General Substance Awareness

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Contents

1. Introduction

How to use this training pack

This pack is intended to be used as a learning tool and also for reference after the training course has been completed. It is not intended for use in isolation to the training course.

2. Types of cannabis

Cannabis or hemp are a product of the plant Cannabis sativa , indica and ruderalis. It is consumed in different forms and goes by various names such as grass, weed, marijuana or ganja in its herbal form and ‘hashish’, ‘solid’ or ‘soap bar’ in its resinous form. Cannabis can also come as an oil and is now used in medicine as a spray (Sativex) and other applications such as supposotries and patches are being explored.

Though the main psychoactive chemical compound in cannabis is THC, the plant is known to contain about sixty or so cannabinoids. One other cannabinoid of particularly high concentration in some plants is cannabidiol (CBD), which is not psychoactive but has recently been shown to block the effect or control the onset and duration of THC in the nervous system. Differences in the chemical composition of cannabis varieties may produce different effects in humans.

Narrow-leafed "sativa" drug strains are native to the Indian subcontinent, and are also cultivated in Africa, South and Central America, the Caribbean Basin, and in other marijuana producing regions.

These strains are usually tall, laxly branched, and relatively late-maturing. They have largely been replaced by so-called "indica/sativa" hybrids by commercial cannabis growers because the hybrids yield a larger crop in a shorter period of time.

The herbal form of the drug consists of dried mature inflorescences (‘buds’) and under todays technology and breeding techniques the potency of the buds have doubled in the past decade (‘skunk’ a blanket term for a variety of cannabis grown under lights is now leveling out at 15% THC in the UK)

The THC content is also affected by the sex of the plant, with female plants generating substantially more resin than their male counterparts. Seedless varieties derived from unpollinated female plants have high THC content and are traditionally known as sinsemilla (Spanish: "without seed").

Wide-leafed "indica" drug strains are traditionally cultivated in northwest India, Afghanistan, and Pakistan for the production of hashish, and may have originated in the Hindu-Kush or Tian Shan mountain range.

Due to the often harsh and variable climate of those regions, these strains are better suited for cultivation in temperate climates. Plants of this type are relatively short, conical, and densely branched, having characteristcally wide leaflets, and tend to

produce a lower ratio of THC to CBD than the narrow-leafed drug strains

Although many commercially available varieties are

genetically fixed to produce relatively high levels of THC and low levels of CBD (which is not psychoactive), some users report more of a body "stoned" and less of a head "high" effect from these varieties compared to the narrow-leafed strains. Differences in the content of the essential oil may account for some of these differences.

It has been reported that commercial hashish is often no more potent than high quality seedless marijuana. However, carefully produced and screened hashish is up to three times as potent as the highest quality herbal varieties.

The range of potencies (measured as THC content by dry weight) found in seized hashish has varied from 3% to 8%.

Most commonly available ‘commercial’ cannabis contains 3-6% THC. Selective breeding and modern cultivation techniques like hydroponics have produced varieties between 15 and 24% THC (2007).

Adulterated Cannabis

Contaminants are found in street cannabis; low-quality hashish such as soap bar has a reputation for being full of contaminants (some psychoactive, some not) which serve to increase the bulk of the street product. Recently, there have been reports of herbal cannabis being adulterated with minute silica crystals in the UK and Ireland. These crystals resemble THC in appearance, yet are much heavier, and so serve again to increase the weight, and hence value, of the cannabis on the street.

Cannabis has many other uses other than recreational:

- Cannabis is cultivated for its fiber
- Cultivated for seed from which hemp oil is extracted.
- Grown for medicinal purposes

3. Types of Opiates/Opioids

Opium

The source of opium and all derivatives such as morphine and heroin is the opium poppy, Papaver somniferum. The genus, Papaver, is the Greek word for “poppy.” The species, somniferum, is Latin for “sleep-inducing.”

The largest licit opium producing regions in the world today are in government-regulated opium farms in India, Turkey, and Tasmania. The major illicit or underground growing areas are in Southwest Asia (Afghanistan, Pakistan, and Iran) and in the highlands of Mainland Southeast Asia (Burma, Laos, Vietnam, and Thailand) popularly known as the “Golden Triangle.” Opium poppy is also grown in Colombia, Mexico, and Lebanon. Afghanistan and then Burma are the largest illicit opium producing counties in the world.

The opium poppy grows in temperate, warm climates with low humidity, and requires only a moderate amount of water. The poppies produce flowers. Only the pod portion of the plant can produce the opium alkaloids. About two weeks after the flower petals fall from the pods the scoring of the pods (also known as incising, lancing, or tapping) commences.

Approximately a depth of one millimetre is desired for scoring. Using a tool designed to cut to that depth, scoring ideally starts late in the afternoon so that raw opium can ooze out of the pod and slowly dries on the surface overnight. The opium gum is then collected.

Before opium is smoked, it is usually cooked. Uncooked opium contains impurities which detract from a smooth-smoking product. The raw opium is placed in a pot of boiling water where the sticky opium alkaloids quickly dissolve. The solution is strained through cloth to remove the impurities. A clear brown liquid, sometimes called “liquid opium,” is left and is actually opium in solution. This liquid then is reheated until the water turns to steam. When the water has evaporated, a thick paste remains. This paste is called “prepared opium,” “cooked opium,” or “smoking opium” and it is dried in the sun until it has a putty-like consistency. It is now ready for smoking or eating.

Opium, either raw or cooked, will not degrade, or otherwise spoil, for an indefinite period of time, as long as it remains relatively dry and cool. There are cases of opium being stored on a shelf for ten years without deterioration.

To make heroin, manufacturers must first extract the morphine from the opium, before converting the morphine to heroin. Morphine extraction is quite simple, requiring only a few chemicals and a supply of water. Morphine sometimes is extracted from opium in small clandestine laboratories, which are set up near opium poppy fields.

Since the morphine base is about one-tenth the weight and volume of raw opium, it makes sense to reduce the opium to morphine before transporting the product from the field to a heroin laboratory for later distribution.

Raw or cooked opium contains more than 35 different alkaloids, including morphine and codeine.

pharmacist F. W. Serturner isolated the ium by dissolving opium in acid and neu- . He named the substance morphium (morphine) after Morpheus, the Greek god of dreams. The invention of the syringe and the discovery of other alkaloids of opium soon followed.

Crude morphine is sometimes referred to as heroin number one and prior to heroin conversion, heroin number two. Morphine is medically one of the most effective drugs known for the relief of severe pain and remains the standard against which new painkillers are measured.

It is stated that morphine is up to 1,000 per cent stronger than opium. It is pharmaceutically produced in tablet, suppository and injectable ampoule form. Usually the form found on the street is from medical stock.

Codeine

Codeine was extracted from opium in 1832. Codeine is the most widely used, naturally occurring narcotic in medical treatment in the world. This alkaloid is found in opium in concentrations ranging from 0.7 to 2.5 percent.

Codeine is medically prescribed for the relief of moderate pain and cough suppression. Codeine produces less sedation, and respiratory depression than morphine, and is usually taken orally. It is made into tablets either alone or in combination with aspirin or acetaminophen.

As a cough suppressant, codeine is found in a number of liquid preparations. Codeine is also used to a lesser extent as an injectable solution for the treatment of pain. Codeine products can find their way onto the illegal market.

Codeine is also the starting material for the production of two other painkillers, dihydrocodeine and hydrocodone. Dihydrocodeine is one of the most commonly prescribed painkillers in the UK

Heroin

In 1874 English researcher CR Adler Wright first isolated and developed an opium-based and supposedly non-addictive substitute for morphine. Morphine and acetic anhydride are heated together for approximately six hours to produce impure diacetylmorphine. The Bayer Pharmaceutical Company of Germany was the first to commercially produce this new drug under the brand name Heroin.

Form – Can come in several forms from brown or black tar coloured alkaloid to white hydrochloride salt. Its appearance varies considerably depending on the amount of refining and the manufacturing process which tends to be illegal.

Route - Heroin can be smoked, snorted injected or inhaled (which involves heating rock or powdered heroin on aluminium foil and inhaling the fumes, referred to as 'chasing the dragon' or ‘booting’ as in bootlace for chase.

Effect - 8 – 10 seconds if injecting). Slower if smoked.

Purity levels can reach 90 per cent by the time heroin leaves the refineries. Pure heroin is rarely sold on the streets, though in recent years the purity has risen to an average of approximately 50 per cent with a purity range of 2 to 90 per cent.

Heroin base
Also known as “crude heroin.” Heroin base is morphine base that has undergone acetylation. Sometimes called Southeast Asian heroin no. 2. Not easily soluble in water, and therefore not injectable in this form. This form of heroin can be smoked. Heroin base may be further refined to either no. 3 or no. 4 heroin.

Heroin hydrochloride
Formed when heroin base is treated with hydrochloric acid. Usually in powder or crystal form, that easily dissolves in water and therefore suitable for injection. Sometimes called Southeast Asian heroin no. 4.

