

NOUVELLES SUBSTANCES PSYCHOACTIVES: ACTUALITÉ & DÉFIS ANALYTIQUES



Journal club de Toxicologie – 23 janvier 2020

Intro Actualité Belgique Défi analytique Cas Lg 1 Cas Lg 2 Conclusion

Plan




- Introduction/rappels
- Actualité
- Actualité en Belgique
- Défi analytique
- Cas liégeois n°1: MDAI-EAPB
- Cas liégeois n°2: 2-AI
- Conclusion

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Les nouvelles drogues de synthèse

« New Psychoactive Substances »

- Substances addictives, soit sous forme pure, soit sous forme de préparation, qui ne sont pas contrôlées ou contrôlées depuis 2015 par la "Single Convention on Narcotic Drugs" de 1961 ou par la "Convention on Psychotropic Substances" de 1971, mais qui sont susceptibles de représenter une menace pour la santé publique
- Pas nécessairement de nouvelles inventions, mais disponibles sur le marché depuis peu
- Bath salts, research chemicals, legal highs, spice,...

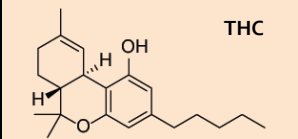




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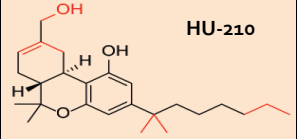
Les nouvelles drogues de synthèse

- Objectif: constituer une alternative légale aux drogues illicites



THC

Psychoactif - Réglementé



HU-210

Psychoactif - (Initialement) non réglementé

MAIS

4 MONITEUR BELGE — 26.09.2017

SERVICE PUBLIC FEDERAL SANTE PUBLIQUE,
SECURITE DE LA CHAINE ALIMENTAIRE
ET ENVIRONNEMENT [C - 2017/31231]

6 SEPTEMBRE 2017. — Arrêté royal réglementant
les substances stupéfiants, psychotropes et soporifiques

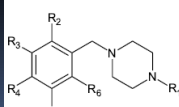


Fig. 6a Benzylpiperazine

R1 = H, CH₃, benzyl
R2 = H, halogène, OCH₃
R3 = H, CH₃, halogène, CF₃
R4 = H, halogène, OCH₃
R5 = H, OCH₃,
R6 = H

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EMCDDA – EU Drug market report 2019

New psychoactive substances overview

Substances reported to the EU Early Warning System since 1997

731 NPS (UNODC 892 NPS)

● Monitored ● EU risk assessment ○ International control ● EU risk assessment and international control ● Reported in 2018

Synthetic cannabinoids (190)
 Cathinones (138)
 Phenethylamines (99)
 Other substances (87)
 Opioids (49)
 Tryptamines (42)
 Arylalkylamines (36)
 Benzodiazepines (28)
 Arylcyclohexylamines (18)
 Piperazines (17)
 Piperidines and pyrrolidines (14)
 Plants and extracts (6)
 Aminoidanes (6)

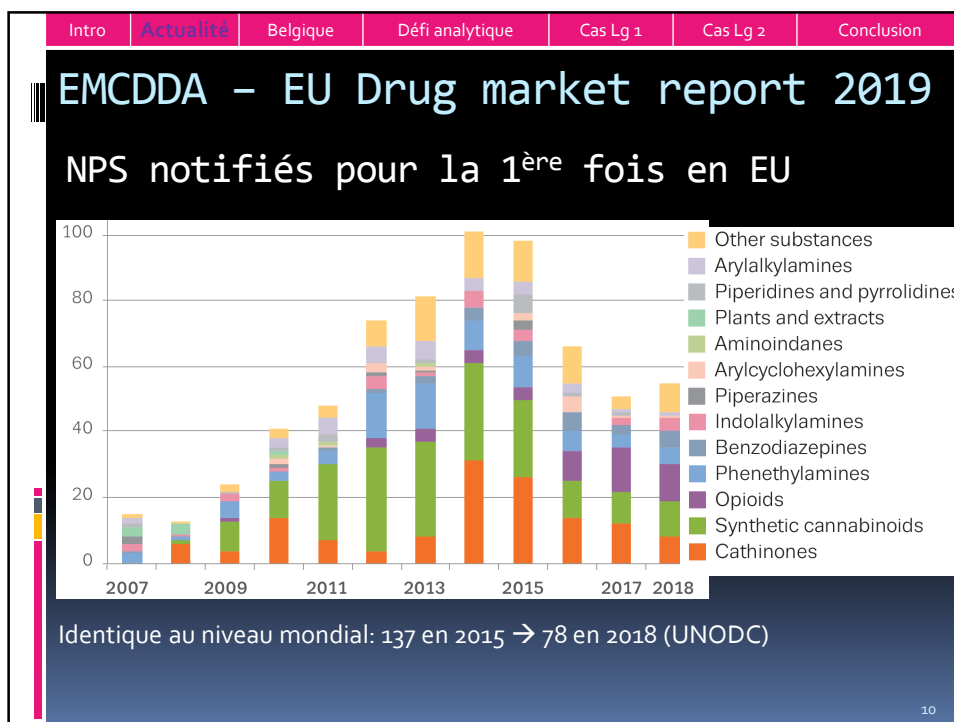
8

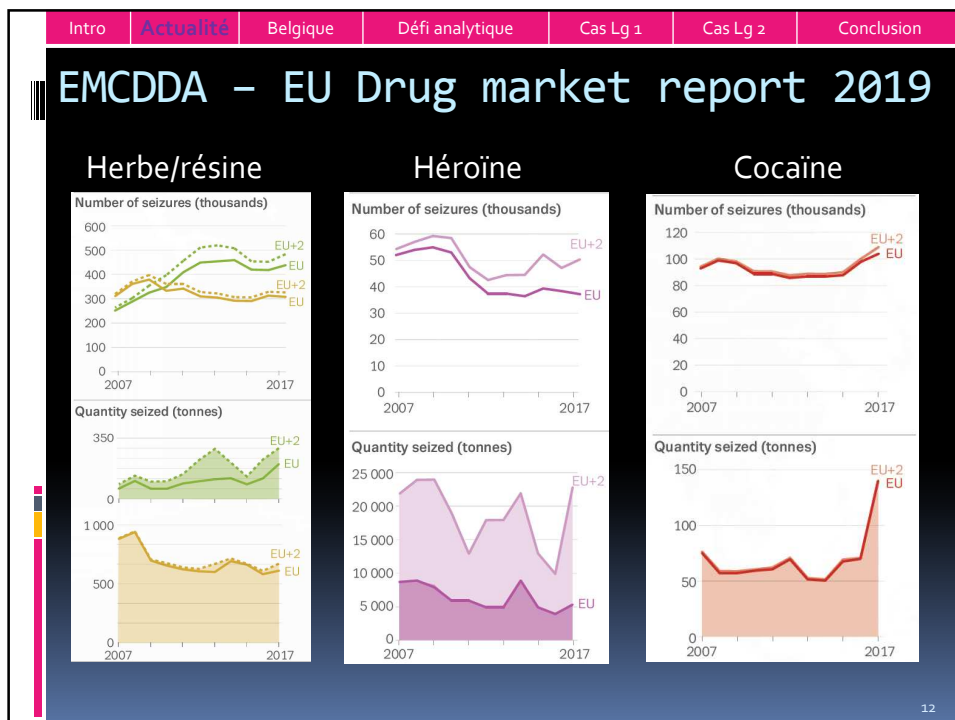
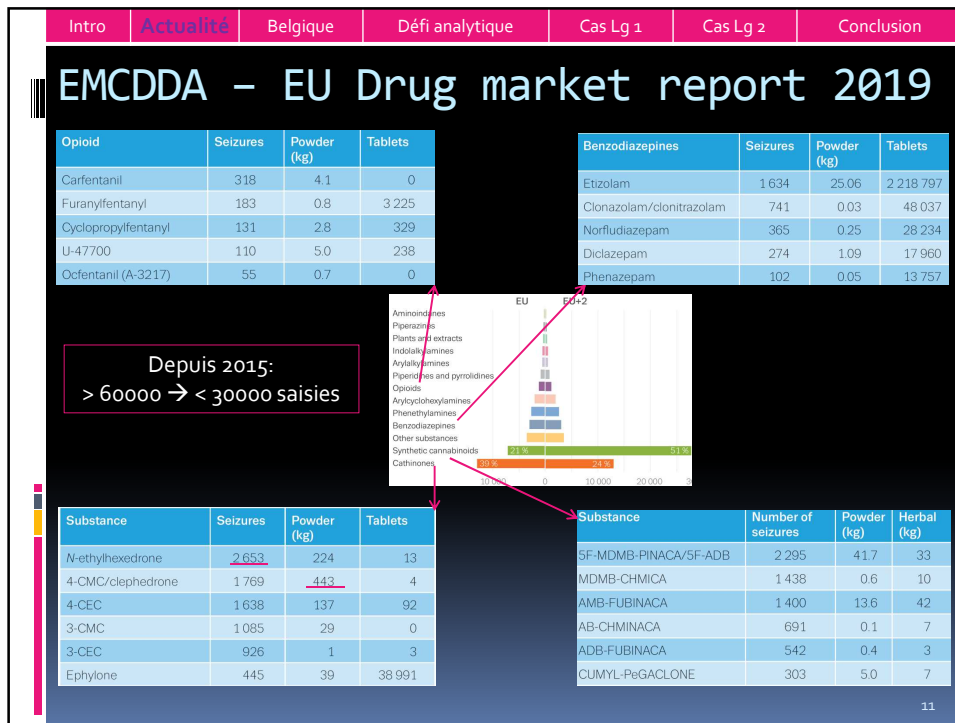
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EMCDDA – EU Drug market report 2019

