

NMS Labs Trends Report : Changes in the Designer Drug Market Spring 2012

Barry K Logan PhD, DABFT



National Director Forensic Services

Willow Grove PA

W H E N Y O U N E E D T O K N O W



The Washington Post

Entertainment

Demi Moore friend who called 911 describes actress as barely conscious and convulsing

“She smoked something. It’s not marijuana. It’s similar to incense,” the friend says to the 911 operator.

While Moore’s friends don’t say exactly what she smoked, an increasingly popular drug known as Spice is sometimes labeled as “herbal incense.”

WDBJ7.com

Prosecutors seeking death penalty against accused killer Shane Padgett **Padgett is accused of killing and raping teenager Cara Holley in 2010.**

What is also critical to point out is that Padgett may have been high on synthetic drugs like bath salts at the time of the offense.

His team has talked with pharmacology experts about what bath salts can do to the mind.



phillyBurbs.com

Courier Times | TheIntelligencer | Burlington County Times

Authorities say more synthetic marijuana raids are coming

Story

Comments (1)

Share Print Font Size: - +

Tweet 12 Like



Spice

Posted: Wednesday, May 2, 2012 5:45 am | Updated: 6:45 am, Wed May 2, 2012.

By Matt Chiappardi Staff writer | 1 comment

MOUNT HOLLY — Monday's bust of two tobacco shops allegedly selling synthetic marijuana was the third such raid in New Jersey in the past week, and authorities said more are coming.

The New Jersey Division of Consumer Affairs said memos have been sent to every law enforcement agency in the state urging them to enforce a ban on the designer drug that authorities implemented Feb. 28.

Shopkeepers had a grace period until March 10 to surrender the drug, but after that date, they would be subject to up to five years in prison and as much as \$25,000 in fines.

Sheriff: Scott County man high on bath salts fires 30 shots inside trailer

By Wes Bunch

Published October 7th, 2011 11:20 pm

Comments      12  

ANTIOCH — Scott County authorities arrested a man this week for allegedly firing 30 rounds inside a trailer while high on bath salts.

Scott County Sheriff John Puckett said deputies received a call Wednesday evening from a man in the Antioch community who claimed six to 10 people were trying to break into his trailer and that he had been shot in the face.



May 6, 2012

HUFF
POST **CRIME**

THE INTERNET NEWSPAPER: NEWS BLOGS VIDEO COMMUNITY

Tucker Cipriano Charged In Baseball Bat Beating Death Of Father, Robert Cipriano

The Huffington Post | By Kyle McGovern

Posted: 04/18/2012 4:11 pm Updated: 04/18/2012 4:19 pm



They broke into the garage as the family slept and stole a credit card that belonged to Cipriano's father from a car, reports say.

Cipriano used the card to buy Spice -- synthetic marijuana -- and smoked it, reports say. Later that night, desperate for more money, he told a friend he needed to smoke even more Spice so he didn't have second thoughts about killing his family, according to the records.

VIDEO

Police consider buying Tasers to deal with bath salts users



By Bill Trotter, BDN Staff

Posted Oct. 11, 2011, at 7:39 p.m.

Last modified Oct. 12, 2011, at 12:54 p.m.



[Recommend](#)



Bath salts linked to stun gun assault on officer

MERRILLVILLE | A 39-year-old Merrillville man -- who police believe may have been under the influence of bath salts -- took a stun gun from a Merrillville patrolman and used it on another officer, police said.

Perosky allegedly choked the woman late Sunday after taking bath salts and forced the woman out of her bed by pulling her hair early Monday, police said.

Perosky is charged with disarming a law enforcement officer, using a stun gun on a law enforcement officer, strangulation, two counts of battery and two counts of resisting law enforcement in Lake Criminal Court, police said.



- Trends
- Legal Status
- Novel Compounds and Drug Classes
- 2012 Outlook



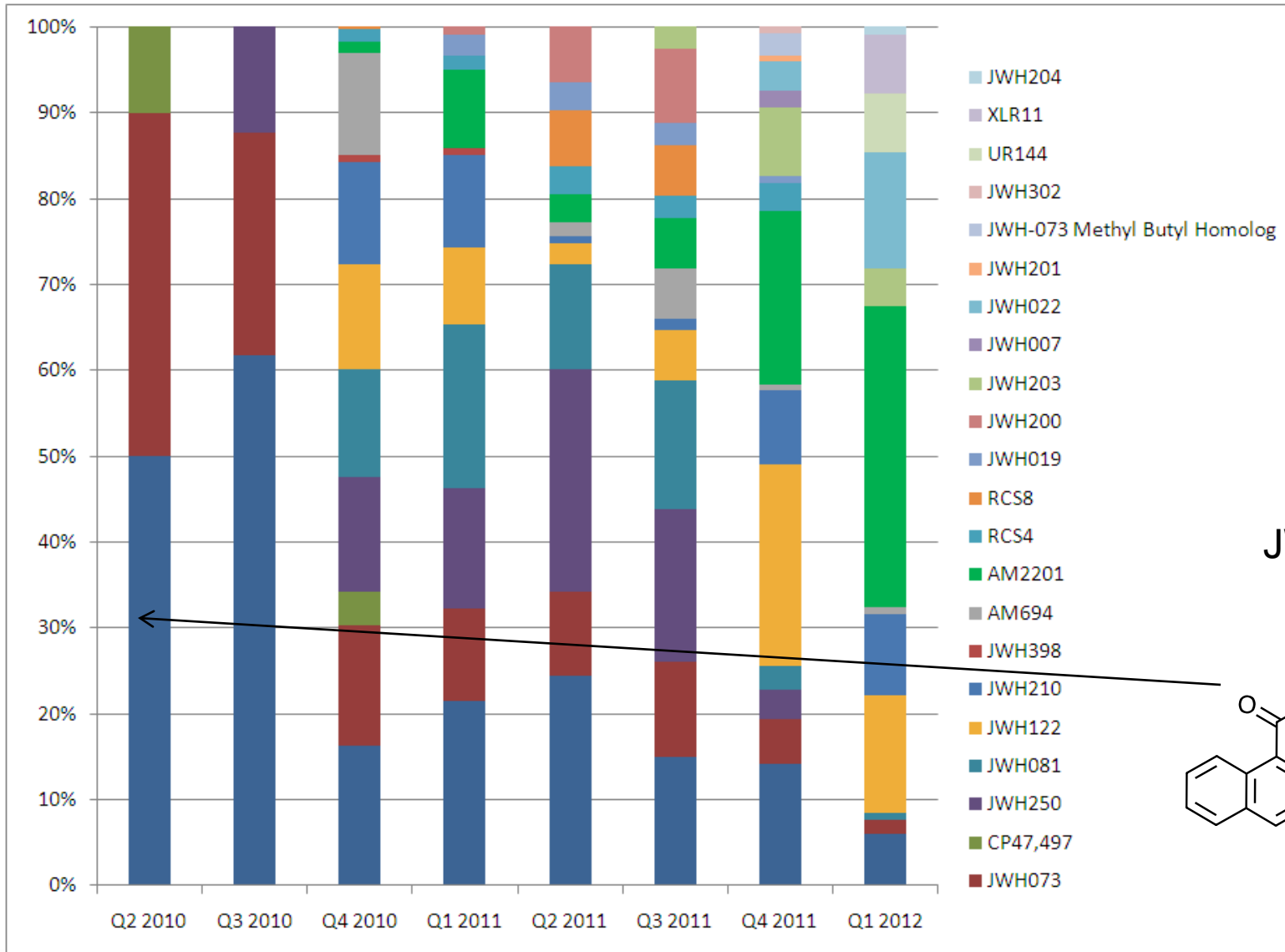
SYNTHETIC CANNABINOIDS: TRENDS



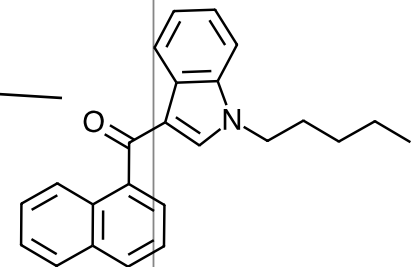
What is K2/Spice?

- Synthetic chemicals that look to the brain like marijuana.
- Sprayed onto plant material for smoking.
- Give marijuana-like high
- Sold online and in head-shops
- Legal grey area

Chemicals - Prevalence



JWH-018



Temporary Scheduling

3/1/2011 – Synthetic Cannabinoids

–JWH-018

–JWH-073

–JWH-200

–CP47,497 (C7)

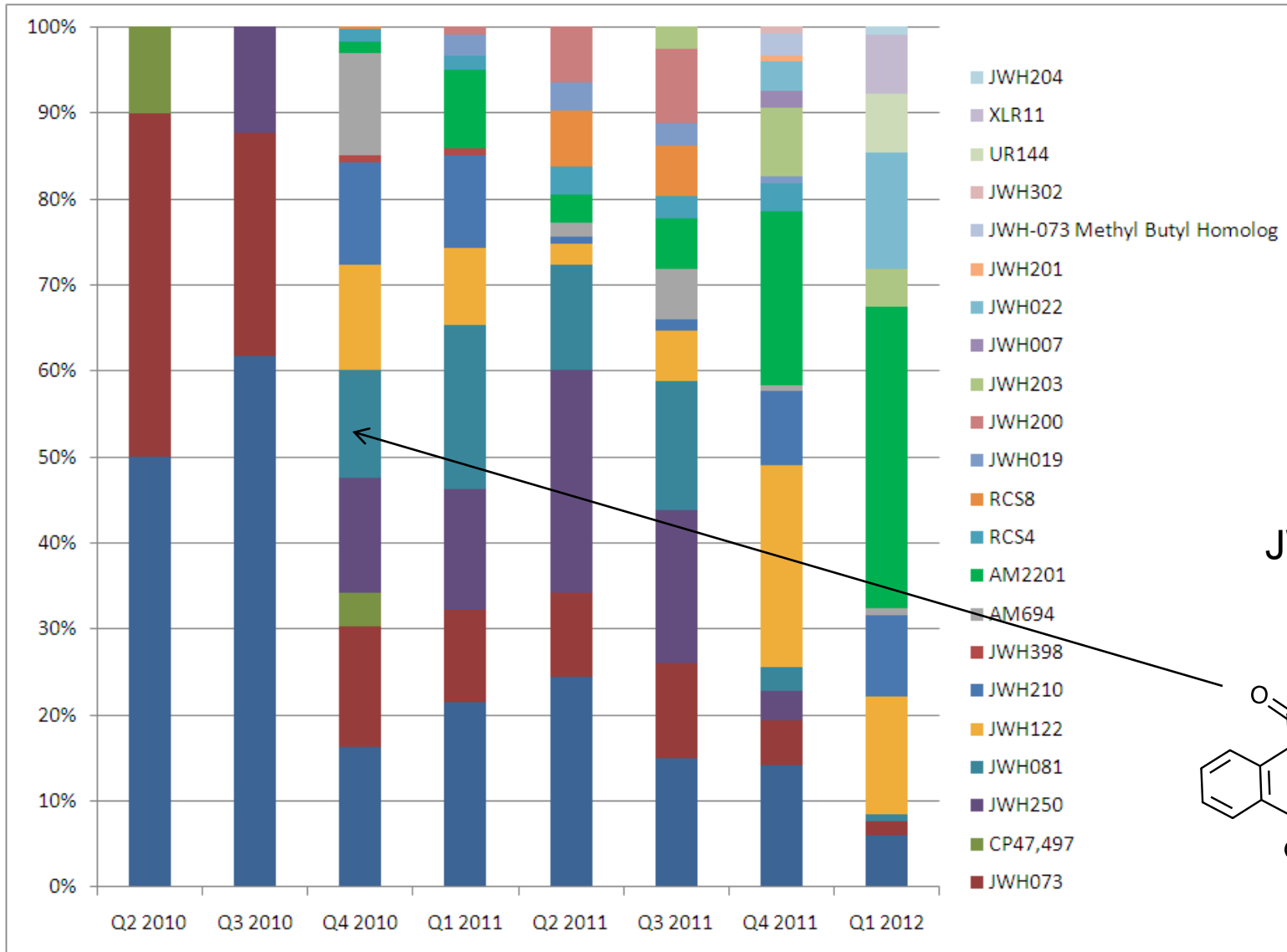
–CP47,497 (C8)

