

A challenging judicial case in distinguishing intentional mixing and on-scene cross contamination

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Objectives

During a search in autumn 2023, police forces seized a large batch of narcotics containing a diverse array of substances:

14 powders

12 types of tablets

4 liquids

2 samples of plant material

1 type of capsule

1 type of blotter

- All substances were recovered from the same location in Belgium
- Identification of the compounds in the seized items
- Determination of applicability of the Royal Decree of 06/09/2017⁽¹⁾

Methods

visual inspection and
photographical
documentation

dissolving and
dilution in
MeOH,
depending
on
the nature
of the
substance

LC-DAD:

- tablets
- powders
- capsule
- blotter
- plant material

In-house library including RT

GC-MS:

- tablets
- powders
- capsule
- liquids

AMDIS:

- Maurer-Pfleger-Weber 5th ed.
- Designer Drugs Wiley 2018
- Wiley 7th ed.

LC-QToF-MS:

- tablets
- powders
- liquids
- blotter

HighResNPS

- Analytical standards
- ID level 3 or higher⁽²⁾

Categorisation of identified compounds by the United Nations Office on Drugs and Crime (UNODC) early warning advisory on NPS.
Substances written in *italics* are not covered by the Belgian Royal Decree of 2017⁽¹⁾.

aminoindanes arylcyclo-alkylamines novel benzodiazepines lysergamides phenethylamines phenidates synthetic cathinones tryptamines precursors or adulterants other drugs of abuse

Results

Liquids

Green Mandala

- Professor.nl: 4-FMA, 2C-E, 1cP-LSD
- Our findings: *x*-FMA, 2C-E/-G, 1cP-LSD

Purple Mandala

- Professor.nl: 5-MAPB, 4-FMA
- Our findings: *x*-MAPB, *x*-FMA, 4-OH-MET

Alegria Supernova

- Homechemistry.nl: 5-MAPB, 4-OH-MET, 1P-LSD, 2-MMC
- Our findings: *x*-MAPB, 4-OH-MET, *x*-FMA, *x*-APB, *x*-AcO-DET/MIPT, *x*-MeO-DET/MIPT

Tablets collected in the same evidence bag

bromazolam

flubrotizolam α -P(i)HP

bromazolam

desalkylflurazepam α -P(i)HP

desalkylflurazepam α -P(i)HP

Research Chemicals

α -PiHP α -P(i)HP, α -PVP

2F-Ketamine *x*-FDCK

4F-Ritalin *x*-fluoromethylfenidat, amfetamine, *x*-FMA

BORAX COMBO *x*-MAPB, *x*-FMA, *x*-MeO-DET/MIPT

DPT DPT/DIPT/PIPT, DET, *x*-MeO-DMT

β -OH-2C-B β -OH-2C-B, β -MeO-2C-B

2C-C 2C-C, 2C-H

4-AcO-MET 4-AcO-MET, 4-OH-MET

6-APB *x*-APB, *x*-MAPB, 2C-E/-G, amfetamine, *x*-FMA, MDPH(i)P

β -2C-B HCl β -2C-B, *x*-APB, *x*-MAPB, *x*-FMA

Other Powders and Tablets

n-methyl-*x*-aminoindane α -P(i)HP, α -PVP *x*-AcO-DMT, *x*-OH-DMT, MDMA methallylescaline, DPT/DIPT/PIPT *x*-MeO-DMT cocaïne, fenacetin MDMA *x*-CEC, *x*-CIC 2C-B-fly *x*-FMA, *x*-MAPB, *x*-MeO-DET/MIPT DMXE

Blotter

1P-LSD LSD, DMT, MDMA, *x*-FDCK

Mondo Mycologicals Spore vial

No compounds detected

Capsule

x-FMA, *x*-MAPB, *x*-EAPB/-MPBP, methylpropiphenone

Plant Material

THC, CBD, CBN, CBC, CGC

Discussion and conclusions

Unusual compound mixtures were found

- Difficulties to trace origin of detected compounds during analysis
 - Cross-contamination due to carelessness of buyer or seller
 - Deliberate mixing to enhance or reduce desired or side effects of the compounds
 - Cross-contamination during seizure of substances
- Recent publication reports mixtures of synthetic cathinones with novel benzodiazepines in Scottish prisons⁽³⁾
- Dangerous interactions between antagonistic compounds, adverse reactions during emergency care
- Importance of proper collection procedures

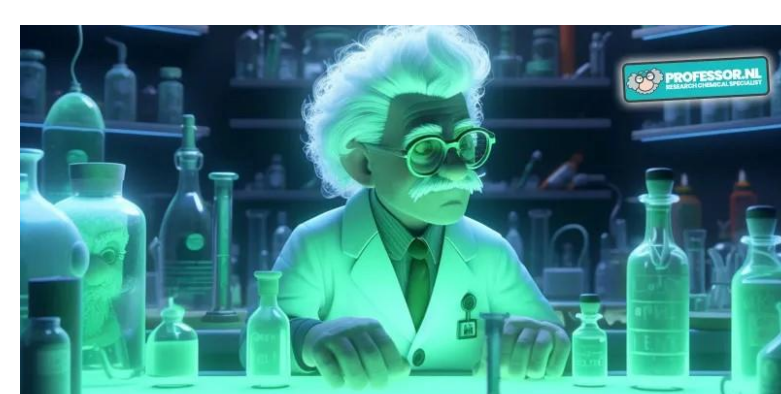


- Combining different analytical techniques allowed us to identify all these compounds

- Identifying positional isomers of NPS is only possible with analytical standards

- Substances seized in this Belgian case are largely purchased on Dutch websites

- Belgium subjects substances to the law based on a generic classification
- The Dutch Opium Act of the Netherlands⁽⁴⁾ prohibits well-defined substances
- Easily accessible websites with quick availability lower the threshold to use
- False or incomplete information about the composition of substances was observed
- NPS found in 28 out of 34 seized items
- 9 out of 46 identified compounds not subject to the Belgian Royal Decree of 06/09/2017⁽¹⁾



Drugs of abuse never seemed more colourful, approachable and easy to obtain than these New Psychoactive Substances. But their variations, concentrations and combinations are more dangerous than ever. Continuing to share information and make it accessible to all, remains necessary so that differences can be made in people's future lives.



References

- The Belgian Royal Decree of September 06, 2017, beholds the Belgian legislation on narcotics and psychotropic substances.
- Schymanski, E.L. *et al.*, Identifying Small Molecules via High Resolution Mass Spectrometry: Communicating Confidence. (2014) Environ Sci Tech.
- Norman, C. *et al.*, Detection of the synthetic cathinone *N,N*-dimethylpentylone in seized samples from prisons. (2024) Forensic Sci Int.
- The Dutch Opium Act of the Netherlands contains the rules about the possession, sale and production of narcotics. The appendices to the Opium Act state which specific substances are covered.