

I-TREND Substance briefing: 4-fluoramphetamine

This technical folder provides information on 4-fluoramphetamine. The information provided is based on a number of existing data discussions and work undertaken as part of the I-TREND project. Research informing the folder includes an analysis of user discussions on popular Dutch drug forums (Workstream 1), an analysis of marketing on popular Dutch speaking web shops selling the substance (Workstream 2), and scientific laboratory analysis of the compound through test purchasing of the substance from NL web shops (Workstream 3).

1.	Substance name(s)	3
1.1.	Chemical name	3
1.2.	Other names (e.g. popular/street/slang name(s)):	3
1.3.	Branded products.....	3
2.	Classification and effect.....	3
2.1.	EMCDDA substance group classification.....	3
2.2.	Substance analysis results.....	3
2.3.	Dutch drug forum monitoring.....	3
2.4.	Dutch web shops marketing	3
3.	Legal status and identification of the substance.....	3
3.1.	Legal status/acts/laws in the Netherlands.....	3
3.2.	EMCDDA Notifications of 4-fluoroamphetamine	3
4.	Photographs of the substance.....	5
4.1.	Images used in the marketing of the product on the web shops the compound was purchased.....	5
4.2.	Photograph of the substance purchased for laboratory analysis.....	5
5.	Chemistry.....	5
5.1.	Chemical Abstracts Service (CAS) registry number.....	5
5.2.	Chemical information: other chemical names or variants:	5
5.3.	Structure (picture of structural formula)	5
5.4.	Molecular formula.....	5
5.5.	Molecular weight	6
5.6.	Structural comparison with a related substance:	6
6.	Analytical composition: results of substance analysis carried out on samples collected by users.....	6
7.	Prices on Dutch web shops selling 4-FA	7
8.	Law enforcement and health data	7
8.1.	Number of law enforcement seizures in the Netherlands in 2013/2014.....	7
8.2.	EMCDDA health alerts in the Netherlands.....	7

8.3.	Confirmed deaths and acute cases reported in the Netherlands.....	7
9.	User experiences of the substance: results from an analysis of discussions in 4 Dutch Drug Forums.....	8
9.1.	Dosage specified by drug forum users (6 discussions, 65 posts).....	8
9.1.1.	Initial Dosing	8
9.1.2.	Boosting	8
9.1.3.	Threshold	8
9.1.4.	Light.....	8
9.1.5.	Common.....	8
9.1.6.	Strong.....	8
9.2.	Duration of 4-FA reported by forum users	8
9.2.1.	Onset.....	9
9.2.2.	Coming up	9
9.2.3.	Plateau	9
9.2.4.	Coming down	9
9.2.5.	After effects	9
9.2.6.	Hangover/ Day after	9
9.3.	Effects of 4-FA reported by forum users.....	9
9.3.1.	Physical effect	9
9.3.2.	Psychological effect	9
9.3.3.	Sought/expected + Desired	9
9.3.4.	Undesired.....	10
9.3.5.	<i>Tolerance</i>	10
9.4.	Route of administration (ROA).....	10
9.4.1.	Ingestion (24 discussions, 56 posts)	10
9.4.2.	Snorting (17 discussions, 48 posts).....	10
9.4.3.	Rectal (0 discussions).....	10
9.4.4.	Inhalation or insufflation (8 discussions, 19 posts)	10
9.4.5.	Sublingual (3 discussions, 3 posts).....	10
9.5.	Other substances referred to when discussing 4-FA	10
9.5.1.	Referred to in comparing the effects.....	10
9.5.2.	Referred to as increasing the effects	10
9.5.3.	Referred to in managing come down	10
9.5.4.	Other substance discussed in the same episode/ combo	10
9.6.	Appearance and preparation	11
9.7.	Patterns/Frequency of use.....	11
9.8.	Context of consumption use	11
9.9.	User's views and experiences on the online market use.....	11
9.10.	Advice provided by online peers	11
10.	Extra data get through online survey	11
10.1.	Unpleasant feelings	11
10.2.	Intended effects.....	12
10.3.	Route of administration:	13
10.4.	Setting of use	13
11.	References	14

1. Substance name(s)

1.1. Chemical name

(RS)-1-(4-Fluorophenyl)propan-2-amine

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

- The EMCDDA's EDND (2014) also refers to this substance as (RS)-1-(4-Fluorophenyl)propan-2-amine
- Dutch forum activity suggests users also referred to 4-fluor-amfetamine as 4-FMP, 4-FA, Flux, Fluor, Flava, Flits.
- Compound sold as 4-FA, 4-FMP, 4-fluoramfetamine or Alegria Azul in NL based web shops.