- Internet reste la source majoritaire d'approvisionnement
- La Chine reste le principal fournisseur, suivi par l'Inde
- Consommation de NPS < drogues classiques
- Groupes marginalisés, psychonautes
- Opioides: préoccupation croissante
- Augmentation de puissance
- Chevauchement avec le marché des médicaments contrefaits
- Epidémie de HIV liée aux cathinones

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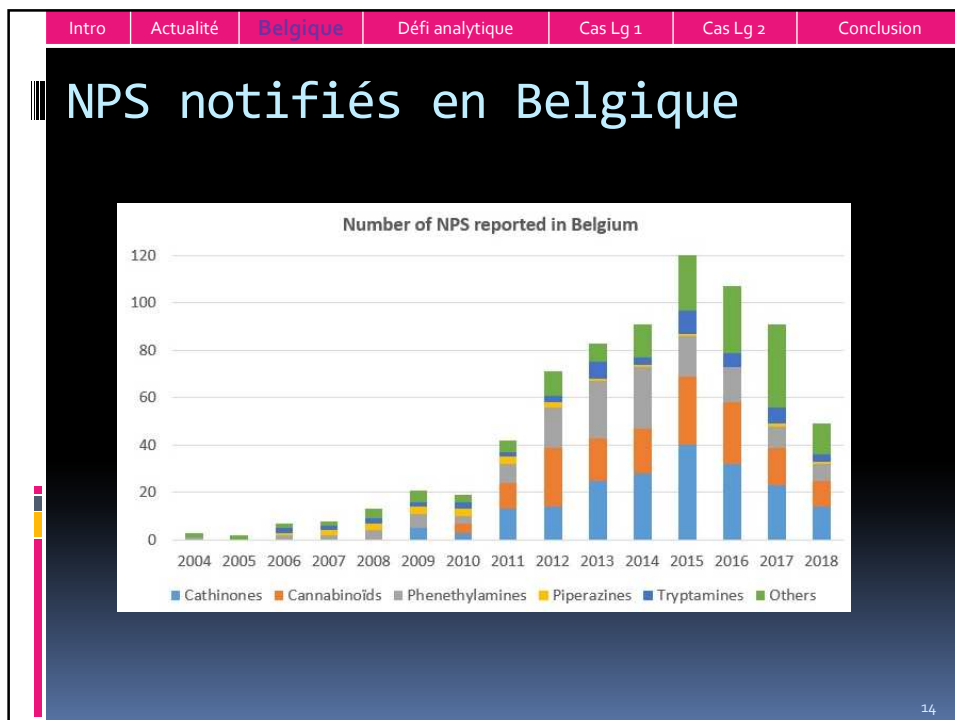




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Données belges

sciensano Belgian Early Warning System on Drugs (BEWSD) • Home

Belgian Early Warning System on Drugs (BEWSD) Contact us! Drugs Program (BMCDDA) EWS Forum

All Site Content

Alerts by BEWSD

Type	Name	Modified By	Modified
	July 2019 - Highly dosed MDMA tablets	Blanckaert, Peter	10/07/2019 23:56
	July 2019 - Highly dosed MDMA tablets in circulation in Belgium	Blanckaert, Peter	18/07/2018 15:45
	July 2018 - Analysis of a powder containing ocfentanil and W-18	Blanckaert, Peter	18/07/2018 15:44
	January 2018 - Drugs contaminated with atropine in Belgium and The Netherlands	Blanckaert, Peter	22/03/2018 13:43
	December 2017 - Highly dosed MDMA tablets in circulation	Blanckaert, Peter	06/12/2017 23:20
	July 2017 - Highly dosed MDMA tablets and 2C-B in circulation	Blanckaert, Peter	12/07/2017 12:21
	June 2017 - One death after the consumption of 3-MeO-PCP	Blanckaert, Peter	12/07/2017 12:11
	June 2017 - Highly dosed MDMA tablets and 2C-B in circulation	Blanckaert, Peter	12/07/2017 12:00
	May 2017 - Highly dosed MDMA tablets in circulation	Blanckaert, Peter	12/07/2017 11:26
	March 2017 - Detection of highly dosed MDMA tablets, MDA and THJ-22011	Blanckaert, Peter	03/04/2017 10:38
	October 2016 - Detection of 25C-NBOME and a highly dosed MDMA tablet	Antoine, Jerome	16/12/2016 08:03
	December 2016 - Highly dosed MDMA tablets in circulation	Blanckaert, Peter	14/12/2016 12:36
	September 2016 - Detection of pCPP and series of highly dosed MDMA tablets	Antoine, Jerome	27/10/2016 09:05
	June 2016 - EMCDDA Alert U-47,700 in Europe	Antoine, Jerome	29/09/2016 10:50
	May 2016 - Highly dosed MDMA tablets detected by Modus Vivendi	Blanckaert, Peter	25/05/2016 11:30
	December 2015 - PMMA tablets	Blanckaert, Peter	24/12/2015 16:26
	December 2015 - Highly dosed MDMA tablets and liquid 2C-E	Blanckaert, Peter	11/12/2015 23:16
	October 2015 - Highly dosed ADE Amsterdam Dance Event ecstasy tablets	Blanckaert, Peter	12/10/2015 01:06
	September 2015 - Several new substances in ecstasy tablets	Blanckaert, Peter	12/10/2015 00:55
	September 2015 - Neurotoxic new substance found in ecstasy tablet	Blanckaert, Peter	09/09/2015 10:09

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Données belges - Gand

DRUG TESTING AND ANALYSIS

RESEARCH Report NPS or isoton Comprehensive Metabolic AMB-FUBI Func

DRUG TESTING AND ANALYSIS

RESEARCH ARTICLE

DRUG TESTING AND ANALYSIS

RESEARCH ARTICLE

David Fabregat: cann valin

Application of an activity-based receptor bioassay to investigate the in vitro activity of selected indole- and indazole-3-carboxamide-based synthetic cannabinoids at CB1 and CB2 receptors

Elise Wc

First published: 02 October 2018 | <https://doi.org/10.1002/dta.2517> | Citations: 14

Carolina Noble, Annelies Cannaert, Kristian Linnet, Christophe P. Stove

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Données belges - Anvers

Journal of Pharmaceutical and Biomedical Analysis 152 (2018) 158–167

Contents lists available at ScienceDirect

Journal of Pharmaceutical and Biomedical Analysis

Journal of Pharmaceutical and Biomedical Analysis 117 (2016) 474–484

Contents lists available at ScienceDirect

Chemosphere 168 (2017) 1032–1041

Contents lists available at ScienceDirect

Chemosphere

Science of the Total Environment 573 (2016) 1527–1535

Contents lists available at ScienceDirect

Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

Identify chron spectr
Noelia I. Toxicological
Liquid chromatographic analysis of synthetic opiates in eight European countries

Richard Badier, Sara Castiglioni, Barbara Kasaj, Alexander L. Nikolaos I. R. Félix Hernández

Qualitative screening of new psychoactive substances in pooled urine samples from Belgium and United Kingdom

