European Monitoring Centre
for Drugs and Drug Addiction

Emerging Trends in New Drugs in the European Union

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NIST/DEA Emerging Trends in Synthetic Drugs Workshop,
30 April 2013

Overview

EU Early warning system

Fundamental shift in the drugs market

Diversity of new drugs - monitoring in action

Concerns - getting new drugs in perspective

What next?

EWS institutional partners

European Monitoring Centre for Drugs and Drug Addiction

Reitox Focal Points

EWS

EUROPOL

Europol National Units

EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

Pharmacovigilance system

European Commission

Council Decision 2005/387/JHA

I. Information exchange Early warning system (EWS) → II. Risk assessment → III. Decision-making

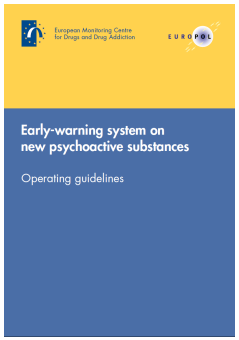
EWS guidelines

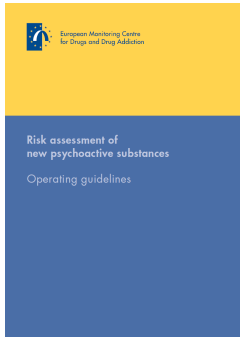
Risk assessment guidelines

Council Decisions on control

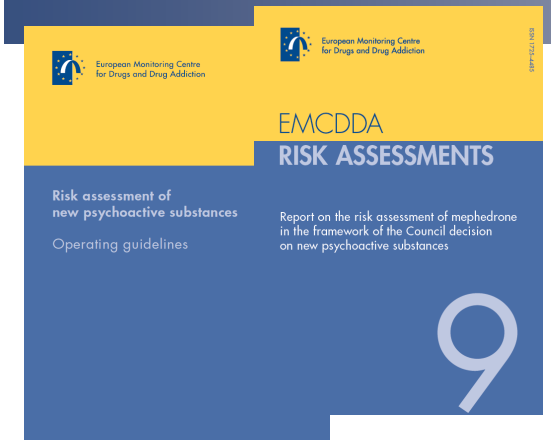
European Database on New Drugs (EDND)

http://www.emcdda.europa.eu/drug-situation/new-drugs





Risk assessment new psychoactive substances

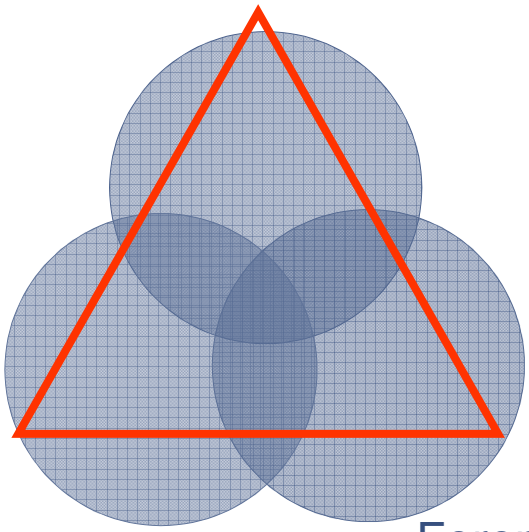


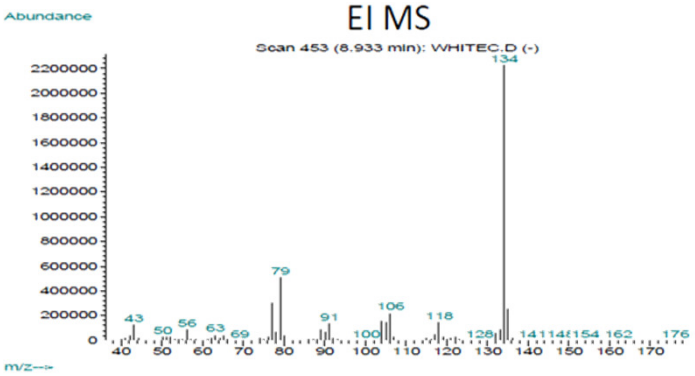
- Formalized guidelines
- Health risks, Social risks, Organized crime
- Diffusion potential

