

# Release

## Drugs, The Law & Human Rights

### Heroin

#### Introduction

Heroin is the popular name (originally a brand name) for *diacetylmorphine* or *diamorphine*, which is synthesized from morphine, a derivative of the opium poppy. It is a strong pain-killer, and also has powerful euphoriant and anxiolytic effects (i.e. it produces feelings of wellbeing and freedom from worry).

While pharmaceutical heroin is white, most of the heroin available in the UK is a brownish powder and is in fact the base form of the drug (an intermediary stage in the production process). This makes it suitable for smoking, and much illicit heroin is smoked on tin-foil ('chasing the dragon' or 'booting'). Like its pure, water-soluble form diamorphine, brown heroin can be injected, but needs an acidifier to be added to make it dissolve (vitamin C is often used).

Heroin is a highly addictive drug, producing tolerance to its effects and deep physical dependence—without it the user becomes ill and unable to function normally. The time taken to become addicted varies with the individual and context, as does the severity of withdrawal symptoms. Overdose can be fatal.

Heroin is known by names such as 'smack', 'skag' and 'brown', and is often combined with cocaine or crack in a cocktail known as a 'snowball' or 'speedball.'

#### Chemistry

Heroin works by reacting with opioid receptors found on the surface of cells in the brain and spinal chord, simulating the action of endogenous opioids produced by the body. It acts on areas of the nervous system particularly linked to mood and nociception (the perception of pain). There are three main types of endogenous opioids: endorphins, enkephalins and dynorphins. The three main types of receptors are mu, kappa and delta receptors. Heroin and morphine work primarily at the mu-receptors, and in addition to affecting mood and the sensation of pain, they act upon the eyes, the vomiting centre, the sense of balance, the blood vessels, the lungs and respiration, the digestive system, the bladder, the womb, the skin and the immune system.

Heroin is metabolized into morphine, a mu-opioid receptor agonist. The mu-opioid receptor also binds endogenous opioid peptides such as beta-endorphin, Leu-enkephalin, and Met-enkephalin. Repeated use of heroin results in a number of physiological changes, including decreases in the number of mu-opioid receptors. These physiological alterations lead to tolerance and dependence, and the cessation of heroin use results in extremely uncomfortable symptoms including pain, anxiety, muscle spasms, and insomnia. This set of symptoms is called the opiate withdrawal syndrome. It has an onset 6 to 8 hours after the last dose of heroin. Morphine also binds to delta- and kappa-opioid receptors. There has also been some controversy regarding whether heroin binds to a subtype of mu-opioid receptors that is not targeted by morphine but is activated by the morphine metabolite morphine-6beta-glucuronide.

### History

Heroin was first synthesized at St Mary's hospital in London in 1874 by C.R. Alder-Wright. Wright was mistaken at the time about the detailed molecular structure, but had produced diacetylmorphine or diamorphine, the usual medical name for heroin. The first marketing of the substance was by the German company Bayer in 1898, which christened it heroin after the German term for "strong, powerful". Bayer introduced both heroin and aspirin to the market that year. Both drugs were to have momentous careers.

Heroin's first use was as a cough suppressant for those suffering from Tuberculosis. Its deviant career began when it became popular amongst adolescent gangs in New York City early in the 20<sup>th</sup> century, and the US was the country that vigorously pushed anti-heroin measures as an element amongst its overall crusade against intoxication, outlawing the domestic production of the drug in 1924. In the period following WW2 the US would attempt to ban the manufacture of heroin globally. Britain was one of the few countries that insisted that heroin had a valid place in medicine.

Since the early attempts to regulate legitimately made heroin, much has changed; the drug has been manufactured illicitly from illegal opium poppy crops; today southern Afghanistan is, notoriously, the producer of some 90% of the world's illicit opium and heroin. In Britain, the old 'British System' that allowed GPs to prescribe heroin to addicts has been superseded by clinics offering methadone; since these changes in the 1960s, the UK's users have been supplied by black market products. The Iranian revolution of 1979 saw many middle class Iranians bring out their money in heroin, and the practice of smoking the drug on foil (chasing the dragon) became established in Britain at that time.

### Use and culture

Heroin produces a sense of euphoria, tranquility, drowsiness and emotional detachment. It can also cause nausea, loss of balance and fatal overdose.

Contemporary use of the drug is split between those who smoke and those who inject, with a smaller group who prefer to snort the drug. The brown Afghan heroin usually available in Britain is really designed as smoking heroin, and is in fact the base form of the drug. If uncut, it runs freely on tin foil and the fumes are inhaled through a foil tube. Cuts presently used include caffeine, paracetamol, manitol and benzodiazepines.

Heroin hydrochloride, the white salt form that is readily soluble in water and designed for injection, is only rarely found in the UK. In order to render the base form ('brown') soluble, an acidifier is added to the heroin in the spoon used to mix the injection- usually vitamin C or citric acid is employed. The mixture is then heated and the brown heroin dissolves.

Heroin has enjoyed regular phases of fashionability since the 1960s, and has been going through one such recently; it has been viewed as a cool and chic drug, used by some of the most credible figures in popular culture. It often forms part of a poly-drug using culture and is frequently mixed with cocaine or crack cocaine in 'speedballs' or 'snowballs' which, when injected together, combine the elements of each in a particularly intense high.

### Health

Pure heroin or diamorphine is, despite the press it has received over most of the last century, a relatively benign drug, and its long-term use does not cause harm to the body. It is, however, a powerfully addictive drug, and the legal, social and economic pressure of maintaining that addiction in the illicit market can have fairly devastating consequences in the long term.

Heroin dependence usually starts out with occasional use, which turns imperceptibly into habitual use. Tolerance builds up and neurological adaptation takes place; essentially, the user has to keep taking the drug in order to feel 'normal'—when William Burroughs was asked why he took heroin, his answer was, "So I can shave." In other words, a dose of heroin becomes necessary before one can perform the most basic of social functions; unless one is very rich, the price of constantly maintaining one's body in an opiated state is extremely time-consuming and expensive; most people get into a mess trying.

Addiction in the UK is often treated by opioid substitution therapy- that is, by supplying the user with an alternative substance that preserves the equilibrium of the body and neural system. This gives the individual some respite from the pressures of continually getting money, scoring, using and so on again, *ad infinitum*—enabling them to consider their

future options, which may involve coming off opiates entirely or rebuilding a life with the support of the substitute medication. There is no single method of treating heroin addiction that will suit everybody, or which will be effective in all cases; consequently most experts, unless driven by some ideological imperative, believe that a range of treatment options should be available.