

Introduction

This method determines the vitamin C concentration in a solution by a redox titration with potassium iodate in the presence of potassium iodide. Vitamin C, more properly called ascorbic acid, is an essential antioxidant needed by the human body (see additional notes).

When iodate ions (IO_3^-) are added to an acidic solution containing iodide ions (I^-), an oxidation-reduction reaction occurs;

- the iodate ions are reduced to form iodine



Equipment Needed

burette and stand 100 mL volumetric flask
20 mL pipette 250 mL conical flasks
10 mL and 100 mL measuring cylinders

Solutions Needed

Potassium iodate solution: (0.002 mol L⁻¹). If possible, dry 1 g of potassium iodate for several hours or overnight at 100°C. Allow to cool and accurately weigh about 0.43g of potassium iodate and dissolve in 1 L of distilled water in a volumetric flask.

Starch indicator solution: (0.5%). Weigh 0.25 g of soluble starch and add it to 50 mL of near boiling water in a 100 mL conical flask. Stir to dissolve and cool before using.

Potassium iodide solution: (0.6 mol L⁻¹) Dissolve 10 g solid KI in about 50 mL of distilled water in a 100 mL volumetric flask and dilute to 100 mL with distilled water

Dilute hydrochloric acid: (1 mol L⁻¹).

Method

Sample Preparation

For Vitamin C tablets: Dissolve a single tablet in 200 mL of distilled water (in a volumetric flask if possible).

For fresh fruit juice: Strain the juice through cheesecloth to remove seeds and pulp which may block pipettes.

For packaged fruit juice: This may also need to be filtered.