Heroin no. 3
A smokeable form of heroin. Not as highly refined as no. 4. Colour ranges from purple to tan to off-white. It may also be injected intravenously.

Heroin no. 4
An injectable form of heroin. Also known as heroin hydrochloride (as above) or China White. Highly refined heroin. Usually a fine white powder, flakes, or crystals. May be smoked or snorted.

Methadone

German scientists synthesized methadone during World War II because of a shortage of morphine due to trade routes being disrupted. Although chemically unlike morphine or heroin, methadone produces many of the same effects for longer hours without the ‘rush’.

It is prescribed in the UK and other counties as a substitute for heroin dependent users. It is available in oral solutions, tablets (physepton), and injectable formulations. Methadone's effects can last up to 20 - 24 hours, thereby permitting once-a-day oral administration in heroin reducing and maintenance programs. The most common form of administration is oral, in the form of supervised consumption. In the United Stated LAAM, another synthetic opioid, is prescribed for heroin dependency, with effects lasting longer than methadone.

Fentanyl

First synthesized in Belgium in the late 1950s.It is stated that fentanyl is fifty times stronger than heroin but the euphoric effects are less than those from morphine.

When used in surgery machines help patients breathe, unlike on the street where many users have been found dead with the syringe still hanging out of their arm. Illicit use of pharmaceutical fentanyls first appeared in the mid-1970s in the medical community and continues to be a problem in the United States. To date, over twelve different analogues of fentanyl have been produced clandestinely and identified in illegal drug markets in the U.S.

Buprenorphine

Buprenorphine is a partial agonist and is prescribed under the brand name of Subutex. It is found to be effective in heroin withdrawal and prevent the need to use heroin. It was also used illegally as a heroin substitute on the street in the 1980's.

Buprenorphine can be administered orally. A tablet is placed under the tongue. The tablet dissolves over 3-7 minutes and is absorbed straight into the bloodstream from the mouth. (The tablets do not work if swallowed into the stomach.) It is usually prescribed as a once daily dose taken under supervision.

Naltrexone

Naltrexone is a blocker. It blocks the effects of opiate drugs such as heroin or morphine. It is used in the treatment of opioid dependency but has recently been used with drinkers. In clinical trials which evaluated the effectiveness of naltrexone, patients who received naltrexone were twice as successful in remaining abstinent and avoiding relapse as patients who received a placebo. Naltrexone should not be used with pregnant women, individuals with severe liver or kidney damage or with clients who cannot remain abstinent for at least five days prior to taking naltrexone. Also, people who are dependent on opioid drugs must stop their drug use at least seven days prior to starting the medication.

Naloxone

Naloxone is an antagonist. It prevents or reverses the effects of opioids, including respiratory depression, sedation and hypotension. Naloxone works by competing against other opioids at the receptor sites.

Naloxone has not been shown to produce tolerance nor to cause physical or psychological dependence. No short-term toxicity has been observed but long-term safety has not been investigated. There is no clinical experience with naloxone overdoses in humans. Suboxone is buprenorphine and naloxone combined.

Lofexidine

Lofexidine reduces the symptoms of withdrawal from opiate dependency during supervised detoxification. It is presumed that opiate withdrawal symptoms such as diarrhoea, sweating, cramps, chills, etc are caused by a temporary excess of noradrenaline. Lofexidine reduces the effect of noradrenaline, thus reducing opiate withdrawal symptoms. Lofexidine does not suppress all opiate withdrawal symptoms, in particular tiredness and sleeplessness. The course is administered either over five days, which is the standard five day detox or as a seven-to-twelve-day programme.

Speedballing

Speedballing traditionally involved the simultaneous injection of cocaine and heroin. The combined use of cocaine and heroin is not new and dates back to the 1930s. Previous to this cocaine was combined with morphine. Sigmund Freud's friend Fleischl-Marxow was speedballing in 1884. The cocaine and heroin combination was also used in medical circles in the 1950's and went by the name of the Brompton Cocktail. Speedballing first attracted widespread attention in the USA when the comedian John Belushi died from speedballing in 1982.

In the past most speedballers primary drug of choice was heroin, these users added cocaine in the injection as a "treat" when they had the extra cash to buy it. From anecdotal evidence from opiate based service providers across the UK speedballing with this type of client group is on the increase, whereby opiate I.V. injectors are now injecting crack, not cocaine, as a treat.

Speedballing is usually associated with injecting users. However there have been reports of heroin and crack use within dance culture and the recreational market. It should be noted that it is possible to combine both drugs through a pipe where users are layering the crack and heroin between different gauzes and 'blasting' it with a blow torch ('burner'). It is also possible to run the two drugs on foil or smoke them in a 'joint'. This method does not solely reside with chaotic users or primary heroin users and is seen as a more socially expectable way of administering the drug.

Though there is anecdotal and empirical information that states that you can be a light recreational user of heroin, for instance some of the Australian studies point to this, we as yet do not see this present in the UK recreational market. Piping/smoking crack, on the other hand has been identified in the mainstream recreational market but is still relatively small. However, this is not to say that there are no light recreational users of heroin. Light recreational or recreational users of any illicit drug are notoriously difficult to quantify for the simple reason that these types of users rarely access treatment and are not identified within criminal justice statistics, unless they get caught.

There is anecdotal information to suggest that high grade heroin is being imported into the UK for the sole purpose of smoking. This could indicate that there could be a growing market for recreational heroin users.

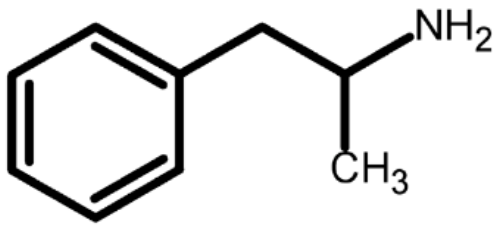
4. Types of amphetamine and methamphetamine

Street terminology for amphetamine (whiz, base, phet) and methamphetamine (Crystal meth, crissy, ice, glass, shards) sometimes do not have a one-to-one correspondence to actual chemicals. In this section the drugs will be referred to by their common chemical names. However, colloquial terms have there place and a lot of users may not want to know about the exact chemical composition of a drug if one word will suffice. This section will also explore these terms.

For example, in Britain, USA and Australia the term ‘speed’ can mean methamphetamine or amphetamine. The term ‘ice’ is generally considered to apply to 4-methyl-aminorex, but is often used by Americans to refer to relatively pure (or not so pure) forms of methamphetamine. Users have stated that 4-methyl-aminorex is closer to the effects of MDMA (ecstasy) than it is to methamphetamine.

There are many analogues of amphetamine and this is possibly why slang terms can confuse the issue with this particular synthetic drug. Forensic investigations into raided clandestine laboratories in the UK and USA have uncovered new (sometimes at the time legal variations of amphetamine and methamphetamine. Novel routes of manufacture and processing have also been uncovered. When precursor chemicals and chemicals for manufacture are monitored and controlled the ‘underground chemists’ or ‘cooks’ resort to other methods, chemicals, acids or gases.

Methylamphetamine and methamphetamine are the same drug, the later is an abbreviation of the former. However, methamphetamine has a similar structure to amphetamine.

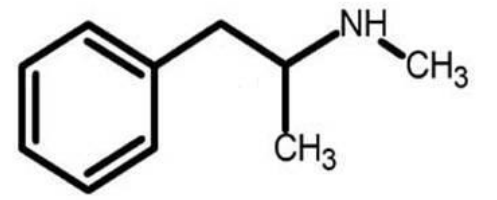


Amphetamine ($C_9H_{13}N$)

Amphetamine has a definite molecular structure.

Notice the difference between the two chemicals

The "meth" in methamphetamine refers to the methyl group (a certain arrangement of atoms) attached to the amphetamine structure. That is the difference you can see if you flick your eyes backward and forward between the two molecules.

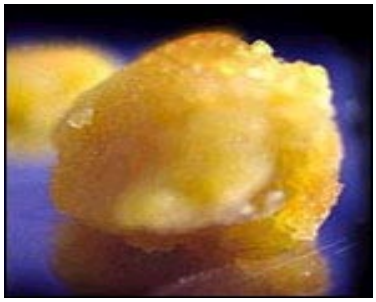


Methamphetamine ($C_{10}H_{15}N$)

From a chemist point of view it is very easy to attach the methyl group to the amphetamine structure.

Each chemical can come in different forms. Such as a freebase or a salt.

Amphetamine and methamphetamine in freebase form are generally oily liquids.



The salts are generally either:

Hydrochloride (addition of a HCl molecule to the freebase)

Sulphate (addition of a hydrogen sulphate molecule to the freebase)

Amphetamine and methamphetamine can exist in two isomeric forms; d for dextrorotatory and l for levorotatory. They chemically 'lean' or rotate to the left or right when measured through polarised light.

There are various ways of synthesizing methamphetamine, and some of them produce pure d-methamphetamine while others produce a 50:50 mixture (racemic mixture) of d and l.

