Opium and Morphine

Alexander Helvaty, Albert Soegiantoro, Haotong Wang & Lu Gao
Department of Chemistry, Indiana University, Bloomington, IN 47405

Abstract

Opium has been used in a medical setting for a long time; people realize the use of opium as a painkiller and medicine. As time has gone on, opium usage has been growing and people have begun to create new drugs with opium. Morphine is one example of processed opium. Despite the high use for health and medicine, opium has been one major issue for some countries due to its misuse in creating non-medical drugs. These differing uses of opium allow focus on both the effect of its lawful medication and the side effects of its unlawful misuse.

Background

Origin of Opium
The unripe pod of the poppy species, Papaver somniferum, exudes milky latex (known as poppy tears). This rubbery latex is then collected and dried to become what is known as opium (Lachryma papaveris). In recent history, opium has been used as a painkiller and for the production of other pain relieving drugs such as heroin and morphine.

Opium has been in use since 3400 B.C by different countries and people groups from all over the world. Long ago, people used to believe opium was magical or devilish due to the effect it had on human reasoning. In later years, the extraction of various opiate analgesics such as morphine has been carried out. Opium and its opiate extracts, such as morphine, have become addictive to recreational users due to the euphoric effect it has on the human body.

The main opiate analgesic derivative extracted from opium is Morphine. It is among the most effective pain relieving drug available. It is used in pharmaceutical products and is also used to produce heroin, a notoriously addictive and illegal drug.

Morphine
Morphine is in a class of opiate, or narcotic analgesics used to relieve moderate to severe pain. Morphine works by changing how the brain and nervous system respond to pain.

Structure and Properties Of Morphine

Molar Mass
286.338 g/mol

Solubility
0.15 g/l at 20 degree Celsius

Melting Point
225 degree Celsius

Boiling Point
190 degree Celsius

Current Events and Real World Impact

Reversal of Intolerable Adverse Effects with Naltrexone (NTX)
Though opioids are such a major treatment option for moderate to severe pain, there are some limitations for a large percentage of people because of what are known as intolerable adverse events. These events, such as constipation, nausea, vomiting, dizziness, and urinary retention create a problem for an effective treatment with morphine and deny many people suffering adequate relief from their pain. These effects are brought on by doses of opioids acting on what are called Gs-coupled receptors. In one recent case study, it was observed that adverse effects occur even with very low doses of morphine; the amount of morphine being administered is not directly related to the induction of adverse effects. The data showed that administering equivalent doses of opioid antagonists would antagonize the Gs-coupled receptor-mediated excitatory effects (what causes the adverse effects), without affecting the inhibitory action on the brain’s ability to perceive pain. In other words, the use of opioid antagonists represents a promising strategy to counteract opioid adverse effects without impairing analgesia (relief from pain).

Side Effects of Non-Medical Use of Opium
Opium use can lead to physical dependence and addiction. Drug tolerance can occur with long-term use. Withdrawal symptoms can also occur if long term use is reduced or stopped.

Smoking opium can increase the risk of lung disease, lung cancer, and several other diseases. Smoking opium can also cause irreparable damage on the heart, liver, kidneys and lungs. Injecting opium or morphine can damage and possibly contaminate one’s vein, which can lead to abscesses of the skin.

Although Morphine has the effect of blocking deep pains, it has minimal effect on sharp superficial injuries. One side effect of its pain-relieving action is that the patient feels detached from reality with feelings of euphoria and pleasure. These are the qualities that make it highly attractive for recreational drug users.

Social Aspect
The number of opium users has increased in recent years. According to a 2011 survey, it is estimated that 607 thousand people per year used heroin in the years 2009-2011, which is up from the years 2002-2003 with 374,000 users per year. Most of the users are young adults aged 18 to 25.

Future Directions
Genetically Altered Yeast ➔ Opiates
In recent years, scientists have studied and practiced to genetically engineer yeast in one useful way to produce morphine. In one of the labs, the chemical biologists engineered strains of yeast into recognizable opiates.

Home-Brewed Opiates and Necessary Regulations
In the future, new technology will be able to help people create home-brewed opiates from yeast. In order to prevent misuse of opiates and regulate the production the there are four steps that should be taken:

1. Yeast strains should be developed that “normal” amateur “home-brewers” cannot use.
2. Simply, keep the materials out of the public’s hands.
3. Increase security where opiate producing yeast strains are being researched or worked on, such as labs and research facilities.
4. Update the law so that the distribution of opiate-producing yeast is illegal.

The road for science is long and will never end, there are many new explorations and discoveries ready to be found out. Studying and researching opiates can benefit society greatly as well as hurt it in devastating ways. It is necessary to make sure that while scientists discover new things about possibly dangerous chemicals and drugs, rules and regulations are established in order to insure the safety of society.

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