

Ministry of Higher
Education
Al-Rasheed University
College

وزارة التعليم العالي والبحث العلمي
كلية الرشيد الجامعة

Pharmaceutical Chemistry

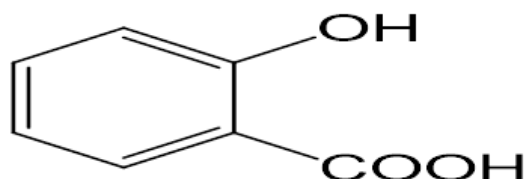
Lab. (1)

Synthesis of salicylic acid

*Presented By
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Experiment no.1

Preparation of salicylic acid



Salicylate derivatives were known many years ago due to their physiological and biological activities specially SALICYLIC ACID which was introduced to the medical field since 1839 owing to its unique properties such as:

- 1- its antiseptic and germicidal activities , thus many pharmaceutical preparations contain salicylic acid as preservative.
- 2- its keratolytic properties which makes salicylic acid highly useful in treatment of warts, corns and athlete's foot .
- 3- The antipyretic and anti-inflammatory effect of salicylic acid derivatives took a huge area in the pharmacology under the category (non-steroidal anti-inflammatory drugs NSAIDs)

Derivatives of salicylic acid

There are two types of salicylic acid derivatives ;

Type I : derivative of carboxylic acid (esters)

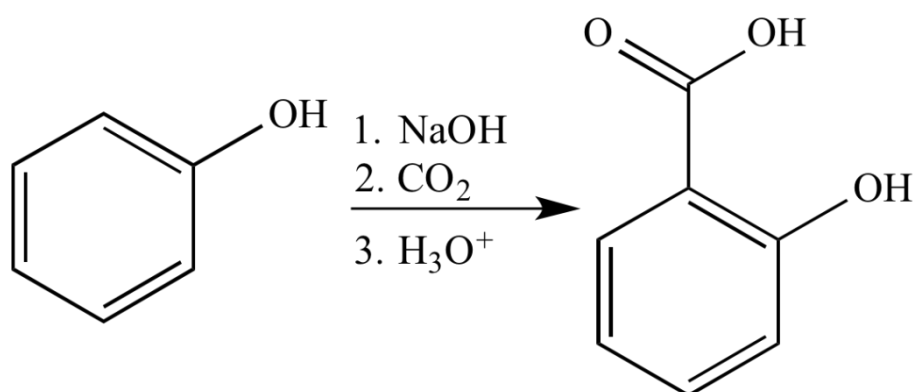
Type II : derivative of phenolic group (like aspirin)

Q1/ what is the aim of derivatization of salicylic acid ??

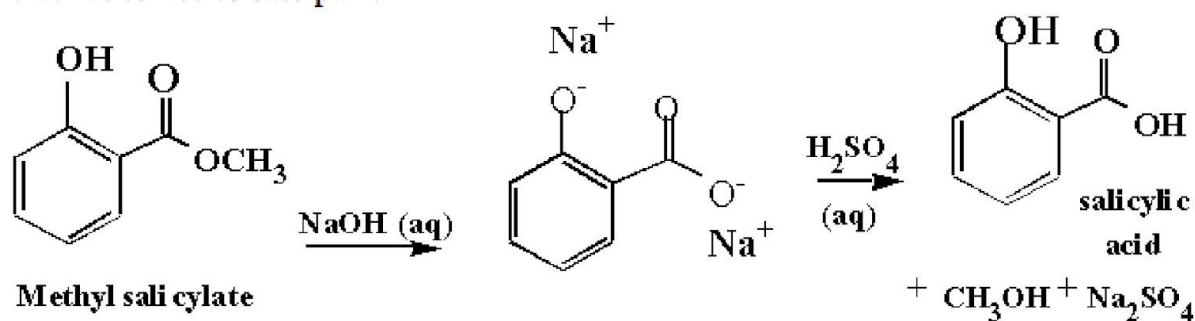
Q2/ why carboxylic acid group is higher acidic than phenolic group in the salicylic acid structure ?

Preparation of salicylic acid :

First method : By KOLBES process , starting from phenol as follows :



Second method : hydrolysis of the ester group of methyl salicylate in the presence of aqueous media , as follows :



Procedure:

1. put (5g) 2.1 ml of methyl salicylate in 250ml distilling flask with 25ml of 20% aq. Sol. NaOH .
2. mix well ,the ppt. may separate out at this point then redissolve on heating .
3. heat at the boiling point for 5-10 min.
4. cool with tap water ,acidify with few drops of H_2SO_4 .
5. filter and collect the ppt.
6. recrystlize from the minimum amount of hot water .

Calculations :

The theoretical yield is usually calculated from the chemical factor method , and the percent yield is calculated as follows :

$$\% \text{ yield} = \text{practical weight} / \text{theoretical weight} \times 100$$

Report

Student's name :

Name of experiment :

Q1/ why we used alkaline medium in our experiment ?

Q2/ why we used acid in our experiment too ??

Calculations & yield

Amount of methyl salicylate used in grams	
Amount of methyl salicylate used in moles	
Theoretical yield	
Actual yield	
Percent yield	