D = dextro- right
L = levo- left
DL- = racemic mixture

Street methamphetamine can be 'racemic'; it contains both the d and l isomers. Standard purification procedures will not remove l-methamphetamine from the product. Separating the two is a difficult process and would probably be a waste of time and money for clandestine chemists who want the product on the street has quickly as possible. However, this will depend on the precursor chemicals used in its manufacture.

The stronger form is d methamphetamine (Methedrine) or d amphetamine (Dexedrine). A good chemist would purify the substance every step along the way. However, many clandestine 'cooks' in the US will use a crude two step process to make methamphetamine from ephedrine and not be concerned with purifying the substance any further.

There has been confusion with the term 'ice', as 'Ice' in America can also refer to 4, methylaminorex, a drug created in the 60's and was used for things such as writers block. Its stimulant effects are not as potent as methamphetamine and are more similar to MDMA.

'Crystal meth', 'Glass', 'Ice', 'shards' are terms that normally should describe the purer form of methamphetamine hydrochloride which is in crystal form. However, street terms can confuse the issues as all these terms have been used to describe methamphetamine in general and not just its large crystal form.

'Yaba' is a methamphetamine tablet that also contains caffeine. Mainly manufactured in Burma and popular in Thailand. Some Yaba has found its way into the UK but this seems to be brought in by travellers who have been to Thailand.

Prescription:

There are many drugs with an 'amphetamine skeleton' prescribed currently, including brand names such as Ritalin or Adderal Adderall is a racemic mixture of d & l amphetamine salts and is prescribed in the treatment of Attention Deficit Hyperactivity Disorder (ADHD)

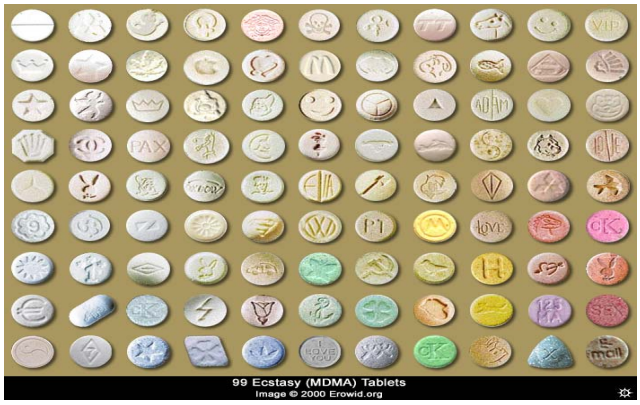
Desoxyn is used to treat the inattentive form of Attention Deficit Hyperactivity Disorder (ADHD) in the US. Desoxyn is methamphetamine.

5. Types of Ecstasy & other Club Drugs

MDMA 3, 4-methylenedioxymethamphetamine (ecstasy) is a member of the phenylethylamine (phenethylamine) family of drugs which include 2CB, 2C-i, 2C-e, the list goes on. Alexandra Shulgin synthesised around 179 substances that contain the phenethylamine structure. Interestingly amphetamine and methamphetamine possess the same chemical skeleton.

It is aid that MDMA can break down boundaries between oneself and others. It has been referred to as an 'empathogen' (to evoke empathy) and 'entactogen' (to touch within).

The substance commonly called MDMA is usually a racemic mixture of d-MDMA and l-MDMA. It is not strictly an amphetamine or hallucinogenic. Like methamphetamine, MDMA contains the methyl group of atoms which is said to contribute to the emphatic qualities of both drugs, though this is disputed.



Ecstasy has a variety of street names including, but are commonly named by the stamp they carry on the tablet. Since Ecstasy is synthesized in laboratories, its purity can vary substantially from lab to lab, and other compounds are easily combined into the same tablet.

MDMA tablets

Forms

- tablets, capsules, powder, liquid

Routes of administration

- oral (crushed / snorted), smoked, anal (‘shelved’) or inserted in vagina (‘shafted’), some IV use

Dose

- normally 75–150 mg in one good quality tablet
- usual dose is 1–2 tablets, although more may be taken if desired effect not reached.

GHB

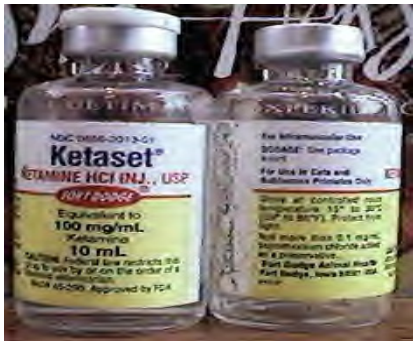
GHB is a sedative that was first synthesized in 1960 by Dr. H. Laborit, a French researcher interested in exploring the effects of GABA in the brain. As it turned out, Laborit found that GHB exhibited a range of effects beyond those expected from GABA. Over the intervening years, numerous researchers have extensively studied GHB's effects.

It is has come to be used in Europe as a general anaesthetic, a treatment for insomnia and narcolepsy (a daytime sleeping disorder), an aid to childbirth (increasing strength of contractions, decreasing pain, and increasing dilation of the cervix), a treatment for alcoholism and alcohol withdrawal syndrome, and for many other uses.

During the 1980s, GHB was widely available over-the-counter in health-food stores, purchased largely by body-builders for its ability to stimulate growth hormone release which aids in fat reduction and muscle building.

For the thirty years prior to 1990, the scientific papers on GHB were unanimous in reporting numerous beneficial physiological effects and the absence of long-term negative effects. In 1964, Laborit listed very low toxicity as one of the principle elements of the compound's pharmacology. In a 1969 report on GHB's anesthetic uses, Vickers referred to GHB as a truly nontoxic hypnotic and repeatedly emphasized its lack of toxicity.

Ketamine



Ketamine is a fast-acting 'dissociative anaesthetic'. Rather than blocking pain, like traditional painkillers, it shuts off the brain from the body. With the brain no longer processing information from nerve pathways, awareness expands resulting in a hallucinogenic state.

Since 1970, it was popular in medicine in the UK and US and all over the world as a safe anaesthetic for children and the elderly. Ketamine is being increasingly used in the UK.

Mushrooms

- Psilocybin is found in mushrooms. Concentration varies with mushroom age and conditions of growth (i.e. light)
- 2–4 mushrooms produce relaxation and wellbeing; 20–30 produce a full LSD-like response
- Effects: 6–8 hours followed by drowsiness
- Chronic toxicity is not well documented.

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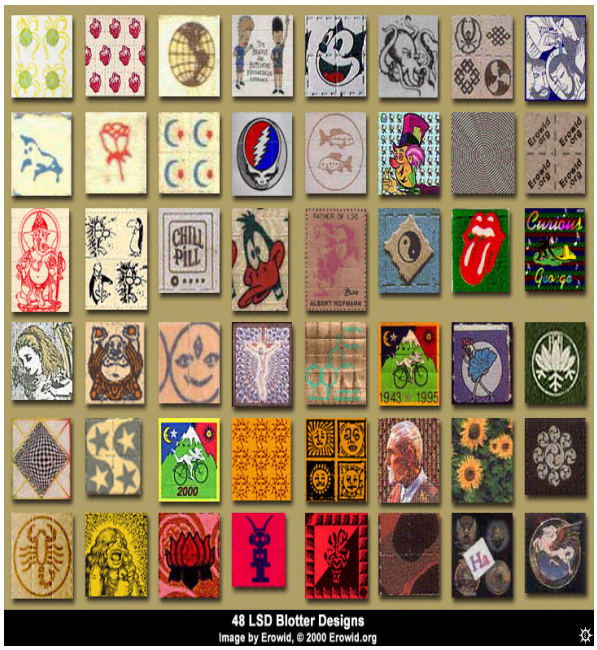
LSD

- The LSD effect is described as a 'trip' because it is a long (8-12 hours) and powerful experience which alters visual and auditory perception.
- Street names: Acid, blotter, cid, trips, hits, tabs
- Liquid substance sold on blotter paper, stamps, “microdots”
- Street dose typically around 0.1–0.5 mg
- Multiple receptor actions (partial agonist effects at serotonin and dopamine receptors)
- Onset of action between 30–60 minutes;
- Acute psychotic symptoms can occur as a result of activation of serotonin receptors



6. Types of cocaine

The coca leaf has been chewed in South America for over 3000 years. It wasn't until the mid 1800's that the active ingredient was isolated and the first cocaine was manufactured. Since then cocaine has been re-invented in many ways according to markets and users preference.

There are around 200 species of erythroxylon plants. At least 17 produce cocaine. Only two of them, erythroxylon coca and erythroxylon novogranatense, typically yield enough cocaine to justify commercial cultivation and can be harvested four times a year. When the Coca leaf is harvested they are put into large vats, crushed, pressed (similar process to making wine) and then put through a manufacturing process that includes the use of kerosene and ammonia. This removes the active ingredient and forms a paste commonly known in South America as 'Basuco'. To refine it further the coca paste is again put through a various chemical processes to produce its acid salt state or cocaine hydrochloride. Cocaine hydrochloride is usually cut during the process / route of importation into the UK. Cuts are often made with substances that can mimic the anaesthetic effect of cocaine or look similar to cocaine.

