

6.4_B

Answers: Suggested divisions

Paragraph 1

- origin in Med. – now many countries
- small round seeds = food source
- opium from seed pods
- workers scrape resin frm. pods & dehydrated & opium blocks

Paragraph 2

- 1st ref. opium Sumeria (2100 BCE) (some researchers)
 - 15 prescrip. clay tablet – ingredients plant, animal, mineral – some still used
- Theophrastus (300 BCE) 1st detailed descr. opium extraction/processing
- Theo.'s descr. used by physicians in ancient Rome (poppy seed tea already used)

Paragraph 3

- from 1500 – op. more widely used Europe
- 1500s laudanum – little pills – opium + citrus juice
- over times diff. additives
- 1800s laud. = liquid – 10% op. – presc. range ill.
- v. addictive – late 1800s literature descr. problems

Paragraph 4

- opiates + opioids created to minimize add. + retain analgesic qualities of opium
- 1st opiate morphine – comm. pharm. Germany 1827
 - effective painkiller – but addictive!
- 2nd opiate diamorphine > concent. morphine
 - 1890s diamorph. commercially sold as Heroin – 'non-addictive morphine'! – but highly addictive
- dev. of opioids (e.g., oxycodone) sim. mechanism to opiates but not derived from opium
 - opioids also highly addictive

Paragraph 5

- worldwide legislation to control opiates + opioids by prescript. limited success – harmed by:
 - illegal markets, e.g., 2019 Europe market illegal heroin > €7bn.
 - opioid overprescription esp. US
 - late 1990s drug companies – false assurances opioids non-addictive
 - overprescribing oxy. + other synthetic opioids
- 2016 opioid epidemic declared national public health emergency in US

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Answers: Model paragraph

Drugs from plants: the opium poppy

One of the best-known examples of a plant source of a medicine is the opium poppy. The plant originated in the Mediterranean region but is now grown in many parts of the world. The seeds of the plant are small and round, and can be used as a source of food. The seed pods of the plant are used to produce the drug opium. Labourers scrape off the resin produced by the pods, which is then dehydrated and formed into blocks of opium.

Some researchers believe that the first reference to opium is on a clay tablet from Sumeria that has been dated to around 2100 BCE. On the tablet, 15 medical prescriptions are listed, including some animal, plant and mineral ingredients which are still in use today. However, Theophrastus's *Historia Plantarum*, a book on the properties of different plants which was written in around 300 BCE, is generally agreed by scholars to provide the first detailed description of opium extraction and processing. As a result of Theophrastus's description, in ancient Rome, where poppy seed tea was already used to relieve patients of their pain, the poppy plant could be employed by physicians more effectively.

From around 1500, opium became more widely used as a medicine in Europe. It first appeared as laudanum in the form of little pills which combined raw opium with citrus juices. Over time, different substances were added to the opium. By the 1800s, laudanum was produced in liquid form and contained only extracts of opium (typically around 10%). It was prescribed for a very wide range of illnesses. While the opium content was relatively low, laudanum was very addictive, and by the late 1800s, articles began to appear discussing solutions to this problem.

Opiates and opioids were created to avoid the addictive nature of opium while retaining its analgesic qualities. The first opiate, morphine, was commercially produced as a pharmaceutical in Germany from 1827. It was very effective as a painkiller – but nevertheless it was highly addictive. Diamorphine, an even more concentrated form of morphine, was produced commercially from the mid-1890s. Marketed as a non-addictive form of morphine with the brand name Heroin, it was, in fact, extremely addictive. Opioids such as oxycodone used a pain relief mechanism similar to opiates but were not derived from opium. They were effective painkillers but, yet again, were also addictive.

Worldwide regulation of opiates and opioids by prescription to control their misuse has had only limited success. Partly this was because a large illegal market developed for the drugs. For example, in 2019, the European market for illegal heroin was estimated at over €7 billion. The overprescription of opioids also caused problems in some countries, especially the United States. From the late 1990s, drug companies falsely reassured doctors that their painkillers were non-addictive. This led to the overprescribing of oxycodone and other opioids. By 2016, the US government had declared the epidemic of opioid addiction a national public health emergency.