

MYTHBUSTERS: SEPARATING FACT FROM FICTION IN THE ACMD AND THE MEDIA

When Professor David Nutt was sacked by the Home Secretary for arguing against government policy on drug classification, he stated that his proposals were based on scientific evidence. Professor Andy Parrott goes mythbusting.

It has been highly publicised across the national media – but how ‘scientific’ was Professor David Nutt’s proposal to downgrade cannabis and Ecstasy/MDMA?

Nutt was sacked by the Home Secretary in November as chair of the UK Advisory Council on the Misuse of Drugs, or ACMD, for arguing against government policy on drug classification. Nutt defended himself by saying that his proposal to downgrade cannabis and ecstasy reflected scientific evidence. In this article, I list published statements made by Nutt about cannabis and Ecstasy/MDMA; after each statement are comments and quotations from scientific papers written by academic researchers in this field.

1. NUTT (2009): “CANNABIS USE DOES NOT LEAD TO MAJOR HEALTH PROBLEMS”.

The smoke from cannabis contains a similar cocktail of damaging chemicals to the smoke from tobacco. Hence it is linked with a similar range of medical disorders: cancers of the respiratory tract, heart disease, and premature death.

In a detailed review of its adverse health effects, two Australian researchers, Hall and Degenhardt (2009) recently wrote: “Epidemiological, clinical, and laboratory studies have established an association between cannabis use and adverse outcomes. We focus on adverse health effects of greatest potential public health interest – those most likely to occur and to affect a large number of cannabis users. The most probable adverse effects include a dependence syndrome, increased risk of motor vehicle crashes, impaired respiratory function, cardiovascular disease, and adverse effects of regular use on adolescent psychosocial development and mental health”.

In an earlier review on health consequences of cannabis/marijuana, Khalsa *et al* (2002) similarly noted: “The use of marijuana is not without significant health hazards. Marijuana is associated with effects on almost every organ system in the body, ranging from the central nervous system to the cardiovascular, endocrine, respiratory/pulmonary, and immune systems... in addition

to marijuana abuse/dependence, marijuana use is associated in some studies with impairment of cognitive function in the young and old, foetal and developmental consequences, cardiovascular effects (heart rate and blood pressure changes), respiratory/pulmonary complications such as chronic cough and emphysema, impaired immune function leading to vulnerability to and increased infections, and the risk of developing head, neck, and/or lung cancer”.

There is also MRI evidence for localised brain damage, to the hippocampus and amygdala, in heavy regular cannabis users (Yucel *et al*, 2008).

2. NUTT (2009): “CANNABIS WOULDN’T HAVE KILLED ANYONE BECAUSE IT DOESN’T KILL”.

Just as with cigarette smoking, cannabis can kill smokers through heart and respiratory disorders. There are differences between people who smoke for nicotine and those who smoke for cannabinoids/THC – for instance, tobacco smokers generally consume more cigarettes per day, whereas cannabis smokers tend to inhale unfiltered smoke for longer inhalation periods.

Many cannabis smokers also smoke tobacco. Aldington *et al* (2008) compared lung-cancer risks from smoking cannabis vs tobacco, and reported: “The risk of lung cancer increased 8% for each joint-year of cannabis smoking, after adjustment for confounding variables including cigarette smoking; and 7% for each pack-year of cigarette smoking, after adjustment for confounding variables including cannabis smoking”.

Cannabis can also impair driving ability, and is linked with increased car accidents. Mura *et al* (2006): “The risk of road crash after a recent use of cannabis is increased by more than 2.4 in all studies”.

Finally, cannabis is associated with a number of acute deaths, mostly in polydrug combinations – although in some acute fatalities, cannabis was the only drug detected (Schifano, 2007).

3. NUTT ET AL (2007): “FOR DRUGS WHICH HAVE ONLY RECENTLY BECOME POPULAR EG, ECSTASY OR

MDMA, THE LONGER-TERM HEALTH AND SOCIAL CONSEQUENCES CAN ONLY BE ESTIMATED FROM ANIMAL TOXICOLOGY AT PRESENT”.

I was particularly surprised to read this statement. I have been publishing about the adverse effects of ecstasy/MDMA in humans for many years, and there are many other research groups. So I undertook a PubMed search using the key words “MDMA and human”. The computer search listed about 1,400 published papers.