Cocaine Hydrochloride: Process of manufacture as above.

- Form - Powder (Salt Form).
- Route - Mainly snorted (but can also be injected and ingested).
- Effect - Starts to take effect within a few minutes and gradually rises to full high in 15 – 30 minutes. Come down is also more gradual.
- Cost - £40 - £50 per gram.
- Purity - Average around 50%
- Cuts - Most common cuts are Lignocaine hydrochloride and phenacetin

Freebase Cocaine:

There are three basic methods to freebase cocaine; these are Ether, Ammonia and Baking Soda (baking powder) Methods:

Freebase Cocaine: Ether Method, Ammonia Method

This process was first developed by drug dealers in the 1970's to test the purity of cocaine hydrochloride by removing the hydrochloride (salt). Ether or Ammonia is combined with water and cocaine and then heated. The crystallised form of cocaine left is now returned to a base form making it easier to smoke.

- Form - Crystallised cocaine (Base Form).
- Route - Mainly smoked (but can also be injected).
- Effect - Starts to take effect within 5 – 10 seconds giving a short and very intense high. Come down can be very rapid and low.
- Cost - Mainly self-manufactured, but if sold same price as crack (£10 - £20 per 'rock').
- Purity - Average between 70% to 90% (but can be lower)

Crack Cocaine: Baking Soda Method.
This involves a similar process to that of 'freebase' but uses bicarbonate of soda instead of ether or ammonia. The name 'crack' comes from the fact that the bicarbonate of soda is not as efficient as ether or ammonia at freeing the 'base' and residues of salt and bicarb are left causing it to crackle when smoked. This form of cocaine can be easily manufactured at home leading to its popularity and abundance.

- Form - Crystallised cocaine (Base Form).

- Route - Mainly smoked or injected (but can also be ingested).
- Effect - As with freebase (Starts to take effect within 5 – 10 seconds if smoked).
- Cost - £10 - £20 per rock, some people will sell it for £5 but these are smaller rocks.
- Purity - Average around 80% but may be decreasing

Black Cocaine: This type of cocaine gets its name from the use of black magnetic iron particles and potassium thiocyanate to mask the cocaine when it is being transported through customs. It enables it to pass colour tests and can also bypass sniffer dogs. The mixture will then be put through a process to extract the cocaine before it is sold on the market. However the resulting street cocaine / crack may be a little darker due to the chemicals used to mask it.

General: The differences between these types of cocaine are similar to the differences between types of alcohol. They all have different tastes and strengths, but at the end of the day they all get you drunk. There is no safe way to take cocaine, they all have their dangers and complications according to the route used.

Cocaine and the law: Crack and cocaine are controlled under the Misuse of Drugs Act and is categorised as a class 'A' drug. It is illegal to produce, supply and possess and can only be legally used for certain medical purposes such as a local anaesthetic for plastic surgery. It is also illegal to allow premises to be used for the dealing or production of crack or cocaine. Legally users could be sentenced to 7 years imprisonment for possession and life for supplying crack cocaine. Although it is rare to find such heavy sentences being metered out it is not unusual for users to serve a couple of years imprisonment for possession of half a sixteenth (£40 - £50 or 2 – 3 'rocks') of crack cocaine especially if it connected with another crime.

6.1 Other forms:

The development of the poly drug culture in the UK / change in dealing networks also means that both crack and cocaine has become more widely available and has increased drug combinations and routes of use:

Drug / combination	Routes	Effect	Types of user
Cocaine & Alcohol	Usually cocaine snorted and alcohol oral but can be combined in injection. Coke also dissolve's in alcohol.	Produces cocaethelyne in the liver which in itself interacts with reward system to produce a 'high'.	One of the most common combinations in the UK. Recreational, binge and chronic users
Crack & Heroin (snowball, speedball)	Can be taken one after the other by smoking or injecting routes. Can also be combined together in injectable form.	When taken together cocaine and heroin seem to boost each others effect leading to a very intense high. Also prolongs the 'comedown'.	This form of use is usually associated with chronic users. However there have been reports of heroin use within dance culture.
Crack & Cannabis	Crack can be added to a joint along with cannabis and smoked.	A less intense 'high' with cannabis alleviating the 'comedown'.	Recreational and sometimes used in clubs or by dealers because of the decreased intensity.
Cocaine & Ketamine (CK1)	Usually snorted alternately or in a combined 'line'. Can also be combined in a smokeable 'rock'.	This combination feelings of euphoria combined with 'out of body' experiences.	Recreational mainly but can also be used by chronic and binge users when combined in a 'rock'.
Cocaine & Ecstasy (dynamite)	Usually the ecstasy is taken orally and the cocaine snorted	Cocaine boosts the euphoric effect that can be felt on ecstasy.	Mainly recreational but can also fit into binge patterns of use.
Cocaine & Viagra	Cocaine snorted and Viagra taken orally.	Cocaine can heighten sexual experiences as can Viagra.	Recreational use.
Cocaine & Steroids	Both drugs taken separately	Both drugs can cause complications with moods	Recreational use.
Crack & amphetamine	Can be taken separately or may be combined in a 'rock'. Speed rocks tend to be pinkish in colour.	Both these drugs work in a similar way, but amphetamines releases dopamine rather than prevents re-uptake.	Recreational, chronic and binge patterns of use.

6.2 Cocaine Acid and Alkaloid Forms:

There are basically two different states of cocaine:

Form	Acid or Alkali	Type
Base form	Alkaloid	Freebase or Crack Cocaine
Salt form	Acid	Cocaine Hydrochloride or crack prepared for injection using an acid

When cocaine is first produced it is in its base form and is therefore an alkaloid. Hydrochloric acid is then used in a process to turn it into a salt form, which is now cocaine hydrochloride.

When ammonia, ether or bicarbonate of soda are used in the preparation of freebase or crack the cocaine is being returned to its base form (alkaloid). In its alkaloid state it is far easier to smoke as the melting point has been reduced hence the process before smoking.

Preparation for injection:

Crack cocaine or freebase cocaine in its alkaloid state does not dissolve in water. It also does not return back to a hydrochloride state when it has been prepared for injection using vinegar, citric acid or vit C. The state depends upon the acid used.

When acids are used to convert cocaine into an injectable form the cocaine is being converted into an acid form (salt). But the form of the cocaine is dependent on the type of acid used.

- Vit C - changes crack into -cocaine ascorbate
- Citric Acid - changes crack into -cocaine citrate
- Vinegar - changes crack into -cocaine acetate

Cocaine hydrochloride is in an acid salt form so does not need to have an acid added to it as with crack and will dissolve in water alone.

Information from:

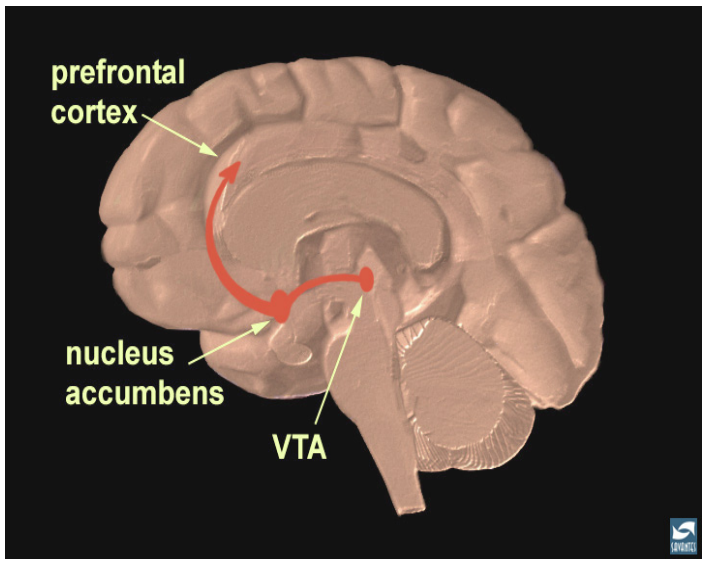
- Yale School of Medicine, Department of Epidemiology and Public Health 2002
- National Institute of Drug Addiction, USA 2002

7. How heroin works

In 1973, scientists discovered that the brain had receptors for opiates and that the equivalent of opiates was produced naturally in the brain. These receptors were located in parts of the brain important for breathing, pain and emotions. The discovery of opiate receptors in the brain raised the question as to why neurons would have such receptors. A couple more years down the line scientists further discovered the brain manufactured its own opiates known as "endorphins." Endorphins are always present within the brain, but release is increased when people and animals are in pain or under stress.

Not all of the mechanisms by which heroin and other opiates affect the brain are fully understood. Neurology is not an exact science. However, there are large numbers of opioid receptors in the mesolimbic system, which is responsible for feelings of happiness, relaxation, fearlessness and tolerance to pain. When the receptors are flooded with morphine, the user experiences a sensation of pain-free euphoria and relaxation.

