



# **DESOXYPIPRADROL (2-DPMP)**

## **IN DUID CASES AND FATALITIES IN FINLAND**

**PIRKKO KRIIKKU**

Department of Forensic Medicine, Hjelt Institute, University  
of Helsinki, Finland

# JUSSI

- 33 years old.
- Finnish male.
- Lives in Helsinki.
- Experienced stimulant user, mostly takes amphetamine. Benzos for come-down effects.
- Active in international drug discussion forums.



UNIVERSITY OF HELSINKI

# LEARNS ABOUT "DAISY"



**fastandbulbous**

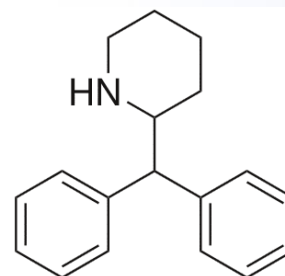
14-09-2009, 12:52

I found desoxypipradrol to be very nice, subtle, incredibly long lasting and almost devoid of physical symptoms. It's a good background stimulant at the 2-5mg dose range (keeps you up and at 'em for hours), it's just that in the full on dose range (8mg+) you can say goodbye to sleep for a good 36 hours

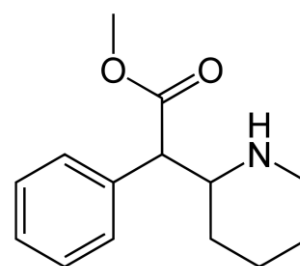
# DESOXYPIPRADROL

- 2-DPMP, "*Daisy*", 2-benzhydryl-1-methyl-piperidine
- $C_{19}H_{23}N$
- $M=265.4$  g/mol
- Soluble in organic solvents
- Long-acting stimulant
- Originally developed for the treatment of ADHD in Germany in 1950s

2-DPMP



Methylphenidate



UNIVERSITY OF HELSINKI

# ORDERING

Call Us: +44-3308080343

Search entire store here...



Buy Research  
ChemicalZ .com

Account

Wishlist

Log In

Sign Up

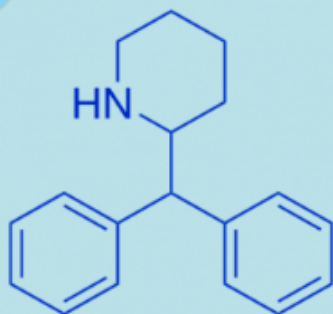
Compare (0)

Cart \$0.00

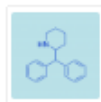
HOME OPIOIDS PSYCHEDELICS PIPERAZINES STIMULANTS CANNABINOIDS HALLUCINOGENIC

Home → 2-diphenylmethylpiperidine (2-DPMP)

New



Zoom



## 2-diphenylmethylpiperidine (2-DPMP)

Be the first to review this product

**2-DPMP** (Desoxyipradrol or 2-diphenylmethylpiperidine) is a piperidine and a noradrenaline-dopamine reuptake inhibitor (NDRI). 2-DPMP is structurally related to and shares pharmacological properties with methylphenidate (methyl phenyl(piperidin-2-yl) acetate) and pipradrol (a,a-Diphenyl-2-piperidinemethanol). **2-DPMP** exhibits stimulant effects similar to those of MDMA (3,4-methylenedioxy-N-methylamphetamine or 'ecstasy') and amphetamine ('speed' or alphamethyl-phenethylamine or a-methylphenethylamine). Animal studies have shown that 2-DPMP stimulated the release and inhibited the reuptake of dopamine in a similar fashion as cocaine (benzoylmethylecgonine). Its molar mass is 251.366 g/mol and is normally sold in the form of white powder and because of its powerful stimulant property it is widely used in the grey market product called 'Ivory Wave' because of which it has now been declared a class B drug.

Availability: In stock

- > Buy 21 for \$20.00 each and **save 10%**
- > Buy 28 for \$19.00 each and **save 14%**

\$22.00

Qty:

Add to Cart

### How does this work?

Select the chemicals you wish to purchase, add them to your cart, and check out.

