

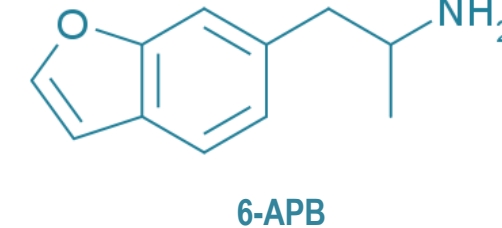
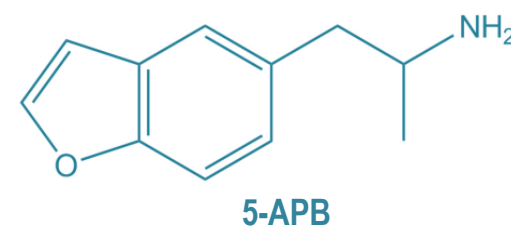
Deaths involving 'Benzo Fury', United Kingdom, 2011-2012.

Carla Gimeno Clemente, Stefania Chiappini, Hugh Claridge, Christine Goodair, Barbara Loi
International Centre for Drug Policy, St George's, University of London, Cranmer Terrace, London SW17 0RE
carlagimenoclemente@gmail.com

1. INTRODUCTION

The novel psychoactive substance 'Benzo Fury' [5-(2-aminopropyl)benzofuran (5-APB) and 6-(2-aminopropyl)benzofuran (6-APB)] is an analogue of 3,4-methylenedioxyamphetamine (MDA).^{2,10} It acts on dopamine transporters (DATs), which pump dopamine back into the nerve cells, and it also acts as a serotonin receptor agonist.^{2,7,5,13} It is for these reasons that 'Benzo Fury' has similar effects as other known controlled drugs like amphetamines and ecstasy (with hallucinogenic and stimulant properties).^{13,14} It is known to pose significant health risks, such as causing anxiety and cardiotoxicity and it has been noted that suppliers fail to include information relating to risks associated with its consumption.^{2,6,7} At the time when the deaths reported here occurred, it was not a banned substance, and it was easily obtained from the internet and delivered by mail.^{1,7,8} However, since 10th June 2013, the Misuse of Drugs Act 1971 (Temporary Class Drug) Order 2013 subjects 5-APB and 6-APB and their related substances, to temporary control under the Misuse of Drugs Act 1971.¹⁶

The aim of this study was to discover the features of deaths involving 'Benzo Fury' in the UK between 2011 and 2012.



2. METHODS

- A literature search for "Benzo Fury", "Benzofuran", "6-APB", "5-APB", "legal highs" and "Novel Psychoactive Substances" using PubMed and Medline databases was conducted. As of April 2013, no confirmed deaths in the UK directly linked to Benzo Fury had been documented in the scientific literature.
- Deaths involving 'Benzo Fury' (implicated in death and/or identified at post mortem toxicology) in the UK from 1997-2012 were identified from the *national programme* on Substance Abuse Deaths (*np-SAD*) database. The Programme has been collecting and analysing drug-related deaths in the UK since 1997, and maintains a database of more than 28,000 cases, with Coroners and relevant regional authorities voluntarily submitting information on drug-related deaths on a daily basis.¹⁵
- The general characteristics of these fatalities were analysed, using descriptive analysis with SPSS Statistics.

3. RESULTS

- Ten cases were found with 'Benzo Fury' identified at post mortem.
- 'Benzo Fury' was directly implicated in eight of these deaths.
- In nine cases, 'Benzo Fury' was found in combination with other psychoactive substances at post mortem.
- The majority were male (8/10).
- The mean age at death was 25.21 ± 1.98 years.
- Where ethnicity was known, all were white.
- The underlying cause of death was accidental poisoning in nine cases, with the remaining case attributed to poisoning of undetermined intent.
- All deaths occurred between 2011-12.

Table 1. General demographic characteristics of the sample (N=10).

