14859-28-0 (maleate); 14995-79-0 (citrate); 100175-06-2 (hydrogen maleate); 16121-74-7 (sulfate); 13415-49-1 (sulfate); 1346599-00-5 (d<sub>8</sub>-).

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

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



### 5.4. Molecular formula

C<sub>15</sub>H<sub>21</sub>NO

### 5.5. Molecular weight

231.33 g mol<sup>-1</sup>

### 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
Legal Chem	21.03.14	powder	alpha-PVP	Alpha-PVP, 57%
RC-24.pl	24.07.14	powder	alpha-pyrrolidinopentiopnone (alpha-PVP BigCristal)	Alpha-PVP, 92%

## 7. Price and marketing strategies on Polish web shops selling 2-AI

Sales of Alpha-PVP in on-line Polish shops were identified in four out of five leading Polish on-line shops, namely:

RESEARCH CHEMICALS (<http://rc-24.pl/>)

LEGALCHEM (<http://legalchem.pl/pl/>)

RESEARCH CHEMICALS (<http://www.rc-lab.cz/>)

ODCZYNNIKI CHEMICZNE (<https://researchchemicals.net.pl/>)

In all of them the substance is selling under the marketing label "a-PVP".

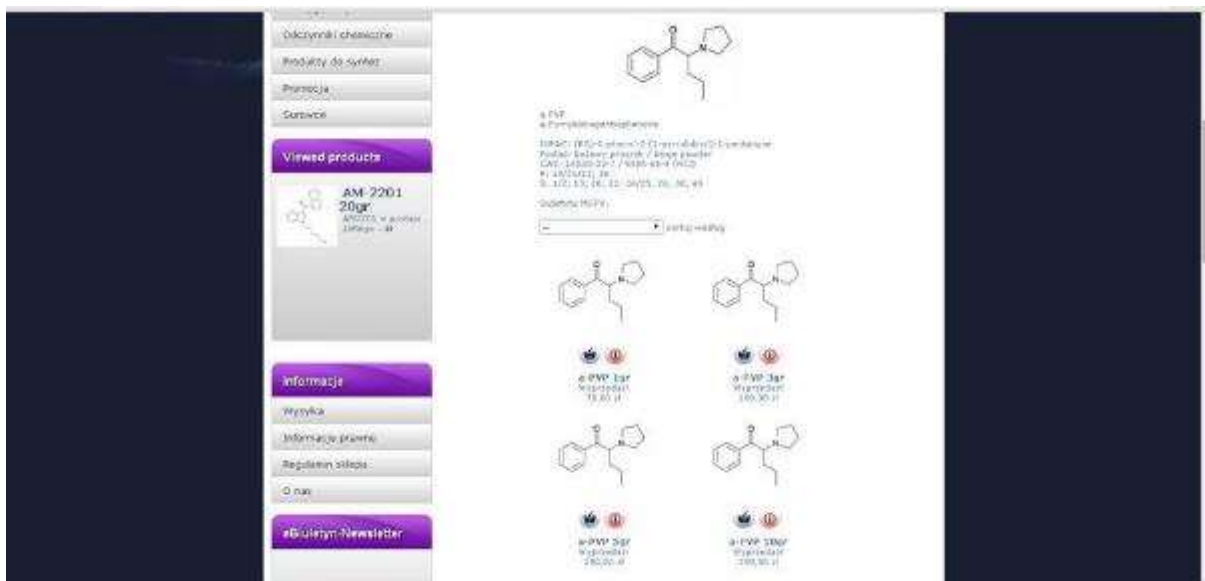
### 7.1.Compound Prices: Powder

	Polish zloty	Quantity
Minimum price		
<ul style="list-style-type: none"> <li>• Retail</li> <li>• Wholesale</li> </ul>	39 PLN	1 gram
	9000 PLN	500 grams
	16 000 PLN	1 kg
Maximum price (retail)	40 PLN	1 gram

### 7.2.Description of availability and marketing strategies on Polish web shops selling the: A-PVP

In some of shops a-PVP is selling out on lower prices (see picture below).