Heroin, (diacetylmorphine), crosses the blood-brain barrier quickly, where, after being changed into morphine, it acts by attaching itself to opioid receptors. Opiates also attach themselves to receptors in the spinal cord and other locations within the brain where pain is experienced. Binding to these opioid receptors creates an analgesic effect within the pain pathway, reducing the pain felt.



Opiates work similar to crack and cocaine in the sense that they both stimulate a "pleasure system" in the brain. Opiates indirectly affect “dopamine," whereby cocaine directly affects dopamine. These midbrain dopamine neurons are located in the ventral tegmental area which projects to another structure called the nucleus accumbens which then projects to the cerebral cortex.

The body builds tolerance to the effects of heroin quickly. Increased amounts of the drugs needs to be consumed to have the desired effects as enzymes within the brain responsible for firing other neurons become accustomed to the presence of the opiate. More of the opiate is needed so that the enzymes can fire in the desired way.

If heroin is continuously consumed the brain again becomes accustomed to the presence of morphine. This is called dependency. When heroin use ceases then the user will experience withdrawals symptoms. The neurons become over activated because they have relied on the presence of morphine which is no longer in the system.

As previously mentioned. Heroin has sedative, painkilling and euphoric effects as the pain pathways in the body also cut across the reward circuits within the brain. It is easy to understand why heroin is used to take the edge off a crack binge, but what is happening when both are combined together in a ‘speedball’? There is limited amount of research into this area but it is stated by users that the high of both drugs combined produces an euphoria that surpass both crack/cocaine and heroin when used in isolation. Below is a table which shows the effects of both drugs when used separately.

8. How cocaine works

The first thing to say about crack and cocaine is that it is not physically dependent in the way that we understand heroin dependence, it can however, create a very strong psychological dependence. Crack and cocaine work by triggering the release of chemicals that are already present in the body. It is important to note that these chemicals are part of the body's response to danger and pleasure.

Adrenaline:

Adrenaline is normally released as part of a response to danger or excitement and heightens the senses and enables the body to work at peak performance. It does this by:

Increasing heart rate: This is to increase the blood flow around the body, which also increases the speed of which oxygen gets to muscles.

Increasing breathing rate: Short and shallow breaths increase the amount of oxygen in the blood stream.

Butterflies in the stomach: This is due to blood leaving the stomach and being diverted to the arms and legs where it is most needed.

Sweating: The body is getting hotter and sweating is the body's the cooling system.

Shaking: This is due to the increased energy ready for release. Muscles are primed and ready to go into action.

Users may interpret the above symptoms as the feelings they get when craving for crack / cocaine or are just about to score. When they do use crack / cocaine they are again releasing adrenaline because of cocaine's affect on the neurotransmitter noradrenalin that controls the adrenal system. The persistent release of adrenaline caused by cocaine use can lead to decreased need for sleep, loss of appetite, visual & auditory hallucinations, impaired cognitive ability (due to lack of sleep), severe anxiety and paranoia. The environment that someone is using in can also affect these feelings. For instance if used in a hostile environment like a crack house or with someone they don't trust then the feelings of anxiety and paranoia can be worse.

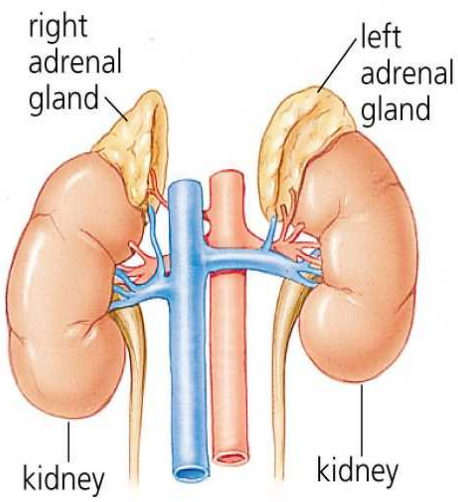


Image source: Dictionary of English Language

Dopamine and Serotonin:

The ‘high’ experienced when taking crack or cocaine is produced by chemicals dopamine and serotonin. Cocaine changes the way the brain works by changing the way the nerve cells (neurones) communicate with each other. Nerve cells in the brain normally send messages to each other using chemicals called neurotransmitters. These neurotransmitters fire across a gap between each cell and attach onto receptor sites. Once the message has been received a transporter cell then collects up the neurotransmitters so that the levels in these chemicals remain balanced.

Dopamine and serotonin are neurotransmitters that help control the feelings of pleasure and are released by the use of cocaine. But by taking cocaine the transporter cell is blocked and does not return these neurotransmitters. This leads to the extended feelings of pleasure that are experi-

enced when taking cocaine and also ultimately leads to the 'downs' experienced by causing a depletion in these chemicals because they can't get back. Imagine getting a brand new credit card, you have extended spending power for a period of time, you have fun and then the bill arrives through your letterbox.

‘Chasing that high’ is a lost cause because the more that people use the more blocks they are putting in place and the less dopamine they have. After their first hit they will be on a downward spiral and it is impossible to reach the high they are aiming for. In this way all that is really happening is that they are kidding themselves into thinking that ‘this will be the one’ and the next, and the…

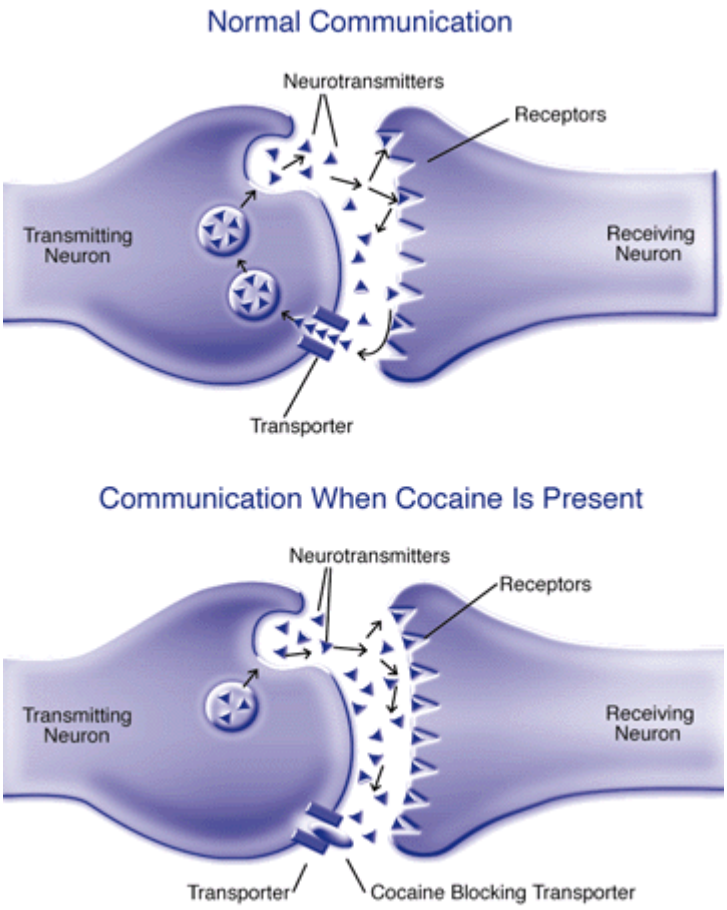


Image source: NIDA Website

The depletion of dopamine is partly responsible for the ‘come down’ or ‘crash’ making users feel bad and reinforcing the need for another hit, then another and another etc. Depletion in these neurotransmitters can also cause a chemical depression, which can sometimes combine with bad things happening in their lives (loss of job, partner etc) and lead to suicidal thoughts. It may also lead to users experiencing severe mood changes.

Combination:

The combination of increased adrenaline levels and low dopamine levels after a period of using can produce the feelings of being 'wired' or 'prang'. Users may at this stage use a 'downer' drug like alcohol, cannabis or heroin to help them cope with this feeling.

Chasing the original ‘high’:

Many users report chasing their early highs even though this may have been years ago and their experience tells them that they will not achieve those feelings again. Although we do not fully understand this some of it may be due to the way we remember euphoric experiences (summer holidays we always longer and hotter in our childhood etc) and also how the brain can associate smells with good or bad experiences e.g.
Most people have had a bad experience on a strong smelling alcohol (usually a spirit) and in smelling that alcohol again they feel sick.
The brain is linking into the memory of that smell and recalling the feelings that went with it, it also does this with memorably good experiences such as the first smoke of crack.