- **MBDB** (1998) — not controlled EU
- **4-MTA** (1999) — controlled EU
- **GHB** (2000) — controlled UN
- **Ketamine** (2000) —
- **PMMA** (2002) — controlled EU
- **2C-I, 2C-T-2, 2C-T-7, TMA-2** (2003) — controlled EU
- **BZP** (2007) — controlled EU
- **Mephedrone** (2010) — controlled EU
- **4-MA** (2012) — proposal for control EU
- **5-IT** (2013) — risk assessment held April 2013

EWS: Triangulation of information from different sources

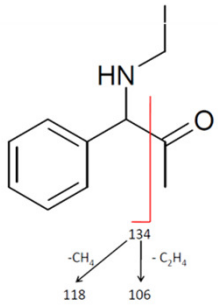
Internet, media, users





Research, test purchase, wastewater analysis, QSAR modelling

Forensic data/toxicology, law enforcement, surveys, health & care



European Database on New Drugs

EDND – European information system and database on new drugs

Search

Advanced search

Substances | Reporting forms | Reports | Search EDND | Alerts | Trainings | Meetings | Announcements | Analytical databank | Miscellaneous

Substance: 5-IT

Created
June 2012

Updated
February 2013

Type
Psychotropic substances

Group
Others

Name
5-IT

- Real time information
- Low cost
- Shared investment & shared benefits

Nature of substance
5-(2-Aminopropyl)indole is a substituted indole and a positional isomer of alpha-methyltryptamine (AMT), however it substituted on the aromatic side of the indole ring system. It is also structurally related to 5-APB (indolyl analogue, h effects (Shulgin).

Systematic chemical name
5-(2-Aminopropyl)indole

Other names
5-API

Alerts

5-IT related deaths in Hungary, 1 October 2012
(Last Update: 01/10/2012)

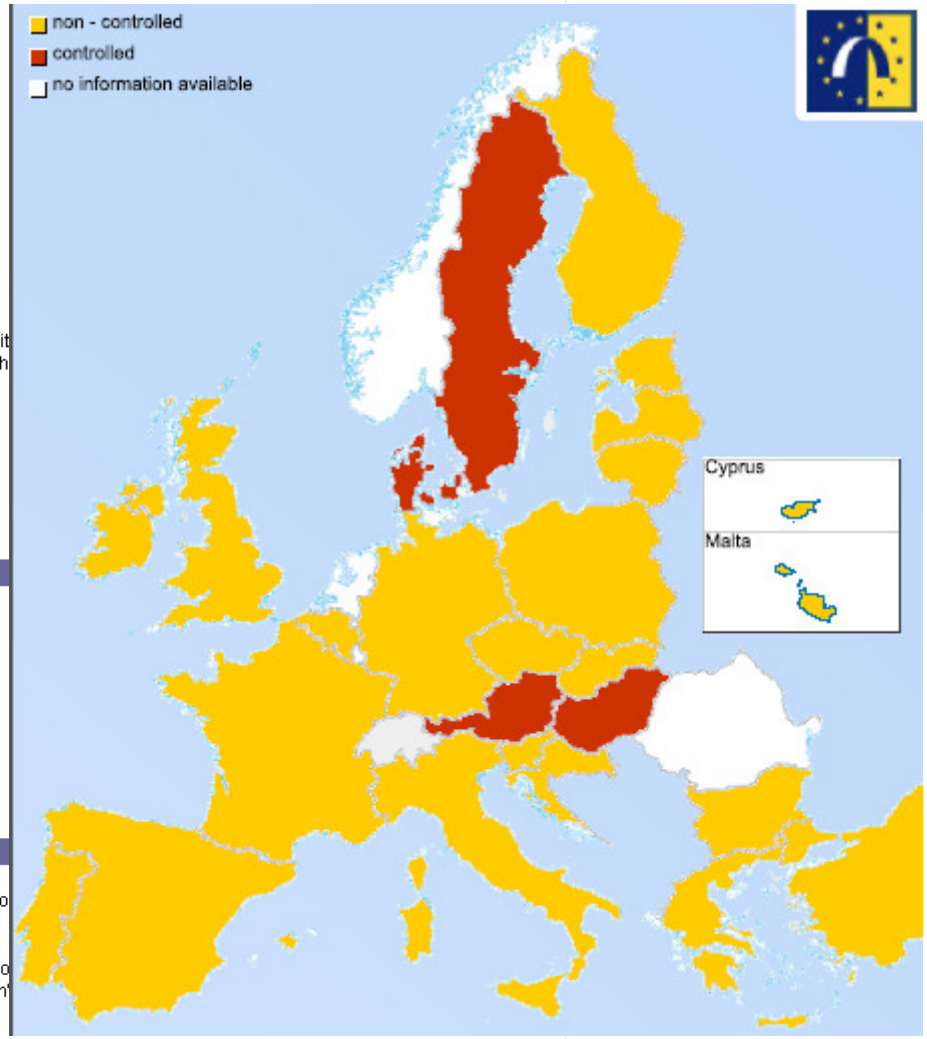
Two fatal intoxications following ingestion of 'Benzo Fury', UK, updated on 27 September 2012
(Last Update: 01/10/2012)

