

EXAMEN : BACCALAURÉAT GÉNÉRAL	SESSION 2011
ÉPREUVE : Évaluation spécifique de langue en section européenne	
PHYSIQUE-CHIMIE en langue ANGLAISE	SUJET N°1

## Acetaminophen

The drug acetaminophen is a pain reliever (an **analgesic** ) and a fever-reducing agent (an antipyretic). It is found in over-the-counter medicines<sup>1</sup> such as Tylenol and Excedrin. It is widely used to treat both chronic and acute pain and is considered to have a pain-relieving potency similar to that of other over-the-counter analgesics, such as aspirin and ibuprofen. Its chemical name is 4-hydroxyacetanilide. Its chemical formula is  $C_8H_9NO_2$  (see Figure 1).

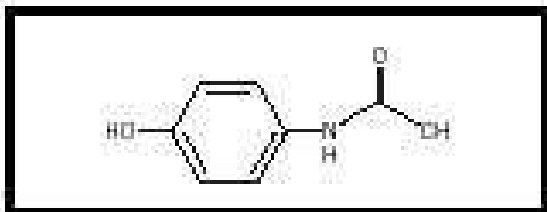


Figure 1. Structure of acetaminophen.

Acetaminophen was used as a pain reliever as early as the late 1800s. It was approved for use by the U.S. Food and Drug Administration in 1950(...).

Acetaminophen works by inhibiting the **synthesis** of chemical messengers called prostaglandins, which help to transmit pain signals and induce fever. The body produces prostaglandins in response to an injury or illness. (...). Unlike aspirin and ibuprofen, acetaminophen does not have anti-inflammatory action.

(...) Acetaminophen is known to cause less stomach irritation than aspirin and ibuprofen, and it does not inhibit **platelet** aggregation and blood clotting (as does aspirin).

When given in its therapeutic dose (500 mg every 4-6 hours), acetaminophen is a safe and effective pain reliever. However, at higher doses it can be severely toxic to the liver, and even fatal (...).

Adapted from Kyle Knight, <http://www.chemistryexplained.com/>

Over-the-counter medicine: medicine that can be bought at places other than at the chemist's

### Questions:

1. Present and comment this document.
2. Do not forget to focus on at least one physics and/or chemistry topic as for example the chemical structure of acetaminophen with its functional groups.
3. What do you know about organic chemistry and its applications in everyday life?