

ECSTASY & PILLS

WHAT YOU NEED TO KNOW



Australian Government
Department of Health

WHAT IS ECSTASY? WHAT ARE PILLS?

Ecstasy is the common name for 3,4-methylenedioxymethamphetamine (MDMA), a member of the phenethylamine family of drugs. Other phenethylamines include MDA, MDEA, 2-CB, PMA and PMMA.¹

Ecstasy was first used as a street drug in the 1980s² and is usually sold in pill (tablet) form, although it can also be found sold as powder, crystals or in capsules.³ **Pills usually have a logo stamped on them. However, two pills with the same logo may have different effects – they can come from different sources and have different ingredients.**

'Pills' is used to describe a range of substances sold in pill form. Traditionally, pills referred to tablets containing MDMA, however the availability of MDMA has decreased in recent years and purity is extremely variable. For example, the average purity of the pills analysed in 2011/2012 by the Australian Crime Commission was between 15-18%.⁴ These days pills sold as ecstasy may contain a wide range of other substances,⁵ some of which can be highly toxic even at low doses. New synthetic drugs with ecstasy-like effects may be packaged as ecstasy (see 'New Psychoactive Substances' factsheet at www.comorbidity.edu.au/cre-resources/public). Drugs sold as ecstasy may not actually contain MDMA, which is one reason why they are often called 'pills' rather than 'ecstasy'.

Ecstasy and pills are also known as E, pills, pinges, doopa, love drug, disco biscuits, XTC and eccy.

HOW MANY PEOPLE TAKE ECSTASY?

The number of people taking pills sold as ecstasy in Australia has declined in recent years. According to the 2016 National Drug Strategy Household Survey, two in every one hundred (2.2%) Australians (aged 14 or over) had taken pills sold as ecstasy in the past year. This was a decrease since 2007, where the reported figure was 3.5%.¹⁰

Other substances that may be found in pills sold as ecstasy include:

Substance	Effects	Possible negative effects include
Methamphetamine ⁶	A stimulant; it speeds up activity in the central nervous system, increasing heart and breathing rates. Users feel more alert and energetic	Dehydration, anxiety, panic attacks. Dangerous for people with pre-existing cardiovascular (heart) problems. For more information, see 'Methamphetamine' factsheet at www.comorbidity.edu.au/cre-resources/public
Other chemicals that are closely related to MDMA, such as MDA ⁷ or PMA	Similar types of effects to ecstasy (MDMA)	Risks are largely the same as for MDMA, although some of these substances are toxic at much lower doses (e.g. PMA)
DXM (dextromethorphan) ^{7,8}	A cough suppressant which has a dissociative hallucinogenic effect at higher doses	Drowsiness, dizziness, nausea, vomiting, stomach/digestive problems. Can be dangerous for people with asthma ⁹
Caffeine ⁶	A stimulant found in coffee, tea, colas and energy drinks	Dehydration, anxiety, panic attacks. May be risky at high doses for some people with pre-existing cardiovascular (heart) problems
Paracetamol ⁶	Painkiller with no psychoactive effect	Usually harmless. In rare cases can cause serious adverse reactions ⁹
Ketamine ⁶	A dissociative anaesthetic with a range of different effects	Anxiety, paranoia, panic attacks, numbness and trouble moving/speaking, confusion, nausea and vomiting. For more information, see 'Ketamine' factsheet at www.comorbidity.edu.au/cre-resources/public
Pseudoephedrine ⁵	A stimulant medication used as a cold and flu remedy	Dehydration, anxiety, panic attacks
Prescription stimulants such as dexamphetamine and methylphenidate (Ritalin)	Prescription medication used in the treatment of Attention Deficit/Hyperactivity Disorder (ADHD) and narcolepsy	Dehydration, anxiety, panic attacks
Synthetic cathinones, such as mephedrone, methylone and MDPV ⁶	Stimulants with a variety of effects	Dehydration, anxiety, panic attacks. These drugs haven't been around long enough for us to know what the immediate risks are or what might happen later on in life to people who use them. For example, there is a lot we don't know about the risk of overdose or major health problems they might cause (or make worse) and whether they are more dangerous than more well-known drugs. For more information, see 'New Psychoactive Substances' factsheet at www.comorbidity.edu.au/cre-resources/public
Piperazines such as BZP or TFMPP ^{6,8}	Stimulants with a variety of effects	
Other new psychoactive drugs developed to have effects similar to other stimulants or MDMA	May have a variety of stimulant or entactogenic (ecstasy-like) effects	

WHAT ARE THE EFFECTS?