Death cases due to 5-IT, Sweden, July 2012
(Last Update: 01/10/2012)

Reports to EMCDDA

United Kingdom (Reporting Form): On 20 December 2012 the UK NFP reported a biological sample identified in po Grampian, Aberdeen Royal Infirmary in Inverness on 13 June 2012.

Denmark (Reporting Form): On 21 September 2012 the NFP reported a seizure of 5,1g light brown powder seized o was found in a small transparent bag and with labering : "5g 5-IT, Research Chemical, Not for human consumption" and without any sender. The post came from UK. The method used for analysing: GC-MS, UPLC-TOF, H-NMR.



Fundamental shift

Gary L. Henderson,[1] *Ph.D.*

Designer Drugs: Past History and Future Prospects

REFERENCE: Henderson, G. L., **"Designer Drugs: Past History and Future Prospects,"** *Journal of Forensic Sciences.* JFSCA, Vol. 33, No. 2, March 1988, pp. 569-575.

Future Trends

In the view of this author, it is likely that the future drugs of abuse will be synthetics rather than plant products. They will be synthesized from readily available chemicals, may be derivatives of pharmaceuticals, will be very potent, and often very selective in their action. In addition, they will be marketed very cleverly.

The challenge we face today — has it changed?

U.S. Drug Sleuths Finally Solve Mystery of the Deadly China White

New Narcotic Identified After Monthlong Quest

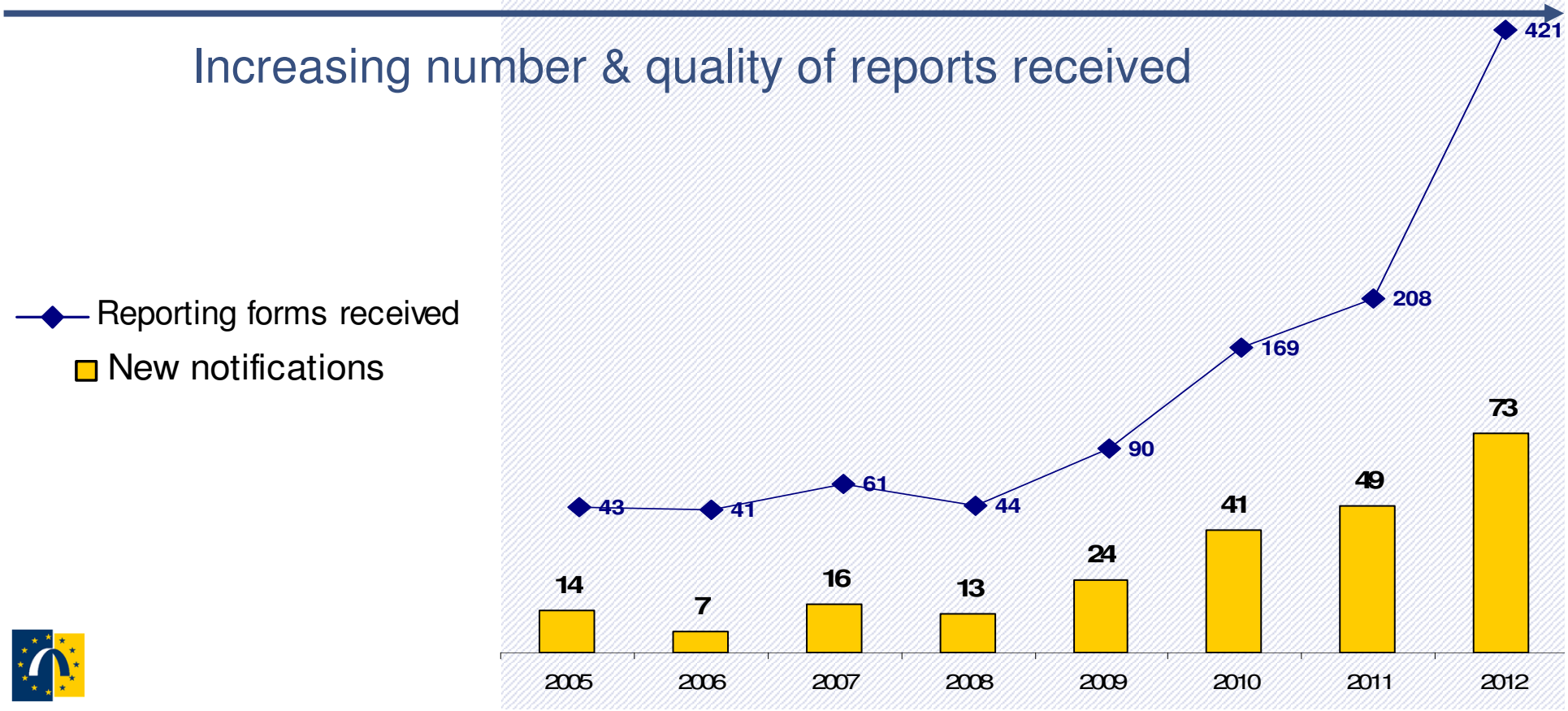
As Federal drug agents and California police stepped up their search for the sources of the China White, the forensic chemists turned their detection scales to a backlog of other, more routine cases. The challenge of identifying a new drug from the street comes no more than once or twice a year.

Substances reported via the EWS

Joint action 97/396/JHA
(June 1997 – May 2005)
~ 30 notifications

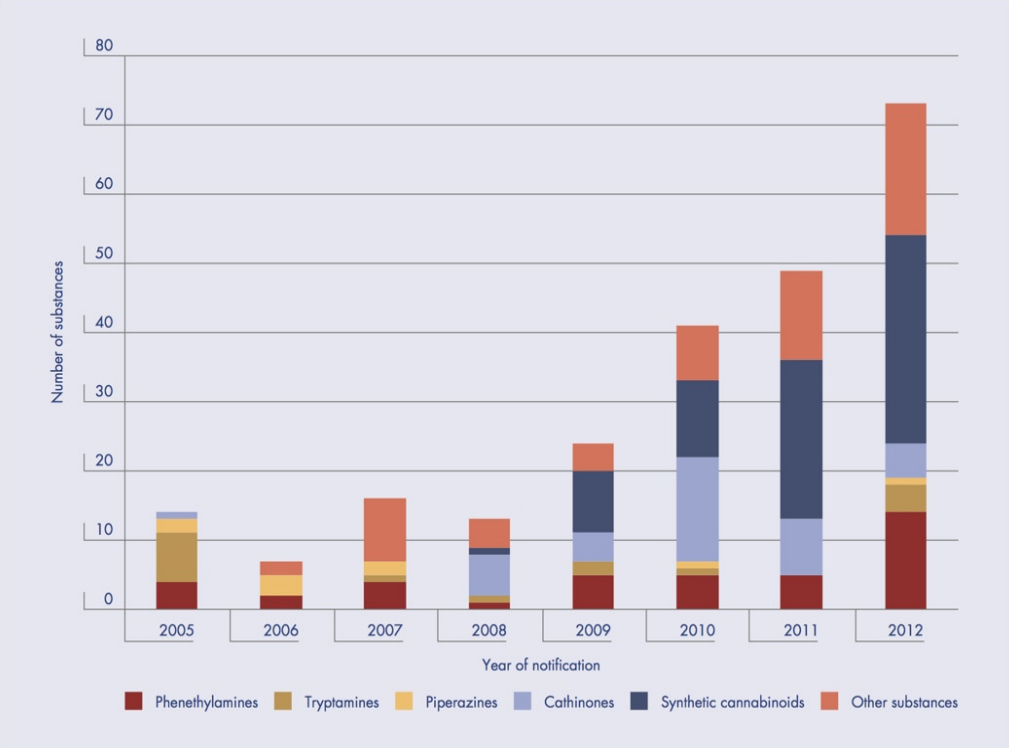
Council Decision 2005/387/JHA
(May 2005 – 2012)
~ 230 notifications