1.3. Branded products

Dutch drug forum analysis found that users purchased a number of brands which contained 4-FA.

2. Classification and effect

2.1. EMCDDA substance group classification

Phenylethylamines.

2.2. Substance analysis results

All 4-fluoroamphetamine samples were confirmed through the analysis of the compound test obtained through our regular testing system at DIMS.

2.3. Dutch drug forum monitoring

Dutch drug forum monitoring suggests that from 2013 onwards, 2778 forum posts in 4 selected fora covered this substance.

2.4. Dutch web shops marketing

Dutch web shops analysed within the I-TREND project advertised 4-fluoramfetamine as 4-fluoramfetamine, 4-FA, 4-FMP, Alegria Azul.

3. Legal status and identification of the substance

3.1. Legal status/acts/laws in the Netherlands

Presently 4-FA is not under any law. From the time it entered the Dutch drugs market around 2007 until summer 2014, 4-FA was under the Medicine Act, but it was decided by the High Court that NPS can no longer be addressed under this law, hence 4-FA is presently free to use, sell or manufacture in the Netherlands.

3.2. EMCDDA Notifications of 4-fluoroamphetamine

- 4-Fluoroamphetamine was first reported at the European level by the Dutch authorities and notified by the EMCDDA in 2009.
- 4-Fluoroamphetamine has been reported to the EMCDDA by the following European countries:

Country	Dates
Netherlands	01-01-2009

Denmark	01-01-2009
Belgium	01-01-2009
Finland	01-02-2009
Croatia	03-02-2009
United Kingdom	06-02-2009
France, Estonia,	20-03-2009
Hungary	02-07-2009
Slovakia	24-07-2009
Germany	21-07-2009
Sweden	Annual report
Austria	Annual report
Poland	01-09-2010
Bulgaria	15-07-2011
Italy	08-09-2011
Slovenia	27-02-2012
Czech Republic	02-04-2012
Greece	02-05-2013
Latvia	12-11-2013
Spain	30-05-2016

4. Photographs of the substance

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



4.2. Photograph of the substance purchased for laboratory analysis



5. Chemistry

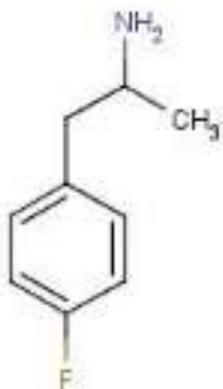
5.1. Chemical Abstracts Service (CAS) registry number

459-02-9

5.2. Chemical information: other chemical names or variants:

White powder, chemical odour (plastic...).

5.3. Structure (picture of structural formula)



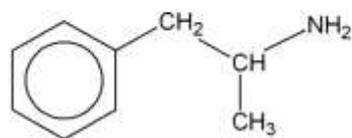
5.4. Molecular formula

C₉H₁₂FN

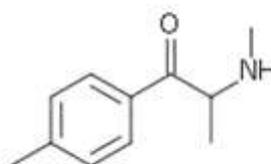
5.5. Molecular weight

153.20 g/mol

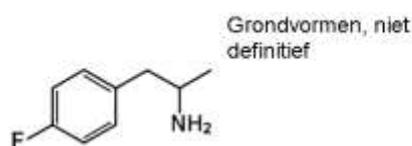
5.6. Structural comparison with a related substance:



amphetamine

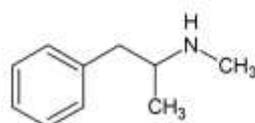


4-methyl-amphetamine



4-fluoro-amphetamine

Grondvormen, niet definitief



methamphetamine

6. Analytical composition: results of substance analysis carried out on samples collected by users

According to the I-TREND methodology used for the workstream 2 (See dedicated online reports), a list of web shops was set up. Among them, at least 4 with the best ranking on the Internet were selected for further investigation. Their content was scanned.

