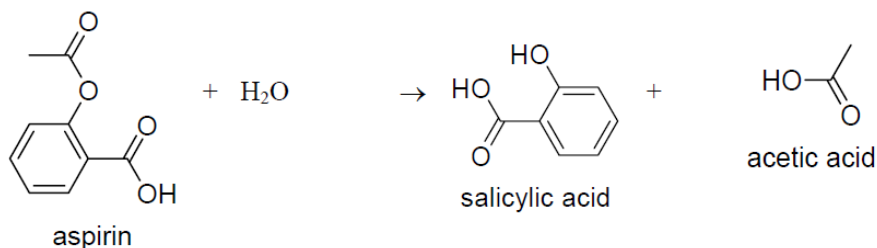


EXAMEN : BACCALAURÉAT GÉNÉRAL	SESSION 2011
ÉPREUVE : Évaluation spécifique de langue en section européenne	
PHYSIQUE-CHIMIE en langue ANGLAISE	SUJET N°5

The Analysis of Some Over-the-Counter Drugs

Over-the-counter (OTC) drugs include categories of drugs such as pain relievers, antacids, alcohol, caffeine, and vitamins. While these OTC drugs are sold legally they, like controlled or prescription drugs, have the ability to cause accidental or purposeful poisoning and even death if taken improperly. Thus it is important that dosage information and precautions printed on the label be strictly followed in order to prevent accidental injury or harm. The first class of OTC drugs tested will be pain relievers, specifically aspirin, acetaminophen and ibuprofen. Aspirin, the common or trade name for acetylsalicylic acid, is today's leading commercial pain reliever. Aspirin acts as an analgesic (pain reliever), an antipyretic (fever reducer), and an anti-inflammatory agent (inflammation reducer). Aspirin is a fairly acidic compound which reacts slowly with moisture from the air to undergo hydrolysis, forming salicylic acid and acetic acid (vinegar), as shown below:



If aspirin tablets, stored for several months, pick up moisture, they may begin to smell like vinegar and become even more acidic. This increased acidity can be very irritating to the lining of the stomach and intestines, causing side effects such as upset stomach, gastrointestinal bleeding, and various allergic reactions. The excess acid, will limit the rate at which the aspirin disintegrates in the stomach, since aspirin disintegrates faster at higher pH (less acidic).

From :<http://www.chymist.com/forensics.html>

over-the counter drugs (OTC): drugs that can be bought at places other than at the chemist's

Questions :

1. Present and comment on this document.
2. Do not forget to focus on at least one physics and/or chemistry topic as for example describing the esterification and hydrolysis reactions and the different functions of the aspirin, salicylic acid and acetic acid.
3. How physics and chemistry help medicine?