

Week 11 – MEDICINES

1. Matching: Match different types of drugs and their description:

DRUGS

1. synthetic	A) you can buy them without a prescription
2. prescription	B) do not occur naturally
3. over the counter / OTC	C) improve qualities such as memory or intelligence
4. anaesthetic	D) alter your mind
5. psychotropic	E) can only be prescribed by doctors
6. smart	F) stop people feeling pain, e.g. during operation

2. Read these statements and rate them from 1 to 10.¹

1: I strongly agree.....10: I strongly disagree

1. Natural medicaments are better than synthetic medicines.
2. People use too many pills nowadays.
3. Alcohol can do you much harm, even in small amounts.
4. All diseases have a psychological basis, they cannot be treated only by pills.
5. Medicines should NOT be tested on animals.
6. The use of illegal drugs is immoral.
7. A soft drug (like cannabis) is quite harmless.
8. Cannabis should be legalized.
9. Drug users should not be criminalized, they are risking only their own health.
10. Heroin should be available on prescription for drug addicts.

In small groups, discuss your responses to these statements.

EXPRESSING OPINIONS

I think that...

I am unconvinced that...

I do not agree that...

I do not believe that...

It seems to me that...

in my view

I would argue that...

in my opinion

- *How acceptable is it for wild animals to be kept in zoos?*
- ***I believe that*** it is quite unacceptable for animals to be kept in zoos. ***It seems to me that*** when they are confined to a cage they never have enough room to move around. ***I would argue that*** it is kinder to allow a rare animal to die naturally in the wilds rather than to prolong its life artificially in a zoo.

to my mind: to emphasise that this is your opinion

I reckon: usually to express an opinion about what is likely to happen

I feel: to express a strong personal opinion

if you ask me: to express an opinion that may be critical

to be honest (with you): to express a critical opinion without seeming rude

as far as I'm concerned: to express an opinion that may be different from others'

- ***I feel*** she shouldn't be getting married so young.
- ***If you ask me,*** it's unreasonable to pay for something which should be free.

Of course, many / some people argue... Admittedly...

It is sometimes argued...

While... : to express other people's opinion

READING: PSYCHOLOGICAL PROPERTIES OF SELECTED ESTERS

3. Do you know how to pronounce these words?

relief synthetic isolate analgesic morphine antipyretic modify
esterify hydrolyze diacetyl induce cure euphoria injection

4. Match the headings and the paragraphs:

- a) Erroneous recommendations
- b) Properties of aspirin
- c) The way of heroin production
- d) Properties of salicylic acid
- e) Derivatives of salicylic acid
- f) Pain relievers in early societies

5. What do the following years refer to?

1860

1763

1875

1886

1899

1874

1890

6. Answer the Questions:

- a) What did early societies use as pain relievers?
- b) When were the properties of salicylic acid discovered?
- c) Why did chemists want to modify the molecule of salicylic acid?
- d) Which derivatives of salicylic acid were synthesised?
- e) What undesirable properties did they have?
- f) What properties does aspirin have?
- g) What is a tablet of aspirin composed of?
- h) What is morphine?
- i) What effects does it have in human body?
- j) How was heroin produced?
- k) What error did the Bayer company make as for heroin?
- l) How does heroin differ in its effects from morphine?

11.8 Physiological properties of selected esters²

People have long sought relief from pain. Alcohol, opium, cocaine, and Indian hemp (marijuana) were used as medicines for relief of pain in some early societies.

The first successful synthetic pain relievers were derivatives of salicylic acid (Figure 11.4). Salicylic acid was first isolated from willow bark in 1360, although an English clergyman named Edward Stone had reported to the Royal Society as early as 1763 that an extract of willow bark was useful in reducing fever.

Salicylic acid is itself a good analgesic (pain reliever) and antipyretic (fever reducer), but it is very sour and irritating when taken by mouth. Chemists sought to modify the structure of the molecule to remove this undesirable property while retaining (or even improving) the desirable properties.

Sodium salicylate was first used in 1875. It was more pleasant when taken by mouth than salicylic acid, but proved to be highly irritating to the lining of the stomach. Phenyl salicylate (salol) was introduced in 1886. It passes unchanged through the stomach. In the small intestine it is hydrolyzed to the desired salicylic acid, but phenol, which is quite toxic, is also formed. Acetylsalicylic acid (aspirin) was first introduced in 1899 and soon became the largest-selling drug in the world.

Aspirin is a registered trade name of the German Bayer Company. In Germany, Canada, and other countries, aspirin still means the Bayer brand. Other brands are sold as acetylsalicylic acid or ASA. In the United States, Bayer has lost its rights to the trade name, and aspirin is now used as a generic name for acetylsalicylic acid.