Extended 2/29/2012 – 8/29/2012

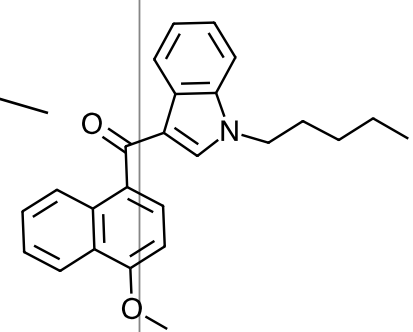


Federal Register Volume 77, Number 40 (Wednesday, February 29, 2012)]

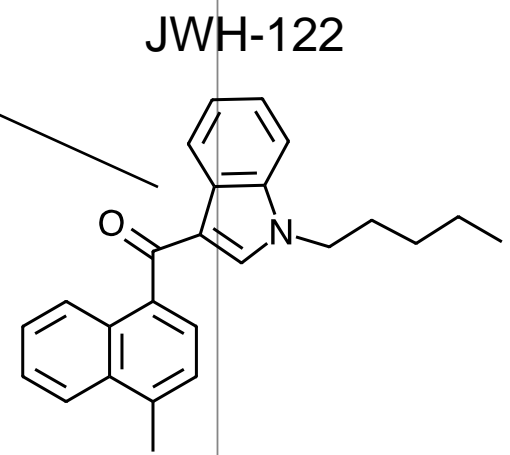
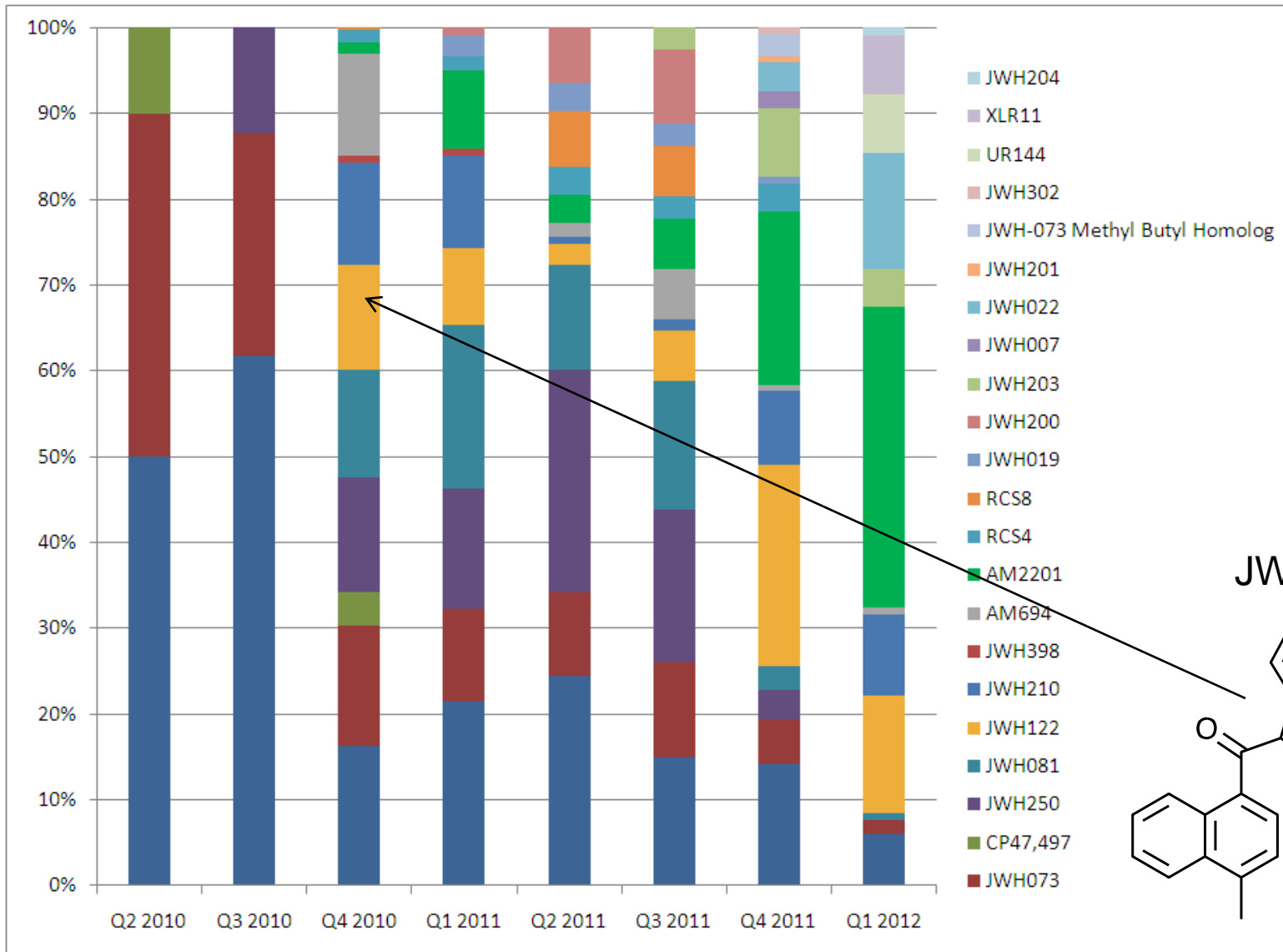
Chemicals - Prevalence