Ecstasy, if it contains MDMA, usually takes approximately 45 minutes to take effect after swallowing. However, this can vary from person to person. Effects usually last about 3–4 hours.^{11, 12} The height of this experience is sometimes known as 'peaking'.

The stimulant effects of ecstasy speed up activity in the central nervous system (the brain and spinal cord). Other effects of the drug can include increased feelings of openness, empathy and well-being. The short-term effects of ecstasy can include:¹³⁻¹⁵

- **Dilated (enlarged) pupils**
- **Increased heart rate and blood pressure/strong pulse**
- **Increased body temperature**
- **Increased arousal**
- **Feeling alert and energetic**
- **A 'rush' when the drug begins to take effect ('coming up')**
- **Dry mouth**
- **Euphoria or a 'high'**
- **A feeling of calmness**
- **Feeling happy/loving, open, confident and talkative**
- **Sweating**
- **Tightening of muscles, especially the jaw, teeth grinding**
- **Visual distortions (things looking weird or different)**
- **Dizziness**
- **Loss of appetite**
- **Decreased urine output**
- **Numbness**
- **Muscle aches**
- **Nausea and vomiting**
- **Confusion, anxiety, panic or fear**

The effects of pills are difficult to predict as the combination of substances used can vary greatly. Depending on the ingredients, the user could find that the effects could be similar to those described above for ecstasy, for example a pill containing another stimulant such as methamphetamine or caffeine may also increase feelings of energy and alertness. However, other pills may be particularly harmful, depending on the combination of their ingredients.

WHAT ARE THE RISKS?

There are a number of risks associated with ecstasy use. Risks may include:^{5, 11, 14, 16-19}

- **Involuntary jaw clenching and teeth grinding. This can lead to dental issues if used heavily/regularly**
- **Unpleasant after-effects (the 'comedown' phase) – see over page**
- **Increased heart rate and blood pressure. This is extremely dangerous for people with pre-existing problems, e.g. high blood pressure or cardiovascular (heart) disease. This risk is even greater when used with other drugs that have stimulant effects, e.g. ecstasy or methamphetamine**
- **Nausea and vomiting**
- **Dehydration and overheating. If taken in a hot or humid environment such as a club or dance party, especially if the user is moving around a lot. This risk that can lead to serious consequences such as kidney failure for users if they don't drink enough water; drinking too much water can also be dangerous**
- **Anxiety and panic attacks**
- **Insomnia**
- **Tremors/shakes, convulsions**
- **Immunosuppression (the body's ability to fight infection is lowered)**
- **Possible dependence (addiction) for some people (see later section)**
- **Serotonin syndrome – this can be life-threatening (see later section)**
- **Psychosis (a serious mental illness that causes people to misinterpret or confuse reality)**
- **Stroke**

If the pills being taken contain other substances (e.g. PMA or methamphetamine), the user may also experience the negative effects of those drugs. Whether a person is a first-time, occasional or regular user, one of the major risks is that the effects of illegal drugs are unpredictable, and users can never be sure what they're taking.

Longer-term effects associated with ecstasy are still debated. It is possible that some people may be more prone to developing long-term problems than others.²⁰ Some studies have linked ecstasy with:^{5, 21}

- **Damage to serotonin levels in the brain (low serotonin levels are associated with depression). Whether this puts ecstasy users at a greater risk of long-term depression is the subject of debate by researchers**
- **Impairments to memory and attention**
- **Liver problems**

People who use ecstasy can develop a tolerance to the drug. This means that users may require a higher dose of the drug to get the same effect.¹⁵ This increases the risks of experiencing negative consequences.²²

IS ECSTASY ADDICTIVE?

Some people report that they have problems with their use and that they find it hard to stop. It seems that ecstasy may be addictive for a small number of people who use it regularly.¹⁶

WHAT IS SEROTONIN SYNDROME?

Serotonin syndrome can be a life-threatening condition. It occurs when the brain is overloaded with a neurotransmitter (brain chemical) called serotonin (which is responsible for making us feel happy). It usually starts within 24 hours of taking the drug.²³ It can be hard to recognise it developing as many of the early signs are the same as the expected effects of taking ecstasy.²³ These include sweating, excitement, tremors and a rapid heartbeat.