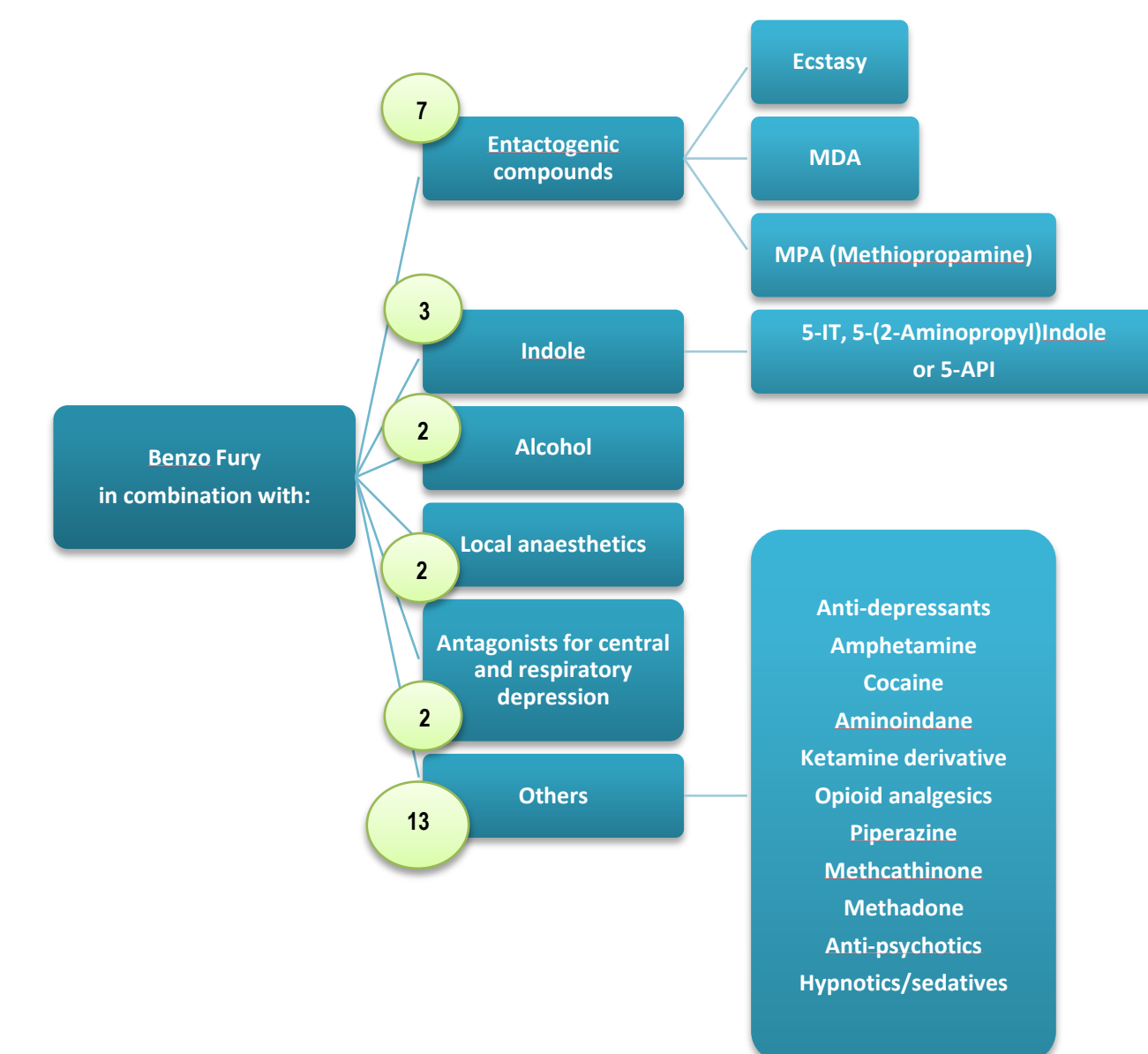
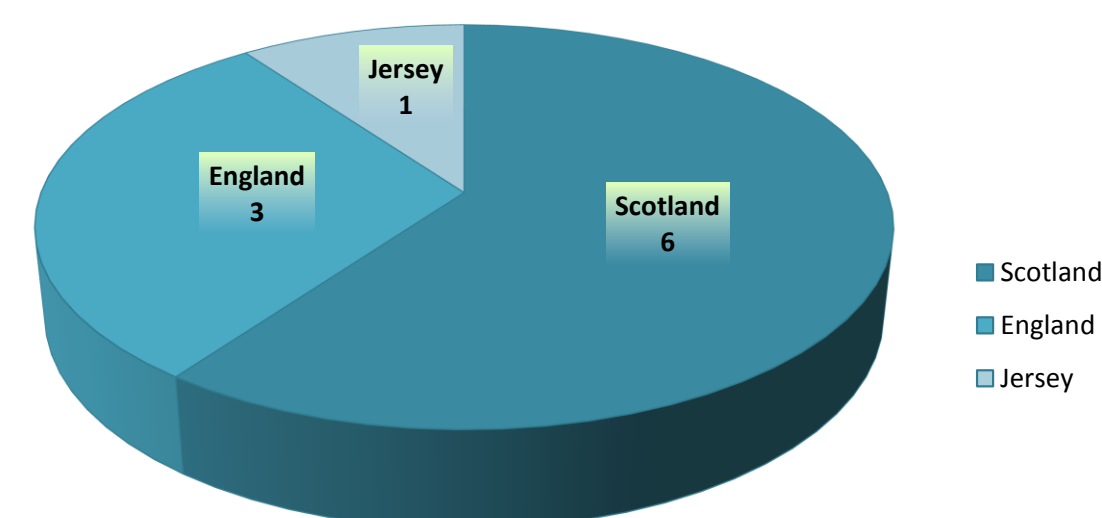
| | n |
|---|--------------|
| Sex | |
| Male | 8 |
| Female | 2 |
| Age at death (years) | |
| Mean (SD) | 25.21 ± 1.98 |
| Age-group (years) | |
| 15-24 | 5 |
| 25-34 | 4 |
| 35-44 | 1 |
| Ethnicity | |
| Known (White) | 9 |
| Unknown | 1 |
| Employment status (where known, n=5) | |
| Unemployed | 1 |
| Employed | 3 |
| Student | 1 |