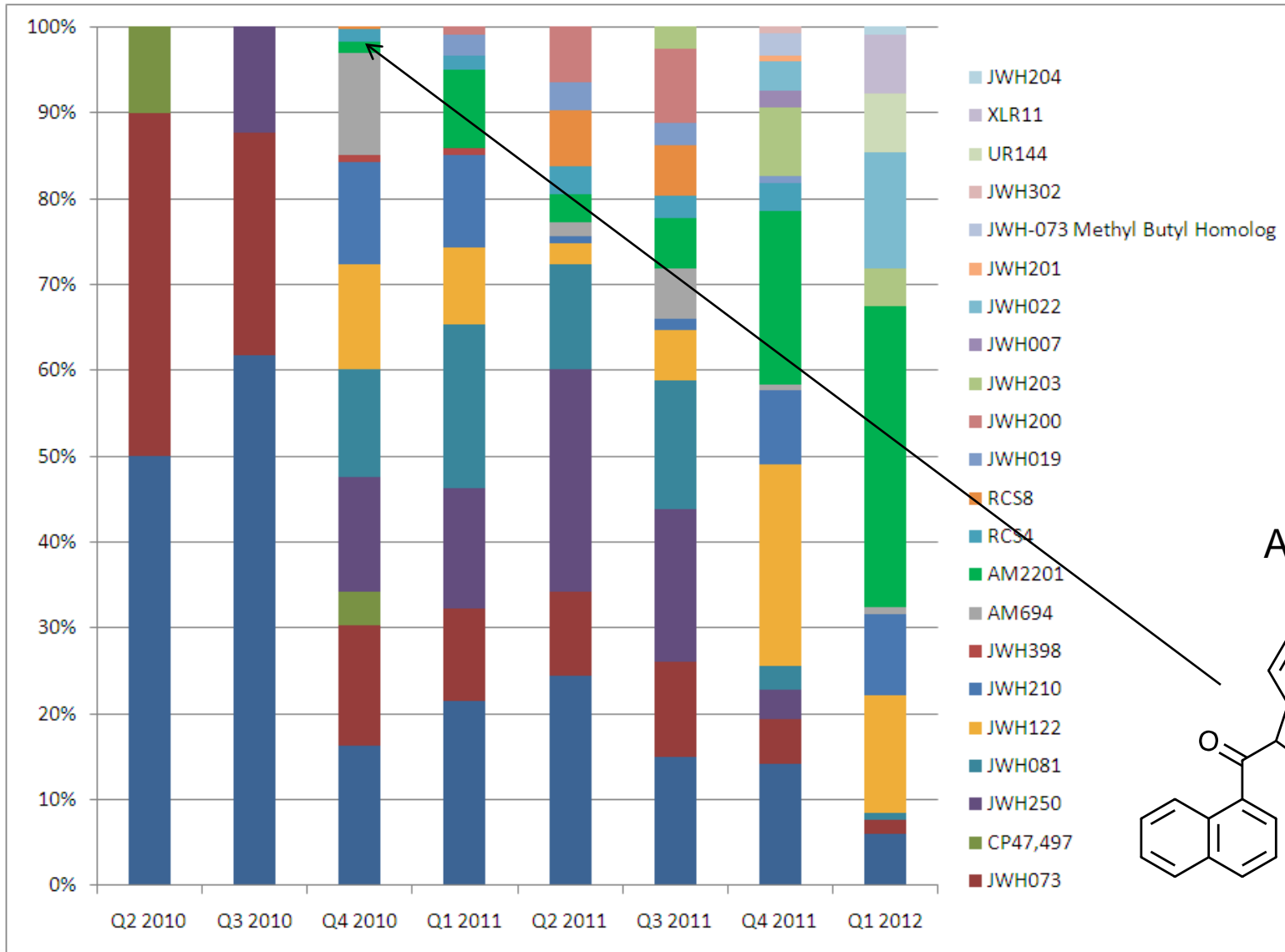
JWH-081



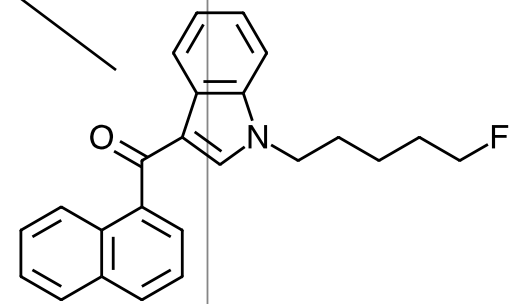
Chemicals - Prevalence



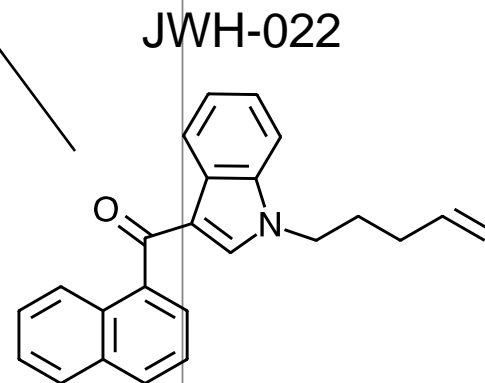
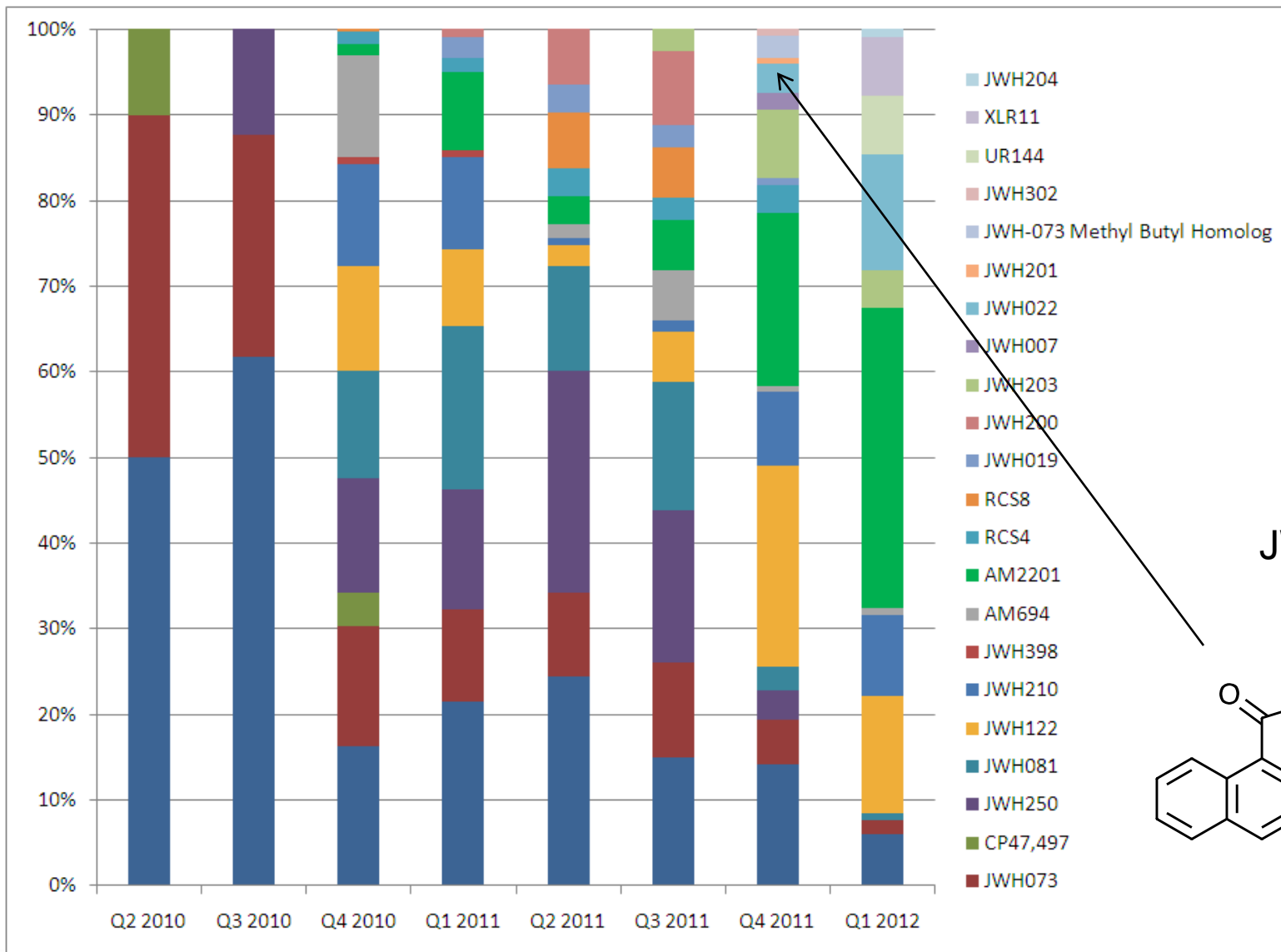
Chemicals - Prevalence



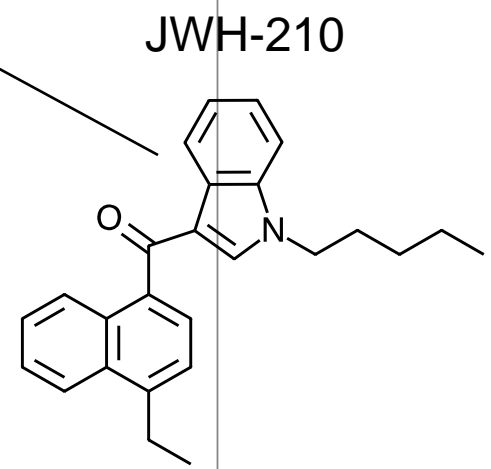
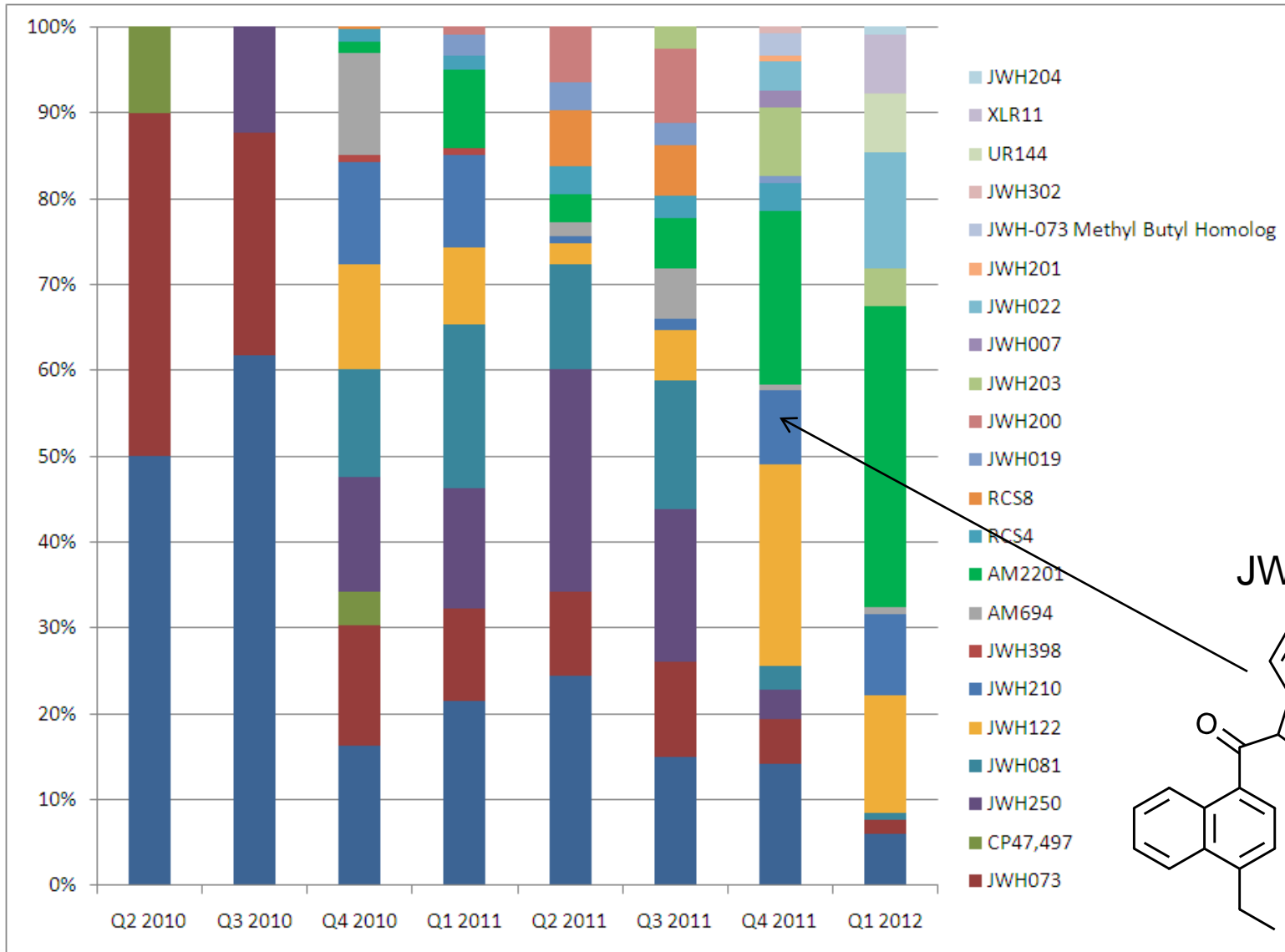
AM-2201



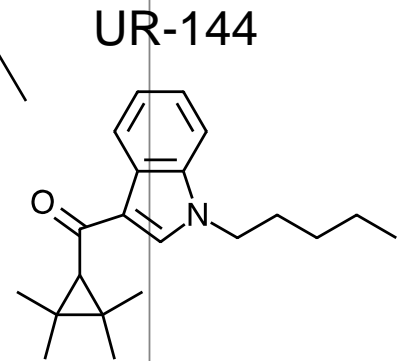
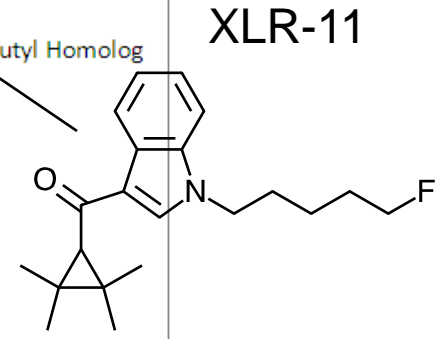
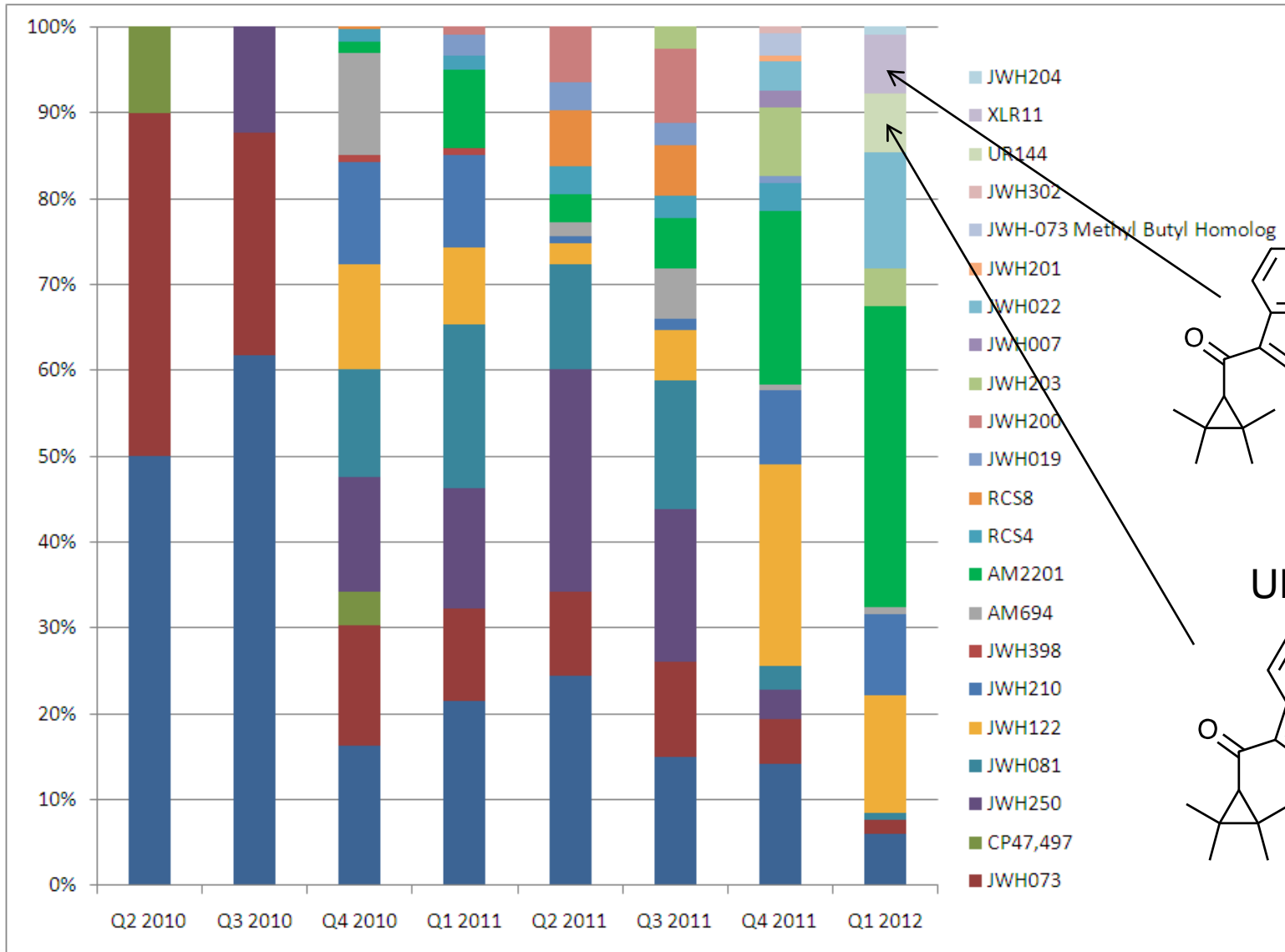
Chemicals - Prevalence