Increasing number & quality of reports received



236 new drugs notified since 2005

More than 280 monitored since the EWS started



Synthetic cannabinoids, phenethylamines and cathinones most common

More diverse and obscure substances being reported

Many more substances offered for sale that have not yet been identified by chemical analysis

What is driving this?

A complex web…

- Globalisation and advances in information technology, internet as:
  - Communication tool
  - Access to information (medicinal chemistry, patents, etc., etc)
  - Global market place
- Available and cheaper organic synthesis capacity
  - ‘legally’ sourced often outside Europe
  - limited regulation/enforcement: availability on the open market
  - differences in national laws

What is driving this?

A complex web…

Innovative marketing of products within a ‘grey’ regulatory zone

Changes in illicit drug market and interaction between markets

- Gaps in availability (such as poor quality of illicit stimulants or heroin drought?)
- Interaction between the markets in illicit drugs, 'legal highs' and medicines
- Creation of new drug markets

Users willing experiment… and substitute

Responding to new marketplace

‘Specialist’ shops

- Responses have been quite successful (IE, PO)

Internet

- A challenge!

The illicit market place

- Controlled and non controlled NPS increasingly present
- Some evidence manufacture in illicit labs
- Interaction with other synthetic drugs and stimulants
- Internet and darkweb

A new market place: monitoring the Internet

693 online shops identified selling to the EU in 2012
Up from 314 in 2011 and 170 in 2010

Other features of the online market include:

Legal highs may not be legal

Open market

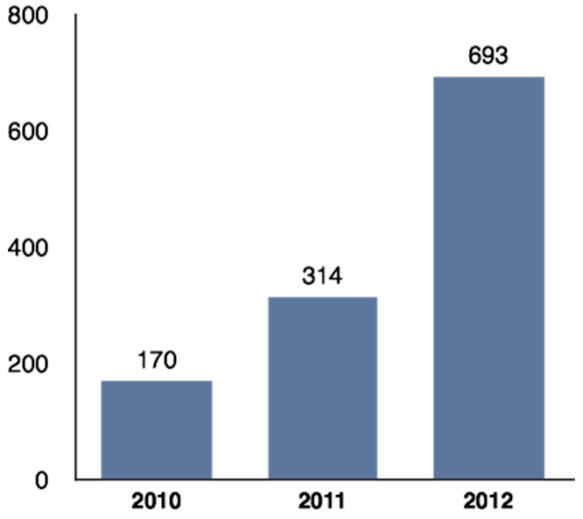
dietary supplements, lifestyle and self-medication products (e.g. phenibut, DMAA)

Developments:

Spamdexing,

diversification, &

more covert strategies



The internet and drug diffusion - Spice

- Monitoring internet may also be important for understanding trends
- ‘Mexican seafood’ was asking about spice back in 2006 and ‘mad scientist’ told him that we did not know.
- It took another 2 years to confirm the nature of the ingredients.

The emergence of synthetic cannabinoids

BLUELIGHT

Spice
Printable View

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Show 40 post(s) from this thread on one page

mexican seafood — 17-09-2006, 23:35

Spice

So, an old friend of mine told me that he and some of my other friends have been buying this stuff called "spice", which is a legal smoking herb blend. He said he only had a little bit, and he found the high pretty impressive, and several other friends I know and trust swear by it.