For the Netherlands 8 samples of 4-FMA were collected by users in different periods over 2014.

The techniques used for analysis were: LC-DAD /GC-MS /Calibration curve (9 points) for quantification.

Web shop	Date of purchase	Form	Substance named on package/web shop	Confirmed substances
Research Chemical shop 1	April 2014	Powder	4-FA	4-fluoroamphetamine
Research Chemical shop 1	April 2014	Powder	4-FMP	4-fluoromamphetamine
Commercial Shop 1	February 2014	Powder	4-FA	4-fluoroamphetamine
Research Chemical shop 2	February 2014	Powder	4-FA	4-fluoroamphetamine
Commercial Shop 2	February 2014	Liquid	Flux-CD-cleaner	4-fluoroamphetamine

Research Chemical shop 3	April 2014	Powder	4-FA	4-fluoroamphetamine
Commercial Shop 3	January 2014	Powder	4-FMP	4-fluoroamphetamine
Research Chemical shop 4	March 2014	Powder	4-FA	4-fluoroamphetamine

Analysis results confirm that 4-fluoroamphetamine was present in all samples obtained as 4-FA/ 4-FMP/Flux-CD-cleaner. Mean = 72% (sd.= 18.) (8 samples analysed).

7. Prices on Dutch web shops selling 4-FA

	Euro	Quantity
Minimum price	15	1 gr
Maximum price	20	1 gr

4-FA had been also found in blotter form, priced at 25€ per unit.

8. Law enforcement and health data

8.1. Number of law enforcement seizures in the Netherlands in 2013/2014

4-Fluoroamphetamine was seized 39 times in powder form, 13 times in tablet form, 5 times in liquid form and 4 times in capsule form in 2014.

8.2. EMCDDA health alerts in the Netherlands

There has been no EMCDDA Alerts for 4-fluoroamphetamine in the Netherlands or any other European country¹

8.3. Confirmed deaths and acute cases reported in the Netherlands

As of January 2009, zero deaths related to 4-fluoroamphetamine have been reported to the EMCDDA.

The national poisoning information centre has reported 11 intoxications involving 4-fluoroamphetamine in 2013. In most of them, combined use with other substances has been reported as well. Most frequent reported symptoms were headache (10x), vomiting (7x), tachycardia (6x), hypertension (6x), nausea (4x), mydriasis (4x), agitation (4x) and

¹ As of November 2014

hyperventilation (4x). The monitor drug-related incidents reported 12 incidents with 4-fluoroamphetamine in 2013, of which 8 were light incidents and 4 were moderate in severity. In most cases, it was combined with other substances, usually alcohol and other stimulants.

9. User experiences of the substance: results from an analysis of discussions in 4 Dutch Drug Forums

The information below is based on the analysis of 4 dutch drug forums containing 2778 posts on 4-FA since January 2013 in 4 selected fora.

9.1. Dosage specified by drug forum users (6 discussions, 65 posts)

9.1.1. Initial Dosing

(4 discussions, 19 posts) A common dose is between 100-150 mg 4-FA with an average of 125 mg.

9.1.2. Boosting

(5 discussions, 29 posts) Redosing prolongs the stimulant effect, but not the euphoric effect, unless you redose shortly after taking the initial dose or redose with a high dose. Redosing usually is done with a lesser amount than the initial dose. Some people prefer not to redose but to take a higher initial dose.

If people redose, a single redose is common, no more. Many take an initial dose of 120-150 and redose later that session around 50-70. So on average users may take up to 200 mg per session, but doses up to 300 mg or more are not exceptional.

9.1.3. Threshold

(2 discussions, 4 posts) The lowest amount of 4-FA to feel any effect is reported to be 15/20 mg.

9.1.4. Light

(5 discussions, 16 posts) A dose below 100 mg can be seen as a relatively light dose.

9.1.5. Common

(4 discussions, 21 posts) A common dose is between 100-150 mg 4-FA with an average of 125 mg.

9.1.6. Strong

(4 discussions, 23 posts) Dosages >150 mg can be considered strong doses.

See also appendix WS3 below.

9.2. Duration of 4-FA reported by forum users

(5 discussions, 16 posts)

The euphoric effect remains for a couple of hours, after which the stimulant effects remains for 5-7 hours and gradually loses its strength. People experience no crash as is the case with ecstasy. The onset and comedown is slow.