Chemicals - Prevalence



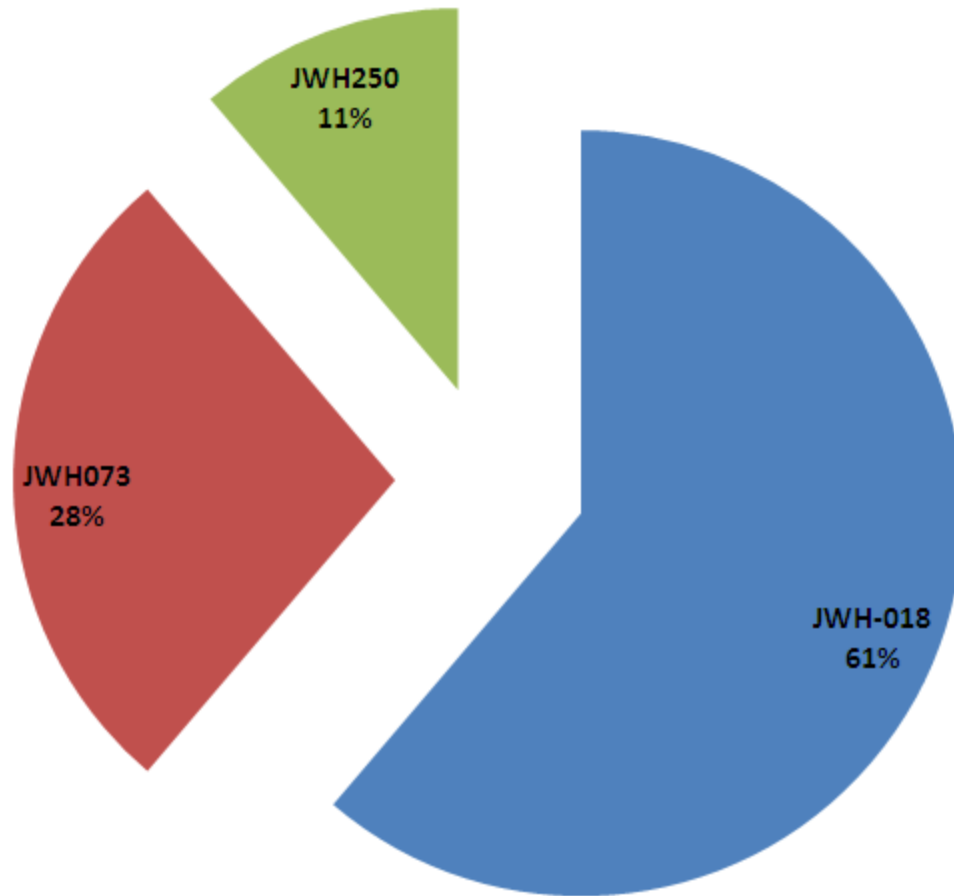
Chemicals - Prevalence



- **JWH-018/073** arrived early and have come and gone.
- **JWH-250** arrived a little later and as also cycled out.
- **JWH-081** was part of a second wave that has already completed its cycle.
- **JWH-122** was part of the same wave but has persisted in popularity and is part of the current scene.
- **AM-2201** was part of the same second wave and has gained in popularity, probably currently the most prevalent.
- **JWH-022** and **JWH-210** are showing signs of increasing popularity.
- Recently emergent drugs are the adamantoyl (**AM-1248**) and tetramethylcyclopropyl (**XLR-11** and **UR-144**) indoles which are ahead of the latest attempts to schedule these drug classes.

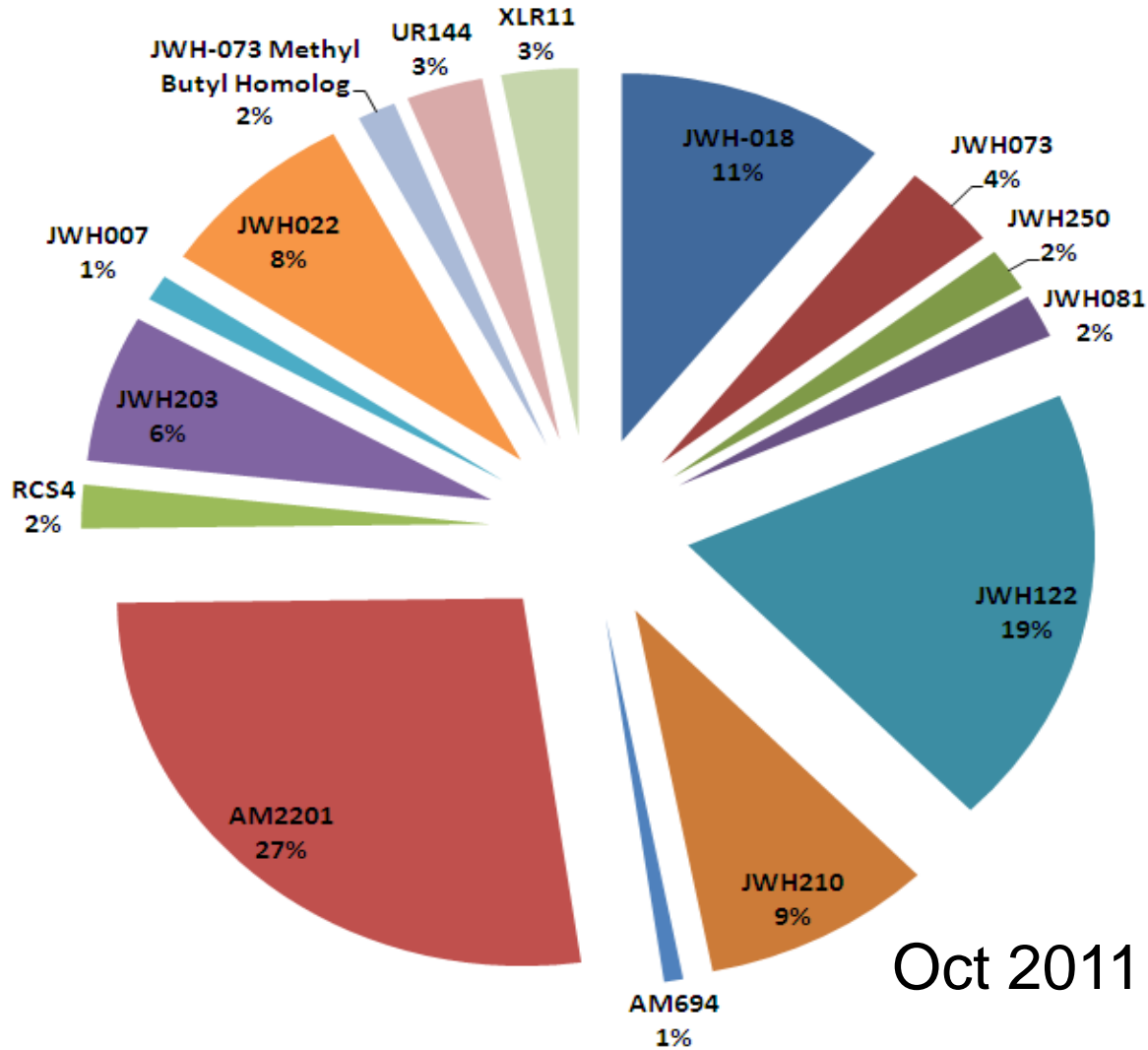


Chemicals – Prevalence 2010



July – December 2010

Chemicals – Prevalence 2012



Oct 2011 – April 2012

JWH-018

JWH-019

JWH-073

CP 47, 497 (C7)

CP 47,497 (C8)

WIN 48,098

HU-210

HU-211

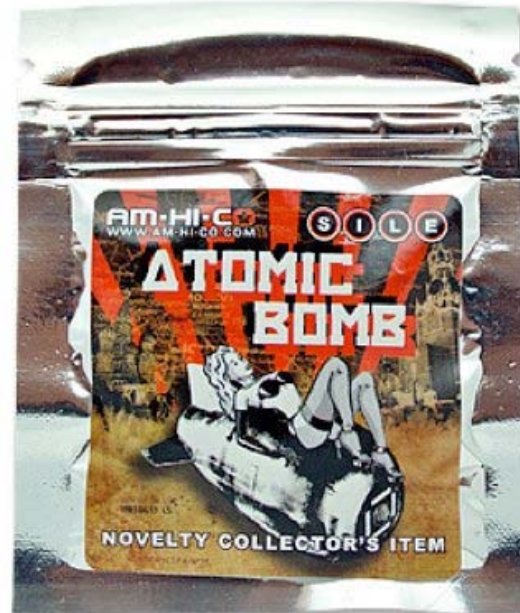
JWH-007	CP 47, 497 (C7)	HU-210
JWH-015	CP 47,497 (C8)	HU-211
JWH-018	CP 55,940	HU-308
JWH-018 methyl hexyl homolog	AM-694	HU-331
JWH-019	AM-1220	JT-7770
JWH-073	AM-1241	
JWH-073 methyl butyl homolog	AM-2201	
JWH-081	AM-2233	
JWH-122	RCS-4	
JWH-133	RCS-8	
JWH-175	WIN 48,098 (Pravadoline)	
JWH-200	WIN 55,212-2	
JWH-201	WIN 55,212-3	
JWH-203	CB-25	
JWH-210	CB-52	
JWH-250		
JWH-251		
JWH-302		
JWH-398		

