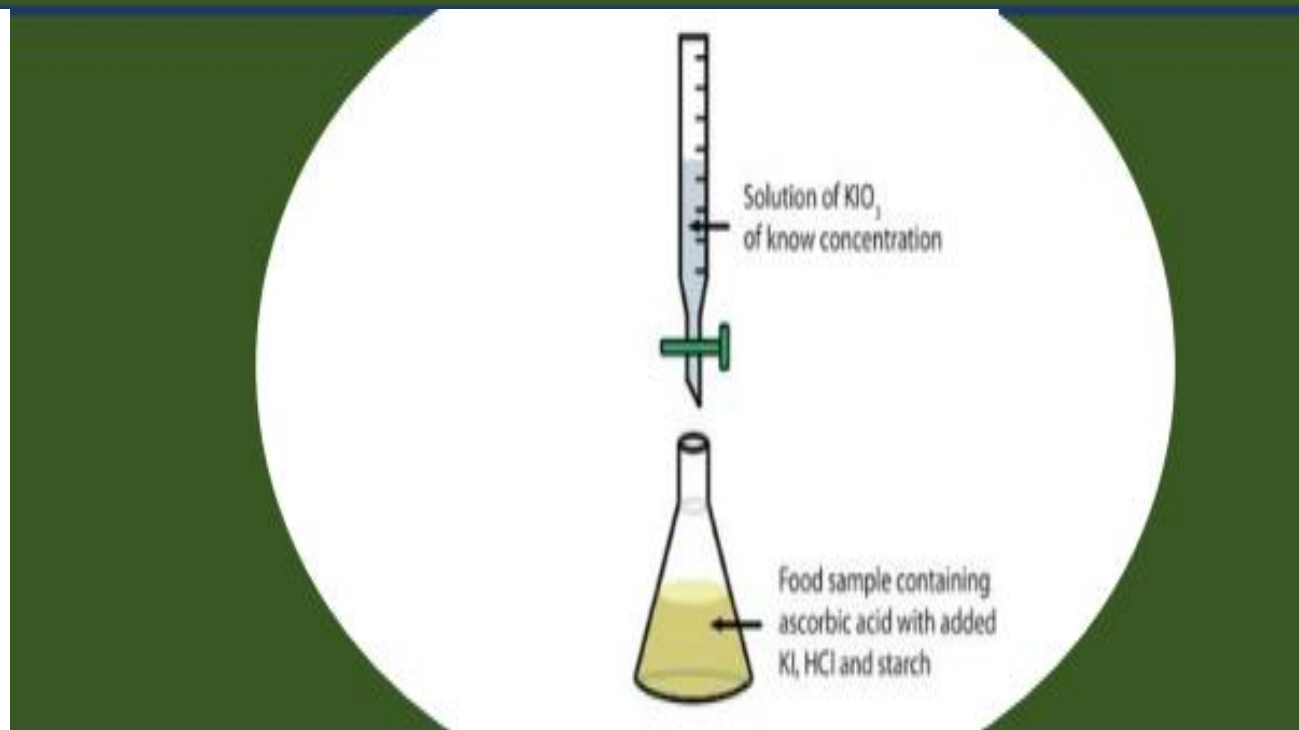


Assay of ascorbic acid



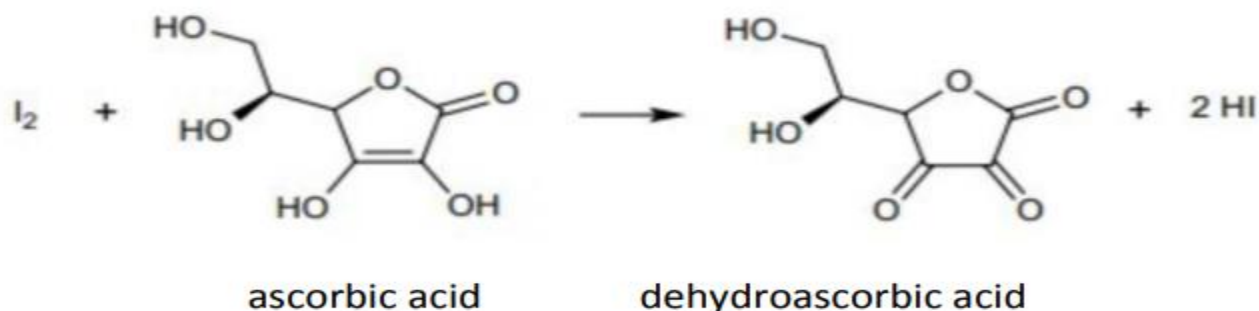
Aim

- Determination of Vitamin C by the Iodometric Method.

Theory

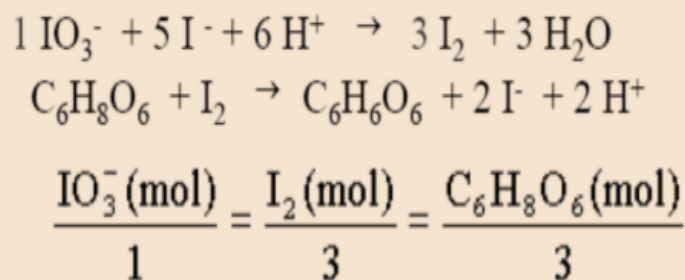
Vitamin C (ascorbic acid) is a water-soluble antioxidant, and plays a vital role in protecting the body. It can be obtained from citrus fruits, tomatoes, potatoes, and fresh vegetables, particularly from red and green peppers. The minimum daily requirement is 30 mg, the recommended daily allowance is 60-70 mg.

The formula for ascorbic acid is $C_6H_8O_6$ and the structures for the reduced form and for the oxidized form (dehydroascorbic acid) are:



Important points:

- The amount of ascorbic acid can be determined by a redox titration with a standardized solution of iodine. The iodine is reduced by the ascorbic acid to form iodide.



- The titration endpoint is reached when a slight excess of iodine is added to the ascorbic acid solution.
- The reaction with potassium iodate titration utilizes **starch** as the indicator.
- When all of the ascorbic acid has reacted with the KIO_3 , the excess KIO_3 oxidizes the KI produced in the reaction (which is **colorless**) to I_2 which forms a **deep blue color** with the starch indicating that the reaction is complete.

Procedure

Part 1: Preparation of iodine solution

- 0.36g of iodine and 0.47g of potassium iodide were weighted accurately by an electric balance.
- Then was dissolved in 50 mL distilled water and 1 mL conc. HCl.
- It was then dissolved in a volumetric flask to make up to 500 mL iodine solution.

- Eye/face protection
Use safety goggle with side protection



- Skin protection



Hazard Warning

- **Avoid contact with skin and eyes and don't inhale vapours of these chemicals.**

Part 2: Preparation of vitamin C

- Accurately weigh out a sample of ascorbic acid (about 0.5 g).
- The sample was dissolved in distilled water.
- It was made up to 250 mL by a volumetric flask.

Part 3: Titration of iodine solution against vitamin C

- The burette was filled up with the standard iodine solution.
- 5 mL of the vitamin C solution, were pipetted out and added into a conical flask. Starch was added as an indicator at this moment.
- Titrate with the standard iodine solution until the first appearance of a blue endpoint.

Principle of experiment

Iodometric determination of ascorbic acid involves ascorbic acid redox titration with iodine solution using starch as an indicator. As the iodine is added during titration the ascorbic acid is oxidized to dehydroascorbic acid while the iodine is reduced to iodide anions

1-Explain Why, vitamin C plays a vital role in protecting the body?

2-How can determinate the amount of ascorbic acid ?