### 7.3.Type of polish websites selling the product (4 out of 5 top Polish on-line shops)

Web shops selling Alpha-PVP were exclusively Research Chemical shops. They were more numerous at the end of the monitoring period rather at its beginning ( 2 versus 4).

## 8. Law enforcement and health data

### 8.1.Number of law enforcement seizures in Poland in 2013/2014 280 in 2013 and 268 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 in two Polish Drug

### Forums

**(100 posts by 56 users)**

Three topics devoted exclusively to alpha-PVP. One was extensive in length and started on 5 September 2011. The other two topics were comparatively short. The second started on 18 March 2013 and the third started on 18 October 2013. All three topics chosen for analysis came from <http://hyperreal.info/talk/> forum and were active in 2013. In general, 56 users took part in topic discussions.

The first topic of discussion was very long and started on 5 September 2011. In the monitoring period, the number of posts increased from 865 posts in September 2013 to 2099 posts in December 2014. The number of views increased from 57203 to 149540, respectively.

The second topic started July 2013 and it contained 11 posts. In the monitoring period (from September 2013 to December 2014) the number increased from 11 to 20 and views increased from 547 to 3958.

The third topic started on October 2013 and it contained only 6 post when downloaded. During the monitoring period, however, the number of posts increased to 74 posts in December 2014. The number of views increased from 185 in October 2013 to 5280 in December 2014.

## 9.1. Dosage specified by drug forum users (n = 99 references by 38 users)

### 9.1.1. light

**(3 references by 2 users):** 1-5 mg. The smallest doses are to be used for intravenous injection (0.5-20 mg)

### 9.1.2. common

**(4 references by 4 users):** from 2 to 5 doses of 10-30 mg of a good quality substance; 10-30 mg (oral use); 20-50 mg (sniffed, snorted)

### 9.1.3. strong

**(11 references by 4 users):** 30 mg – 200 mg (sometimes even up to 1g in a single session); 700 mg (considered too strong and not recommended)

### 9.1.4. initial

**(11 references by 10 users):** 0.5 – 20 mg.

### 9.1.5. boosting

**(8 references by 6 users):** 20 – 30 mg

### 9.1.6. threshold

**(0 references by 0 users):** no information found

## 9.2. Duration

Total described duration of effects associated with alpha-PVP ranged between 1 hour and 10 hours.

### 9.2.1. Onset

**(3 references by 2 users):** 5 - 10 minutes

### 9.2.2. Coming up

**(15 references by 10 users), plateau:** psychological effects lasted for 30-120 minutes, while the physical effects lasted much longer. After that, the psychological stimulation usually disappears. This prompted many users to take another dose, which may produce effects of similar duration (i.e. 1-2 h of stimulation)

### 9.2.3. Coming down

**(3 references by 3 users):** 1 hour – 10 hours; this stage lasts much longer than the intoxication. Users usually report duration of 5-10 hours. Many forum participants stress that the after-effects are aggravated by insomnia, they cannot be “slept off”. The recovery to full functionality may take another day.

### 9.2.4. After effects

**(2 references by 2 users):** some users suffered from insomnia even over a dozen of hours after taking the substance; heart palpitation; desire to vomit.

### 9.2.5. Hangover

**(0 references by 0 users):** no information found

## 9.3. Effects of alpha-PVP reported by forum users (n = 194 posts by 40 users)

### 9.3.1. Physical

**(n=31 references by 27 users)**

- Desired

The most commonly mentioned desirable effect is physical stimulation, “speed”. Users are restless and hyperactive; they feel that they cannot stay in one place. They describe the state as a long, **intensive state of hyperactivity**.

Some respondents report **sexual arousal**. However, a more common view is that using this compound is detrimental to sexual activity.

- Undesired

The physical after-effects of using this compound are numerous. They are often described as severe, unpleasant and long lasting.

Using alpha-PVP results in **sleeplessness**. At best, users get interrupted sleep. Several participants report very long periods (up to 70 hours) of sleep deprivation.

