General Chemistry

University Of Fallujah
College Of Medicine

Lecture : ***seliwannof and iodine test***

Stage : First stage 2st

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Date: / 4 / 2026

- **Seliwanoff's Test** distinguishes between aldose and ketose sugars. Ketoses are distinguished from aldoses via their ketone/aldehyde functionality. This test is based on the fact that, when heated, ketoses are more rapidly dehydrated than aldoses. The ketose reacts with Hcl (3M) to give furfural derivative, which condenses with resorcinol to give a pink complex, so attention to the heating time should be given .

- **Principle**: A dehydration reaction due to the hydroxyl groups of the sugar. Selivanoff's reagent is resorcinol in dilute hydrochloric acid. Ketoses (e.g. fructose) are more readily dehydrated by HCl than the aldoses to form hydroxymethyl furfural which then condenses with resorcinol of Seliwanoff's reagent to form a red colored complex.

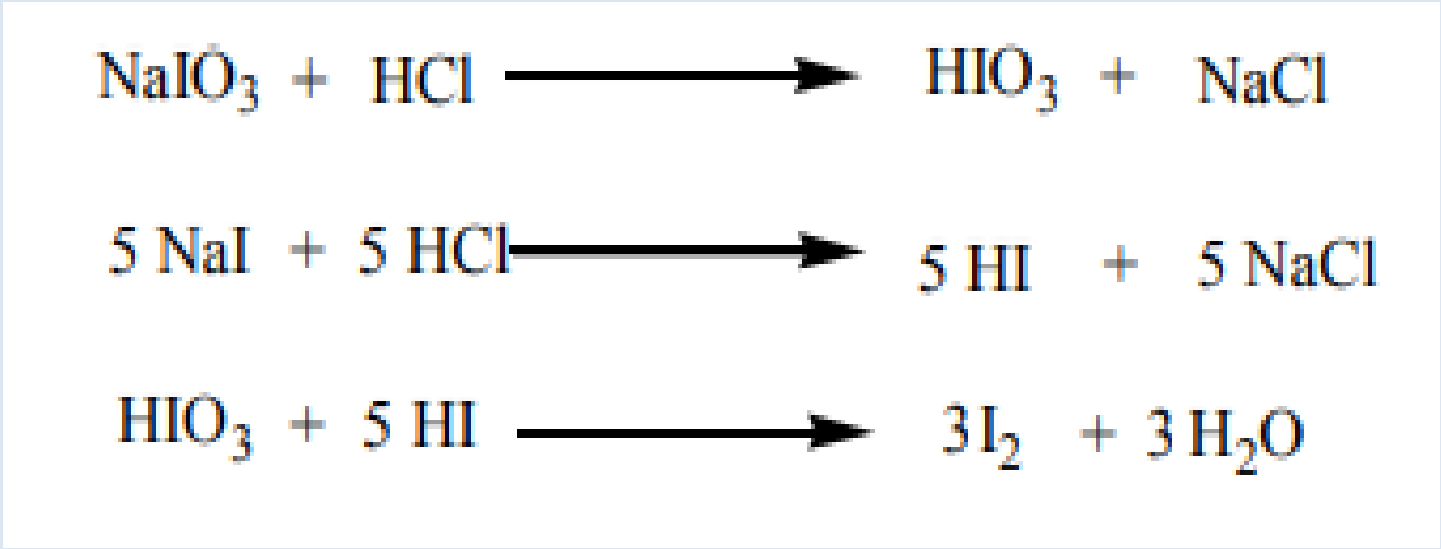
- **Procedure**: Take 0.5 ml of the sugar solution in a test tube and add 1mL of Seliwanoff's reagent solution, heat the tube for 3-5 minutes in a boiling water and note the appearance of the pink color

- **Iodine Test**: This test depends on the adsorption of iodine on the surface of starch or dextrin, giving a blue color for starch and purple for dextrin. This process occurs at room temperature, because the high temperature does not help adsorption due to dissociation of partially , there fore , the color disappears.of particles. This test is effected by:

- **A- Heat**: The color disappears at high temperature and returns when cooled.
- **B- PH**: This test can be conducted only in acidic or neutral medium, and it could not be conducted in alkaline medium because free iodine will react with the base forming iodides and iodates salts according to the following reaction:

$$3\ I_2 + 6\ NaOH \rightarrow 5\ NaI + NaIO_3 + 3\ H_2O$$

- While adding Hcl produce iodine according to the following reactions (note that the color returns again):



- **Procedure**: Add (3-5) drops of iodine solution to (1mL) of starch solution in a test tube. Notice the appearance of the blue color. When heating, the color will disappear and reappear when cooling. As the heating and cooling process continues, we will reach a stage where the tube is heated and the color disappears. When cooled, the color does not reappear, and this occurs because of the total evaporation of iodine.