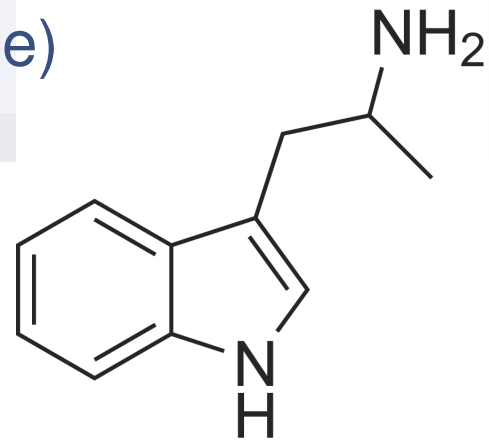
I did a search and came up with these ingredients:
Baybean, Blue Lotus, Lion's Tail, Lousewort, Indian Warrior, Dwarf Scullcap, Maconha Brava, Pink Lotus, Marshmallow, Red Clover, Rose, Siberian Motherwort, Vanilla and Honey

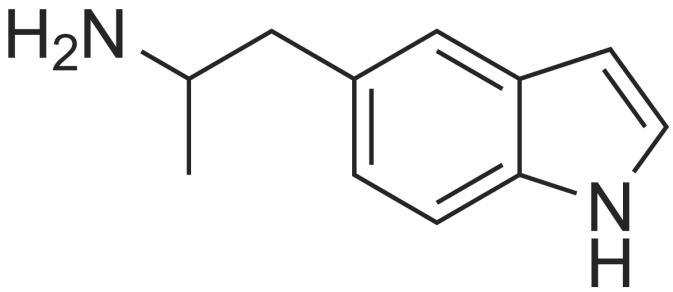
I figured this would be the best forum to ask; does anybody know of the effects/entheogenic properties of any of these substances?

At first glance I thought this must be BS, but I'm inclined to believe these guys, they're not particularly inexperienced or anything.

First CRA in a smoking mixture sold as ‘Spice’ was JWH-018
First detected (analytically confirmed) in Europe, Dec. 2008
Now, EWS monitors more than 70 CRA´s

Risk Assessment 5-IT (5-(2-aminopropyl)indole)





Notified to EMCDDA in June 2012

Stimulant type drug (little known)

Sometimes sold as ‘Benzofury’ which has contained different drugs in the past (e.g. 5/6-APB).

Users may think they are taking a different drug

Analytical difficulties (cf. AMT)

24 deaths in 4 MS linked to the drug

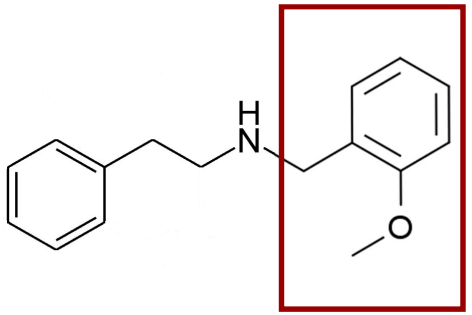
-NBOMe compounds (1)

N-2-methoxybenzyl derivatives of the '*2C*-series' of phenethylamines

Extremely potent, active at µg level

Binding affinities at 5-HT2A receptors Ki 0.16–1.49nM

Typically detected in 'blotters'/tabs, sugar cubes



Phenethylamine	-NBOMe derivative	Date	Country
2C-B	25B-NBOMe	Dec-12	Sweden
2C-C	25C-NBOMe	Jun-11	Finland
2C-D	25D-NBOMe	Apr-12	UK
2C-E	25E-NBOMe	Dec-12	Poland
2C-G	25G-NBOMe	Dec-12	Poland
2C-I	25I-NBOMe	Jun-12	Sweden
2C-N	25N-NBOMe	Dec-12	Poland

Information sources – The challenges

Speed of developments

- Increase in the number, type and availability
- More diverse, obscure compounds
- Products, mixtures and mislabelling (licit & illicit)

Forensic capacity limited, analytic challenges

- Lack of reference standards
- Increasing numbers of mixtures
- Difficulties in identification (don't know what your looking for)

Epidemiological challenges

- Self-reported data becoming increasingly less useful
- Mislabelling of products, change of composition over time and region
- Lack of standardised questions, common definitions and agreed terminology