7.1 Adrenaline, Dopamine and serotonin

Below is a chart that will explain further how crack and cocaine affect both the mind and body:

Adrenaline	Dopamine and Serotonin
Initial release: (craving, anticipation) Danger and excitement	Initial release: (first high / buzz) Reward and reinforcement
• Increased heart rate • Faster breathing • Sweating • Shaking / cant stay still • Butterflies / sickness in stomach	• Very strong first high • Feelings of confidence • Euphoric / orgasmic • Compulsion to use again
Prolonged release: (continued use can cause the following)	Prolonged release: (depletion of dopamine)
• Can't sleep • Don't want to eat • Increased anxiety ('wired' or 'prang') • Harder to think clearly • Hallucinations (also to do with brain chemicals) • Paranoia	• Repeated compulsion to use • Buzz getting shorter and lower • Comedown or 'crash' • Loss of interest in things not related to cocaine • Mood swings • Depression

Cravings and compulsion to use:

The urge to use crack or cocaine comes from a combination of the affects of adrenaline and dopamine. To begin with adrenaline is usually released by a 'trigger' (something that is associated with crack or cocaine use) such as meeting someone they use with, emotional feelings or getting the money to use. This causes the symptoms described above (initial adrenaline release) and suddenly they can be on the 'mission' to use and feeling agitated or full of anticipation at the thought of using. However when they have used once the compulsion to use is created by dopamine. Dopamine works within the primitive areas of the brain and is partly responsible for the drive that we experience to seek food and have sex etc. Taking crack or cocaine exaggerates this drive and reinforces drug seeking behaviour leading to continued use of the drug even when users know that the 'high' cannot be reached again.

Crack and Cocaine	Heroin

Effects on the brain: Cocaine works by stimulating pleasure-giving neurotransmitters. One of the main neurotransmitters affected by cocaine is dopamine. It stimulates the neurons to release dopamine in the limbic system, this is the part of the brain that controls among other things, feelings of pleasure. When dopamine has been released it will attach itself to the corresponding nerve cells receptor stimulating a pleasurable response. It is then normally taken back to the neuron that released it. Cocaine blocks this re-uptake causing dopamine to continue stimulating the receptor, which in turn leads to a higher, more pronounced feeling of pleasure. In the long term this depletes dopamine, causing changes in brain function such as depression and mood swings. Nervous System: Cocaine works with the sympathetic part of the nervous system, which is concerned with outside stimulus such danger and anticipation. The 'Fight and Flight' response is part of this and releases adrenalin into the body. Cardiovascular System: Cocaine increases the heart rate through the release of adrenalin and at the same time releases a chemical called endothelin which reduces the size of blood vessels (not a good combination). Respiratory System: Again cocaine stimulates the respiratory system through the release of adrenalin, especially when the user is craving or experiencing a bad 'come down'. Addiction: Physical addiction to cocaine is debatable. Cravings are triggered because of thoughts of using rather than a physical need for the drug	Effects on the brain: The limbic system, brainstem and spinal cord have nerve cells that respond to endorphins. The brain naturally releases endorphins when the body is undergoing pain or stress. Large amounts of endorphins flood the space between nerve cells inhibiting the neurons from firing thus creating an analgesic effect. They can also stimulate the neurons leading to a feeling of euphoria. Heroin contains a metabolised version of morphine that mimics endorphins and binds onto endorphin-receptor sites. Because morphine is more powerful than natural endorphins the brain has no control over release, so it builds dependence. When heroin is taken away a chemical imbalance is created causing the feelings of withdrawal. Nervous System: Heroin works with the parasympathetic part of the nervous system. This is responsible for the opposite effect of the sympathetic nervous system and produces a 'Rest and Digest' response in the mind and body. Cardiovascular System: As well as depressing the activity of the nervous system, heroin also depresses the cardiovascular system. Heart rate lowers and the blood vessels are widened giving the feeling of warmth. Respiratory System: When heroin is used the respiratory system is depressed slowing down breathing. Rather than 'Fight or Flight' it's 'Rest and Digest'. Addiction: Heroin causes a physical addiction because the brain adapts itself to accommodate the regular use of this chemical. Cravings are often associated with periods of physical withdrawal.

9. How MDMA works

Ecstasy Gets into the Brain Easily

MDMA predominately works on the serotonergic system. The chemical structure of MDMA allows it to reach the brain quickly after ingestion. First, the pill is ingested and it disintegrates quickly in the stomach contents. Once dissolved, some MDMA molecules are absorbed from the stomach into the bloodstream, but most of the Ecstasy molecules move from the stomach into the small intestine. There, they are absorbed into the bloodstream very easily.

Some studies have suggested that ecstasy has no long-term impact on the levels of the neurotransmitter serotonin in the brain, while others have suggested that it leaves clubbers feeling depressed and unable to concentrate. Studies on animals show damage to neurons but how it exactly does this is not fully explained.

In recent years, there has been a lot of research carried out to understand how Ecstasy affects the brain. Scientists have made a lot of progress in identifying how Ecstasy changes mood and behavior. The long-term effects include changes in brain structure (based mainly on animal studies) and behavior.

Serotonin Pathways in the Brain

The nerve pathway that is predominantly affected by Ecstasy is called the serotonin pathway. Serotonin is a neurotransmitter that is synthesized, stored, and released by specific neurons in this pathway. It is involved in the regulation of several processes within the brain, including mood, emotions, aggression, sleep, appetite, anxiety, memory, and perceptions. Serotonin pathways innervate (connect to) different brain regions.

The Serotonin Neuron; The Major Target of Ecstasy

Serotonin Transporters
Serotonin (in pink) is present in the synaptic space only for a limited amount of time. If it is not bound to the serotonin receptor, serotonin is removed from the synaptic space via special proteins called transporters (in green). The serotonin transporters are proteins located on the serotonin neuron terminals and they are in a unique position to transport serotonin from the synaptic space back into the neuron where it can be metabolized by enzymes.

When MDMA binds to the serotonin transporters, more serotonin ends up in the synaptic space. This occurs for two reasons. First, Ecstasy can prevent the transporters from carrying serotonin back into the terminal. Second, Ecstasy can cause the transporters to work in reverse mode-- they actually bring serotonin from the terminal into the synaptic space. So, more serotonin is present in the synaptic space and more serotonin receptors become activated. This is the major short-term effect of Ecstasy that alters brain chemistry.

While the serotonin system is the primary target for Ecstasy, Ecstasy has similar effects on the dopamine system as well.

Ecstasy can inhibit dopamine transporters and cause an increase in dopamine levels in the synaptic space. (NIDA 2004)

10. Health implications (Methamphetamine)

Methamphetamine is a neurotoxin and with long term use may affect the production of dopamine within the brain. There are many dangers associated with the use of methamphetamine and depending on how the drug is administered will also determine some of the health problems faced by users.

Initial Effects
* Increased energy and alertness
* Decreased need for sleep
* Euphoria
* Increased sexuality
* loss of appetite

Long-Term Effects
* disturbed sleep patterns
* Tightened jaw muscles
* Loss of interest in sex,
* aggressiveness
* panic, suspiciousness & paranoia
* fatal kidney and lung disorders
* moodiness & irritability
* anxiousness & nervousness
* possible brain damage
* permanent psychological problems
* stroke * liver damage
* involuntary body movements
* false sense of confidence and power (delusions of grandeur)
* severe depression, suicidal tendencies
* excessive excitation, hyperactivity
* shortness of breath
* lowered resistance to illnesses

There is also a risk from the increased chance of HIV infection through unprotected and uninhibited sex while under the influence of methamphetamine.

Lead poisoning is another potential risk for methamphetamine users. A common method of illegal methamphetamine production uses lead acetate as a solvent. Errors in manufacture may result in methamphetamine contaminated with lead.

Methamphetamine causes increased heart rate and blood pressure and can cause irreversible damage to blood vessels in the brain, producing strokes. Other effects of methamphetamine include respiratory problems, irregular heartbeat, and extreme anorexia. Its use can result in cardiovascular collapse and death.

By sharing needles and syringes intravenous drug users can easily be infected with HIV or other blood-borne diseases.

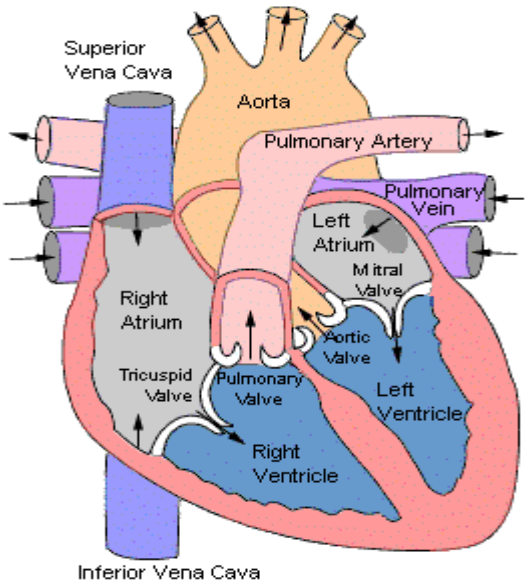
Of particular concern are Hepatitis B and C, two viruses that can eventually destroy the liver. According to recent studies, between half and three quarters of Japanese methamphetamine injecting users are already infected with hepatitis C.

11. Health implications (Crack and Cocaine)

Crack and cocaine can damage your health in many ways and in some instances these can be fatal. Some of these risks can be increased by the way that the drug is used and also by the route of use. The bottom line is that there is no safe way to use.