Juliet Kinyua^a, Noelia Negreira^a, Bram Miserez^b, Ana Causanilles^c, Erik Emke^c, Lies Gremeaux^d, Pim de Voogt^{e,g}, John Ramsey^b, Adrian Covaci^a, Alexander L.N. van Nuijs^{h,*}

^a Toxicological Center, Department of Pharmaceutical Sciences, Campus Drie Eiken, University of Antwerp, Universiteitsplein 1, 2610 Antwerp, Belgium
^b TACTAC Communications Ltd, St George's University of London, Cranmer Terrace, London SW170BE, United Kingdom
^c KWR Watercycle Research Institute, Chemical Water Quality and Health, P.O. Box 1072, 3430 BB Nieuwegein, The Netherlands
^d Programme Drugs, Operational Direction of Public Health and Surveillance, Scientific Institute for Public Health, Juliette Wytsmanstraat 14, 1050 Brussels, Belgium
^e Institute for Biodiversity and Ecosystem Dynamics, University of Amsterdam, P.O. Box 94248, 1090 GE Amsterdam, The Netherlands

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Données belges - Population

DRUG TESTING AND ANALYSIS

RESEARCH ARTICLE

Prevalence of new psychoactive substances and prescription drugs in the Belgian driving under the influence of drugs population

S. M. R. Wille, C. Richeval, M. Nachon-Phanithavong, J. M. Gaulier, V. Di Fazio, L. Humbert, N. Samyn, D. Allorge

First published: 22 June 2017 | <https://doi.org/10.1002/dta.2232> | Citations: 12

558 échantillons sanguins + 199 salives
 7% de sang positifs et 11% de salives positives
 Diphenidine, ketamine, 4F-amphétamine, 2-AI, methoxetamine, alpha-PVP, methiopropamine, 5-MAPB, 5-EAPB, TH-PVP, mephedrone, methedrone, 4-methylethylcathinone, 5-MeO-DALT, 4-acetoxy-DIPT, AB Fubinaca, FUB-JWH-018, JWH-020, trifluoromethylphenylpiperazine, ethylphenidate

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Données belges – Case report

Forensic Science International 266 (2016) 469–473

Contents lists available at ScienceDirect

Forensic Science International

Forensic Science International 266 (2016) 68–72

Contents lists available at ScienceDirect

Forensic Science International

journal homepage: www.elsevier.com/locate/forsciint

Forensic Science International 299 (2019) 89–94

Contents lists available at ScienceDirect

Forensic Science International

journal homepage: www.elsevier.com/locate/forsciint

Death following consumption of MDAI and 5-EAPB

Marine Deville^{a,*}, Nathalie Dubois^a, Ewa Cieciewicz^b, Pascal De Tullio^c, Eric Lemaire^d, Corinne Charlier^a

^a Eurofins Fore
^b Emergency D
^c Department of
^d Chem/Tox, Rat

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Vera
Jan C

^a Eurofins
^b Belgium
^c Departm
^d Laborat

Check for updates

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Données belges

THE DRUG PROBLEM IN BELGIUM AT A GLANCE

Drug use in young adults (15-34 years) in the last year

All treatment entrants by primary drug

Overdose deaths

Drug law offences 51 774

Top 5 drugs seized ranked according to quantities measured in kilograms

Other drugs

Opioid substitution treatment clients 16 546

Syringes distributed through specialised programmes 1 203 077

New HIV diagnoses attributed to injecting

Population (15-64 years) 7 328 664

Source: Eurostat. Extracted on: 18/03/2019

Drug use in young adults (15-34 years) in the last year

Cannabis 10.1 %

7 % Female 13.2 % Male

Other drugs

MDMA 0.8 %
Amphetamines 0.5 %
Cocaine 0.9 %

All treatment entrants by primary drug

Cannabis, 35 %
Amphetamines, 9 %
Cocaine, 25 %
Heroin, 19 %
Other, 13 %

Opioid substitution treatment clients 16 546

Syringes distributed through specialised programmes 1 203 077

Overdose deaths

2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Drug law offences 51 774

Top 5 drugs seized ranked according to quantities measured in kilograms

1. Cocaine
2. Cannabis resin
3. Herbal cannabis
4. Amphetamine
5. Heroin

New HIV diagnoses attributed to injecting

2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Population (15-64 years) 7 328 664

Source: Eurostat. Extracted on: 18/03/2019

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Défi analytique

- Nombre de substances
 - Faible concentration
 - Métabolisme
- Méthode de référence: MS-HR
 - **Screening ciblé: librairie**
 - Avec temps de rétention: 329 composés
 - Sans temps de rétention:
 - Sciex: 2636 composés
 - Designer drugs: 530 NPS
 - **Screening non ciblé: Chempider®**



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Screening ciblé

33 of 320 rows Filters: 2 Qualify for Rules Filters

Index	Mass Error	RT Conf.	Isotope Conf.	Library Conf.	Sample Name	Component Name	Retent. Time	Expected RT	Retent. Time D.	Area	U...	Adduct / Charge	Formula	Precursor Mass	High...	Reporta...	Found At Mass	Mass Error L.	Librar...	Library Score	Lib R.
488	✓	✓	✓	✓	191205_SCR_0672...	Nordiazepam	7.29	7.37	0.08	1413335	✓	[M+H] ⁺	C15H11CL	271.063	1.000	✓	271.0634	0.7	Nordiaz...	95.4	0.8
495	✓	✓	✓	✓	191205_SCR_0672...	O-Desmethylvenlafaxine	5.26	5.08	0.18	1455910	✓	[M+H] ⁺	C16H25NL	264.196	1.000	✓	264.1959	0.2	Tramadol	100.0	1.0
497	✓	✓	✓	✓	191205_SCR_0672...	Oxazepam	6.75	6.85	0.10	1481136	✓	[M+H] ⁺	C15H11CL	287.058	1.000	✓	287.0579	-0.9	Oxazepam	99.5	5.7
507	✓	✓	✓	✓	191205_SCR_0672...	Prasopam	8.43	8.44	0.01	10343998	✓	[M+H] ⁺	C19H17CL	325.110	1.000	✓	325.1104	0.6	Prasopam	97.9	4.9
527	✓	✓	✓	✓	191205_SCR_0672...	Trazolam	7.39	7.05	0.34	613	✓	[M+H] ⁺	CL7H12CL	343.051	0.000	✓	343.0581	34.3	No Match	0.0	65

Calculations Library Searching Columns Confidence Settings User Settings

Mass Error
Mass Error (ppm)

< 5.0

< 10.0

>= 10.0

Retention Time
% Error

< 5.1

< 15.0

>= 15.0

Isotope
Isotope Ratio % Difference

< 10.0

< 20.0

>= 20.0

Library Hit
Library Score

> 70.0

> 31.0

<= 31.0

Formula Finder
Formula Finder Score

> 70.0

> 30.0

<= 30.0

Integration

- Minimum Peak Width: 3
- Minimum Peak Height: 100.00
- S/N Integration Threshold: 3
- Gaussian Smooth Width: 0.0 points
- Noise Percentage: 98.0 %
- Baseline Subtract Window: 2.00 min
- Peak Splitting: 2 points

Retention Time (RT)

Expected RT: 8.44 min

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Screening non ciblé

[AutoPeak] Modify Method

Workflow Configure the parameters to use to find the non-targeted peaks to add to the extracted ion chromatogram list

Components

Integration

Library Search

Calculated Columns

Flagging Rules

Advanced

Formula Finder

Non-targeted Peaks

Minimum retention time: 0 min

Maximum retention time: 5 min

Peak detection sensitivity: Fast Exhaustive

Area Ratio Threshold (Unknown/Control): 0

Group peaks by adduct or charge:

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Screening non ciblé

Index	Mass Error	RT Conf.	Isotope Conf.	Library Conf.	Sample Name	Component	Retent. Time	Expected RT	Retent. Time D.	Area	U...	Adduct / C...	Formula	Precursor	Reporta...	Found At Mass	Mass Error	Libra...	Library Score	Isotope Ratio
46					191210_SCRM_QC...		3.80	3.80	N/A	790998		[M+H] ⁺	[C ₁₄ H ₁₄ O ₂]	130.088		130.088	N/A	Caffeine-L	95.5	N/A
47					191210_SCRM_QC...		3.92	3.92	N/A	372622		[M+H] ⁺	[C ₁₇ H ₁₉ O ₂]	128.207		128.207	N/A	No Match	0.0	N/A
48					191210_SCRM_QC...		3.92	3.92	N/A	904133		[M+H] ⁺	[C ₁₄ H ₁₁ N ₃ O]	155.118		155.118	N/A	No Match	0.0	N/A
49					191210_SCRM_QC...		4.03	4.02	N/A	47453		[M+H] ⁺	[C ₁₈ H ₂₄ O ₂]	188.253		188.253	N/A	PEG-8me	87.8	N/A
50					191210_SCRM_QC...		4.10	4.10	N/A	26987		[M+H] ⁺	[C ₁₂ H ₁₆ O ₂]	124.076		124.076	N/A	No Match	0.0	N/A
51					191210_SCRM_QC...		4.11	4.10	N/A	29814		[M+H] ⁺	[C ₁₂ H ₁₆ O ₂]	129.091		129.091	N/A	No Match	0.0	N/A
52					191210_SCRM_QC...		4.24	4.24	N/A	12079		[M+H] ⁺	[C ₁₀ H ₁₄ O ₂]	160.244		160.244	N/A	No Match	0.0	N/A
53					191210_SCRM_QC...		4.17	4.17	N/A	288566		[M+H] ⁺	[C ₁₅ H ₁₉ O ₂]	156.160		156.160	N/A	No Match	0.0	N/A
54					191210_SCRM_QC...		4.22	4.22	N/A	38254		[M+H] ⁺	[C ₁₃ H ₁₈ O ₂]	143.279		143.279	N/A	PEG-9me	67.7	N/A
55					191210_SCRM_QC...		4.27	4.26	N/A	510149		[M+H] ⁺	[C ₁₆ H ₂₂ O ₂]	167.180		167.180	N/A	No Match	0.0	N/A
56					191210_SCRM_QC...		4.27	4.26	N/A	494214		[M+Na] ⁺	[C ₁₆ H ₂₂ O ₂]	189.162		189.162	N/A	No Match	0.0	N/A
57					191210_SCRM_QC...		4.27	4.26	N/A	72596		[M+H] ⁺	[C ₁₀ H ₁₄ O ₂]	131.217		131.217	N/A	No Match	0.0	N/A
58					191210_SCRM_QC...		4.45	4.44	N/A	126033		[M+H] ⁺	[C ₁₃ H ₁₈ O ₂]	136.076		136.076	N/A	No Match	0.0	N/A
59					191210_SCRM_QC...		4.52	4.53	N/A	525597		[M+H] ⁺	[C ₁₀ H ₁₄ O ₂]	131.244		131.244	N/A	No Match	0.0	N/A
60					191210_SCRM_QC...		4.56	4.56	N/A	611252		[M+H] ⁺	[C ₁₀ H ₁₄ O ₂]	131.207		131.207	N/A	No Match	0.0	N/A

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Screening non ciblé

ChemSpider results for: C15H26N4O3

CSID	Common Name	Molecular Weight
225478	4-Ethyl-2-(2S-dioxo-3-pyrimidinyl)-1-piperazine N-isopropylacetamide	310.39194
843672	4-Morpholinyl-1-piperidinyl-1-piperazine N-isopropylacetamide	310.3919
4529639	(S)-1-butyl-5-(1-[3-(dimethylamino)propylamino]ethylidene)-2,4,6-trimethyl-pyrimidin-2-ylidene-1-piperazine N-isopropylacetamide	310.3919
4620541	(S)-5-[(2S)-dimethylaminoethylamino]methylidene-1-butyl-2,4,6-trimethyl-pyrimidin-2-ylidene-1-piperazine N-isopropylacetamide	310.3919
4620626	(S)-1-butyl-5-[(2S)-dimethylaminoethylamino]methylidene-2,4,6-trimethyl-pyrimidin-2-ylidene-1-piperazine N-isopropylacetamide	310.3919
7788055	N-(6-Amino-2,4-dioxo-1-propyl-1,2,3,4-tetrahydro-5-pyrimidinyl)-N-butyl-2-methylpropanoate	310.3919
4786644	Ethyl 4-[(cyclohexylamino)hydrazono]-1-piperidinecarboxylate	310.39194
7615685	2-(4-Cyclopropylamino)-1-piperazine N-isobutylacetamide	310.3919
296528	3-(4-Morpholinyl)propylhexahydro-1H-pyridazino[1,2-a][1,2,3]triazepine-1,5(2H)-dione	310.3919
3489938	2-Methyl-2-propenyl 3-[(2Z)-2-(2-pyrrolidinylidene)hydrazono]carbonyl-1-piperidinecarboxylate	310.3919
5738553	2-Methyl-2-propenyl [(2Z)-3-isopropyl-4-oxo-1,3,7-triazaspiro[4.5]deca-2-ylidene]carbamate	310.3919
7748765	N-(6-Amino-1-butyl-2,4-dioxo-1,2,3,4-tetrahydro-5-pyrimidinyl)-N-butyl-2-methylpropanoate	310.3919
7221307	N-(6-Amino-1-butyl-2,4-dioxo-1,2,3,4-tetrahydro-5-pyrimidinyl)-N-butyl-2-methylpropanoate	310.3919
4711587	5-(1-[(2S)-dimethylaminoethylamino]propylidene)-1,3-dimethyl-2,4,6-trimethyl-pyrimidin-2-ylidene-1-piperazine N-isopropylacetamide	310.3919
5043884	2-(4-Dibutyl-6-(4-morpholinyl)-1,3,5-triazine	310.3919
11726909	N-Butyl-N-sec-butyl-2-(3,5-dimethyl-4-nitro-1H-pyrazol-1-yl)acetamide	310.3919
16982604	1-[2-(2,6-Dimethyl-4-morpholinyl)-2-methylpropyl]-3-(5-methyl-1,2-oxazol-3-yl)urea	310.3919

Fragments	Peaks	Num H	Broken Bonds	Error (Da)	Composition
83.0604	-2	2	0.025		C4.H7.N2+
87.0917	2	2	0.048		C4.H11.N2+
99.0917	0	2	0.012		C5.H11.N2+
131.1179	2	2	0.013		C6.H15.N2.O+