Many users mention heart problems after using this compound. The symptoms are commonly described as **heart pain, hypertension, high pulse rate**. These effects can last into the day following substance use. Several users had to receive medical treatment. Some report **feeling close to collapse** (*“I had a feeling I will lose consciousness and never come round”*). Another associated symptom was interpreted as “thick blood”, which can lead to clotting. Some users reported vasoconstriction.

Users report respiratory problems, usually described as **quick, shallow breaths**. One after-effect was a feeling of paralysis of diaphragm, making breathing very difficult.

Many users had a feeling of **muscle tension**. Some describe it as shivering and light trembling. Others had **seizures**. One user had trouble walking the day after use.

Some forum participants had nausea and **digestive problems**. One user who took alpha-PVP in different forms claimed that these effects do not occur if it is snorted.

Several participants had **kidney problems** (pain, green urine).

In the day after taking the compound, users feel **tired, inactive**. Several of them describe exhaustion as severe. Several users report stupor, "*feeling like a vegetable*".

### 9.3.2. Psychological effects (n=30 references by 22 users)

- Desired

The compound provides psychological stimulation, variously described as strong or weak. Some users felt general **improvement of the mood, or even euphoria**. However, others claim that the stimulation is only physical, with no psychological effects.

Users are ready to talk, chat online, they report the need for company. Some describe the effect as **logorrhea**: disjointed, incoherent talk.

Alpha-PVP consumers feel the need to start different activities at the same time ("*I wanted to do everything, each moment I turned to something different*"). Some felt **stimulated to work or study**; others, however, said it was impossible because of **lack of concentration**.

- Undesired

A frequently reported psychological effect is compulsion to use: several users claim it is difficult to stop taking additional doses, even though they do not produce desired psychological effects. The **compulsion** is particularly strong if the substance is inhaled.

Frequently, consumption of this substance is associated with **psychosis**. Users report both visual and auditory **hallucinations**. They were associated with paranoid sensations: forum users imagined someone creeping behind their windows, eavesdropping on them, etc. Coupled with physical stimulation, these sensations resulted in **dangerous behavior**, such as jumping from the window, running long distance in the cold, jumping into a river. In the words of one forum participant, "*the worst thing about alpha is that the hallucinations are what you are most afraid of when sober*".

Taking this substance can lead to short-term **memory loss**. For instance, a user reported driving under influence and instantly forgetting traffic signs.

Another set of undesired psychological effects is related to **sleeplessness**. It disrupts normal functioning for prolonged periods of time (up to 2-3 days after use).

Some users report depression after the effects wear out: **a feeling of sadness, emptiness**, feeling low.

### 9.3.3. **Tolerance (n= 8 references by 4 users)**

Alpha-PVP builds tolerance fast. For instance, a user reported increasing the dose 10 times after one month of regular use.

The effects diminish in users with high tolerance. Insomnia, one of the most unpleasant after-effects, is much less pronounced. The feeling of exhaustion is also less acute.

## 9.4. **Route of administration (n = 66 references by 33 users)**

This substance can be taken in different ways.

9.4.1. **The most common route of administration is snorting (14 posts by 12 users)**, sniffing a line of substance. Users describe this as the most convenient way to take it, sometimes claiming that the effects are moderate relative to other ways of administering it.

### 9.4.2. **Alpha-PVP can be inhaled (5 posts by 5 users)**

Most commonly, the substance is vaporized on the aluminium foil or a light bulb. Some respondents claim it can be added to tobacco. Once a vaporizer was mentioned.

### 9.4.3. **Some users inject it intravenously (5 posts by 4 users)**

They stress that, for i.v. injection, the substance must be pure (more so than with snorting or smoking). Some respondents mentioned difficulties caused by clotting: alpha-PVP was perceived to increase blood density, which makes injecting difficult. Moreover, it “burns the veins”. The effects are strongest with this route of administration.

Sometimes the substance is **swallowed (2 posts)**.