More serious symptoms require immediate medical help and include:^{23, 24}

- **Muscle twitches, spasms and tremors**
- **Shaking, shivering**
- **Fever or overheating**
- **Agitation**
- **Confusion**
- **Distress**
- **Rigid muscles**
- **Seizures**
- **Coma**

Serotonin syndrome is more common when other drugs that increase serotonin levels are also used, including pharmaceutical stimulants (e.g. dexamphetamine and Ritalin), and some types of antidepressants (called MAOIs). Methamphetamine, cocaine, LSD and some other medications and herbal supplements also affect serotonin levels and have been linked to serotonin syndrome.²³

WHAT IS THE 'COMEDOWN' PHASE?

Users often experience a 'comedown' phase that occurs after the drug starts to wear off. These feelings can last for several days and may include:¹⁵

- **Anxiety or paranoia (feeling extremely suspicious and frightened)**
- **Feeling down or depressed**
- **Lethargy, feeling physically exhausted, drained or 'out of sorts'**
- **Feeling 'scattered' or unable to concentrate**
- **Loss of appetite**
- **Irritability**
- **Problems sleeping – sometimes this can last longer than the rest of the comedown symptoms**

SOURCES

1. Australian Bureau of Statistics, 2011. Australian Standard Classification of Drugs of Concern, 2nd Edition, Australian Bureau of Statistics: Canberra.
2. National Institute on Drug Abuse, 2006. Research Report Series— Ecstasy Abuse, National Institute on Drug Abuse, National Institutes of Health: Bethesda, MD.
3. Sindicich, N. and Burns, L., 2012 An overview of the 2012 EDRS: Ecstasy returns and the Emerging class of drugs. Ecstasy and Related Drugs Reporting System Drug Trends Bulletin. October: p. 1-7.
4. Australian Crime Commission, 2011-2012. Illicit Drug Data Report. Accessed April 2014 via <https://www.crimecommission.gov.au/sites/default/files/IDDR-2011-12-Amphetamine-Type-Stimulants.pdf>.
5. Morefield, K.M., Keane, M., Felgate, P., White, J.M. and Irvine, R.J., 2011. Pill content, dose and resulting plasma concentrations of 3,4-methylenedioxymethamphetamine (MDMA) in recreational 'ecstasy' users. *Addiction*. 106(7): p. 1293-300.
6. Kenneally, M., Harpas, P., Granleese, J. and Chen, J.-Y., 2012. The Disappearance and Re-emergence of MDMA in South Australia. Paper presented at 21st International ANZFSS Symposium. Hobart, 23-27 September.
7. Johansen, M., Garlepp, D. and Gerstner-Stevens, J., 2012. Drug Seizures at Victorian Music Festivals. Paper presented at 21st International ANZFSS Symposium. Hobart, 23-27 September.
8. Garlepp, D., Johansen, M. and Gerstner-Stevens, J., 2012. Methorphan and piperazine derivatives in illicit drug seizures in Victoria. Paper presented at 21st International ANZFSS Symposium. Hobart, 23-27 September.
9. MIMS online, 2012. MIMS online accessed 23 August 2012 via UNSW www.mimsonline.com.au.
10. Australian Institute of Health and Welfare, 2017. 2016 National Drug Strategy Household Survey report, AIHW: Canberra.
11. Silins, E., Bleeker, A. and Martin, M., 2008 Ecstasy: facts and fiction (2nd Edition), National Drug and Alcohol Research Centre, University of New South Wales Sydney.
12. Liechti, M.E., Baumann, C., Gamma, A. and Vollenweider, F., 2000. Acute Psychological Effects of 3,4-Methylenedioxymethamphetamine (MDMA, "Ecstasy") are Attenuated by the Serotonin Uptake Inhibitor Citalopram *Neuropsychopharmacology*. 22(5): p. 513-521.
13. Baylen, C.A. and Rosenberg, H., 2006. A review of the acute subjective effects of MDMA/ecstasy. *Addiction*. 101(7): p. 933-47.
14. Green, A.R., Cross, A.J. and Goodwin, G.M., 1995. Review of the pharmacology and clinical pharmacology of 3,4-methylenedioxymethamphetamine (MDMA or "Ecstasy"). *Psychopharmacology*. 119: p. 247-260.
15. Verheyden, S.L., Henry, J.A. and Curran, H.V., 2003. Acute, sub-acute and long-term subjective consequences of 'ecstasy' (MDMA) consumption in 430 regular users. *Human Psychopharmacology*. 18(7): p. 507-17.
16. Degenhardt, L., Bruno, R. and Topp, L., 2010. Is ecstasy a drug of dependence? *Drug and Alcohol Dependence*. 107(1): p. 1-10.
17. Antolino-Lobo, I., Meulenbelt, J., van den Berg, M. and van Duursen, M.B., 2011. A mechanistic insight into 3,4-methylenedioxymethamphetamine ("ecstasy")-mediated hepatotoxicity. *Veterinary Quarterly*. 31(4): p. 193-205.
18. Docherty, J.R. and Green, A.R., 2010. The role of monoamines in the changes in body temperature induced by 3,4-methylenedioxymethamphetamine (MDMA, ecstasy) and its derivatives. *British Journal of Pharmacology*. 160(5): p. 1029-44.
19. Boyle, N. and Connor, T., 2010. Methylenedioxymethamphetamine ('Ecstasy')-induced immunosuppression: a cause for concern? *British Journal of Pharmacology*. 161: p. 17-32.
20. Parrott, A.C., 2006. MDMA in humans: factors which affect the neuropsychobiological profiles of recreational ecstasy users, the integrative role of bioenergetic stress. *Journal of Psychopharmacology*. 20(2): p. 147-163.
21. Lieb, R., Schuetz, C., Pfister, H., von Sydow, K. and Wittchen, H., 2002. Mental disorders in ecstasy users: a prospective-longitudinal investigation. *Drug and Alcohol Dependence*, 68: p. 195-207
22. Parrott, A.C., 2005. Chronic tolerance to recreational MDMA (3,4-methylenedioxymethamphetamine) or Ecstasy. *Journal of Psychopharmacology*. 19(1): p. 75-87.
23. Silins, E., Copeland, J. and Dillon, P., 2007. Qualitative review of serotonin syndrome, ecstasy (MDMA) and the use of other serotonergic substances: hierarchy of risk. *Australian and New Zealand Journal of Psychiatry*. 41(8): p. 649-55.
24. Berney-Meyer, L., Putt, T., Schollum, J. and Walker, R., 2012. Nephrotoxicity of recreational party drugs. *Nephrology*. 17(2): p. 99-103.