Aspirin is an analgesic and antipyretic. It reduces inflammation and hinders the clotting of blood. An aspirin tablet usually contains 325 mg (5 grains) of acetylsalicylic acid. The tablet is held together with some sort of inert binder, such as starch, clay, or sugar. Various brands of aspirin have been extensively tested. The conclusions of impartial studies are invariably the same: the only significant difference between brands is price.

Morphine, an opium alkaloid, is a narcotic, that is, a drug that produces both sedation (narcosis) and relief of pain (analgesia) (Figure 11.5). It is also strongly addictive. Chemists, therefore, also sought to modify the properties of morphine.

Morphine is both a phenol and an alcohol. When both of these groups are esterified, heroin (diacetylmorphine) is produced.

Chemists at the Bayer Company first prepared this morphine derivative in 1874. Heroin is Bayer's trade name for diacetylmorphine. Heroin received little attention until 1890, when it was proposed as an antidote for morphine addiction! Shortly thereafter, Bayer was widely advertising heroin as a sedative for coughs, often in the same advertisement with aspirin (Figure 11.6). It was soon found that heroin induced addiction more quickly than morphine, however, and that heroin addiction was harder to cure. The physiological action of heroin is similar to that of morphine, except that heroin produces a stronger feeling of euphoria for a longer period of time. Heroin is so strongly addictive that it seems that one or two injections are sufficient to induce dependence in

some individuals. Heroin is not legal in the United States, even by prescription. Some individuals are lobbying for legalization of the drug for use with terminally ill people who have great pain.

Many thousands of morphine derivatives have been synthesized over the years. Only a few show significant analgesic activity. Most are strongly addictive. In fact, it now seems likely that the same molecular features that provide relief of pain also create chemical dependence.