Intro Actualité Belgique Défi analytique Cas Lg 1 Cas Lg 2 Conclusion

Screening non ciblé

7307 rows Filters: 0 Quality for Rules Filters

Index	Mass Error	RT Conf.	Isotope Conf.	Library Conf.	Sample Name	Component	Retention Time	Expected RT	Retention Time D.	Area	U...	Adduct / C...	Formula	Precursor Mass	Reporta...	Found At Mass	Mass Error	Librar...	Library Score	Isotope Ratio
1					191210_SCRmL_QC...	181.0069 / 0.07	0.05	0.07	N/A	3731		[M+H] ⁺	[180.0002]	181.007		181.0084	N/A	No Acqui...	N/A	N/A
2					191210_SCRmL_QC...	57.0700 / 0.10	0.11	0.10	N/A	7772		[M+H] ⁺	[56.06324]	57.070		57.0698	N/A	No Acqui...	N/A	N/A
3					191210_SCRmL_QC...	74.0599 / 0.10	0.09	0.10	N/A	3464		[M+H] ⁺	[73.05321]	74.060		74.0600	N/A	No Acqui...	N/A	N/A
4					191210_SCRmL_QC...	158.1539 / 0.12	0.12	0.12	N/A	5362		[M+H] ⁺	[157.14719]	158.154		158.1530	N/A	No Acqui...	N/A	N/A
5					191210_SCRmL_QC...	115.0754 / 0.14	0.06	0.14	N/A	1206		[M+H] ⁺	[114.06872]	115.075		115.0759	N/A	No Acqui...	N/A	N/A
6					191210_SCRmL_QC...	150.1122 / 0.14	0.14	0.14	N/A	1095		[M+H] ⁺	[149.10548]	150.112		150.1120	N/A	No Acqui...	N/A	N/A
7					191210_SCRmL_QC...	209.1015 / 0.14	0.13	0.14	N/A	494		[M+H] ⁺	[208.09480]	209.102		209.1017	N/A	No Acqui...	N/A	N/A
8					191210_SCRmL_QC...	445.1205 / 0.14	0.43	0.14	N/A	287		[M+H] ⁺	[444.11372]	445.120		445.1196	N/A	No Acqui...	N/A	N/A
9					191210_SCRmL_QC...	137.1222 / 0.16	0.10	0.16	N/A	697		[M+H] ⁺	[136.12540]	137.122		137.1229	N/A	No Acqui...	N/A	N/A
10					191210_SCRmL_QC...	145.0168 / 0.16	0.03	0.16	N/A	2127		[M+H] ⁺	[144.01004]	145.017		145.0190	N/A	No Acqui...	N/A	N/A
11					191210_SCRmL_QC...	145.1779 / 0.16	0.04	0.16	N/A	822		[M+H] ⁺	[144.17119]	145.178		145.1762	N/A	No Acqui...	N/A	N/A
12					191210_SCRmL_QC...	356.0670 / 0.16	0.07	0.16	N/A	2695		[M+H] ⁺	[355.06027]	356.067		356.0705	N/A	No Acqui...	N/A	N/A
13					191210_SCRmL_QC...	186.0441 / 0.17	0.10	0.17	N/A	1276		[M+H] ⁺	[185.03738]	186.044		186.0445	N/A	No Acqui...	N/A	N/A
14					191210_SCRmL_QC...	149.0233 / 0.19	0.21	0.19	N/A	1062		[M+H] ⁺	[148.01658]	149.023		149.0238	N/A	No Acqui...	N/A	N/A
15					191210_SCRmL_QC...	153.1269 / 0.19	0.05	0.19	N/A	1293		[M+H] ⁺	[152.12018]	153.127		153.1289	N/A	No Acqui...	N/A	N/A
16					191210_SCRmL_QC...	93.0694 / 0.21	0.10	0.21	N/A	245		[M+H] ⁺	[92.06265]	93.069		93.0690	N/A	No Acqui...	N/A	N/A
17					191210_SCRmL_QC...	132.0857 / 0.22	0.10	0.22	N/A	909		[M+H] ⁺	[132.07896]	132.086		132.0863	N/A	No Acqui...	N/A	N/A
18					191210_SCRmL_QC...	155.0678 / 0.20	0.60	0.60	N/A	1404		[M+Na] ⁺	[152.07913]	155.068		155.0681	N/A	No Acqui...	N/A	N/A
19					191210_SCRmL_QC...	227.1638 / 0.22	0.04	0.22	N/A	177		[M+H] ⁺	[226.15711]	227.164		N/A	N/A	No Acqui...	N/A	N/A
20					191210_SCRmL_QC...	279.0928 / 0.22	0.04	0.22	N/A	3089		[M+H] ⁺	[278.08607]	279.093		279.0954	N/A	No Acqui...	N/A	N/A
21					191210_SCRmL_QC...	391.2840 / 0.22	0.23	0.22	N/A	576		[M+H] ⁺	[390.27727]	391.284		391.2837	N/A	No Acqui...	N/A	N/A
22					191210_SCRmL_QC...	141.0908 / 0.24	0.04	0.24	N/A	699		[M+H] ⁺	[140.08409]	141.091		141.0924	N/A	No Acqui...	N/A	N/A
23					191210_SCRmL_QC...	69.0450 / 0.27	0.27	0.27	N/A	769		[M+H] ⁺	[68.03826]	69.045		69.0449	N/A	No Acqui...	N/A	N/A
24					191210_SCRmL_QC...	375.0960 / 0.27	0.06	0.27	N/A	1062		[M+H] ⁺	[374.08926]	375.096		375.1036	N/A	No Acqui...	N/A	N/A
25					191210_SCRmL_QC...	74.0980 / 0.28	0.12	0.29	N/A	414		[M+H] ⁺	[73.09128]	74.098		74.0963	N/A	No Acqui...	N/A	N/A
26					191210_SCRmL_QC...	149.0446 / 0.26	0.06	0.29	N/A	1892		[M+H] ⁺	[148.03780]	149.045		149.0443	N/A	No Acqui...	N/A	N/A
27					191210_SCRmL_QC...	341.0920 / 0.29	0.14	0.29	N/A	617		[M+H] ⁺	[340.08523]	341.092		341.0932	N/A	No Acqui...	N/A	N/A
28					191210_SCRmL_QC...	346.0074 / 0.29	0.03	0.29	N/A	1070		[M+H] ⁺	[345.00669]	346.007		346.0100	N/A	No Acqui...	N/A	N/A
29					191210_SCRmL_QC...	153.0908 / 0.31	0.12	0.31	N/A	721		[M+H] ⁺	[152.08495]	153.091		153.0912	N/A	No Acqui...	N/A	N/A
30					191210_SCRmL_QC...	155.1062 / 0.31	0.04	0.31	N/A	574		[M+H] ⁺	[154.09951]	155.106		155.1044	N/A	No Acqui...	N/A	N/A
31					191210_SCRmL_QC...	202.1806 / 0.31	0.34	0.31	N/A	3970		[M+H] ⁺	[201.17388]	202.181		202.1802	N/A	No Acqui...	N/A	N/A
32					191210_SCRmL_QC...	327.0773 / 0.31	0.10	0.31	N/A	656		[M+H] ⁺	[326.07032]	327.077		327.0769	N/A	No Acqui...	N/A	N/A
33					191210_SCRmL_QC...	133.0870 / 0.27	0.66	0.77	N/A	511		[M+NH ₃] ⁺	[132.09288]	133.086		133.0868	N/A	No Acqui...	N/A	N/A
34					191210_SCRmL_QC...	84.9592 / 0.34	0.05	0.34	N/A	751		[M+H] ⁺	[83.95248]	84.959		84.9584	N/A	No Acqui...	N/A	N/A
35					191210_SCRmL_QC...	371.3158 / 0.34	0.11	0.34	N/A	492		[M+H] ⁺	[370.30903]	371.316		371.3147	N/A	Spiromes...	34.3	N/A

Intro Actualité Belgique Défi analytique Cas Lg 1 Cas Lg 2 Conclusion

Screening « non ciblé – ciblé »

[MQ4] NPS super table.qmethod

Workflow Select or verify the analyte and internal standard names and masses. 1151 formules

Components

Integration

Library Search

Calculated Columns

Flagging Rules

Advanced

Formula Finder

Non-targeted Peaks

Row	IS	Group	Name	Chemical Formula	Isotope	Adduct/Ch...	Gain/Loss	Precursor (Q1) Mass (Da)	Fragm...
1087			JWH-249		1	[M+H] ⁺		386.1951	
1088			JWH-250	C22H25NO2	1	[M+H] ⁺		336.1951	
1089			JWH-307	C26H24FNO	1	[M+H] ⁺		395.1947	
1090			JWH-307 brominated analogue	C26H24BrNO	1	[M+H] ⁺		446.1134	
1091			JWH-359	C24H36O2	1	[M+H] ⁺		357.2781	
1092			JWH-368	C26H24FNO	1	[M+H] ⁺		386.1947	
1093			JWH-370	C27H27NO	1	[M+H] ⁺		382.2164	
1094			JWH-387	C24H22BrNO	1	[M+H] ⁺		420.0575	
1095			JWH-424	C24H22BrNO	1	[M+H] ⁺		420.0575	
1096			JWH-007	C23H25NO	1	[M+H] ⁺		335.2089	
1097			JWH-011	C27H25NO	1	[M+H] ⁺		384.2319	
1098			JWH-016	C24H23NO	1	[M+H] ⁺		342.1854	
1099			JWH-018	C24H23NO	1	[M+H] ⁺		342.1854	
1100			JWH-018 adamantyl carboxamide	C24H22NO2	1	[M+H] ⁺		365.2574	
1101			JWH-018 benzimidazole analog	C23H22NO2	1	[M+H] ⁺		343.18049	
1102			JWH-018 cyclohexymethyl derivative	C26H25NO	1	[M+H] ⁺		368.20089	
1103			JWH-018 indazole analogue	C23H22NO2	1	[M+H] ⁺		343.18049	
1104			JWH-018 N-(4-hydroxyphenyl) metabolite	C24H23NO	1	[M+H] ⁺		358.1805	
1105			JWH-018 N-(5-chlorophenyl) analog	C24H23ClNO	1	[M+H] ⁺		376.14627	
1106			JWH-031	C21H23NO	1	[M+H] ⁺		306.18524	
1107			JWH-071	C21H17NO	1	[M+H] ⁺		300.13829	
1108			JWH-073	C23H21NO	1	[M+H] ⁺		328.16959	
1109			JWH-073 methyl derivative	C24H23NO	1	[M+H] ⁺		342.1854	
1110			JWH-122 pentenyl 2-methylindole derivat...	C26H25NO	1	[M+H] ⁺		368.20089	
1111			JWH-145	C26H25NO	1	[M+H] ⁺		368.20089	
1112			JWH-146	C26H25NO	1	[M+H] ⁺		396.23119	
1113			JWH-147	C27H27NO	1	[M+H] ⁺		382.2164	
1114			JWH-182	C27H25NO	1	[M+H] ⁺		384.23119	
1115			JWH-250 1-(2-methylseco-N-methyl-piper...	C24H28NO2	1	[M+H] ⁺		377.22225	
1116			JWH-251	C22H25NO	1	[M+H] ⁺		320.20089	
1117			JWH-302	C26H24NO2	1	[M+H] ⁺		336.19551	

