# Methamphetamine

## Introduction

Methamphetamine (*methylamphetamine* or *desoxyephedrine*) is a powerful stimulant drug, related to amphetamine. First synthesized by Japanese chemists in the late 19th century, the substance saw its first widespread application in the Second World War, when it was prescribed to German military personnel under the trade name Pervitin.

Methamphetamine ('MA') was prescribed as a slimming aid and to counter narcolepsy in the 1960s; its illicit recreational use first occurred as an alternative to the licensing of cocaine in 1967. Since then there have been sporadic warnings about methamphetamine epidemics, which have failed to develop in the anticipated fashion. Meth can be produced from ingredients in readily available products, though the production process may be hazardous. In the UK, it usually comes in the form of a crystalline whitish powder, although colorant may be added and pills also appear.

MA can be taken orally or snorted, but is often smoked or injected, and these methods, which accelerate the onset of the drug's effects, are most likely to produce dependence. It has very strong dependence potential. Smoking and injecting produce the intense rush characteristic of the drug; euphoria, energy, talkativeness and heightened libido are experienced, while panic, obsessions, profuse sweating, jaw-grinding and sexual recklessness are also associated. Long-term use is extremely debilitating.

Methamphetamine is known by the streets names 'meth', 'ice', 'crystal', 'crank', 'Tina', 'yaabaa', (Thai for 'crazy pills') and 'shabbu'.

## Pharmacology

Methamphetamine is a powerful stimulant of the Central Nervous System (CNS). It causes modification in the neural mechanisms that regulate heart rate, body temperature, blood pressure, appetite, alertness, attention and mood. The drug's action produces a condition closely equivalent to the so-called "fight or flight" response seen in organisms when danger or threat to survival is at hand; normally generated by increased production of adrenalin, this state consists of increased heart rate and blood pressure, vasoconstriction (constriction of the arterial walls), bronchodilation (expanded lung capacity) and hyperglycaemia (increased blood sugars). These physical changes enable greater physical speed, strength and stamina, and are accompanied by heightened alertness, focus, loss of appetite and a rush of energy. In evolutionary terms, these mechanisms allow organisms to survive through recourse to a quick and intense burst of energy, and their action is replicated by methamphetamine. It is clear then, why government became interested in the military applications of these drugs. At the same time, the fight or flight response is by its very nature a short-term, temporary adaptation; extended periods of such intensity tend to bring exhaustion in their wake.

The methyl element potentates the drug's effects as compared to amphetamine, its close chemical relative; it is more lipid-soluble and can therefore more easily cross the blood-brain barrier, while at the same time it is less susceptible to the enzyme-degrading effects of monoamine oxydase. It increases intrasynaptic levels of norepinephrine, dopamine and serotonin.

History

Methamphetamine was first synthesized by Nagayoshi Nagai, a Japanese chemist, in 1893. It was synthesized from *Ephedrine*, a naturally occurring substance found in several plants used in traditional herbal medicine. Its earliest popular use was during the second world war (1939-1945), when it was widely used by German military personnel under the trade name *Pervitin*. The drug was supplied to elite forces, tank crews and aircraft personnel; it came in the form of chocolate and was named *Fliegerschokolade* (Flyer's chocolate) for pilots and *Panzerschokolade* (Tanker's chocolate) for tank crews. US and Japanese forces were also supplied extensively with MA.

At the end of WW2, stockpiles of methamphetamine often fell into criminal hands, and there is no doubt that large supplies were sold on the black market and contributed to the "economic miracles" achieved by the defeated axis countries. The energy of MA certainly assisted in the rebuilding of the shattered economic and social infrastructure of Japan, which banned the drug in 1951 following widespread problems with heavy usage.

While it was prescribed as a slimming aid throughout the developed world in the 1950s and 60s, illicit methamphetamine use in the UK has not reached the problematic levels seen in some other countries (USA, Australia, Thailand, Myanmar, Vietnam etc). Injectable methamphetamine did enjoy a wave of popularity in 60s London, prompting warnings from the counter-culture that "Speed Kills". This market was largely a result of the changes to the British system of prescribing, under whose terms a number of people had been prescribed cocaine. When the law changed, a number of doctors tried prescribing methamphetamine as a substitute for cocaine. Its use has recurred at intervals since then, repeatedly leading to warnings of an impending epidemic, which has so far failed to materialise. The most recent warnings about the mass use of methamphetamine in the UK appeared in 2005 when unpublished research by academics at City University, leaked to the BBC, claimed that 10-20% of London's gay men were using the drug. The claim was widely disputed and was almost certainly a considerable exaggeration. Nonetheless a number of reports have emerged that suggest the use of the drug is spreading, and following advice from the Advisory Council on the Misuse of Drugs, the government reclassified the drug to Class A in 2007.

Use and culture

Methamphetamine produces a sense of euphoria, alertness and increased energy- these effects are intensified when the drug is administered by smoking or injection, those methods which get it into the blood and the brain the quickest. It also causes sweating, nausea, suppression of appetite, sleeplessness, jaw-clenching, increased libido, loquacity, agitation, fascination with repetitive tasks (punding), anxiety and panic attacks.

Methamphetamine can appear in powder, tablets and crystalline form; the latter, known as 'ice' or 'crystal meth' is the base form of the drug, which can be smoked and is similar in its effects to crack cocaine, and produces a very intense though much more durable high. Its use has until now been mostly associated with members of the gay community and certain groups of clubbers, but some sources allege that the drug's use is now becoming more generalized. The white, odourless powder that constitutes the hydrochloride form is easily dissolved in water and can be snorted and injected.

MA is associated, as mentioned above, with ‘punding’ or the compulsive fascination with repetitive tasks and acts. The combination of this facet of the drug’s makeup with its increasing of libido has led many users into bizarre and often highly risky sexual practices, their confidence, lowered inhibitions and generalized sexual arousal often resulting in unsafe conduct such as sex without condoms, ‘rough’ sex and so on. Prolonged sexual bouts in which males do not ejaculate or reach orgasm can cause bodily damage to the sexual organs, mouth and rectum, which is often not recognized until later when the drug’s effects have worn off. Prolonged and solitary sessions of compulsive masturbation are also reported to be common.

Health

Chronic methamphetamine use can be seriously harmful. The horrific photographs of “meth mouth” are perhaps familiar to the reader; they represent a condition which is caused not by the corrosive effects of the drug itself as is commonly supposed, but rather as by-products of some of its effects. These include the dry mouth that results from MA’s use, long periods of poor oral hygiene, the jaw-clenching and teeth-grinding that occur. MA causes the body to produce less saliva, which normally works to resist the acids that cause tooth decay; the situation is exacerbated by the drinking of high-sugar beverages. Intense cravings and depression can follow the cessation of use, and the neurological modifications brought about by regular use can take months or even years to return to a normal neuro-adaptive state.

Overdose can be fatal, usually as a result of stroke, heart failure, cardiac arrest and hyperthermia. Rhabdomyolsys or muscle breakdown can also occur and may lead to kidney failure.