FOR MORE INFORMATION

We have listed some of the national telephone helplines and websites below.

Australian Drug Foundation

Provides information about drugs and links to services in each state and territory
www.adf.org.au

DrugInfo Line

Provides information about drugs and alcohol. Open 9am–5pm, Monday to Friday
1300 85 85 84 or **03 8672 5983**. Or visit www.druginfo.adf.org.au

Just Ask Us

Provides information about drugs, alcohol, health and well-being
www.justaskus.org.au

Kids Helpline

Free, private and confidential telephone and online counselling service for young people aged 5–25 years
Open 24 Hours **1800 55 1800**

Lifeline

24 hour crisis line **131114**
Also available is one-on-one chatlines for crisis support, visit
www.lifeline.org.au/Find-Help/Online-Services/crisis-chat

Counselling Online

Free, confidential counselling service for people using drugs, their families and friends
www.counsellingonline.org.au

National Drugs Campaign

Australian Government website provides information about illicit drugs and campaign resources.
www.australia.gov.au/drugs

Family Drug Support

For families and friends of people who use drugs or alcohol
1300 368 186

Some state and territory based helplines are listed below.

Alcohol and Drug Information Service (ADIS)(free, confidential advice about drugs and alcohol).
Some services operate 24 hours.

State/Territory	City contact	Regional/Rural contact (free call from landline)
New South Wales ADIS	02 9361 8000	1800 422 599
Queensland ADIS	1800 177 833	1800 177 833
Victoria Directline	1800 888 236	1800 888 236
Western Australia ADIS	08 9442 5000 08 9442 5050 (for parents)	1800 198 024 1800 653 203
Australian Capital Territory Alcohol & Drug Program	02 6207 9977	
Northern Territory Alcohol & Other Drug Services	08 8922 8399 (Darwin) 08 8951 7580 (Alice Springs)	1800 131 350
Tasmania ADIS	1800 811 994	1800 811 994
South Australia ADIS	1300 131 340	1300 131 340

Callers in Victoria can also contact the Youth Substance Abuse Service (YSAS) on 1800 014 446
(24 hour toll free service)

© National Drug and Alcohol Research Centre 2014

This booklet was funded by the Australian Government Department of Health. It was written by Emma Black in consultation with Anthony Shakeshaft, Nicola Newton, Maree Teesson, Michael Farrell and Daniel Rodriguez.
Expert review was provided by Lucy Burns, Raimondo Bruno and Edmund Silins.
Design and layout by Greg Stephenson of Netfront.

ISBN 978-0-7334-3221-7



Australian Government

Department of Health