AM-694	JWH-018 Chloropentyl analog	JWH-251
AM-1220	JWH-018 6-Methoxyindole analog	JWH-302
AM-1241	JWH-018 1-Methylhexyl homolog	JWH-307
AM-1248	JWH-019	JWH-398
AM-2201	JWH-020	RCS-4
AM-2233	JWH-022	RCS-8
CB-13	JWH-072	RCS-8 4-Methoxy
CB-25	JWH-073	UR-144
CB-52	JWH-073 3-Methylbutyl homolog	URB-447
CP47,497 (C7 analog)	JWH-081	URB-597
CP47,497 (C8 analog)	JWH-098	URB- 602
CP55,940	JWH-122	URB-754
HU-210/HU-211	JWH-133	URB-937
HU-308	JWH-147	WIN48,098
HU-331	JWH-175	(Pravadoline)
JP-104	JWH-200	WIN55,212-2
JTE-907	JWH-201	WIN55,212-3
JWH-007	JWH-203	XLR-11
JWH-015	JWH-210	
JWH-018	JWH-250	

DESIGNER STIMULANTS: TRENDS

AKA:

- ☠ Bath Bubbles
- ☠ Bath Salts
- ☠ Pond Cleaner
- ☠ Soft Drink Additive
- ☠ Burial Powder
- ☠ Glass Cleaner
- ☠ Plant Food
- ☠ Plant Vitamin
- ☠ Insecticide

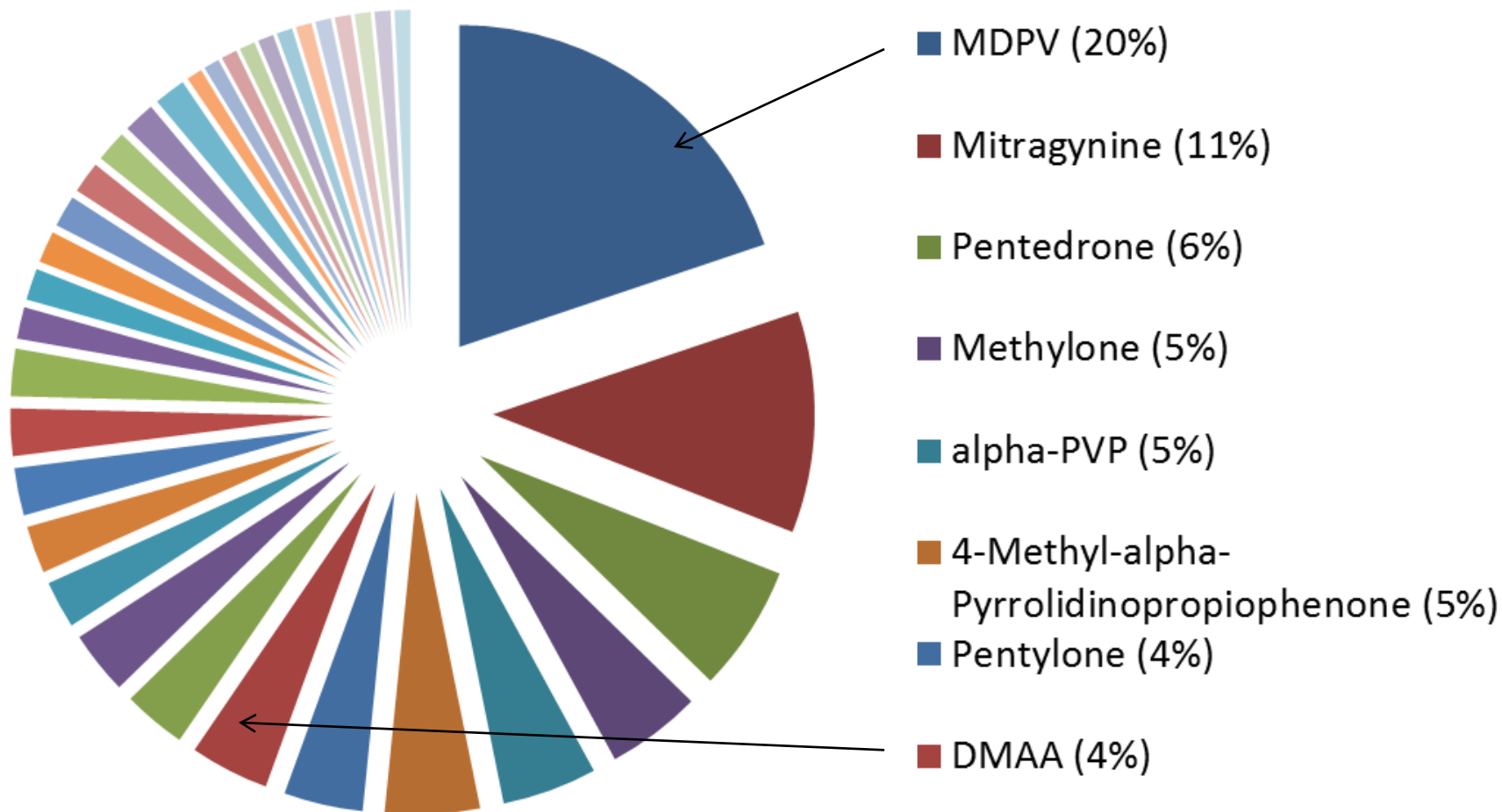


Temporary Scheduling

10/21/2011 “Bath Salts”

- MDPV
- Mephedrone
- Methylone





Others include

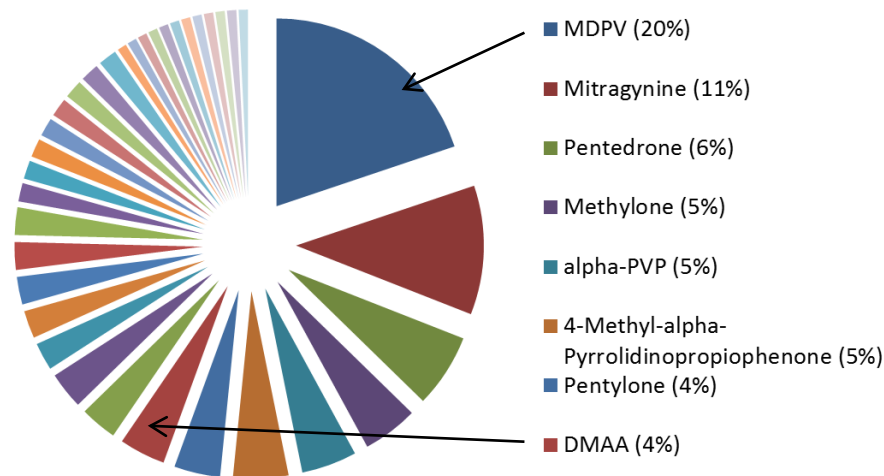
☠ Tryptamines

- ☠ 5-MeO-DALT
- ☠ 5-MeO-DIPT
- ☠ 5-MeO-DMT
- ☠ DMT

☠ β -keto-Amphetamines

- ☠ Pentedrone
- ☠ Buphedrone
- ☠ Mephedrone
- ☠ Ethylone
- ☠ Pentylone
- ☠ Butylone

☠ 2C (Shulgin) series



DMAA
2C-B
2C-B-FLY
2C-C
2C-E
2C-H
2C-I
2C-N
2C-P
2C-T-2
2C-T-4
2C-T-7
3-FMC
Flephedrone
4-MEC
5-MeO-DALT
5-MeO-DIPT
5-MeO-DMT

AMT
BDB
Bromo-DragonFLY
Buphedrone
Butylone
BZP
Cathinone
DBZP
DET
DMA
DMMC
DMT
DOB
DOM
Ethylone
MBDB
MBZP
mCPP
MDA

MDEA
MDMA
Methedrone
MDPV
Mephedrone
Methcathinone
Methylone
Mitragynine
Naphyrone
O-Desmethyltramadol
Pentylone
Phenazepam
PMA
Pyrovalerone
Salvinorin A/B
TFMPP

**...Plus Other Traditional
DoA**

LEGAL STATUS

Is It Federally Scheduled?

Is It State Scheduled?

Is It a State Analog?

State Analog Test (varies):

- Is it substantially chemically similar?
- *Does it have equivalent pharmacological activity?*
- Is it intended for human consumption?

Is It a Federal Analog?

Federal Analog Test:

- Is it substantially chemically similar?
- Does it have equivalent pharmacological activity?
- Is it intended for human consumption?

Pennsylvania: 35 P.S. § 780-102; “Designer drug’ means a substance other than a controlled substance that is intended for human consumption and that either has a chemical structure substantially similar to that of a controlled substance in Schedules I, II or III of this act or that produces an effect substantially similar to that of a controlled substance in Schedules I, II or III.

Examples of chemical classes in which designer drugs are found include, but are not limited to, the following:
Phenethylamines, N-substituted piperidines, morphinans, ecgonines, quinazolinones, substituted indoles and arylcycloalkylamines.

H.R. 1254: Synthetic Drug Control Act of 2011

Amends the Controlled Substances Act to add as schedule I controlled substances: (1) any material, compound, mixture, or preparation which contains cannabimimetic agents (or the salts, isomers, or salts of isomers thereof), including: any substance that is a cannabinoid receptor type 1 (CB1 receptor)

Specifically: CP-47,497, JWH-018, JWH-073, JWH-019, JWH-200, JWH-250, JWH-081, JWH-122, JWH-398, AM-2201, AM-694, RCS-8, RCS-4, JWH-203.

<http://www.gpo.gov/fdsys/pkg/BILLS-112hr1254rfs/pdf/BILLS-112hr1254rfs.pdf>

H.R. 1254: Synthetic Drug Control Act of 2011

Amends the Controlled Substances Act to add as schedule I controlled substances: (1) any material, compound, mixture, or preparation which contains cannabimimetic agents (or the salts, isomers, or salts of isomers thereof), including: any substance that is a cannabinoid receptor type 1 (CB1 receptor)

Specifically: CP-47,497, JWH-018, JWH-073, JWH-019, JWH-200, JWH-250, JWH-081, JWH-122, JWH-398, AM-2201, AM-694, RCS-8, RCS-4, JWH-203.

Mephedrone, MDPV, Methylone, naphyrone, flephedrone, methedrone, Bk-PMMA, Ethcathinone, ethylone, butylone, metamfepramone, alpha-PPP, MOPPP, MDPPP, alpha-PVP, MDAI, 3-fluoromethcathinone, MPBP, 2C-E, 2C-D, 2C-C, 2C-I, 2C-T-2, 2C-T-4, 2C-H, 2C-N, 2C-P

H.R. 1254: Synthetic Drug Control Act of 2011

Includes:

Any substance that is a cannabinoid receptor type 1 (CB1 receptor) agonist as demonstrated by binding studies and functional assays within any of the following structural classes:

2-(3-hydroxycyclohexyl)phenol with substitution ...

3-(1-naphthoyl)indole or 3-(1-naphthylmethane)indole by substitution ...

3-(1-naphthoyl)pyrrole by substitution ...