9.2.1. Onset

(1 discussion, 2 posts) 45 min-90 min and comes on slowly.

9.2.2. Coming up

(3 discussions, 5 posts) It takes between 30-60 minutes after the first effects are noticed for the full effects to kick in.

9.2.3. Plateau

(2 discussions, 3 posts) For euphoric effect: this lasts two hours after which stimulant effects remain. Plateau: 3-4 hours

9.2.4. Coming down

(4 discussions, 8 posts) The coming down on 4-FA takes around 2-3 hours, depending on the dose taken, and whether people redose or not.

9.2.5. After effects

(4 discussions, 6 posts) After effects are mostly absent.

9.2.6. Hangover/ Day after

(4 discussions, 7 posts)

According to forum members, stimulant effects endure too long, sleep deprivation occurs often. When large amounts of 4-FA have been taken, sleeping problems arise, but no hangovers the next day or other major after effects. People refer to the fact that they prefer 4-FA over ecstasy because they remain clear in their head during the session, and afterwards no major after effects.

9.3. Effects of 4-FA reported by forum users

9.3.1. Physical effect

(6 discussions, 59 posts) 4-FA makes you 'not too much up, not too much wasted. Effects include: increased energy, warm intense feeling, shivers, less bruxism (if compared to other stimulants)

9.3.2. Psychological effect

(6 discussions, 58 posts)

Talkative, clear in the mind, not looking like you are completely out of your mind, no hangover, night doesn't go very fast (compared to ecstasy/MDMA), ability to remember the night (compared to ecstasy/MDMA), subtle effects that come up slowly and come down slowly as well. Not a sudden crash, the euphoric effect is less intense (compared to ecstasy/MDMA).

9.3.3. Sought/expected + Desired

No additional information.

9.3.4. Undesired

(6 discussions, 58 posts) some users report the following undesired effects: pale look in the face, sweating, anxiety, when sniffing: pain in the nose, red face, nausea when effects are almost gone. After high doses: lack of concentration, and sleep and paranoia.

See also appendix WS3 below

9.3.5. Tolerance

(3 discussions, 12 posts) It is said that tolerance arises after taking 4-FA 2- 3 weeks or more for some time. Advice is not to take 4-FA too long without a break of at least several weeks.

9.4. Route of administration (ROA)

(3 discussions, 6 posts)

9.4.1. Ingestion (24 discussions, 56 posts)

9.4.2. Snorting (17 discussions, 48 posts)

9.4.3. Rectal (0 discussions)

9.4.4. Inhalation or insufflation (8 discussions, 19 posts)

9.4.5. Sublingual (3 discussions, 3 posts)

4-FA is usually taken orally by swallowing the capsule, or by swallowing a cigarette paper in which the 4-FA is enrolled. Some pour the substance in to a glass of water or other liquid and ingest it this way. When 4-FA is snorted, this causes major pain to the nose. Infrequently, 4-FA is being inhaled.

See also appendix WS3 below

9.5. Other substances referred to when discussing 4-FA

9.5.1. Referred to in comparing the effects

(discussions, 18 posts) ecstasy/MDMA, 6-APB, 4-FA is principally a diversion of amphetamine with euphoric effect the first hours. In comparison, 6-APB is more like MDMA.

9.5.2. Referred to as increasing the effects

(4 discussions, 29 posts) GHB, 2C-B, ecstasy, methylone are mentioned mostly as substances used alongside 4-FA in order to increase the effects

9.5.3. Referred to in managing come down

(2 discussions, 3 posts) GHB

9.5.4. Other substance discussed in the same episode/ combo

(4 discussions, 27 posts) methylone, GHB, 2C-B

9.6. Appearance and preparation

(3 discussions, 11 posts) 4-FA appears in various forms: powder, capsules, pills, liquids, crystals. The colour of the substance varies (e.g. white, brown and yellow), Sometimes a sandy structure of the powder is mentioned.

9.7. Patterns/Frequency of use

Generally speaking, being a club drug, 4-FA is used primarily on weekends, while partying. It looks like most users do not take 4-FA not every weekend, but a couple of times a month or less.