4. NUTT ET AL (2007) RATED ECSTASY/MDMA AS LESS PLEASURABLE THAN COCAINE OR NICOTINE.

Nutt noted that the most powerful drugs were the most pleasurable and the most damaging. But MDMA was given one of the lowest pleasure scores for any drug. By doing this, they also gave MDMA a surprisingly low harm score.

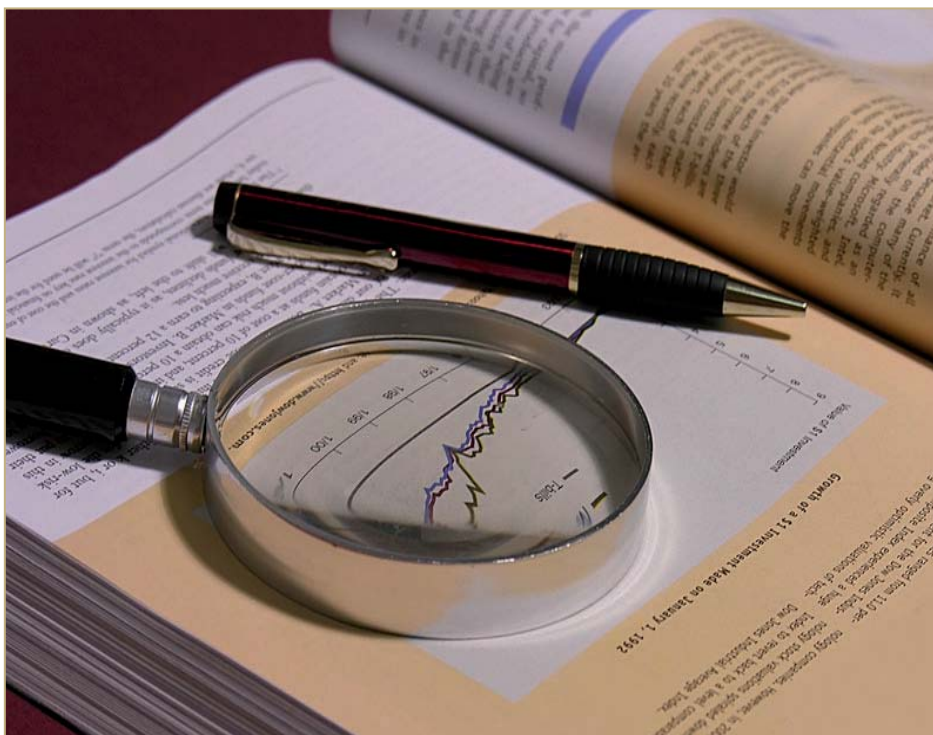
Nutt must be one of the few people to think that ecstasy is less pleasurable than smoking a cigarette. Recreational Ecstasy/MDMA users often report pronounced euphoria (Cohen, 1998).

MDMA is a powerful stimulant drug (Green *et al*, 2003; Parrott *et al*, 2008) but its use can lead to a wide range of psychobiological problems, including depression, irritability, aggression, memory loss, reduced problem solving/reasoning skills, impaired psychomotor/driving skills, reduced social intelligence, weight loss, poor sleep, sexual dysfunctioning, reduced immunocompetence, occupational stress, interpersonal difficulties and other problems (Brookhuis *et al*, 2004; Curran *et al*, 2004; Parrott, 2001, 2006, 2008; Topp *et al*, 1999; Reay *et al*, 2006; Zakzanis and Campbell, 2006).

MDMA-related deficits in young people have been shown after an average consumption of three tablets lifetime (Schilt *et al*, 2007).

5. NUTT ET AL (2007) GAVE MAXIMUM ‘INJECTION POTENTIAL’ SCORES TO COCAINE AND HEROIN (3.0), WHEREAS MDMA WAS RATED AT 0.0.

The empirical literature shows that some experienced Ecstasy users do inject MDMA. In



a survey of 329 regular Ecstasy users, 54 reported injecting Ecstasy for the increased rush (Topp *et al.*, 1999). They also noted that MDMA injections were more intense, the come-down more severe, and its dependency

potential was higher. So MDMA can be injected (Parrott, 2009) but, as with other illicit drugs, injections are linked to extensive polydrug use and multiple drug-related problems.