Intro Actualité Belgique Défi analytique Cas Lg 1 Cas Lg 2 Conclusion

Screening « non ciblé – ciblé »

Index	Mass Error	Frag. Mass	RT Conf.	Isotope Conf.	Library Conf.	Na	Cl	Component Name	Expected RT	Area	Retent. Time	Retent. Time D.	U.V.	Formula	Precursor Mass	Reports	*Height	Found At Mass	Mass Error L.	Libra. Score	Library Score	Isotope Ratio
146								191... 1 Methylphenylbutan-1-yl	6.58	1708013	6.58	0.00		C22H28N2O2	353.222		0.000	353.2221	-0.8	No Match	0.0	3.8

Name	Formula	Score	m/z (Da)	Error (ppm)	Error MSMS (ppm)	HRi	CE
C22H28N2O2		90.4	353.22258	0.8	1.3		

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Intro Actualité Belgique Défi analytique Cas Lg 1 Cas Lg 2 Conclusion

Screening « non ciblé – ciblé »

ChemSpider results for: C22H28N2O2

CSD	InChIKey	Common Name	Molecular Weight
6297	IKDQKX	Toucanone	352.4699
8000		Anilidine	352.4699
20518316		2-Methyl-2-propenyl [(4-phenylmethyl)-2-oxoethyl]methylcarbamate	352.4699
9451725		Cis-tert-butylphenyl(4-((4-methylphenyl)propylamino)phenyl)methanone	352.4699
56079		Benzoylbenzamide	352.4699
2041293		Benzyl methyl(2S)-1-phenyl-3-(1-pyrrolidinyl)-2-propylcarbamate	352.4699
2047666	WFCOZDZ575A		352.4699
1287720		N,N-Diethyl-N,N'-diphenylhexanediamide	352.4699
1403041		N,N'-1,2-Ethanediylbis(4-benzylpiperanamide)	352.4699
11279516		1-Methyl-2-propenyl [(4-((4-phenylmethyl)-2-oxoethyl)phenyl)carbamate	352.4699
1403327		N,N'-1,2-Ethanediylbis(phenylbutanamide)	352.4699
1403873		N,N'-Bis(4,4-dimethylphenyl)hexanediamide	352.4699
1817604		N-(3-Benzyl-4-piperidinyl)-4-oxopropylbenzamide	352.4699
2108875		N,N'-Cisbenzylhexanediamide	352.4699
2260715		(1S,4S)-2-isopropyl-5-methylphenylbutyl(1H-benzimidazol-2-yl)methanone	352.4699
1841844		N,N'-Bis(2,5-dimethylphenyl)hexanediamide	352.4699
2009465		N-(3-Benzyl-4-piperidinyl)-2-(2-dimethylphenyl)acetamide	352.4699
812167		N,N'-Di(1,4-dimethyl-4-oxophenyl)butanamide	352.4699
2009442		N-(3-Benzyl-4-piperidinyl)-3-propylbenzamide	352.4699
1607170		N-(3-(4-Methylphenyl)propyl)-2-(4-phenyl)propylamine	352.4699
2543302		N,N'-Bis(2-phenylmethyl)hexanediamide	352.4699
356640		N,N'-Bis(2-phenylmethyl)hexanediamide	352.4699
1608932		2-(3,5-Dimethylphenyl)-N-(4-(3-pyrrolidinylmethyl)phenyl)acetamide	352.4699
2042178		Benzyl methyl(1-(4-methylphenyl)-2-(1-pyrrolidinyl)phenyl)carbamate	352.4699
532561		N,N'-Bis(2-phenyl-2-propyl)succinamide	352.4699

Fragments (Peak)	m/z	Num. H	Broken Bonds	Error (Da)	Composition
105.0335	105	0	2	0.037	C7H5O+
105.0699	105	1	2	0.060	C8H6+
134.0237	134	2	2	0.073	C7H4N.O2+
134.0600	134	0	2	0.038	C8H6N.O2+
188.1434	188	0	2	0.000	C13H18.N+
353.2224	353	0	0	0.001	C22H28N2.O2+

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Intro Actualité Belgique Défi analytique Cas Lg 1 Cas Lg 2 Conclusion

Screening « non ciblé – ciblé »

ChemSpider results for: C21H28N2O2

CID	Common Name	Molecular Weight
121880	N-(1-Benzyl-4-piperidinyl)-2-(4-ethylphenyl)acetamide	352.4699
1275139	4-(3-Methylphenyl)-N-(4-(1-piperidinophenyl)butanamide	352.4699
1681565	3,3'-(1,3-Butadiene-2,4-diylbis(1-cyclohexanediyl))dipropylamine	352.4699
1277252	(2S)-N-(4-(Diethylamino)phenyl)-2-(4-propoxyphenyl)acetamide	352.4699
2328395	4-(Phenylamino)-N-(4-phenyl-2-butyl)benzamide	352.4699
2261210	N-(1-(4-Ethylphenyl)pyridin-2-yl)N-(2-butylamino)-2-butylamine	352.4699
1144055	4-tert-Butyl-N-(4-(2-cyclohexylamino)phenyl)benzamide	352.4699
1061059	Cyclohex-2-enone, 2-butyl-3-(2-(2,5-dimethyl-1H-imidazol-3-yl)ethylamino)-	352.4699
1042006	3-(2-Ethylbutanoylamino)-N-(2-isopropylphenyl)benzamide	352.4699
1607376	[4-(2-Ethoxyphenyl)-1-piperazinyl]propylmethanone	352.4699
1846322	Cyclohex-2-enone, 2-(2-(2-methyl-1H-imidazol-3-yl)ethylamino)-2-piperazinyl-	352.4699
3429469	2-(3,4-Dimethylphenyl)-N-(4-(2-methyl-1H-benzimidazol-2-yl)-1-butanol	352.4699
2943918	2-(3,4-Dimethylphenyl)-N-(4-(2-piperidinylmethyl)phenyl)acetamide	352.4699
30118650	1-(1-(3-(4-Ethylphenyl)propyl)-2H-benzimidazol-2-yl)-1-butanol	352.4699
20136950	1-(1-(4-Methylphenyl)propyl)-2H-benzimidazol-2-yl)-1-butanol	352.4699
1200703	N-(4-(Dimethylamino)benzyl)-2-methyl-N-(tert-butyl)-2-isopropylacetamide	352.4699
2127942	1-(1-(2-(2,4-Dimethylphenyl)propyl)-1H-benzimidazol-2-yl)-1-butanol	352.4699
2873971	1-(2-Ethoxyethyl)-2-(2-(2-methyl-2-propenyl)phenyl)ethyl-1H-benzimidazole	352.4699
18139	Methoxyphenylacetamide	152.1499
2943272	Benzyl methyl(2-phenyl-3-(2-piperidinyl)propyl)carbamate	312.4699
2488711	N-Benzyl-1-(2-methoxybenzyl)-N-methyl-3-piperidincarboxamide	352.4699
1274846	4-(4-Methylphenyl)-N-(4-(1-piperidinophenyl)butanamide	352.4699
1261164	[4-(2-Ethoxyphenyl)-1-piperazinyl]propylmethanone	352.4699
1620022	N-(1-(4-tert-butyl)butyl)-2-dimethylbenzamide	352.4699
1648952	N-(4-tert-butyl)-4-(2-piperidinophenyl)benzamide	352.4699

Spectrum from 191219_05.CHY_LCCE-LGC-Guard run077.e66f.2mL.infl.sample.1-191220_E-LGC-Guard run077.e66f.2mL.infl.sample.1-191220_16_1*DF.MS2.D0-1100 from 6.974 min Pressure: 501.2 Pa, CE: 303

