

The aspirin story: additional information

Conditions and ways that aspirin helps to cure them

- Pain – analgesic
- Fever – antipyretic
- Inflammation – anti-inflammatory
- Rheumatism – antirheumatic
- Myocardial infarction (heart attack)

Side effects

- Aspirin can lead to irritation of the lining of the stomach and possibly stomach ulcers.
- There is a possible link between taking aspirin and Reye's syndrome - a rare disorder that can cause severe liver and brain damage in children and young adults who are recovering from a viral infection.

Nomenclature

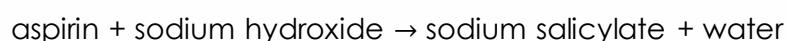
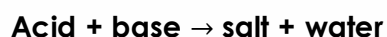
A variety of names are commonly used for aspirin. Generally, the everyday or industrial names are less complex than the systematic names.

The name given to aspirin is 2-ethanoyloxybenzenecarboxylic acid, but when carrying out your own research you may also come across the names 2-acetoxybenzoic acid or acetylsalicylic acid.

Chemistry of aspirin

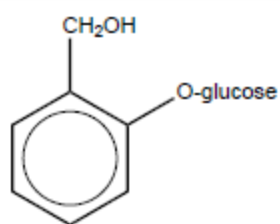
Aspirin is an ester, which is formed by joining an alcohol with a molecule derived from a carboxylic acid.

Aspirin can be made more soluble by its reaction as an acid with aqueous sodium hydroxide.

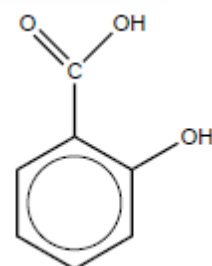


This reaction is effectively reversed when soluble aspirin reaches the hydrochloric acid in the stomach.

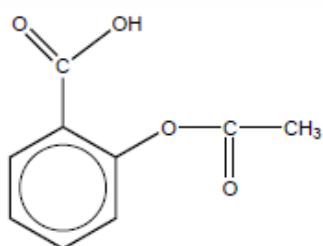


**Salicin**

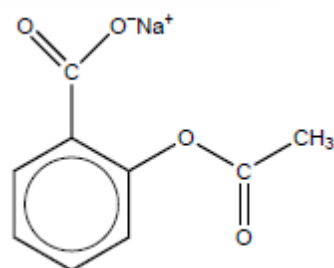
(2-(hydroxymethyl)phenyl β-D-glucopyranoside)

**Salicylic acid**

(2-hydroxybenzoic acid)

**Aspirin**

(2-ethanoyloxybenzenecarboxylic acid)

**Sodium salicylate**

(sodium 2-ethanoyloxybenzenecarboxylate)

Methods of establishing the safety and efficacy of medicines

- 'Clinical trial' – usually near the end of the medicine testing procedure where the compound is tried out on one group of patients and compared with the effect of a placebo on another group.
- In the late 1800s, compounds were given to patients almost immediately after synthesis or discovery.
- Following several high-profile incidences of new drugs leading to severe, sometimes fatal, side-effects, legislation was introduced in the 20th century to require animal testing before human trials could be carried out.
- A common way of testing anti-inflammatory action is to irritate the joint of a rat's leg until it is inflamed and then administer the medicine.
- In your presentation you may wish to include a section on the ethics of animal testing (optional).