There is no need to pay anything during checkout. You will not be asked for your credit card information at that time.

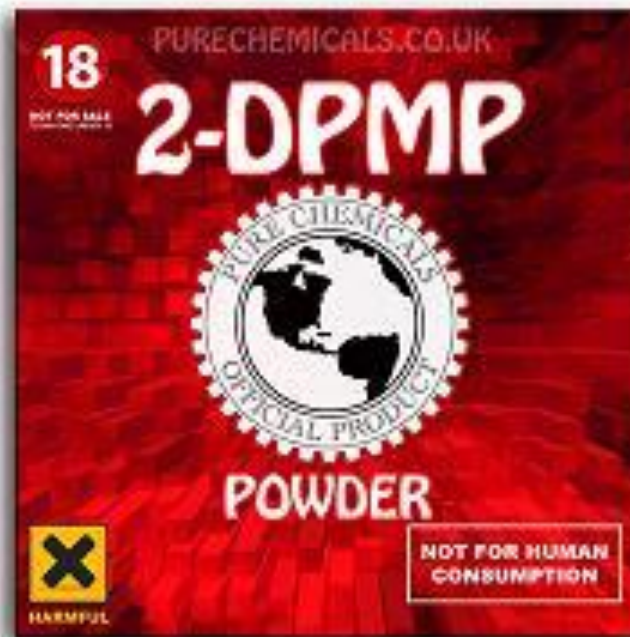
Within 24 hours, one of our representatives will contact you with payment details.

After you complete your payment we will ship your products immediately.



# DESOXYPIPRADROL

- In Finland mainly ordered via the Internet
- In "bath salts" e.g. *Ivory Wave* and *Whack*
- Scheduled as a narcotic in Finland since March 2012



# DRIVE OVERNIGHT



# ACCIDENT

- Car crash after some hours of driving, the police arrive in 10 minutes.
- Road-side breath test suggests no alcohol.
- Drugwipe suggests no drugs.
- The police still suspect something.
- Jussi is taken to the nearest health centre.
- A blood test is taken and sent to be analysed for drugs of abuse.



UNIVERSITY OF HELSINKI



# ANALYSIS



- Sample amount: 200  $\mu$ l serum
- Internal standard: Amphetamine-d5
- Solid phase extraction: OASIS HLB 30 mg
- Elution MeOH/acetic acid 5%, evaporation to dryness, reconstitution in mobile phase,
- ESI-LC-MS/MS, positive ionization, sMRM
- Calibration (8 point): 10-500 ng/ml
- LOD / LOQ: 3 ng/ml / 9 ng/ml
- Recovery: 83%,
- Matrix effect: -11.8%



# RESULTS - DUID CASES

- Between October 2010 and December 2011  
91 positive cases from apprehended drivers  
→ 1.9% of all confirmed drug cases
- Median desoxypipradrol concentration 0.065 mg/L
- Concentration range 0.006-0.480 mg/L
- Mostly males (84.6%)
- Mean age 35 years



# RESULTS: JUSSI

Serum sample analysed

- **2-DPMP**      **0.390 mg/L**
- **MDPV**      **0.018 mg/L**
- **THC-COOH** **0.016 mg/L**



Standardized clinical test for drunkenness performed by a physician:

- Impairment is rated as "mild"
- Aberrations observed in e.g. speech and mood



UNIVERSITY OF HELSINKI

**Jussi, 33 years**

2-DPMP 0.390 mg/L

MDPV 0.018 mg/L

THC-COOH 0.016 mg/L

# Kliininen tutkimus

## Kokeet, havainnot

	Nor- maali	Lievästi poikkeava	Selvästi poikkeava (löydös alleviivataan)	
Tajunta	<input checked="" type="checkbox"/>		<input type="checkbox"/>	Turtunut, nukahteleva, lähes tajuton
Ajanmäärittämyskyky, muisti	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Kävely suoraan eteenpäin	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Täyskäännös kävellessä	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Romberg-koe silmät kiinni	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sormi-sormikoe	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ryhdistäytyminen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Käytös	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Estoton, hyökkäävä, vihainen, puhelias, röyhkeä, torjuva, velto, poissaoleva
Puhe	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Epäselvä, kangerteleva, puuroutunut, sammaltava
Ajatuksenkulku	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Epälooginen, hyppelhtivä, sekava
Mieliala	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Euforinen, ärtynyt, ahdistunut, ailahteleva, levoton, masentunut, tylsistynyt
Pupillien koko	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Voimakkaasti laajentuneet, pistemäiset
Pupillien reaktio valolle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hidastunut, reagoimaton
Silmävärve	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Karkealyöntinen <input type="checkbox"/> katseen seuraamisen jälkeen <input type="checkbox"/> pyörityksen jälkeen
Muu poikkeava löydös	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hikoilu, kouristelu, vilunväristys, suu kuiva, nenä vuotaa, vapina, silmät verestävät tai vetistävät
Muut havainnot	"Spastisia-tyyppisiä" aistojen liikkeitä → tutkittuun Huomaa: HÄLLE OLLUT VAIHTELUA ENNEN SAATAKSI TYPPI- KILKEITÄ HUUTAMISELTA LÄHTÄÄ YHTYÄSSESSÄ			

Speech ("slurred")

Mood ("distressed, restless")

## Toimintahäiriön asteen arviointi

Toimintahäiriötä	<input type="checkbox"/> Ei todettu	<input checked="" type="checkbox"/> Todettiin	<input type="checkbox"/> Tutkimusta ei suoritettu, koska
Toimintahäiriön aste	<input type="checkbox"/> Normaalitilan vaihtelun rajoissa	<input checked="" type="checkbox"/> Normaalista poikkeava ja asteeltaan	<input checked="" type="checkbox"/> Lievä <input type="checkbox"/> Vähintään keskivahva
Toimintahäiriöt aiheutuneet	<input checked="" type="checkbox"/> Huumeista	<input checked="" type="checkbox"/> Lääkkeistä	<input type="checkbox"/> Alkoholista <input type="checkbox"/> Sairaudesta <input type="checkbox"/> Vammasta <input type="checkbox"/> En osaa arvioida

"Spastic movements of the arms and legs. The suspect states that he has had similar symptoms before, after taking this drug."



UNIVERSITY OF HELSINKI

# LEGAL CONSEQUENCES

"Jussi" is a first offender. The offence is rated as aggravated: "Driving while seriously intoxicated".

- 6-12 kk conditional sentence
- 60 day fines
- 1 years driving ban



# 2-DPMP IN FINLAND

- One death case in Finland (2011)
- In 2010 several young people were hospitalized after consuming 2-DPMP
- Psychosis, severe damage at the inner organs such as kidney failure
- Users report serious sleeping problems
- Clinical examination reports do not give much information (multi-drug use)



UNIVERSITY OF HELSINKI



# CONCOMITANT USE OF OTHER DRUGS (DUID)

- Amphetamine (or meth) 82.4%
- Benzodiazepines 81.3%
- Both amphetamine and benzos 67.0%
- Cannabis 35.2%
- Opiates & opioids 16.5%
- Together with MDPV 2.2%