Mass Charge	Intensity (%)	Assigned	Error (Da)
50.0169	0.15		
51.0285	0.15		
55.0540	0.46		
56.0476	0.15		
64.0918	0.15		
67.0546	0.31		
69.0690	0.31		
73.0289	0.37		
76.0145	0.42		

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Intro Actualité Belgique Défi analytique Cas Lg 1 Cas Lg 2 Conclusion

Concentrations retrouvées

Publication	NPS	[sanguine]	Contexte
Adamovicz et al. 2017	UR-144	0.15 à 17 µg/L (Med: 1.6)	Intoxication (39 cas)
Adamovicz et al. 2016	3-MMC	<1-1600 (Med: 18.5)	Tout confondu (95 cas)
Backberg et al. 2015	Butyrfentanyl	0.6 et 0.9 µg/L	Intoxication (4 cas)
	4-fluorobutyrfentanyl	15 µg/L	Intoxication (1 cas)
Helander et al 2015	Diphenidine	2 à 262 µg/L	Intoxication (14 cas)
	Methoxphenidine	187 à 409 µg/L	Intoxication (3 cas)
Helander et al. 2016	Acetylfentanyl	0.6 à 51.6 µg/L (Med: 14.8)	Intoxication (7 cas, 1 décès)
	4-Methoxybutyrfentanyl	1.3 et 3.1 µg/L	Intoxication (2 cas)
	Furanylfentanyl	4.4 et 148 µg/L	Intoxication (2 cas)
Schep et al. 2015	BB-22	0.097 µg/L	1 seul patient, intoxication multiple
	AM2233	148 µg/L	
	PB-22/5F-PB-22	80 µg/L	
	JWH-122	10 µg/L	
Shanks et al. 2016	5F-AMB	0.3 µg/L	Décès
	MPA	1.9 à 286 µg/L (Med: 24)	Usage (18 cas)
Karinen et al. 2017	MXE	2.7 à 490 µg/L (Med: 26)	Usage (15 cas)
	4-FA	4.7 à 580 µg/L (Med : 34)	Usage (16 cas)
	5-IT	13 à 590 µg/L (Med: 225)	Intoxication (8 cas)
	4-MTA	430 à 2080 µg/L (Med : 1170)	Intoxication (6 cas)
	Bromo- Dragonfly	4.7 µg/L	Décès (1 cas)
	2-FMA	6.9 µg/L	Décès (1 cas)
	25C-NBOMe/25I-NBOMe	0.60 / 0.41 et 3 µg/L	Décès (2 cas et 1 cas)

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Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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Evaluation de la LOD: méthode

- 35 NPS testés:

Phencyclidine	5-OH-DMT	2-(3,4-DMP)EA
Cathinone	N,N-DMT	4-MTA
Méphédronne	5-MeO-DMT	BDB
DOB	25B-NBOMe	Estazolam
PMA	2-CH	DMA
PMMA	2-CB	HMA
2-Aminoindane	2-CI	HMMA
NM-2-AI	mCPP	MDDMA
MDAI	Mescaline	N-propylamphétamine
5-EAPB	2C-T-7	N-ethylamphétamine
5-MAPB	2C-T-2	
5-APB		
PMMA		
- Sang enrichi: 0.5 – 1 – 2.5 – 5 – 10 – 20 µg/L

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Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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Evaluation de la LOD: résultats

- Extraction « screening »

LOD (µg/L)	Nombre de NPS
0,5	0
1	1
2,5	7
5	11
10	13
20	3

- Extraction « Phree » et cocop: LOD ↑

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Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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- Introduction/rappels
- Actualité
- Actualité en Belgique
- Défi analytique
- **Cas liégeois n°1: MDAI-EAPB**
- Cas liégeois n°2: 2-AI
- Conclusion

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Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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Death following consumption of MDAI and 5-EAPB

Marine Deville^{a,*}, Nathalie Dubois^a, Ewa Ciekiewicz^b, Pascal De Tullio^c, Eric Lemaire^d, Corinne Charlier^d




56th Annual Meeting of TIAFT



Addictive days and Toxic nights

TIAFT 26-30th August 2018



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Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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Case Report

- Contexte**

Toxicomanie décédée
(28 ans)

Poudres non identifiées
Matériel utilisé pour sniffer

Lorazépam,
prazépam,
zopiclone, amoxicilline,
bisoprolol
- Examen externe**
 - Epistaxis
 - Pas de lésion corporelle
 - Prélèvement de sang et d'urine
- Cause toxique hautement suspectée**

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Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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Materiel & Méthodes

- Screening**

Sang/Urine (traitée ou non par glucuronidase)	1 mL
Standard Interne (prazepam)	100 µL
Na ₂ CO ₃ 1M	500 µL
Diéthyl Ether/ Dichlorométhane/Hexane/ alcool n-amylique (50/30/20/0.5:v/v) → Agitation → Centrifugation → Evaporation	5 mL
Phase Mobile	100 µL

HPLC-DAD (Waters)

Alliance 2695 + PDA 2996
Colonne: Symmetry C8, 5 µm,
 250 X 4,6 mm (Waters)
Phase Mobile A: Tampon
 Phosphate pH 3,8 43,5 mM
Phase Mobile B: Acétonitrile



UPLC-TOF-MS (Sciex)

Eksigent LC 100 XL + TripleTOF 4600
Colonne: Kinetex 2.6 C18, 100 Å,
 50 x 3.00 mm (Phenomenex)
Phase Mobile A: 10mM Ammonium
 formate
Phase Mobile B: ACN/MeOH (50/50)
- Poudres:** dilution → HPLC-DAD & UPLC-TOF-MS

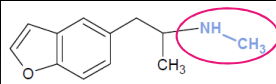
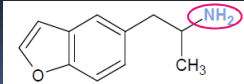
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Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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Résultats

- Poudres**
 -  5,6-MethyleneDioxy-2-AminoIndane
MDAI : 68 % Nc1ccc2c(c1)OCO2
 -  EthylAminoPropylBenzofuran
EAPB : 87 % CCNCc1ccc2occc12
- Echantillons Biologiques**

	Sang (mg/L)	Urine (mg/L)	Cas 1 [1]	Cas 2 [1]
MDAI	2,09	69,4	26,3	3,3
EAPB	6,45	14,8	-	-
MAPB	0,089	1,00	-	-
APB	0,546	4,88	-	0,34

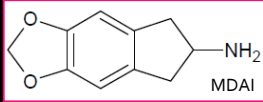
 -  MethylAminoPropylBenzofuran (MAPB) CCNCc1ccc2occc12
 -  AminoPropylBenzofuran (APB) Nc1ccc2c(c1)OCO2

[1] Corkery JM., et al., MDAI toxicity: a brief overview and update, Hum Psychopharmacol Clin Exp (2013)28; 345-355

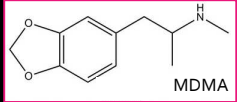
Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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MDAI - EAPB

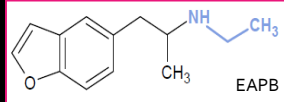
- MDAI (5,6-MethyleneDioxy-2-AminoIndane)**
 - Insufflation, ingestion orale
 - Euphorie, empathie
 - Confusion, anxiété, dépression, attaques de panique, tachycardie,...
 - Insuffisance rénale/hépatique, syndrome de détresse respiratoire aiguë, hypertension pulmonaire, troubles valvulaires aortiques, rhabdomyolyse, ...
- EAPB (EthylAminoPropylBenzofuran)**
 - Très peu de données scientifiques
 - Insufflation, ingestion oral (parachutie)
 - Stimulant, empathogène, appréciation de la musique - effet plus faible que la MDMA mais plus fort que l'APB
 - Tachycardie, tension dans les mâchoires, insomnie → convulsions, arrêt cardiaque (APB)