Effects on the heart:

Heart failure can happen to anyone taking crack or cocaine, it does not matter how much they are taking or how long they have been using for. People who already have heart disease or heart defects are at an even greater risk if they use the drug. Some American studies have shown that around 25% of all heart attacks in people between the ages of 18 - 45 are down to frequent cocaine use. When taking crack or cocaine, you can increase the risk of having a possibly heart attack by 23 times in the hour after use, especially if alcohol has been used in conjunction.



The increased risk of heart attack can come from a number factors including:

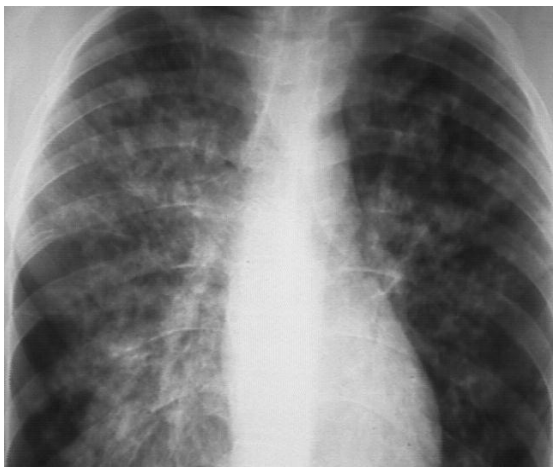
- Increased adrenaline (released because of cocaine use)
- High blood pressure (increased heart rate caused by adrenaline)
- Constricted blood vessels (cocaine releases endothelin which constricts blood vessels)
- Hardening of the arteries (caused by cocaine use)
- Weakened heart (congestive heart failure)
- Arrhythmia's (erratic heart beat)
- Ashen gray skin (poorly oxygenated blood)
- Current heart problems (Made worse by cocaine)
- Other drugs that may be used in conjunction with cocaine such as Viagra and alcohol (can increase the stress upon the heart)

Sodium Bicarbonate (used to ‘wash’ cocaine to turn it into crack) may have some effect upon the heart putting it under further stress. And cocaethylene, a chemical that is produced in the liver when using crack / cocaine and alcohol together, also exerts more pressure on the cardiovascular system, than if cocaine were just taken on its own.

Strokes and Seizures:
Strokes are thought to be caused by the constriction of blood vessels and the repeated increase in blood pressure. These combined factors can sometimes cut off the blood supply to parts of the brain and also in some cases cause delicate blood vessels to break (causing bleeding in the brain). Blackouts and seizures mat also be caused by the above coupled with high body temperatures.

Respiratory System:
Taking crack or cocaine can cause many lung problems. These problems are not just isolated to smoking crack as injecting crack or cocaine can also cause lung problems. Some of the problems that are associated with the use of crack or cocaine include:

- Pulmonary edema - Build up of fluid in the lungs
- Pulmonary haemorrhage - Bleeding in the lungs
- Pulmonary barotraumas - Air escaping lungs (by holding in crack smoke)
- Foreign bodies in lungs - Poor pipes, no gauze's used
- 'Crack Lung' - Cough, shortness breath, fever, inflamed lungs



Crack use can affect the cilia (small hairs) that line the main tubes of the lungs. These help to clean the lungs and prevent infections, which in turn leads to crack and cocaine users being more susceptible to bronchitis, pneumonia, pleurisy etc (this can be made worse by the impaired immune system).

Tuberculosis may be a new risk factor for crack and cocaine users as there is emerging evidence from the USA (University of Texas-Houston Health Science Centre) that is suggesting that there is increased chances of catching TB. This is probably due to impaired immune systems, long spells within enclosed environments (crack houses etc), poor diet and reluctance to present for medical interventions. The symptoms of TB are similar to those of someone heavily using crack or cocaine so may not be identified. The only sure way of sure diagnosis is through a chest x-ray or skin test.

Damage to the lungs may also be caused by deep inhaling ammonia (freebase rocks).

Liver Damage:
If alcohol is used in conjunction with cocaine then the stress upon the liver will become increased as a liver toxic substance called cocaethylene is produce. If users are Hep C positive then the stress exerted upon the liver could have more serious consequences.

Immune System:
Crack and cocaine impair the immune system by damaging CD4 T Cells (they don't work as effectively as they should). This cell helps fight off infections throughout the body. Prolonged use can lead to a depletion in vitamins (particularly C and E) minerals and amino acids (the building blocks for neurotransmitters). Poor diet and unhealthy lifestyle can also contribute to a poor immune system. This should recover once the client has stopped using crack or cocaine.

Excited Delirium:
Excited delirium (agitated delirium) is thought to be caused by the build up of dopamine in certain areas of the brain after repeated binges of crack or cocaine. The symptoms of ED include (below) and may be followed by a heart attack (some deaths in custody are now being attributed to excited delirium especially following restraint):

- Bizarre or violent behaviour (incoherent shouting)
- Hyperactivity (lots of energy)
- Hypothermia (inability to regulate body temperature)
- Extreme paranoia

Pregnancy:
Crack or cocaine use is definitely <u>not</u> advisable during pregnancy as taking any substance during this time could have an adverse effect. Many of the studies regarding issues such as 'crack baby syndrome' have now been shown to be overblown and more to do with public and professional reactions to crack being used during pregnancy than factual evidence.

However, crack and cocaine use during pregnancy MAY cause:

- Miscarriage (high blood pressure)
- Low birth weight (under nourishment)
- Premature birth
- Disturbed behaviour in new-born babies (possibly high adrenaline levels)

Cocaine can be passed on to the child through breast milk so it is advisable that if clients continue to use after the birth of their child that they bottle-feed.

It is vitally important that if someone has used when they are pregnant that they receive proper medical attention and look after themselves during the course of the pregnancy. Avoiding proper medical care, not eating properly, smoking cigarettes and drinking alcohol can all have a major effect upon the health of the baby during pregnancy.

Psychiatric Issues:
Some diagnosed psychiatric disorders can appear to get better with the use of crack or cocaine, this does not mean that the issue has gone away as when the use of crack or cocaine stops these conditions may reappear. It is therefore vitally important that if there has been a psychiatric diagnosis made in the past that they are receiving the appropriate support from mental health professionals. Psychiatric illnesses that may be complicated by the use of crack or cocaine:

- Attention Deficit Hyperactivity Disorder (cocaine may act as self medication)
- Paranoia / Anxiety disorders (cocaine can make these worse)
- Bi-polar (manic depression)
- Schizophrenia (dopamine theory may indicate possible medication action)
- Depression / suicidal thoughts
- Visual and auditory hallucinations
- Compulsive and eating disorders
- Crack /cocaine induced psychosis

Other Health Issues:

- Stomach pains and digestive disorders
- Weight loss (usually happens with people using on a daily basis, can become more complicated if combined with an eating disorder)
- Kidney damage
- Skin problems (poor diet, depletion in vitamins, burns from smoking etc)
- Hypothermia (increased body temperature)
- Can exacerbate asthma and increase attacks
- Complications with epilepsy and sickle cell (increased attacks)

8.2 Crack and blood borne viruses

The issue of BBV's in connection with crack and cocaine use has to a large extent been ignored unless the route of use is injecting and even then important elements are not being addressed. There is a need to challenge this and disseminate information to users who are at risk.

HIV:
HIV can be spread by the sharing of injecting equipment (as with heroin use) and also by the practice of unsafe sex. Some crack and cocaine users may have multiple partners and recent research into crack and the commercial sex industry (Mainliners, 2002) has highlighted that some working girls / boys are willingly having unprotected sex for an increased price to support their habit.

The main transmission route for HIV amongst crack and cocaine users is either through sharing contaminated needles or risky sexual behaviour. There is a tendency generally for risk taking behaviour to increase when taking cocaine, which in itself could increase the likelihood of the above transmission routes.

Recent research from the University of California has discovered that cocaine not only influences risk taking behaviour and consequent possible transmission but it also affects the AIDS viral load in the blood. Cocaine affects HIV in two ways;

1. Cocaine can double the amount of HIV infected cells
2. Cocaine can deplete the number of CD4 T-Cells by up to nine times

The above combination can obviously have a dramatic affect upon the health of an individual who is HIV positive and taking cocaine, whether it is on a recreational basis or dependent use.

HCV:
The dangers of contracting Hepatitis C are again not confined to intravenous drug use. If Hep C positive cocaine use itself can exert strain upon the liver, let alone if alcohol is also used and the immune system can be impaired.

Injecting:
As mentioned above cocaine use can increase risk taking behaviour and anecdotal information suggests that injecting users of cocaine who are fully aware of safer injecting behaviour can ignore this when caught up in the chaos and compulsion of using.

Smoking:
The use of crack can seriously dehydrate the body leading to lips becoming chapped. These can often be picked producing open wounds and the virus transmitted by pipe sharing. Some pipes can also cut the mouth when smoking, again increasing the risk.

Snorting:
When cocaine is snorted on a regular basis damage to nasal mucus membranes can occur causing the nose to bleed. The practice of sharing straws to ‘snort’ is quite common leading to the possibility of blood to blood transmission via the straw.