## 9.5. **Other substances referred to when discussing alpha-PVP (n = 125 references by 23 users)**

### 9.5.1. **Comparable effects (n=32 references by 16 users)**

- Alpha-PVP is used as a substitute for the controlled substance MDPV. The effects are, according to users, comparable. In comparison with MDPV, the desired effects at similar doses are much weaker and last shorter (3 times weaker and shorter, according to one forum participant; another user calculated that required dosing of MDPV is 10 times lower). Some users claim that the euphoria, noticed when using MDPV, is missing in alpha-PVP. In comparison with MDPV, the negative after-effects (especially insomnia) are more severe. On the other hand, alpha-PVP differs in that it does not cause aversion to food.
- Another substance with comparable effects is amphetamine. The psychotic states are, in view of some users, similar. However, alpha-PVP does not trigger such aggression.
- According to several users, the effects of alpha-PVP are similar to the stimulants 3-FA, alpha-PPP and pentedrone.
- Some users call this substance “*crack for the poor*”.

#### 9.5.2. Other substances in the same session (n=12 posts by 4 users)

- Forum participants use alpha-PVP with many different substances, such as GBL, EPH and 3-MMC.

#### 9.5.3. Substances used to enhance effects (n=12 posts by 4 users)

- Several users note that alpha-PVP by itself does not provide satisfactory experience because it produces mostly physical stimulation, without expected psychological effects.
- Therefore, they report and advise mixing it with substances such as:
  - MXE,
  - Buphedrone,
  - Brephedrone,
  - Sulpiride,
  - Ethylphenidate.
- Some users drink alcohol with alpha-PVP.

#### 9.5.4. Substances used to manage negative effects (n=12 references by 8 users)

- Many users report acute psychoses after using alpha-PVP.
- They need medication to reduce panic attacks, hallucinations, etc.
- Forum participants manage psychotic effects with substances such as:
  - Clonazepam,
  - Olanzapine.
  - Benzodiazepine.

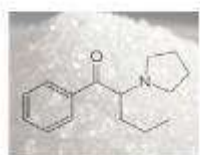
- The after-effects can be managed by buprenorphine.

#### 9.5.5. Antagonists (n=0 by 0 users)

No information found

## 9.6. Appearance and preparation

### 9.6.1. APPEARANCE OF THE SUBSTANCE (n=21 posts by 12 users)



- The compound is described as a powder or crystals.
- Colour: white, light brown and brown-grey versions of the product. The powder is sometimes sticky. The light brown powder is sometimes claimed to have better effects, and it is perceived to be of higher purity (i.e. more active substance). However, other users recommend the white powder.
- Smell: The substance sometimes smells of mushrooms and sperm. The white powder is sometimes described as without smell; but other users describe it as smelling of mushrooms. This differentiation depends on the vendor.

### 9.6.2. PREPARATION (n=10 posts by 8 users)

- For i.v. injection, respondents dissolve the substance in water. When prepared like this, it can also be drunk.
- For inhalation, freebase can be prepared. The substance is heated and users inhale the fumes from foil or a light bulb.
- Some users put the substance in a glass bended pipe to heat it and inhale.
- It is also possible to add the substance to a cigarette and smoke it. Users break the cigarette, add the substance and use tape to glue the cigarette together.

## 9.7. Patterns/Frequency of use (n=2 posts by 2 users)

There are both regular and occasional users. Some forum participants take alpha-PVP daily, reaching daily doses of up to 1g. Some alternate between periods of daily usage (lasting several days) and abstinence. Some occasional users take other psychoactive substances in the periods when they do not take alpha-PVP.

As regards **frequency of use during one event**, there is some variation as well. Some users only take

the substance once. However, the dominant pattern is to use it several times, after the effects recede. The frequency can be every 1-2 hours, or less frequently. Some users give the optimum dose as 3 lines in a session if the substance is snorted.

## 9.8. User's views and experiences on the online market use - - online-survey (n= 138)

### 9.8.1. Pattern/frequency

Did you use any of the following new psychoactive substances?

<b>alfa - PVP</b>	138	10,0%
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What was the new psychoactive substance you used last time?

<b>alfa - PVP</b>	36	3,4%
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During the last twelve months, on how many days have you taken selected new psychoactive substance?