MDAI



MDMA



EAPB

Intro Actualité Belgique Défi analytique **Cas Lg 1** Cas Lg 2 Conclusion

EAPB: distinction des isomères

Résonance Magnétique Nucléaire

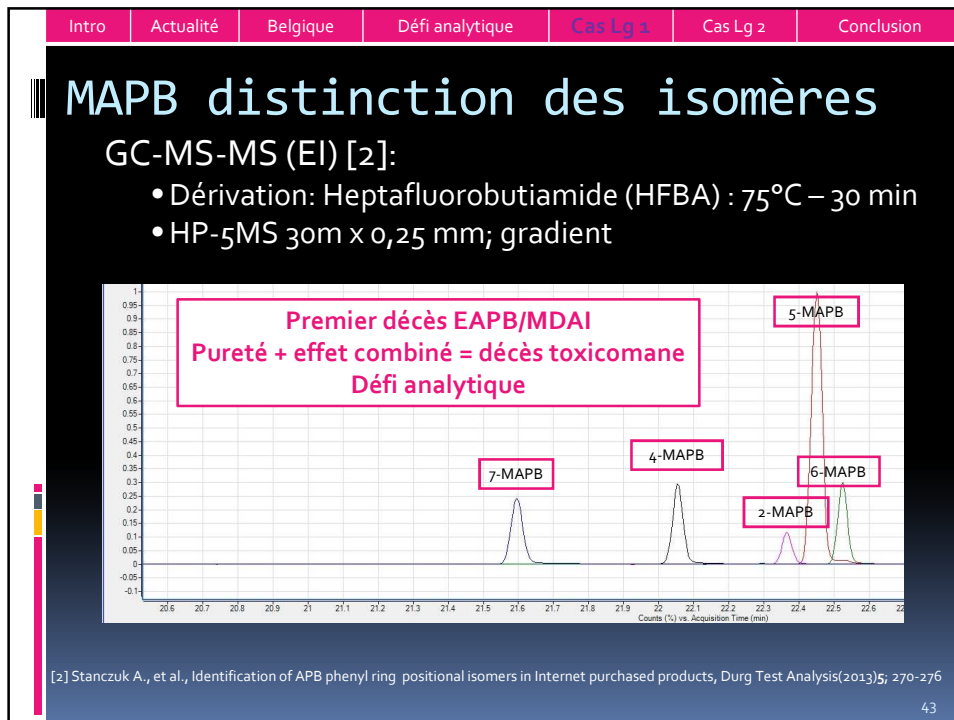
4.1

Intro Actualité Belgique Défi analytique **Cas Lg 1** Cas Lg 2 Conclusion

MAPB: distinction des isomères

Isomer	Temps de rétention	
	HPLC-DAD	UPLC-TOF-MS
2-MAPB	10,32	5,48
4-MAPB	9,81	5,27
5-MAPB	9,58	5,16
6-MAPB	9,53	5,16
7-MAPB	9,46	5,17

4.2



Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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- Introduction/rappels
- Actualité
- Actualité en Belgique
- Défi analytique
- Cas liégeois n°1: MDAI-EAPB
- Cas liégeois n°2: 2-AI
- Conclusion

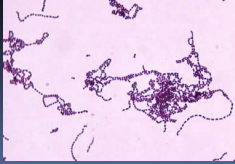
The 57th Annual Meeting
of the International Association
of Forensic Toxicologists
BIRMINGHAM, UK
Sept 2-6, 2019

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Intro Actualité Belgique Défi analytique Cas Lg 1 **Cas Lg 2** Conclusion

Case report

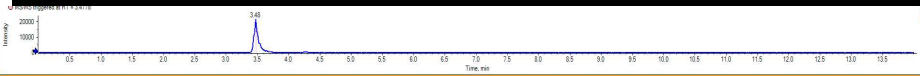
- Homme de 24 ans
- 3^{ème} visite aux urgences pour symptômes ORL en aggravation depuis une semaine, traité par paracétamol, ibuprofène et oxymétazoline
- Sudation profuse, érythème généralisé, tachycardie sinusale
- Œdème paupière droite, poignet et coude gauches, jambe douloureuse.
- Soins intensifs: intubation et antibiothérapie
- Choc septique, CIVD, défaillance multiviscérale
- Chemsex → Screening NPS



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Intro Actualité Belgique Défi analytique Cas Lg 1 **Cas Lg 2** Conclusion

Résultat du Screening



#	Name	Formula	Isotope	Mass Da	Addc	Int	Extraction	Found At	Error (ppm)	Isotope	Found At	Intensity	Area	Library Hit	Library	Score	Isotope	Combined	Fomali	Finder	Result	Width (Da)	Width (ppm)	Expected	RT (min)	RT Width (min)	Fragment	Mass Da
1	2AI	CH11N	0	131.08915	-H	134	134.0963	134.0963	1.2	2.6	3.48	21650	1814	2AI	96.1	96.1	96.8	88	CH11N		0.02	143.146	0	2				

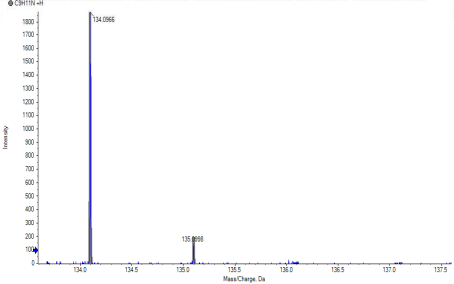
Sample: 190313_SCRnl_BOULAY-2-SER [190313_SCRnl_...]

Rows 1

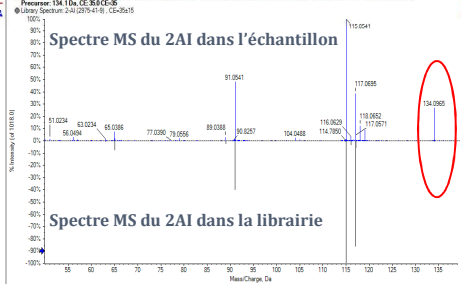
Specimens from 190313_SCRnl_BOULAY-2-SER will Example 1: 190313_SCRnl_BOULAY-2-SER, Experiment 2, +TSP MS7 (20-1300) Ion 3.478 min

Specimen: 134_10a_CE369CE-05

Library Specimen: 2AI (131.08915) C-14515



Spectre MS du 2AI dans l'échantillon



Spectre MS du 2AI dans la librairie

→ Commande du standard de référence

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Intro	Actualité	Belgique	Défi analytique	Cas Lg 1	Cas Lg 2	Conclusion
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2-Aminoindane

CC(N)Cc1ccccc1

Nc1ccc2ccccc12

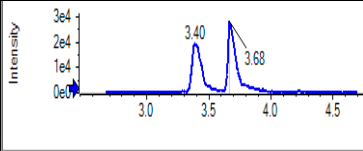
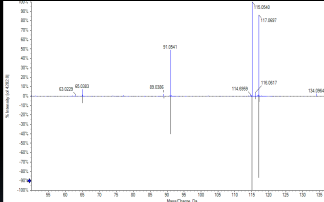
- Ingestion/insufflation nasale
- Inhibition sélective du transporteur de la noradrénaline et libération de dopamine et noradrénaline dans la synapse
- Effets légers > effets stimulants physiques et mentaux comparables à la MDMA
- Antidouleur, vigilance, euphorie
- 4 rapports de cas:
 - Détecté en 2011 au UK, pas de détails
 - Décès méthadone (807 µg/L) + 2-AI (101 µg/L) + médicaments
 - Détecté lors d'une overdose au MT-45
 - Détecté dans des urines poolées d'urinoir de nightclub londonien


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Substance de référence

- Injection sur la TOF: $\Delta t = 0,3 \text{ min}$ → effet matrice?
- Echantillon du patient enrichi avec le 2-AI



- Réception du standard 2.5 mois après la commande
- Volume d'échantillon reçu

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Méthode LC-MSMS

UHPLC-MS-MS (Waters) UPLC Acquity + Quattro Premier

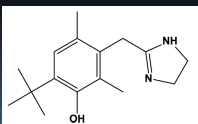
- Colonne: BEH C18, 1.7 μm , 50 X 2.1 mm (Waters)
- Phase Mobile A : eau + 0.1% acide formique
- Phase Mobile B: méthanol + 0.1% acide formique
- Mode Gradient : 15 min

Résultats:

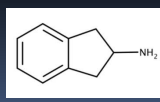
- $\Delta t = 0,1$ min
- Ion Ratio 133.9 > 116.9 / 133.9 > 115.1 Standard : 6.62 \neq Sample : 2.37
- Même interférence dans 6 échantillons testés sur 900. Origine?

Ion ratios indispensables

Oxymétazoline
(Nesivine®)



2-Al




- Validation: 10 matrices blanches / composés fréquemment rencontrés

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Conclusions

- La consommation de NPS est anecdotique comparé aux drogues « classiques »
- Une technique sensible ET spécifique est indispensable



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