1-(1-naphthylmethylene)indene ...

3-phenylacetylindole or 3-benzoylindole by substitution ...

Rand Paul, In Ongoing Opposition To Synthetic Drugs Ban, Cited Threat Of 'Radical Islam'

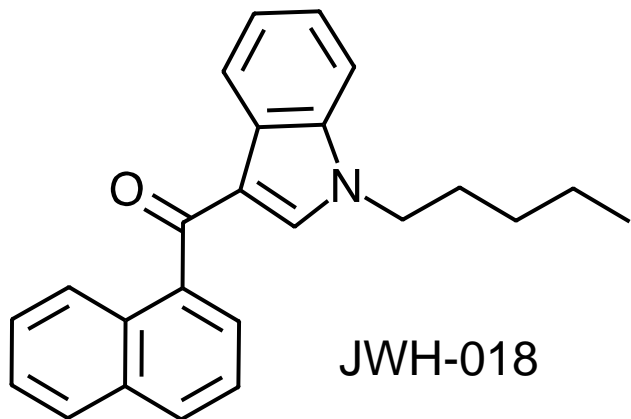
Posted: 02/21/12 01:59 PM ET



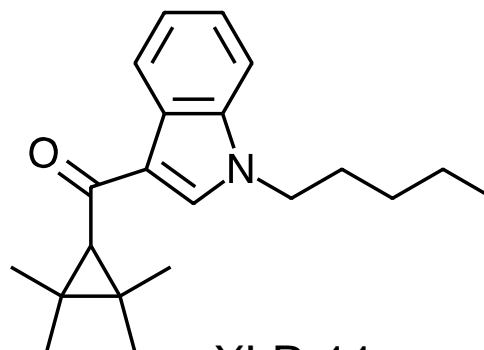
388 likes. [Sign Up](#) to see what your friends like.



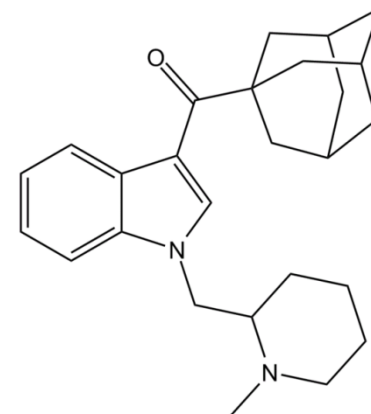
Synthetic Cannabinoids Analogs



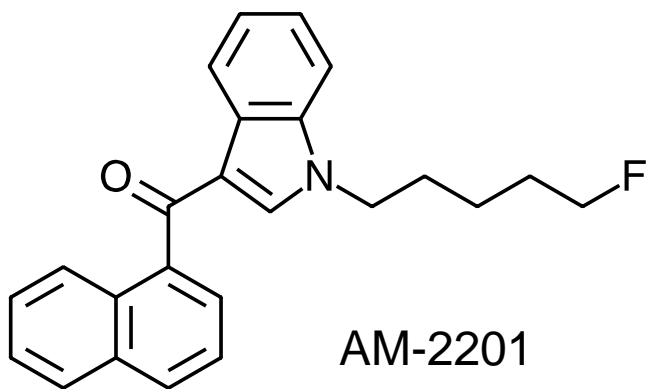
JWH-018



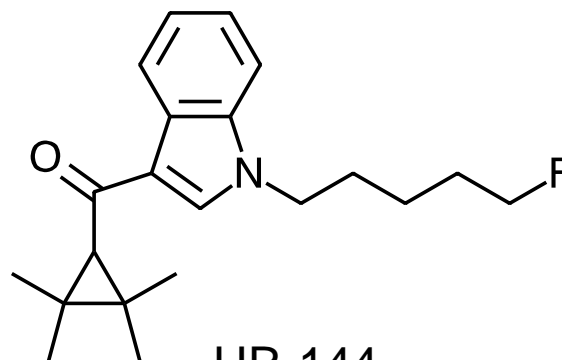
XLR-11



AM-1248



AM-2201



UR-144

Advisory Committee for the Evaluation of Controlled Substance Analogs

- Primary Objective: create a comprehensive, scientifically sound method for evaluating non-controlled drugs for analog status
- Seek community consensus and peer review of our proposed method
- Advise and train laboratory, law enforcement, and legal personnel in our scientific method
- End Goal: Create consensus thereby removing the “expert” v. “expert” scenario from the courtroom when the opinion held by each expert is solely his own

- Currently consists of 20 chemists from federal, state, and private labs, academia and law
- Met at MAAFS (May 14th & 15th) to organize and strategize
- Aggressive timeline to have a working document prepared by AAFS in Feb 2013 (if not sooner)
- Workshop scheduled at ACS Meeting, Phila. August 23rd
- For More Information Contact:

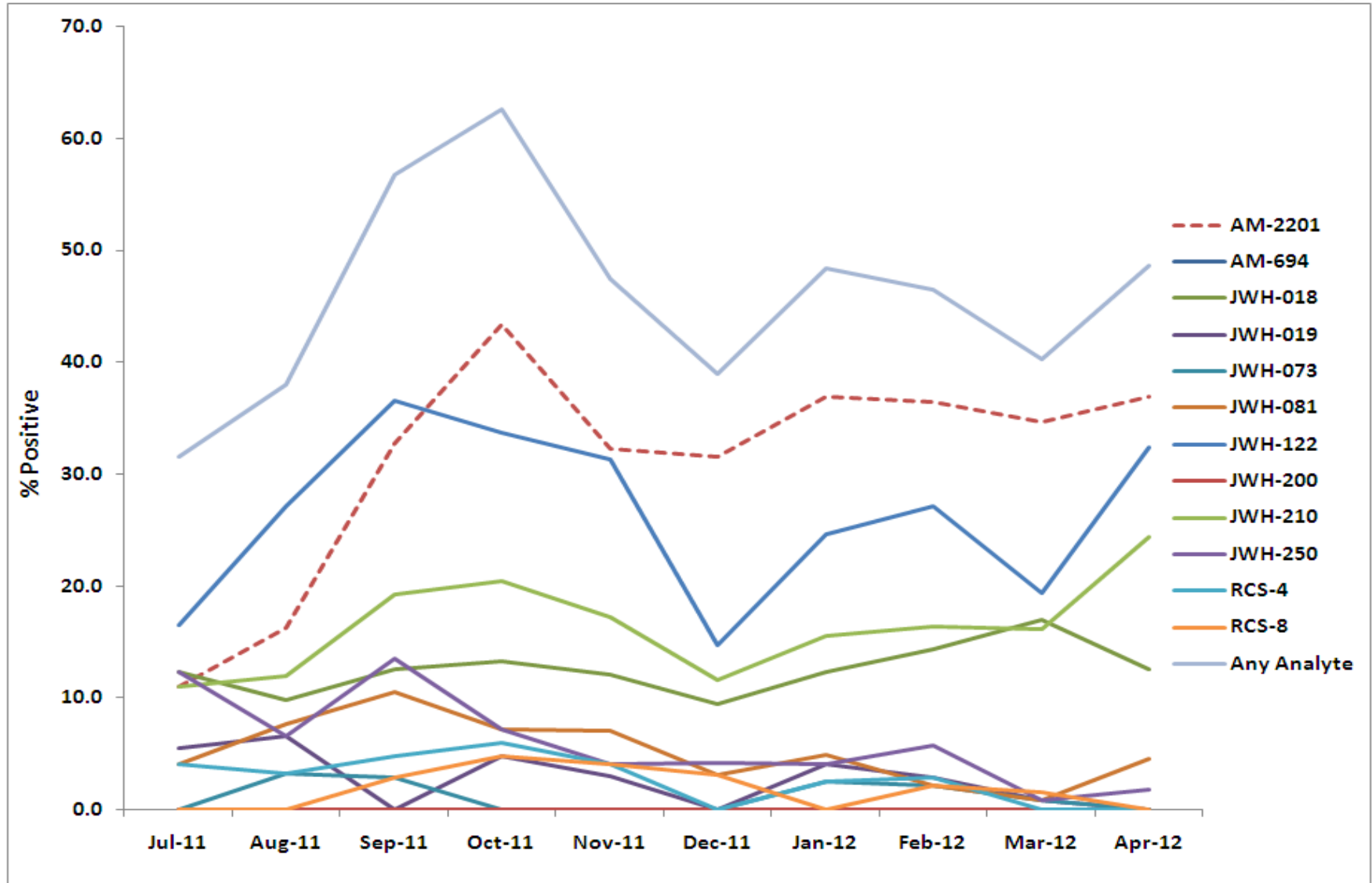
*Lindsay Reinhold, MFS, F-ABC
NMS Labs
215-366-1331
lindsay.reinhold@nmsslabs.com*

TRENDS IN BIOLOGICAL FLUIDS ANALYSIS

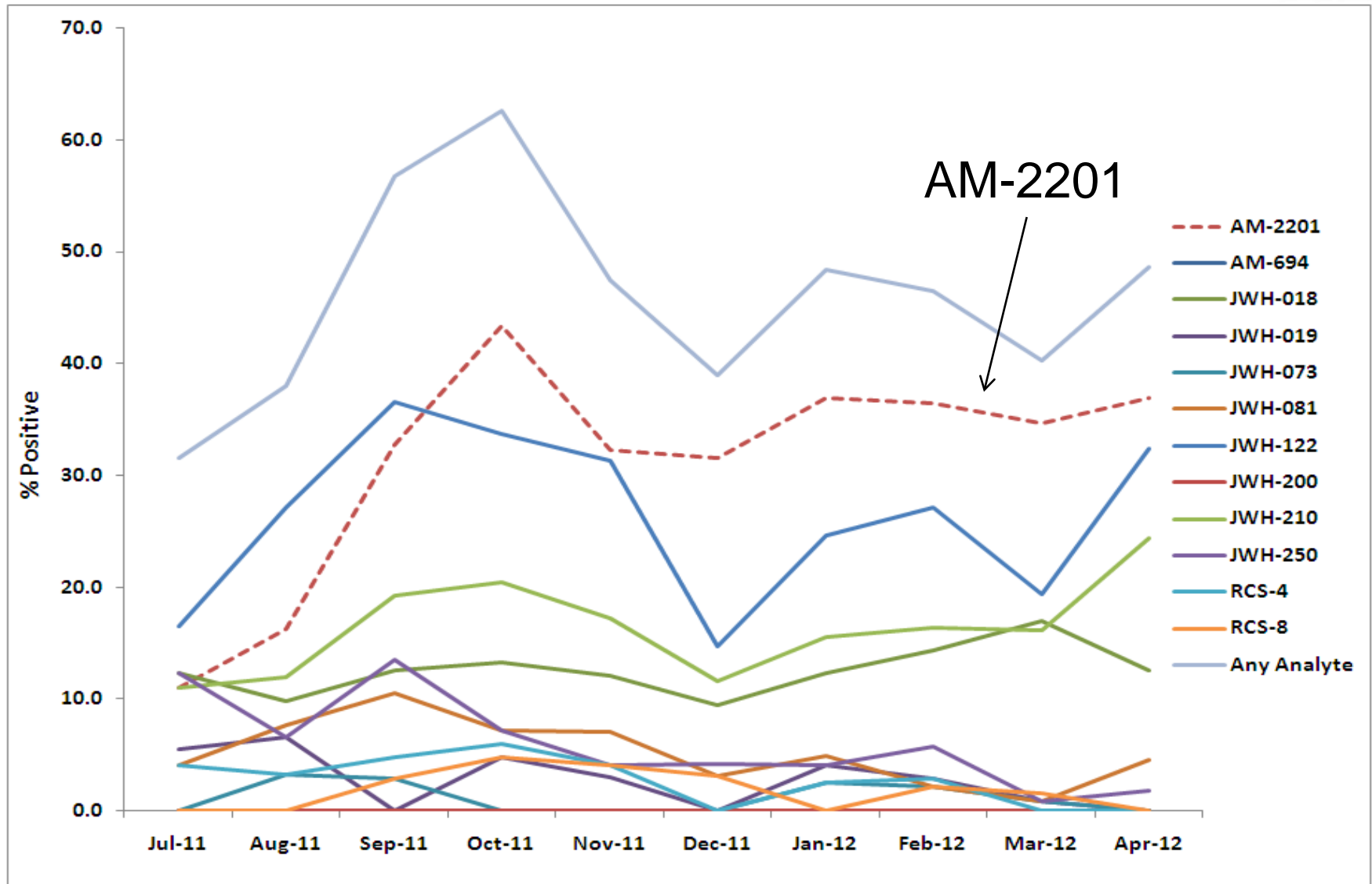
- Kacinko SL, Xu A, Homan JW, McMullin MM, Warrington DM, Logan BK.
- Development and Validation of a Liquid Chromatography-Tandem Mass Spectrometry Method for the Identification and Quantification of JWH-018, JWH-073, JWH-019, and JWH-250 in Human Whole Blood.
- J Anal Toxicol. 2011;35(7):386-93.
- Current Scope:
- AM-2201, AM-694, JWH-018, JWH-019, JWH-073, JWH-081, JWH-122, JWH-200, JWH-210, JWH-250, RCS-4, RCS-8