Integrate more innovative & proactive monitoring approaches

- Waste water
- Test purchasing
- Internet monitoring
- Computational studies

Information sources – The challenges

Better conceptual models to understand diffusion potential

Need to develop hospital emergency data

Increase capacity to respond rapidly to particularly toxic products – rapid and sound assessment of properties & risks

- Identification of DID associated with NPS
- Evaluation of potential acute and chronic toxicity in humans
- Receptor binding and mode of action studies
- Assessment of psychoactivity

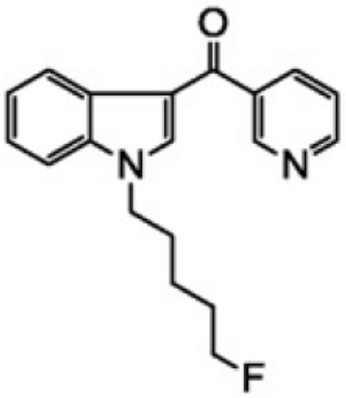
Follow – up over time important

- Re-emergence of controlled drugs and establishment on the licit market

What next?

Synthetic cannabinoids, not yet detected in Europe, e.g.

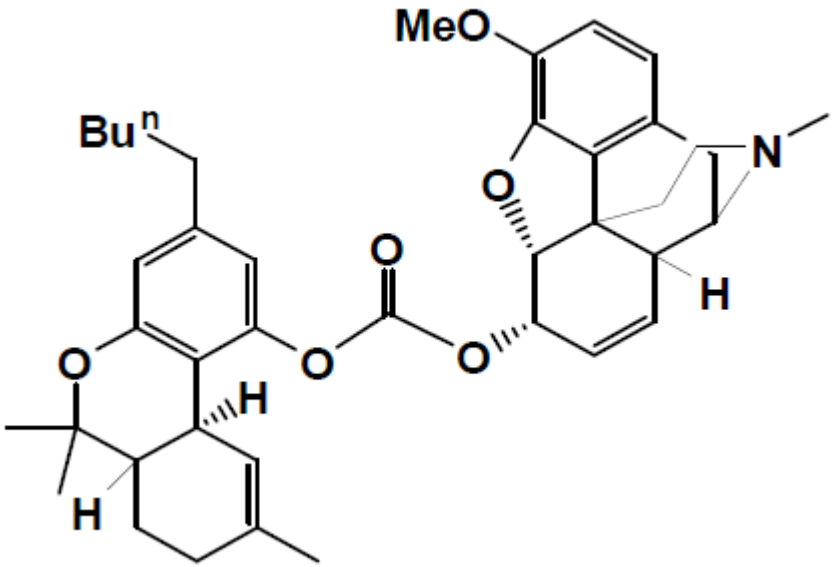
N. Uchiyama et al. / Forensic Science International xxx (2012) xxx–xxx



5-Fluoropentyl-3-pyridinoylindole (III)
$C_{19}H_{19}FN_2O$: 310

What next?

Dhooper, H. K., (2010), *Opioid-cannabinoid co-drugs with enhanced analgesic and pharmacokinetic profile*, University of Kentucky, KY

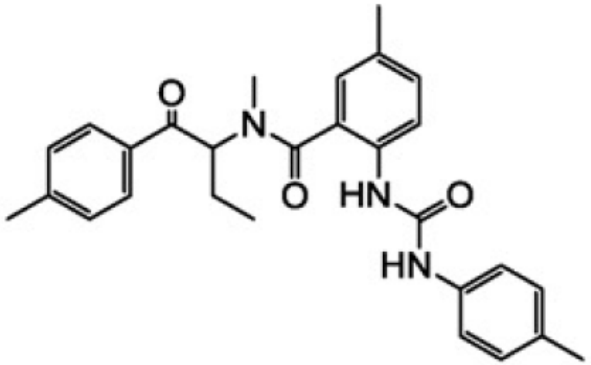


Codeine-Δ^9-Tetrahydrocannabinol Carbonate.

What next?

Synthetic ‘co-drugs’

N. Uchiyama et al. / Forensic Science International xxx (2012) xxx–xxx



Reaction product of URB-754 with 4-Methylbuphedrone (II)
$C_{28}H_{31}N_3O_3$: 457

What next?

Let’s see!

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