

TerranearPMC Safety Share

Week of February 24, 2014 – Heroin

Early morning on Super Bowl Sunday, actor Philip Seymour Hoffman was found dead in his home in New York's West Village of an apparent over dose of heroin. While being acclaimed as the greatest actor of his generation, this only makes his untimely death that much more of a tragedy.

Heroin has been around for over 100 years, when it was manufactured for commercial sale in 1898 by the Bayer pharmaceutical company and marketed as a treatment for tuberculosis as well as a remedy for morphine addiction. Heroin is not a naturally occurring substance, such as opium or marijuana; it is made by adding two acetyl groups to the morphine molecule, and is chemically known as diacetylmorphine or morphine diacetate, or simply diamorphine. Ironically, a year later, Bayer manufactured another acetyl derivative of a painkiller; this time from a natural drug, salicylic acid, which is today commonly known as aspirin.

Heroin was first synthesized in 1874 from morphine. The name heroin comes from the adjective *heroisch* (heroic). In its purest form, heroin is a fine white powder. But more often, it is found to be rose gray, brown or black in color. The coloring comes from additives which have been used to dilute it, which can include sugar, caffeine or other substances. Street heroin is sometimes "cut" with strychnine (colorless, bitter crystalline alkaloid used as a pesticide, particularly for killing small vertebrates such as birds and rodents). Strychnine, when inhaled, swallowed or absorbed through eyes or mouth, causes a poisoning which results in muscular convulsions and eventually death through asphyxia. The various additives of heroin do not fully dissolve, and when they are injected into the body, can clog the blood vessels that lead to the lungs, kidneys or brain; causing an increased risk for infection or destruction of vital organs.

Heroin can be injected, smoked or sniffed. The first time it is used, the drug creates a sensation of euphoria. A person can feel extroverted, able to communicate easily with others and may experience a sensation of heightened sexual performance. However, after continued use, a tolerance develops, which requires greater quantities to achieve the same intensity. Heroin is highly addictive and withdrawal extremely painful. The drug quickly breaks down the immune system, finally leaving one sickly, extremely thin and bony and, ultimately, dead.

The history of man's use for artificial or recreational euphoria dates back thousands of years. As long ago as 3400 B.C., the opium poppy was cultivated in lower Mesopotamia. The Sumerians called it as Hul Gil, the 'joy plant.' The Sumerians' knowledge of poppy cultivation passed to the Assyrians, the Babylonians, and ultimately, the Egyptians. By 1300 B.C. the Egyptians were cultivating *opium thebaicum*, named for their capital city of Thebes. From Thebes, the Egyptians traded opium all over the Middle East and into Europe. Throughout this period, opium's effects were considered magical or mystical.

Some eight hundred years later, the Greek physician, Hippocrates, dismissed the idea that opium was "magical." Instead, he noted its effectiveness as a painkiller and a styptic (a drug used to staunch bleeding.)

Around 330 B.C. Alexander the Great introduced opium to the people of Persia and India, where the poppies later came to be grown in vast quantities. By A.D. 400, *opium thebaicum* was first introduced to China by Arab traders.



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During the Middle Ages in Europe, when anything from the East was linked to the Devil, opium went unmentioned and unused in Europe. However, the surge of seafaring and exploring reintroduced the drug in the late 15th and early 16th centuries. Portuguese sailors are thought to have been the first to smoke opium, around 1500. As with any drug, smoking opium has an instantaneous effect, contrasted with eating or drinking the drug.

During the 18th century, physicians in the U.S. used opium as a therapeutic agent for multiple purposes, including relieving pain in cancer, spasms from tetanus, and pain attendant to menstruation and childbirth. It was only towards the end of the 18th century that some physicians came to recognize the addictive quality of opium

In 1805, morphine and codeine were isolated from opium, and by the 1850s morphine was used as a cure for opium addiction since its addictive characteristics were not known. Morphine's use (named after the Greek god of dreams Morpheus - for its tendency to cause sleep) was initially well received as it has about ten times more euphoric effects than the equivalent amount of opium. Over the years, however, morphine abuse increased, overtaking opium and creating a much larger addiction problem than opium.

Opium, morphine and heroin all fall under the specific class of drugs known as opiates or opioids. They work by binding to specific receptors in the body which are found principally in the central and peripheral nervous system and the gastrointestinal tract. The receptors in these organ systems mediate both the beneficial effects and the side effects of opioids.

During the 1970s, a new drug called methadone (synthesized in 1937) was used to treat heroin addicts, but, similar to previous attempts to treat one drug, the new drug turned out to be even more addictive than the initial drug: in other words, methadone was more addictive than heroin.

Heroin use in the US is becoming an increasing concern, More than 660,000 Americans used heroin in 2012, which is nearly double the number from five years earlier; while users tend to be more affluent than before, living in the suburbs and rural areas rather than the inner city.

Mexican cartels are pushing ever-larger amounts of heroin across the Southwestern border, sometimes hidden in fake coconuts, bananas and lollipops. Heroin has flooded the Northeast and reached a large market of American pain-pill addicts seeking a less-expensive high. Heroin users can get a hit for as little as \$8 to \$10, so they can get high several times for what they would pay for a single, pricier pain pill. Overdoses and emergency room visits have skyrocketed across the country, and more are dying from a drug whose purity can be hard to judge. The consequences have been increasingly lethal. In 2010; the latest year such data were available, heroin overdoses killed more than 3,000 people across the U.S., a 45% increase since 2006.

The answer to our country's crisis for all substance abuse, whether heroin or other opiates or alcohol, seems to be far removed from our desire to understand our need to have and use such substances. Yet until we, as a people, decide to truly confront the reasons that so many of us feel the need to reach out to such products, we will never find a way to end the destruction of which we now recognize that Philip Seymour Hoffman became the latest statistic.

All the world is birthday cake, so take a piece, but not too much.

George Harrison