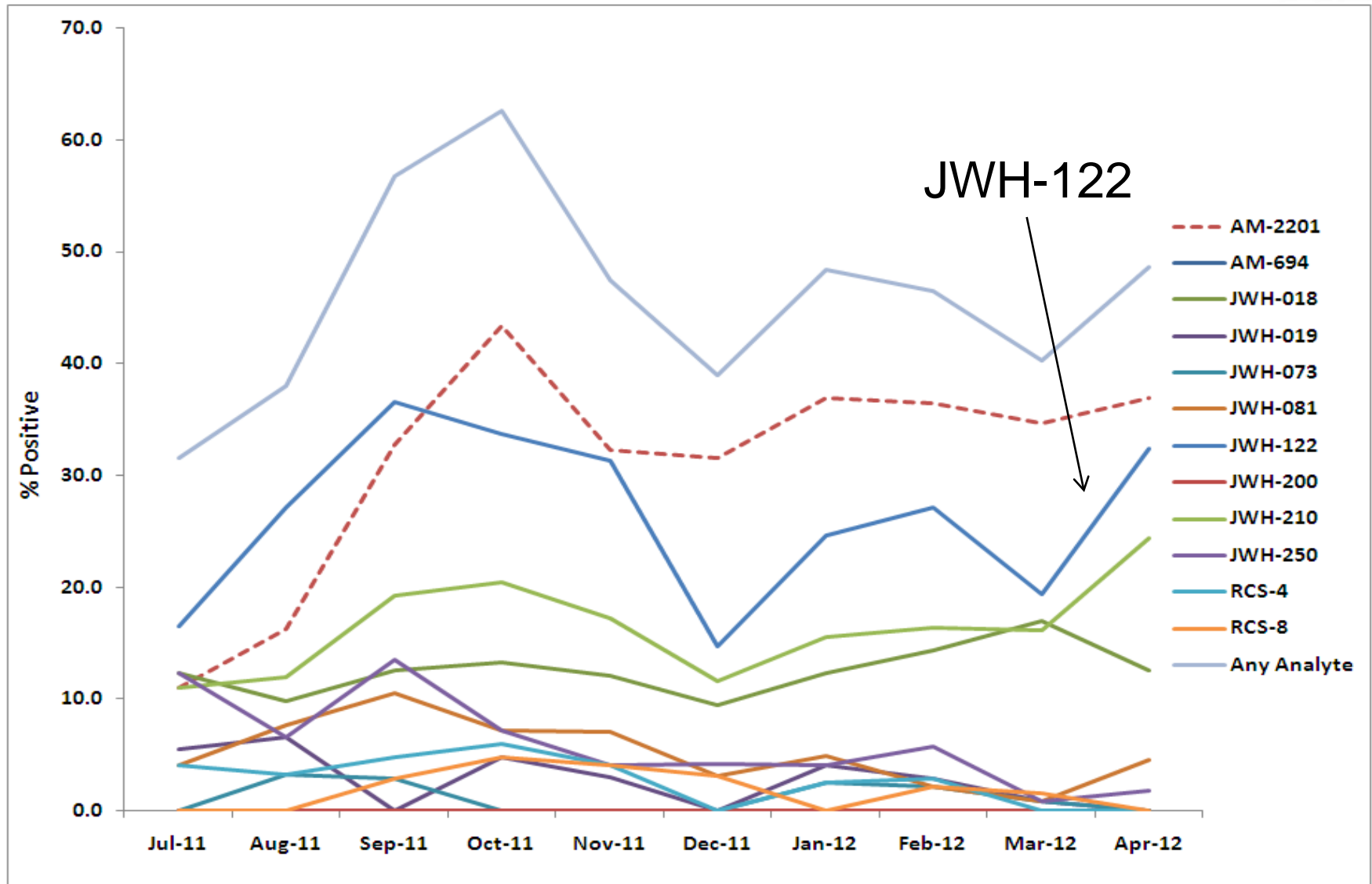
Blood K2/Spice - Positivity



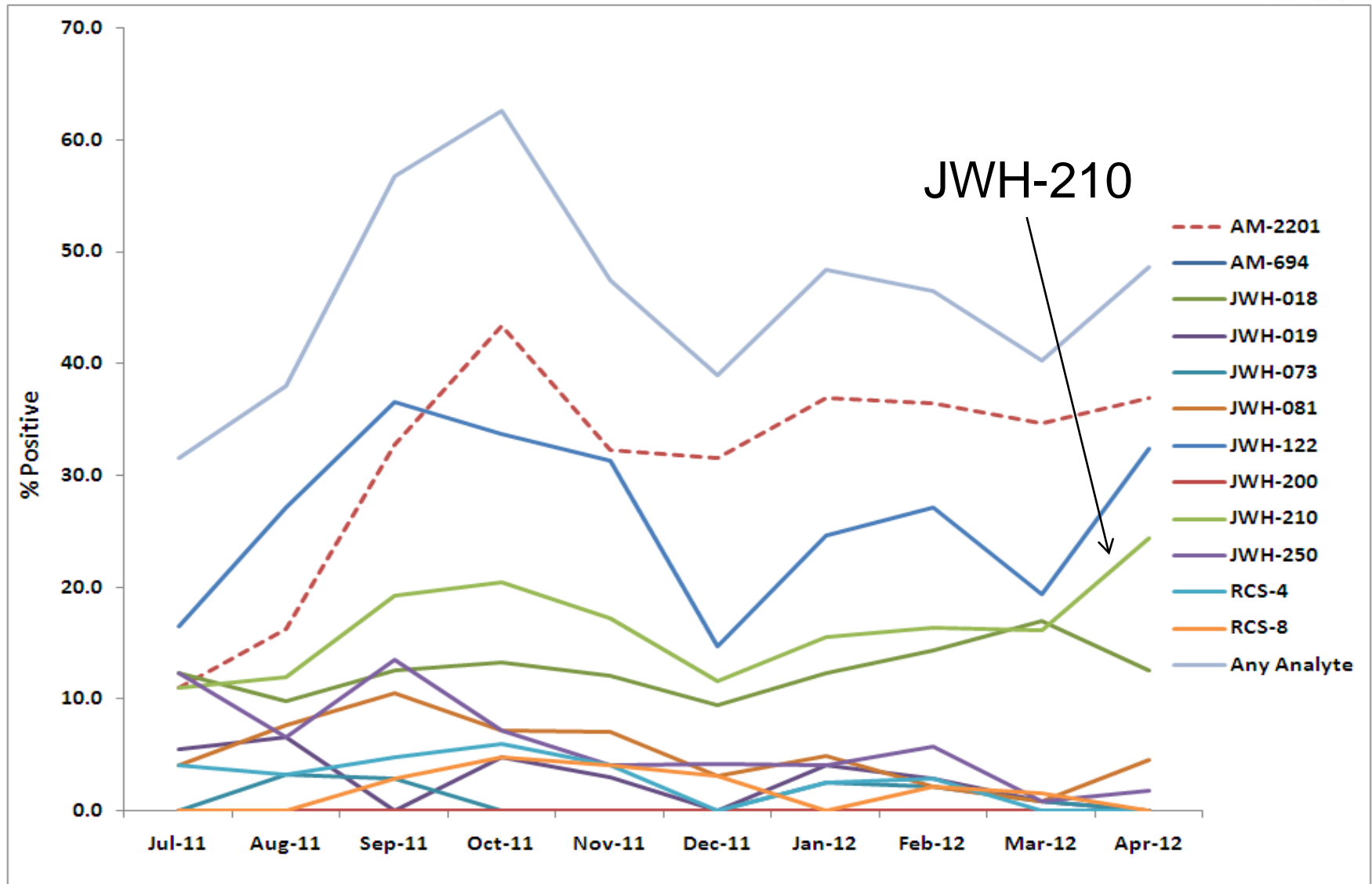
Blood K2/Spice - Positivity



Blood K2/Spice - Positivity



Blood K2/Spice - Positivity

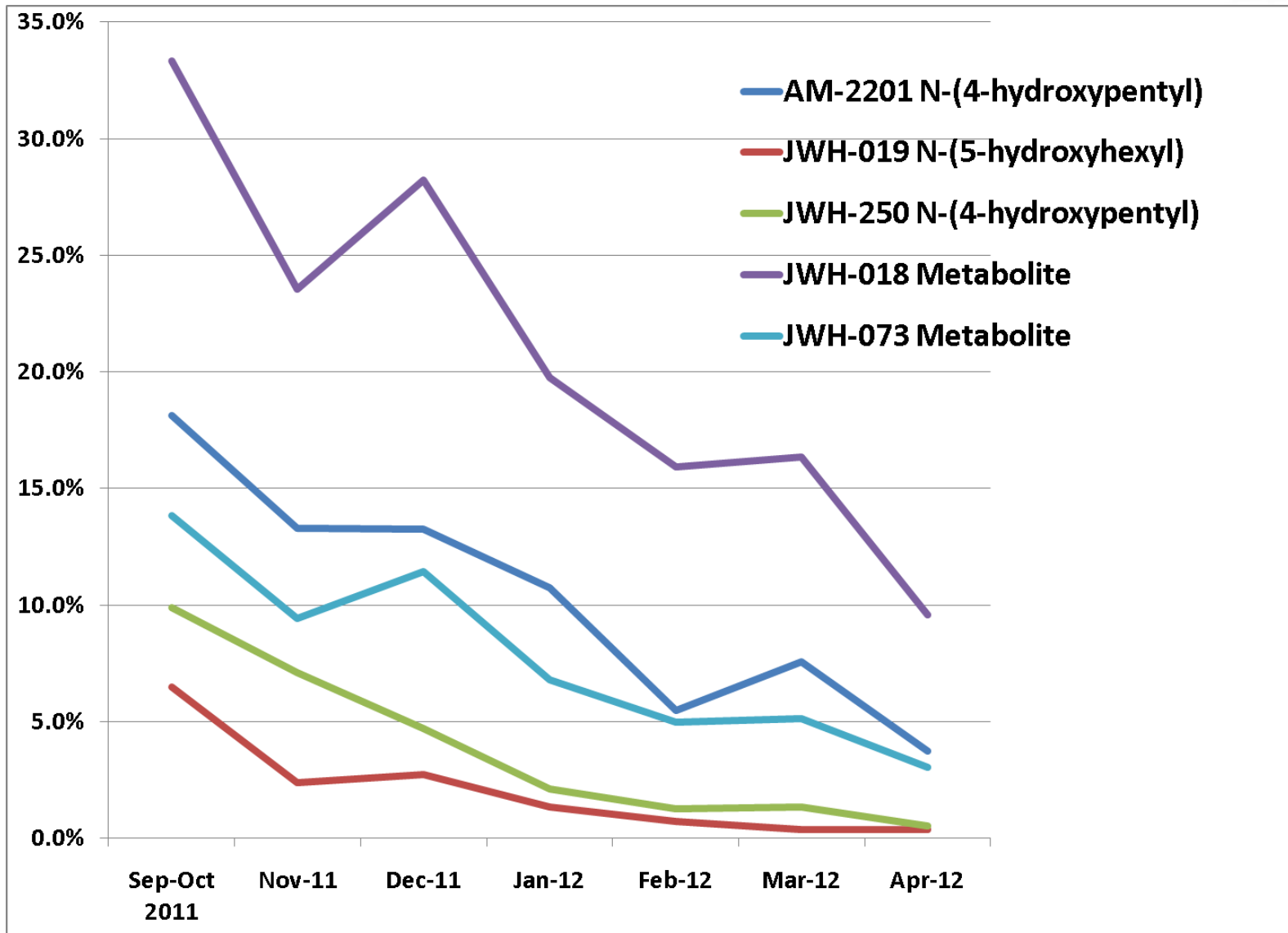


Synthetic Cannabinoids in Blood 2012



2010	2011	2012
JWH-018	AM-2201	AM-2201
JWH-073	AM-694	AM-694
JWH-019	JWH-018	JWH-018
JWH-250	JWH-019	JWH-019
	JWH-073	JWH-073
	JWH-081	JWH-081
	JWH-122	JWH-122
	JWH-175	JWH-175
	JWH-200	JWH-200
	JWH-210	JWH-210
	JWH-250	JWH-250
	RCS-4	RCS-4
	RCS-8	RCS-8
		UR-144
		XLR-11
		JWH-022
		JWH-203
		...

Urine K2/Spice - Positivity



NMS Labs Adopts Synthetic Cannabinoids ELISA

Two complementary ELISA's
developed and validated.

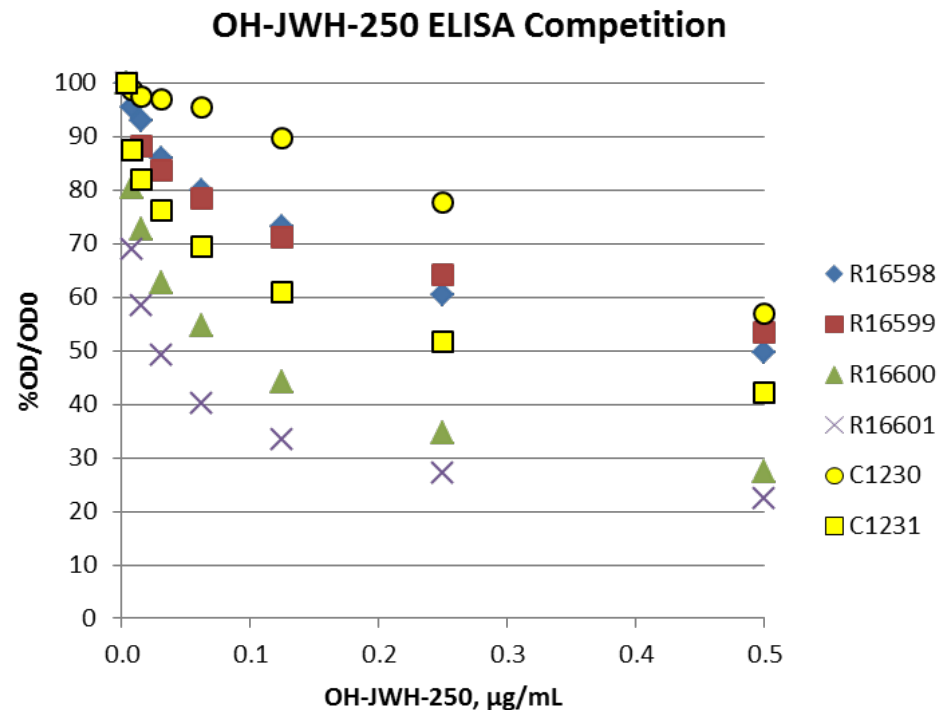
For Forensic Use Only.

All ELISA screens confirmed by
LCMSMS

Relative to current confirmatory
scope:

>96% Sensitivity

100% Selectivity



Over fifty known cross-reacting species

JWH 250

JWH 250 N-(4-Hydroxypentyl) met

JWH 250 N-(5-hydroxypentyl) met

JWH-018 6-hydroxyindole met

JWH-018 7-hydroxyindole met

JWH-073 N-butanoic acid met

RCS-8

AM 2201

AM2201 N-(4-hydroxypentyl) met

AM-2233

AM-694

JWH 022

JWH 081

JWH 081 N-(4-hydroxypentyl) met

JWH 081 N-(5-hydroxypentyl) met

JWH 098

JWH 122

JWH 122 N-(5-hydroxypentyl) met

JWH 200

JWH 210

JWH 210 N-(4-hydroxypentyl) met

JWH 210 N-(5-hydroxypentyl) met

JWH 250 N-(4-Hydroxypentyl) met

JWH 250 N-(5-hydroxypentyl) met

JWH 018 N-(5-chloropentyl) analog

JWH-018 4-hydroxyindole met

JWH-018 4-hydroxypentyl met

JWH-018 5-hydroxyindole met

JWH-018 6-hydroxyindole met

JWH-018 7-hydroxyindole m

JWH-018 N-(5-hydroxypentyl) met

JWH-018 N-pentanoic acid met

JWH 019

JWH-019 N-(5-hydroxyhexyl) met

JWH 073

JWH-073 4-hydroxyindole met

...OTHERS

Current	Effective June 18th
9562U Screen – Expanded, Urine (Forensic)	9562U Screen – Expanded, Urine (Forensic)
LCMS/MS, confirmation by repeat	ELISA screen, confirmation by LCMS/MS
AM2201, JWH-018, JWH-019, JWH-073, JWH 250	AM2201, JWH-018, JWH-019, JWH-073, JWH 250, JWH 122, JWH 081, JWH 210, (RCS4)
7 Analytes	15 Analytes
\$95	\$95

OUTLOOK FOR 2012

Coroner: Lamar Jack ingested chemical found in fake marijuana before he died

By Nikie Mayo

Posted October 15, 2011 at 7:59 p.m.

Discuss

Print

A A A

f t 47 e

Anderson University basketball player Lamar Jack died after ingesting a chemical that is a key ingredient in synthetic marijuana, the county coroner said Saturday.

Anderson County Coroner Greg Shore said specialists from an accredited laboratory in Pennsylvania ran toxicology tests and analyzed blood samples that were taken when Jack was admitted to AnMed Health Medical Center in Anderson. The lab testing and analysis revealed that Jack had the chemical JWH-018 in his body when he collapsed during a preseason warm-up with his team on Sept. 30. Just days later, on Oct. 4, Jack died. He was 19.



On the basis of an autopsy and the toxicology test results, Shore is ruling Jack's death accidental — caused by "acute drug toxicity with excited delirium that led to multiple organ failure."

