

# EXPERIMENT 1

## CALIBRATION CURVE OF SALICYLIC ACID BY COLORIMETRY

### AIM

To construct a calibration curve of salicylic acid using colorimetric method.

### CHEMICALS

Salicylic acid, Hydrochloric acid (1%v/v), Ferric chloride, Distilled water.

### PRINCIPLE

The increasing concentrations of salicylic acid is treated with 1% ferric chloride reagent (1g  $\text{FeCl}_3$  in 100 mL of 1% Hydrochloric acid). The free phenolic hydroxyl group present in salicylic acid reacts with the reagent and forms a violet coloured complex i.e., ferric salicylate which is proportional to the concentration of salicylic acid.

### PROCEDURE

Ferric chloride reagent is prepared by adding 1 gm of  $\text{FeCl}_3$  to 100 mL of 1% HCl (1mL concentrated hydrochloric acid added to 100mL of distilled water).

Stock solution of salicylic acid (1mg/mL) is prepared by dissolving 100 mg of salicylic acid in few mL of methanol and made up to 100 mL with distilled water in a volumetric flask. 10 mL of this stock solution is diluted with 100 mL distilled water to get 100  $\mu\text{g/mL}$  salicylic acid solution.

Take the respective samples in each test tube, add the reagent and distilled water to make total volume of 10 mL (as per mentioned in table) and measure the absorbance of the violet colored complex using

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UV-Visible spectrophotometer at wavelength of 525 nm against blank sample (without salicylic acid).

<b>Volume of stock solution (mL)</b>	<b>Volume of reagent (mL)</b>	<b>Distilled water to make 10 mL</b>	<b>Concentration of Salicylic acid (<math>\mu\text{g/mL}</math>)</b>	<b>Absorbance</b>
0 (Blank)	1	9	0	0
1	1	8	10	--
2	1	7	20	--
3	1	6	30	--
4	1	5	40	--
5	1	4	50	--
6	1	3	60	--

Plot a graph taking concentration on X-axis and observed absorbance values on Y-axis, draw a best fit line and record  $r^2$  value (regression coefficient) and equation of straight line.

### **REPORT**

Calibration Curve of salicylic acid is plotted and the concentration of unknown sample can be determined from interpolation of calibration curve.