9.8. Context of consumption use

4-FA is a club drug and so its main context of consumption is at parties/ festivals. But it is reported that because of its subtle effects, it may be good to also try this at home and be able to feel those subtleties better than at crowded, noisy scenes.

9.9. User's views and experiences on the online market use

Discussions about what is better: to buy capsules or prepare them yourselves, about the availability on various types: capsules, pills, crystals, about the appearance of the substance that is received, about the legal status of the substance or the shop where it is offered and its reliability, about receiving different NPS from what was ordered, and about differences between what is bought and received, sometime less sometimes more.

9.10. Advice provided by online peers

(1 discussions, 11 reference) Advices are given on swallowing 4-FA by emptying the capsule on your tongue and then drink cup of water. Advice on how best make capsules, the use of weighing scales, and about dissolving 4-FA in water or vodka, what to eat and when to eat prior to the intake of the substance

No specific information is available, generally speaking, 4-FA is being used by people that go clubbing, both male and female, and young, meaning roughly between 20 and 30 years of age.

10. Extra data get through online survey

The results presented here concern only the Dutch sample. The online survey had been conducted under the workstream 3.

10.1. Unpleasant feelings

Q. 13a. Did you feel anything unpleasant after you used 4-FA last time? What were the unpleasant feelings after you used the substance? (*several answers are possible*)

	Frequency	Percent
No effect	-	0.0
unpleasant, intensive hallucinations, delusions	3	4.1
strong craving to use more	4	5.5
depression, dejection	3	4.1
strong paranoia, fear, anxiety	3	4.1

aggression	-	0.0
extreme agitation and excitement, sleeplessness	13	17.8
fatigue, exhaustion, sleepiness	3	4.1
muscle ache, cramps, jaw clenching	13	17.8
tremors	3	4.1
seizures	-	0.0
could not control my muscle, I have problems with moving	3	4.1
headache	11	15.1
nausea, vomiting	9	12.3
strongly increased heart rate, palpitation, chest pain	3	4.1
breathing difficulty, dyspnea	1	1.4
sweating	17	23.3
overheating	3	4.1
dehydration and/or diarrhea	3	4.1
problems of sight	1	1.4
itches , skin changes , changed colour, spots, blisters, rash etc.	-	0.0
other	34	11.8

Table 1 Description of unpleasant feeling after use of NPS

10.2. Intended effects

Q. 11a. What are the most important intended effects that you seek when you used 4-FA?
(several answers are possible)

	Frequency	Percent
To bond with others, to socialize	25	34.2
To get high	23	31.5
To provides me with energy (sexual performances not included)	25	34.2
To improve sexual intercourse	1	1.4
To increase the positive effects of another drug	4	5.5
To reduce the negative effects of another drug	2	2.7
To modify perception	34	46.6
To soothe pain	3	4.1

To escape reality	1	1.4
To allay or alleviate anxiety	-	0.0
To fight sleeplessness	1	1.4
To fight tiredness	18	24.7
To relax	25	34.2
To stimulate the brain activity for learning or work	3	4.1
others	5	6.8

Table 2 Indented effects

10.3. Route of administration:

Q. 10a. Last time when using 4-FA, what were the typical ways of administration for you? (*several answers are possible*)

	Frequency	Percent
Smoking	-	0.0
Waterpipe	-	0.0
Bong	-	0.0
Vaporizer	-	0.0
Chasing the dragon	-	0.0
Sublingual	-	0.0
Ingestion	64	87.7
Snorting	6	8.2
Rectal	-	0.0
Injection	-	0.0
Sublingual	-	-

Table 3 The typical way of administration

10.4. Setting of use

Q. 9a. Last time when using 4-FA, what were circumstances? (*several answers are possible*)

	Frequency	Percent
Alone at home	2	3.0

With friends at your or their home	14	21.2
Alone in a club, pub or at a party	2	3.0
With friends in a club, pub or at a party	47	71.2
Alone outside/in the countryside	-	-
With friends outside/in the countryside	1	1.4
At school/work	-	-
Other circumstances	-	-

Table 4 The circumstances of last NPS used

11. References

EMCDDA (2014) EDND

National Programme on Substance Abuse Deaths (NPSAD) (2014) Data provided for I-TREND on Deaths involving specified Novel Psychoactive Substances reported to the National Programme on Substance Abuse Deaths (NPSAD). London: St Georges Hospital