Project Title

Vitamin C in Fruit Juices – Iodine Test

Introduction

Vitamin C (ascorbic acid) is an important nutrient found in many fruits. It helps in building immunity and keeps us healthy. The amount of Vitamin C is different in different juices. Vitamin C can reduce iodine solution. When iodine is added to juice, it reacts with Vitamin C until all of it is used. The remaining iodine gives a blue-black color with starch. By measuring how much iodine is needed, we can compare the Vitamin C in different juices.

Aim / Objective

To compare the Vitamin C content in different fruit juices using iodine test.

Hypothesis

Citrus fruits like lemon and orange will have more Vitamin C than fruits like apple or grape.

Variables

Independent Variable: Type of fruit juice (orange, lemon, pineapple, apple, grape, tomato)
Dependent Variable: Vitamin C content (measured by iodine used)
Controlled Variables: Volume of juice, concentration of iodine, starch indicator, same procedure for all juices.

Experimental Design

1. Control/Standard: Pure Vitamin C solution
2. Experimental groups: Different fruit juices
3. Replication: Each titration repeated 2–3 times

Materials Required

1. Fresh fruit juices (orange, lemon, pineapple, apple, grape, tomato)
2. Vitamin C powder/tablet
3. Iodine solution (~0.01 M)
4. Starch indicator (1%)
5. Distilled water
6. Pipette, burette, conical flask, beakers
7. Measuring cylinder
8. Filter paper
9. Notebook
10. Gloves, goggles

Procedure (Step by Step)

1. Prepare a standard Vitamin C solution (100 mg in 100 mL distilled water).
2. Standardize iodine with the Vitamin C solution using starch as indicator.

3. Filter and dilute fruit juices.
4. Pipette 10 mL juice into conical flask.
5. Add 20 mL water and 1–2 mL starch.
6. Titrate with iodine until blue-black color remains.
7. Record iodine volume.
8. Repeat for all juices (3 times).
9. Calculate Vitamin C in mg/100 mL juice.

Observation Table 1 – Standardization of Iodine Solution

Trial	Std. Vit C used (mL)	Known Vit C (mg)	Iodine used (mL)
1			
2			
3			
Average			

Observation Table 2 – Vitamin C in Fruit Juices

Juice Type	Dilution	Juice Taken (mL)	Trial 1 (mL)	Trial 2 (mL)	Trial 3 (mL)	Avg. Iodine (mL)	Vit C (mg/100 mL)
Orange							
Lemon							
Pineapple							
Apple							
Grape							
Tomato							

Graph: Under process
Result: Under process
Discussion: Under process
Conclusion: Under process