6. NUTT ET AL (2007): MDMA WAS RATED AS 18TH OUT OF 20 DRUGS ON THE LANCET LIST FOR DRUG-RELATED HARM.

This low harm score reflects many of the erroneous statements on MDMA made in the *Lancet* article (see points 3-5). With amended scores for “intensity of pleasure” and “injection potential”, MDMA rises from 18th to 9th on the overall harm list.

Several other harm scores in Nutt *et al* (2007) were also surprisingly low, since recreational Ecstasy/MDMA is linked to numerous psychobiological deficits (see previous references). With revised scores based on empirical literature, MDMA becomes the 5th most harmful drug on the *Lancet* scale (Parrott, 2009).

7. NUTT (2006): “IN CONTRAST TO ALCOHOL, ECSTASY IS LESS TOXIC IN OVERDOSE AS IT DOES NOT CAUSE RESPIRATORY DEPRESSION”.

MDMA is a stimulant drug which increases heart rate and breathing. Respiratory depression is found with sedative drugs such as alcohol.

For a professor in the field of pharmacology to suggest that respiratory depression is a potential cause of death with a stimulant drug such as MDMA, is difficult to understand. MDMA

can cause death – but through very different mechanisms (Schifano *et al.*, 2003).

8. NUTT (2006): ECSTASY WAS LESS HARMFUL THAN ALCOHOL, SINCE IT WAS NOT ADDICTIVE, DID NOT CAUSE CAR DRIVING DEATHS, WAS NOT LINKED WITH AGGRESSION, NOR LEAD TO CIRRHOSIS OR HEART DAMAGE, AND WAS SAFER IN OVERDOSE.

None of these statements is consistent with the empirical literature. Like all recreational CNS stimulants, MDMA displays addictive properties. Ecstasy dependence has a two-factor structure, with compulsive use and escalating use (Topp *et al.*, 1997). Chronic tolerance and dosage escalation are noted by 85% of regular users (Parrott, 2005). Recreational Ecstasy can also impair car driving (Brookhuis *et al.*, 2004); lead to mid-week aggression (Curran *et al.*, 2004), damage the heart, liver, kidney and brain (Parrott, 2007).

Gesi *et al* (2002) noted that “Persons abusing ecstasy typically suffer cardiac symptoms, such as tachycardia, hypertension, and arrhythmia”.

MDMA also has hepatotoxic properties, causing apoptosis or programmed-cell-death in cultured liver cells (Montiel-Duarte *et al.*, 2002), while liver failure can occur in young recreational Ecstasy users (references in Parrott, 2007).

9. NUTT (2009): “EQUASY, THE EQUINE ADDICTION SYNDROME”.

Nutt stated that horse riding was more dangerous than taking Ecstasy. Natural pleasures

are real and enduring. People who ride horses, cycle, canoe, sail, windsurf, climb mountains or play rugby have genuine natural pleasures which can benefit health and wellbeing. Sadly, some normal recreational activities can be linked with occasional accidents or death [note: some deaths in horse riders might be

poor driving]. But most participants experience a natural boost in pleasure, which can continue for decades. Furthermore, these natural activities can increase physical health and promote general wellbeing. This contrasts with psychoactive drug users and their many problems, which generally worsen with continued usage (Parrott, 2008).

It is strange that Nutt does not seem to recognise the difference between natural healthy pleasures such as horse riding, and drug-induced short-cuts to pleasure which paradoxically tend to heighten distress.

IN CONCLUSION, Nutt has published statements about cannabis and Ecstasy/MDMA – many of which do not reflect the scientific evidence.

PROFESSOR ANDY C PARROTT works at the Department of Psychology, Swansea University. He has published extensively on the psychobiological effects of recreational drugs such as Ecstasy/MDMA. He has also organised international MDMA conferences and edited the published proceedings. He is the first author of a leading European textbook in this field: *Understanding Drugs and Behaviour*. The Ecstasy/MDMA papers from his research group have been given the British Association for Psychopharmacology journal award, on two occasions.

The 29 research references are available at www.addictiontoday.org/addictiontoday

Image: Stephen Coburn