[Sign In](#) | [Mobile/iPhone](#) | [Email Alerts](#) | [Contact Us](#) | [Report It](#)

FOX10tv.com

MOBILE | PENSACOLA | FT. WALTON BEACH

[News](#) | [Weather](#) | [Video](#) | [Sports](#) | [Traffic](#) | [Only on FOX10](#) | [Entertainment](#) | [Participate](#) | [Health](#)

[Home](#) : [News](#) : [Local News](#) : [Mobile County](#) :

Photo



Deputy: Suspect smoked "Gorilla Spice"

Updated: Friday, 20 Apr 2012, 9:42 PM CDT

Published : Sunday, 22 Apr 2012, 10:00 AM CDT

SEMMES, Ala. (WALA) - The Mobile County Sheriff's Office says they were called to the 2700 block of Sun Valley Road in Semmes for a possible home invasion assault.

Deputies say a 74-year-old woman was in her bedroom when she heard someone say, "I'm gonna show you, old lady." She said the suspect then hit her in the head. She told deputies she did not know what she had been hit with or who hit her.

The victim was taken to a hospital, where she was treated and released.

Cannabinoids

- More non-benzyl/naphthoyl indoles
 - Adamantoyl
 - Tetramethylcyclopropopyl
 - Halogenated derivatives
- FAAH Inhibitors
- More cocktails

Stimulants/Hallucinogens

- Benzofurans
- Aminoindanes
- DMAA





Contents lists available at ScienceDirect

Drug and Alcohol Dependence

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



Short communication

A survey study to characterize use of Spice products (synthetic cannabinoids)

Ryan Vandrey^{a,*}, Kelly E. Dunn^a, Jeannie A. Fry^a, Elizabeth R. Girling^{a,b}

^aJohns Hopkins University School of Medicine, Baltimore, MD 21224, United States

^bTowson University, Towson, MD 21252, United States

The most frequently reported reason for using Spice products was for the pleasurable effects associated with intoxication. One in five participants reported that Spice products were their current “drug of choice,” and many reported continued use of Spice products following local legislation banning these products or their constituents. These findings are important because they suggest an established market for synthetic cannabinoids exists. Thus, legislation prohibiting these products and/or availability of commercial drug testing resources to identify use of Spice products may not eliminate use.

FORENSIC SERVICES



WELCOME to NMS LABS

Leading in Innovation, Quality & Service

NMS Labs is an ISO accredited independent provider of clinical and forensic toxicology, endocrinology and criminalistics laboratory services for the health care and forensic sciences communities. Since 1970, we have built a reputation as a provider of innovative, first-to-

CLINICAL SERVICES



ANNOUNCEMENTS



NMS Labs is proud to announce the following **live webinar on Designer Drug Trends:**

Trends Report on Changes in the Designer Drug Market: Spring 2012, hosted by: Dr. Barry K. Logan,

RESEARCH SERVICES



NMS LABS ONLINE TEST CATALOG

Select by first letter or code number

ABCDEFGHIJKLM
NOPQRSTUVWXYZ
0123456789

QUESTIONS