

# ***Preparation of Aspirin***

## **Theoretical part:**

**Salicylic acid** : is a mono hydroxyl benzoic acid, a type of phenolic acid, It is derived from the metabolism of salicin. In addition to serving as an important active metabolite of **aspirin** (acetylsalicylic acid or ASA) in which the phenol group turned to acetyl group.

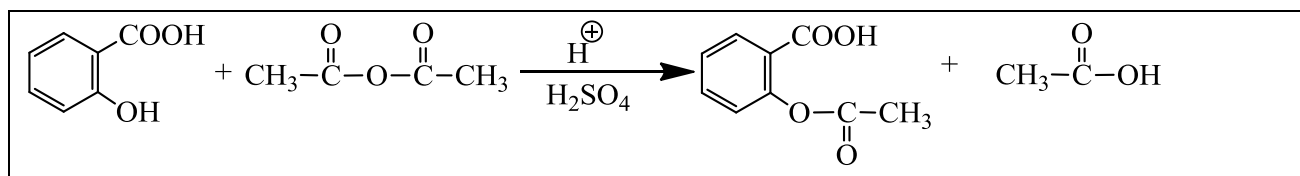
## **Properties of Aspirin :**

- 1- Have white color.
- 2- Crystalline.
- 3- Weakly acidic substance.
- 4- Melting point of 136 °C .
- 5- Its acid dissociation constant (pKa) is 3.5 at 25 °C.
- 6- Aspirin decomposes rapidly in solutions of ammonium acetate, acetates, carbonates, citrates, or hydroxides of the alkali metals.
- 7- It is stable in dry air, but gradually hydrolyses in contact with moisture to acetic and salicylic acids.

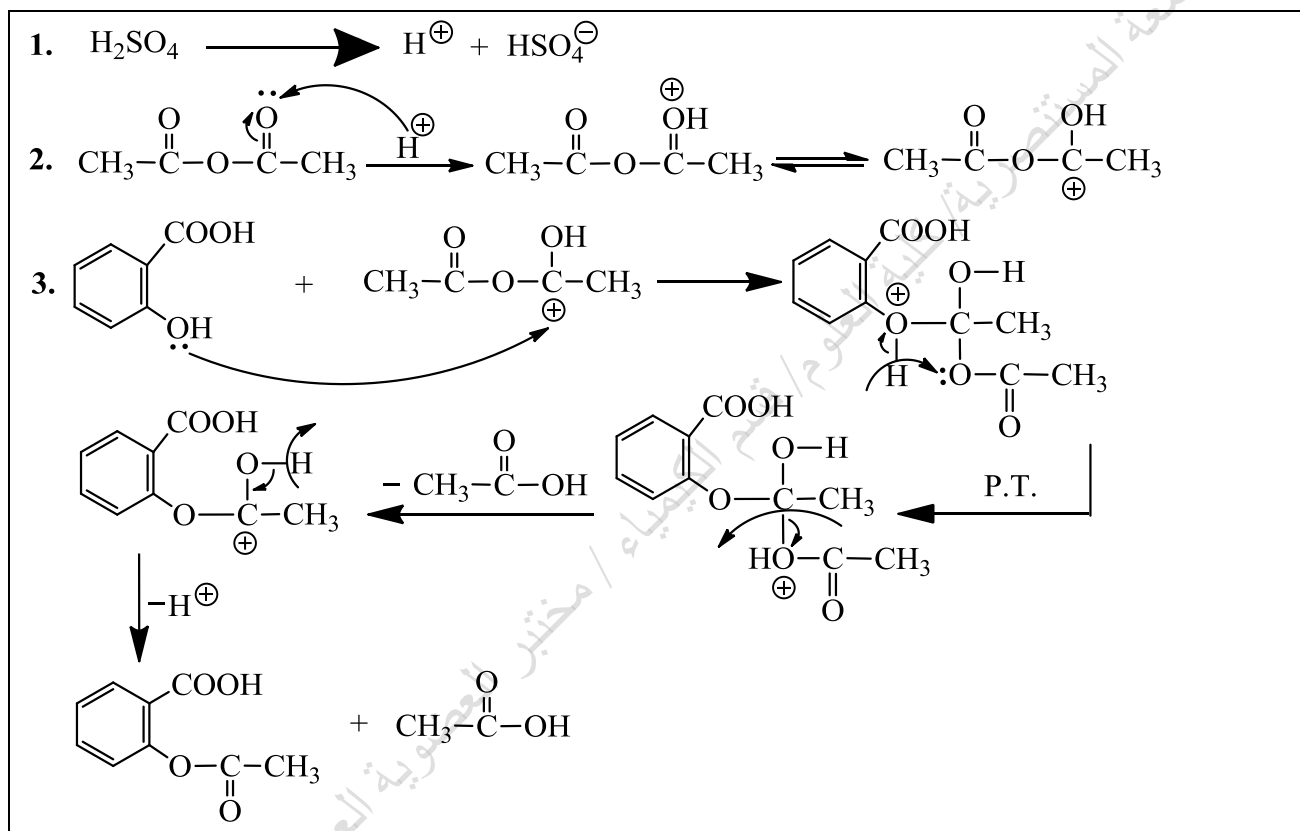
## **Uses of Aspirin:**

- 1- Used to prevent heart attacks and prevent stroke, by preventing blood clotting.
- 2- Used to relieve severe pain, inflammation and fever.
- 3- Used to treat *Rheumatoid Arthritis*.

## **The general equation:**



### The mechanism for the reaction:



### Experimental part:

- 1- In a (100ml) round bottomed flask, A mixture of salicylic acid (1g) and acetic anhydride (2ml), and (3drops) of concentrated sulfuric acid are added and stirred.
- 2- The mixture is refluxed on water bath for (15mins) with constant stirring.
- 3- The mixture is cooled after reflux and added on ice-cold water and with shaking for (5mins) until a white precipitate is formed.

- 4- The precipitate is washed several times with cold water.
- 5- The precipitate is filtered and recrystallized from methanol or ethanol (M.p=136C<sup>0</sup>).
- 6- After recrystallization, the solid is filtered and dried.
- 7- The product is weighted and the percentage of yield is calculated.

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## ***Experiment 4***