Never as a  
single finding



UNIVERSITY OF HELSINKI

# WAS JUSSI'S CASE TYPICAL?

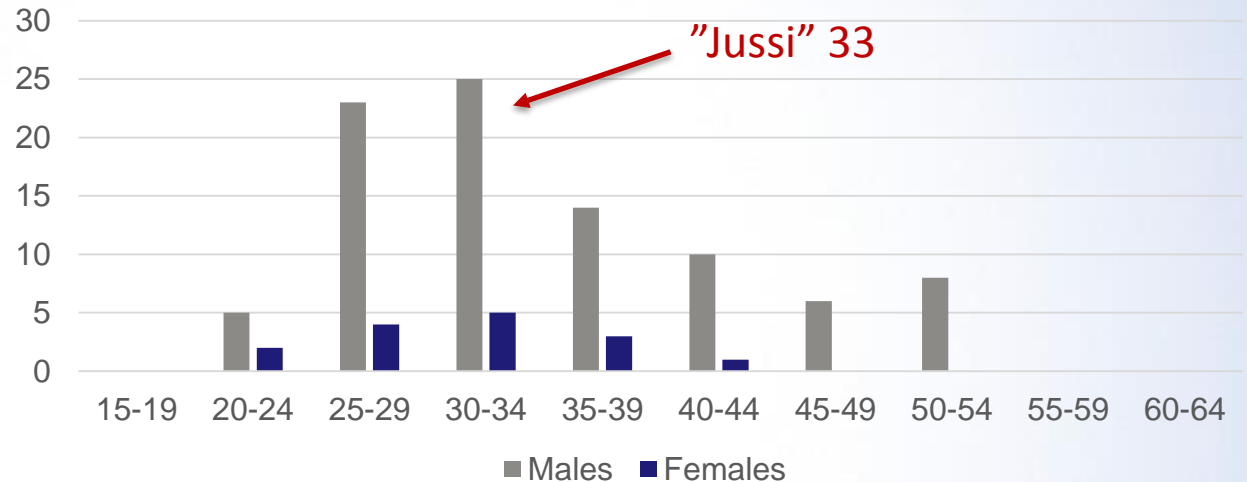
## TYPICAL:

- Age
- Gender
- Place of residence
- Multi-drug user

## NOT SO TYPICAL:

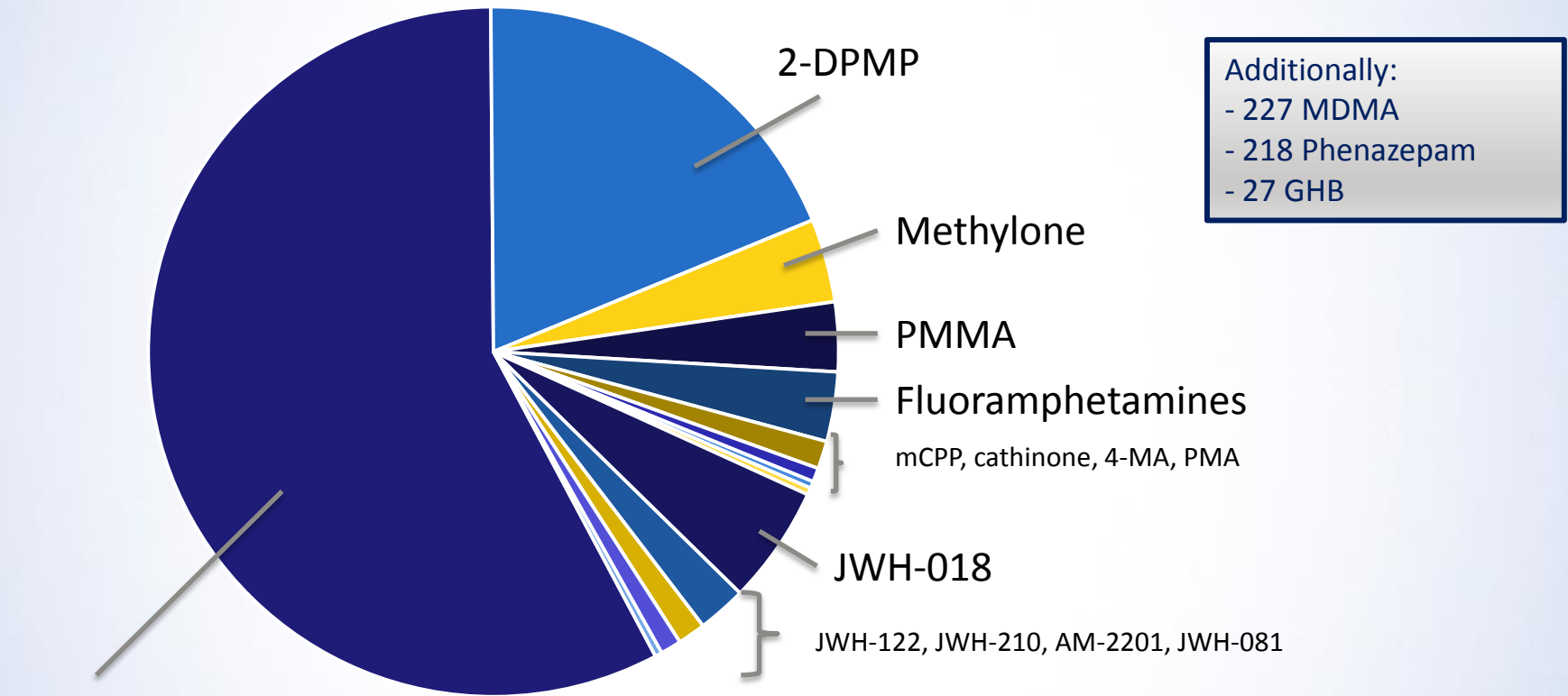
- First time offender (recidivism in DUID cases!)
- No amphetamine or benzos present
- The designer drug was clearly the most relevant finding