10

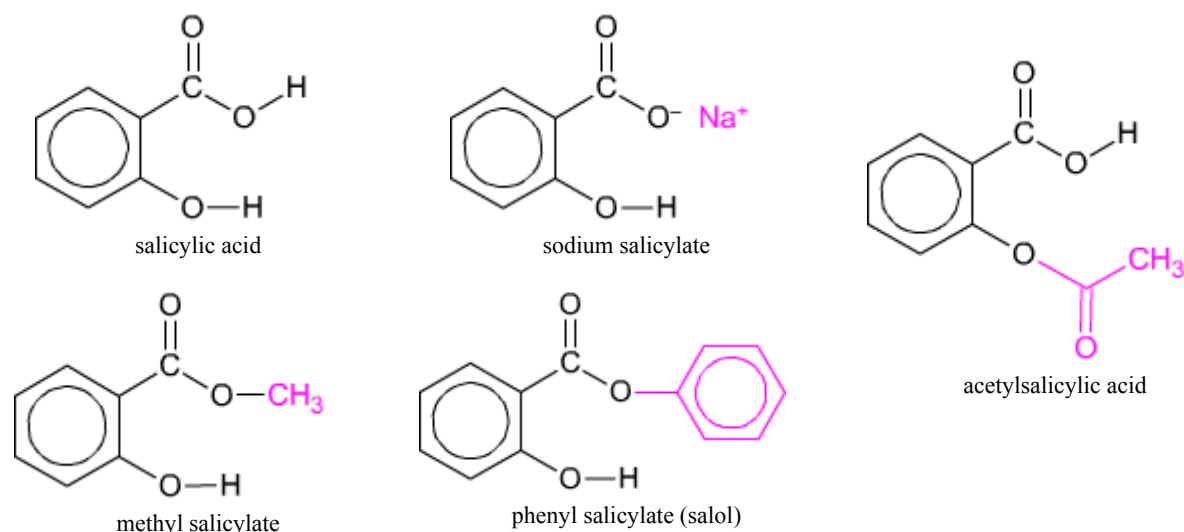


Figure 11.4. Salicylic acid and some of its derivatives

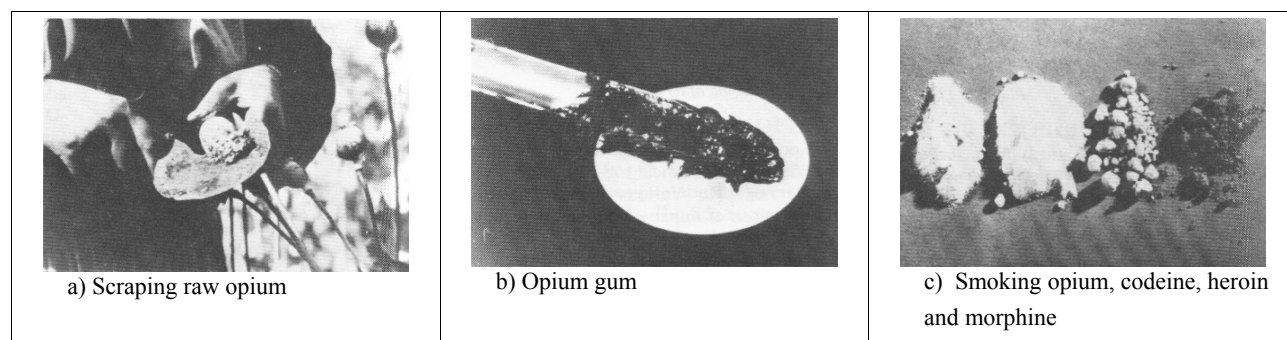
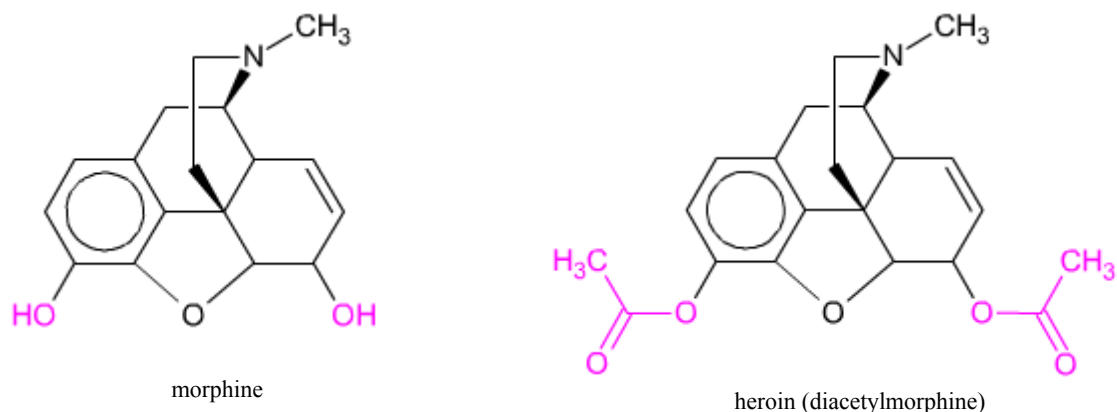


Figure 11.5 Morphine is the narcotic isolated from raw opium. Codeine and heroin are derivatives of morphine.

7. Listening: When Medicines Become a Risky Mix³

Are these statements true or false?

1. Gerard Levert became seriously ill because of drug interactions. T/F
2. In 2004 almost 50000 people died from accidental drug mixing. T/F
3. People infected with the AIDS virus often develop cancer. T/F
4. People should consult a pharmacist before taking herbal treatment. T/F
5. The combination of alcohol and painkillers may lead to stomach bleeding. T/F



8. HOMEWORK

a) Complete the following table:

<i>adjective</i>	<i>abstract noun</i>	<i>Czech (adjective)</i>
glad		
	eagerness	
excited		
	cheerfulness	
inspired		
	enthusiasm	
frustrated		
	anxiety	
grateful		
	ecstasy	
furious		

b) Choose the best word from those given to complete each of the sentences which follow.

enthusiastic - confused - cross - thrilled - depressed - upset - fed-up - frustrated - discontented

- I didn't know who was telling the truth. I felt totally
- Some mothers are for several months after the birth of a baby.
- I think she is bad-tempered because she is She wanted to be an actress and not a school-teacher.
- Although he seems to have everything anyone could possibly want, he is still
- He went skiing for the first time last month, but now he is so about it that he can talk of little else.
- My baby brother gets veryby the evening if he doesn't have an afternoon sleep.
- This rainy weather has gone on for so long. I feel reallywith it.
- He was terriblywhen he heard the news of his friend's accident.
- She was.....when she learnt that she had won the first prize.

c) The words ending in **-ed** also have **-ing** forms e.g. **interested/interesting**. Add the correct ending **-ed** or **-ing**.

She was thrill..... by her present.
 I found the film very excit.....
 The poet was inspir..... by the sunset.
 This weather is terribly depress.....
 It is very frustrat..... when the phones aren't working.
 She was confus..... by the ambiguous remarks he made to her.

Sources: ¹ Adapted from BBC Learning English
² From the textbook General, organic and biological chemistry. By Dorothy M.Feigl.
³ Available at <http://www.voanews.com/specialenglish/archive/2007-08/2007-08-21-voa2.cfm?CFID=197547808&CFTOKEN=35578150>
 Lesson adapted from Hana Němcová and Milada Pavlovová.