SD, Standard Deviation.

Table 2. Characteristics of the deaths (N=10).

| | n |
|---|---|
| Year of death | |
| 2011 | 1 |
| 2012 | 9 |
| Addiction/drug use history (where known, n=4) | |
| No | 3 |
| Yes | 1 |
| Place of death (where known, n=6) | |
| Defined residential address | 2 |
| Hospital | 4 |
| Prescribed psychoactive drugs (where known, n=4) | |
| No | 3 |
| Yes | 1 |
| Country of death | |
| Scotland | 6 |
| England | 3 |
| Jersey | 1 |
| Manner of death | |
| Accidental | 9 |
| Undetermined | 1 |

Table 3. Country of death (N=10).



Number of times psychoactive substances were found at post mortem. Drug count may total more than sample size as multiple drugs may be found in an individual case.

4. CONCLUSIONS

- Our findings represent the largest known case series in the UK of deaths involving 'Benzo Fury'.
- This indicates a need for a Public Health education campaign on the risks of 'Benzo Fury' consumption, especially targeting young users and drugs education workers.
- Further research into the toxicity of 'Benzo Fury' and the risks associated with its consumption is also needed.

5. ACKNOWLEDGMENTS

This poster arises from the activity of the *national programme* on Substance Abuse Deaths (*np-SAD*) team of the International Centre for Drug Policy, at St George's University of London. Thanks in particular to John Corkery for technical advice and assistance in data preparation, and to Professor Fabrizio Schifano for his general supervision and for arranging the opportunity to work on the *np-SAD* programme at ICDP.