	Not at all	1 to 3 days	4 to 9 days	10 to 19 days
<b>alfa - PVP</b>	13,9%	19,4%	16,7%	11,1%

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

No answers

### 9.8.2. 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*)

	unpleasant, intensive hallucinations, delusions	strong craving to use more	depression, dejection	strong paranoia, fear, anxiety	aggression	extreme agitation and excitement, sleeplessness	fatigue, exhaustion, sleepiness	muscle ache,, cramps, jaw clenching	tremors	seizures
<b>alfa - PVP</b>	0%	16,7%	30,6%	30,6%	38,9%	11,1%	36,1%	19,4%	30,6%	33,3%



	<b>with moving</b>											
	could not control my muscle, I have problems	headache	nausea, vomiting pain	strongly increased heart rate, palpitation, chest	breathing difficulty, dyspnea	sweating	overheating	dehydration and/or diarrhea	problems of sight	itches, skin changes, changed colour, spots, blisters, rash etc.	other	
<b>alfa - PVP</b>	13,9%	16,7%	13,9%	5,6%	38,9%	22,2%	30,6%	16,7%	5,6%	27,8%	5,6%	

### 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>alfa - PVP (included)</b>	16,7%	36,1%	10,0%	8,3%	10,0%	30,6%	5,6%	2,8%

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

	To get high	(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>alfa - PVP</b>	63,9%	58,3%	25,0%	8,3%	2,8%	16,7%	44,4%	5,6%	19,4%	2,8%	27,8%	44,4%	19,4%	8,3%

### 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>alfa</b>	-	25,0%	2,8%	,0%	5,6%	5,6%	5,6%	11,1%	88,9%	2,8%	5,6%
<b>PVP</b>											

### 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?

	Frequency	Percent
1	8	53,3%
2 to 5	3	20,0%
5 to 10	1	6,7%
More than 10	3	20,0%
Total	15	

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

	Frequency	Percent
I followed the advice of other users <sup>1</sup>	9	60,0%
I had a good experience with the shop already	6	40,0%
Its use the site of a Secure payment method	5	33,3%
Good profile at pages where client share their experience (fe.; SafeOrScam)	8	53,3%
It is specialized into one substance	3	20,0%
this was cheaper than other online shops	3	20,0%
The New Psychoactive Substance are of better quality than other online shops	4	26,7%
The New Psychoactive Substance are shipped in discrete packets	2	13,3%

The shipment was more reliable than other sites	4	26,7%
The New Psychoactive Substance I was looking for was not available in other online shops	1	6,7%
No online shop sends to my country the New Psychoactive Substance I was looking for	3	20,0%

No specific criterion	1	6,7%
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*)

	Frequency	Percent
from an online shop	1	6,7%
from a web forum	7	46,7%
from friends / family / acquaintances	3	20,0%
I don't need any information	4	26,7%
from my dealer	1	6,7%
from TV/radio	0	,0%
from newspapers, magazines	0	,0%
I don't have any information	1	6,7%
Other	0	,0%

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

## 9.12. Harm reduction advice provided by online peers (n=4 references; 3 users)

### 9.12.1. Warnings

Some users warn:

- against taking alpha-PVP together with synthetic cannabinoids because of possible problems with blood circulation and hypertension
- against the negative mental states, such as fear, loss of consciousness, risky behavior (not controllable), depression and even psychosis: "I feel episode titled "pvp" is closed in my life. I do not wish my worst enemy to hell went through what I did."

### 9.12.2. Advice

- In a case of addition to change the route of administration from injection to swallowing

and gradual limitation of dosing.

- To use some sleeping pills after taking alpha-PVP and supplements as e.g. magnesium, B12 or hydroxyzinum
- To eat something before taking alpha-PVP
- To visit psychiatrist

### 9.13. Relevant literature

### 9.14. References

EMCDDA (2014). European Database on New Drugs (EDND) (2014). “ $\alpha$ -Pyrrolidinovalerophenone /  $\alpha$ -PVP”. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). Lisbon, Portugal.