12. Health implications (Heroin)

The effect on users is more intense in the few minutes after injection (the 'rush') after which follow several hours of lethargy and sleepiness. During this time;

- The user may feel nauseous and may vomit, though the nausea doesn't distress them,
- Intense pleasure: heroin may cause a rush of intense pleasure and a strong feeling of well-being.
- Pain relief: heroin relieves physical pain. After using heroin, feelings of pain, hunger or sexual urges are diminished.
- Users may have trouble urinating,
- Drowsiness increases, as the quantity used increases, the user may feel warm, heavy and sleepy, eyelids may droop, close and open again, (they are 'gouching'),
- The user may sweat and itch, scratching themselves continually,
- Breathing becomes slower than normal,
- the pupils of their eyes contract (the eyes are 'pinned'),
- The user may become constipated.

When the effect wears off, the person may feel slightly drowsy for a day or so. After that they return to normal. However, if they start using heroin on a daily basis after a period – usually a few weeks – tolerance to the drug develops. The body's natural way of responding to this excess of opiates is to reduce the number of opioid receptors in the brain.

When heroin is no longer in the body there are a number of physical and biochemical changes which give rise to withdrawal symptoms, including: muscle cramps, irritability, anxiety, abdominal pains, chills, nausea, diarrhoea, sweating, sniffing, sneezing, weakness and insomnia.

These extremely uncomfortable sensations begin within 12 hours of not using, and peak after two to four days; subsiding after about a week. Death from withdrawal is rare.

Overdose

Using a large quantity of heroin can be fatal. Breathing slows down, body temperature drops, and heartbeat becomes irregular.

Overdose may occur if:

- too much heroin is injected, or it is a strong batch; or
- heroin is combined with other depressive drugs.

Most overdoses occur as a result of poly-drug use.

While unconscious, the person may also inhale and choke on their own vomit, which could cause a chest infection, long-term problems or death.

Short-Term Effects	Long-Term Effects
• "Rush" initial hit	• Dependence
• Depressed respiration	• HIV/AIDS and hepatitis B and C
• Clouded mental functioning	• Collapsed veins
• Nausea and vomiting	• Bacterial infections
• Suppression of pain	• Abscesses
	• Infection of heart lining and valves

Long-term use

Heroin is relatively non-toxic to the body in its pure form, causing little damage to body tissue and other organs. However, over long term use, users may become dependent on it. One of the most detrimental long-term effects of heroin is dependency.

Dependency is characterized by compulsive drug seeking behaviour and use, and by neurochemical changes in the brain. Heroin also produces tolerance and physical dependence, which are also powerful motivating factors for compulsive use. Users gradually spend more time and energy in searching, obtaining and using the drug. .

Physical dependence can develop with higher doses of the drug. With physical dependence, the body adapts to the presence of the drug and withdrawal symptoms occur if use is reduced abruptly. Symptoms of withdrawal include restlessness, muscle and bone pain, insomnia, diarrhoea, vomiting, cold flashes with goose bumps ("cold turkey"), and leg movements (kicking the habit). Withdrawal symptoms peak between 24 and 48 hours after the last dose of heroin and subside after about a week. However, some people have shown persistent withdrawal signs for many months.

Psychological problems can persist for longer periods. Craving and relapse can occur weeks and months after physical withdrawal symptoms are long gone. Patients with chronic pain who need opiates to function (sometimes over extended periods) have few if any problems leaving opiates after their pain is resolved by other means. This may be because the patient in pain is simply seeking relief of pain and not the rush sought by the illicit heroin user. In this case the ‘knowing’ is a factor in dependency. Knowing that if they have another hit of heroin then withdrawal symptoms will disappear. Recent neurological studies suggest that dependency and addiction affect two different parts of the reward system in the brain.

Consequences of chronic heroin use include scarred and/or collapsed veins, bacterial infections of the blood vessels and heart valves, abscesses and other soft-tissue infections, and liver or kidney disease. Lung complications (including various types of pneumonia and tuberculosis) may result from the poor health condition of the user as well as from heroin's depressing effects on respiration.

Problems are more likely to occur if heroin is injected, for example, DVTs, skin, heart and lung infections and diseases such as hepatitis, HIV and other blood-borne viruses may arise. Sharing needles and the process of breaking down ‘brown’ with an acid are still ongoing practices. Many of the ‘cuts’ in street heroin may include substances that do not readily dissolve in acid and result in clogging the blood vessels that lead to the lungs, liver, kidneys, or brain.

Heroin users also report high rates of hopelessness, anti-social behaviour and self-harm. Depression can be both reactive and chemical, especially if heroin is combined with other drugs. Users can neglect such things as housing and food and, combined with reduced appetite, this can lead to malnutrition, low self esteem and depression.

13. Rebalancing Diet

The use of amphetamine and methamphetamine can severely deplete both dopamine and serotonin neurotransmitters causing problems with depression, mood swings, movement and sleep patterns. Certain amino acids are needed to re-build these neurotransmitters:

Dopamine - Tyrosine
Phenylalanine

Serotonin - Tryptophan

Eating a balanced diet that is rich in foods that contain these amino acids can shorten the time needed for the body to rebalance these neurotransmitters and address the symptoms described above.

Foods rich in Tryptophan	Foods rich in Tyrosine and Phenylalanine
Breakfast: • Porridge • Eggs • Muesli • Milk • Wheat based cereals • Apples	Breakfast: • Porridge • Eggs • Muesli • Milk • Plain Yoghurt
Lunch: • Cottage cheese • Chocolate • Whole wheat pasta / bread • Sausages • Cheddar cheese • Avocado • Grapes • Plain yoghurt	Lunch: • Cottage cheese • Chocolate • Whole wheat pasta / bread • Sausages • Low fat cheese • Sardines • Walnuts
Dinner: • Turkey • Chicken • Pork • Mackerel • Brown rice	Dinner: • Turkey • Chicken • Pork • Duck • Steak • Brown rice • Soya beans • Fresh berries

The diet does not mean that you solely eat the food above just that your balanced diet is rich in the above foods.

14. Tea Recipes

SLEEP TEA	Name	Use
1 part each (i.e. 1.oz)		
CHAMOMILE	Matricaria recutita	Anti-inflammatory / antispasmodic / mild bitter / sedative.
SKULLCAP	Scutellaria laterifolia	Nerve tonic,anxiolytic, sedative, mild bitter, diaphoretic
MOTHERWORT	Leonurus cardiaca	Cardiac tonic, sedative
DAMIANA	Turnera Diffusa	Nerve tonic, stimulant, anxiolytic ,antidepressant
PASSIFLORA	Passiflora Incarnata	Sedative, antispasmodic, hypotensive
RED CLOVER BLOSSOM	Trifolium praetense	Oestrogenic, expectorant, skin depurative
VERVAIN	Verbena Officinalis	Nerve tonic sedative antispasmodic cholagogue

DETOX TEA	Name	Use
CAMOMILE 2 parts	Matricaria recutita	Anti-inflammatory / antispasmodic / mild bitter / sedative.
SKULLCAP 1 part	Scutellaria laterifolia	Nerve tonic, anxiolytic, sedative, mild bitter, diaphoretic
CATMINT `` ``	Nepeta cataria	Diaphoretic, antispasmodic, sedative,
PEPPERMINT `` ``	Mentha piperata	Expectorant / antiviral, carminative, antispasmodic

YARROW `` ``	Achillea Millefelioum	Circulatory, diaphoretic, anti-inflammatory, antispasmodic.
ELDER `` ``	Sambucus nigra	Anti-inflammatory, diuretic, vascular, diaphoretic, astringent, anti-catarrh.
HOPS (if feeling depressed leave this out) ¼ part	Humulus Inpulns?	Sedative, bitter digestive, diuretic

LUNG TEA	Name	Use
1 part each		
HYSSOP	Hyssopus officinalis	Antispasmodic, sedative, anticatarrah
COMFREY	Symphytum officinalis	Demulcent, tissue healer, expectorant
MARSHMALLOW	Althaea officinalis	Demulcent, expectorant
PEPPERMINT	Mentha piperata	Expectorant / antiviral
WILD CHERRY BARK	Prunus serotina	Anti-tussive, astringent, sedative
COLTSFOOT	Tussilage farfora	Expectorant, Demulcent, antispasmodic
YARROW	Achillea Millefolium	Circulatory, diaphoretic, , antispasmodic
St. JOHN'S WORT – only if infection)	Hppericum perforatum	Nervous system tonic, vulnerary, anti depressant, antiviral anti bacterial.

* Not advised for people with liver complaints

Vulnerary = healing of wounds.
Anxiolytic = relieving anxiety:
Depurative = purifying cleansing:
Diaphoretic = promotes sweating (cleansing)
Carminative = eases gripe pain –expels flatulence
Cholagague = stimulates bile flow:
bitter = digestive stimulant:
Demulcent = soothes mucus membranes:
Antitussive = anticough reflex:
Expectorant = expels catarrh and mucous
Nephritic = soothes kidneys

Always advise clients to seek appropriate medical attention and always inform medical staff of any complimentary therapies used.

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