DUID cases positive for 2-DPMP in Finland in 2010-2011



UNIVERSITY OF HELSINKI

# DESIGNER DRUGS IN DUID CASES 2011-2012



MDPV

2-DPMP

Methylone

PMMA

Fluoramphetamines

mCPP, cathinone, 4-MA, PMA

JWH-018

JWH-122, JWH-210, AM-2201, JWH-081

Additionally:  
- 227 MDMA  
- 218 Phenazepam  
- 27 GHB



UNIVERSITY OF HELSINKI

*Total number of designer drug findings: 307*

## Desoxypipradrol is more potent than cocaine on evoked dopamine efflux in the nucleus accumbens

Colin Davidson<sup>1</sup> ;

*Clinical Toxicology* (2012), **Early Online**: 1–6  
Copyright © 2012 Informa Healthcare USA, Inc.  
ISSN: 1556-3650 print / 1556-9519 online  
DOI: 10.3109/15563650.2012.716158

REVIEW ARTICLE

Use and acute toxicity associated with the novel psychoactive substances diphenylprolinol (D2PM) and desoxypipradrol (2-DPMP)

DAVID M. WOOD, and PAUL

*Clinical Toxicology, Guy's and  
and King's College London, Lo*



### Progress in Neuro-Psychopharmacology and Biological Psychiatry

Volume 39, Issue 2, 3 December 2012, Pages 253–258

New Drugs of Abuse







Psychopharm

*Journal of Psychopharmacology*  
0(0) 1–6

**informa**  
healthcare

2-DPMP (desoxypipradrol, 2-benzhydrylpiperidine, 2-phenylmethylpiperidine) and D2PM (diphenyl-2-pyrrolidin-2-yl-methanol, diphenylprolinol): A preliminary review

John M. Corkery<sup>a, c</sup>,   , Simon Elliott<sup>b</sup>, , Fabrizio Schifano<sup>a, c</sup>, , Ornella Corazza<sup>c</sup>, , A. Hamid Ghodse<sup>a</sup>, 

# FOR MORE INFORMATION:

Forensic Science International 226 (2013) 146–151



Contents lists available at [SciVerse ScienceDirect](#)

Forensic Science International

journal homepage: [www.elsevier.com/locate/forensi](http://www.elsevier.com/locate/forensi)



Prevalence and blood concentrations of desoxypipradrol (2-DPMP) in drivers suspected of driving under the influence of drugs and in post-mortem cases

Pirkko Kriikku<sup>a,e,\*</sup>, Lars Wilhelm<sup>b</sup>, Janne Rintatalo<sup>c</sup>, Jukka Hurme<sup>a</sup>, Jan Kramer<sup>b,d</sup>, Ilkka Ojanperä<sup>e</sup>



UNIVERSITY OF HELSINKI



Thank you:  
Janne Rintatalo, Lars Wilhelm, Stefan  
Jenckel, Olaf Schwarz, Tiina-Mari  
Paunu, Sanna Taskinen, Jukka Hurme  
and Ilkka Ojanperä



UNIVERSITY OF HELSINKI