For information on *np-SAD* and ICDP as a whole, either scan the QR barcode, or email the team at icdp@sgul.ac.uk

REFERENCES

- Bovens M, Schlupfer M. (2011) Designer drugs/ Research chemicals/ Legal highs – A survey of recent seizures and an attempt to a more effective handling from a Swiss perspective. *Toxichem Krimtech*. 788(Special Issue):167
- Chan W L, Wood D M, Hudson S, Dargan P I. (2013) Acute psychosis associated with recreational use of benzofuran 6-(2-aminopropyl)benzofuran (6-APB) and cannabis. *J Med. Toxicol*. DOI 10.1007/s13181-013-0306-y
- Davies S, Wood D M, Smith G, Button J, Ramsey J, Archer R, Holt D W, Dargan P I. (2010) Purchasing 'legal highs' on the Internet - is there consistency in what you get? *Q J Med*. 103:489-493
- European Monitoring Centre for Drugs and Drug Addiction (2005) *EMCDDA-Europol 2005 Annual Report on the implementation of Council Decision 2005/387/JHA*. Available at <http://www.emcdda.europa.eu/html.cfm/index132877EN.html>. Accessed July 29th 2013
- Iversen L, Gibbons S, Treble R, Setola V, Huang X, Roth B L. (2013) Neurochemical profiles of some novel psychoactive substances. *European Journal of Pharmacology*. 700 147-151
- Ramsey J, Dargan P I, Smyllie M, Davies S, Button J, Holt D W, Wood D M. (2010) Buying 'legal' recreational drugs does not mean that you are not breaking the law. *Q J Med*. 103:777-783
- Ratnapalan S. (2013) Legal substances and their abuse: Legal highs. *Journal of Paramedic Practice*. Vol 5 No 1
- Schifano F, et al. (2006) Drugs on the web; the Psychonaut 2002 EU project. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*. 30, 640-646.
- Schultz D M, Prescher J A, Kidd S, Marona-Lewicka D, Nichols D E, Monte A. (2008) 'Hybrid' benzofuran-benzopyran congeners as rigid analogs of hallucinogenic phenethylamines. *Bioorganic and Medical Chemistry* 16, 6242-6251
- Seetohul L N, Maskell P D, De Paoli G, Jounder D J. Deaths associated with new designer drug 5-IT. (2012) *BMJ*. 345:e5625
- Wood D M, Dargan P I. (2012) Understanding How Data Triangulation Identifies Acute Toxicity of Novel Psychoactive Drugs. *J Medical Toxicol*. 8:300-303
- Wood D M, Davies S. (2012) Acute toxicity associated with the recreational use of the ketamine derivative methoxetamine. *Eur J Clin Pharmacol*. 68:853-856
- St Georges University of London. (2013) *Legal high Benzo Fury may be dangerous due to stimulant and hallucinogenic effects*. Available at <http://www.sgul.ac.uk/media/latest-news/legal-high-benzo-fury-may-be-dangerous-due-to-stimulant-and-hallucinogenic-effects>. Accessed May 2013.
- Kelland K. (2013) 'Legal high' Benzo Fury may harbour addiction risk. *Reuters Health Information*. Available at <http://www.reuters.com/article/2013/04/08/us-drugs-benzo-fury-idUSBRE93715V20130408>. Accessed April 2013.
- Ghodsse, H., Corkery, J., Claridge, H., Goodair, C., and Schifano, F. (2013) *Drug-related deaths in the UK: Annual Report 2012. Drug-related deaths reported by Coroners in England, Wales, Northern Ireland, Guernsey, Jersey and the Isle of Man; Police forces in Scotland; & the Northern Ireland Statistics and Research Agency – Annual Report January-December 2011*. London: International Centre for Drug Policy, St George's University of London. Available at <http://www.sgul.ac.uk/research/projects/icdp/our-work-programmes/substance-abuse-deaths>. Accessed May 2013.
- Home Office (2013) *Home Office circular 008/2013: Misuse of Drugs Act 1971: Control of NBOME and benzofuran substances under a Temporary Class Drug Order*. Available at <https://www.gov.uk/government/publications/circular-temporary-class-drug-order-on-nbome-and-benzofuran>. Accessed July 2013

