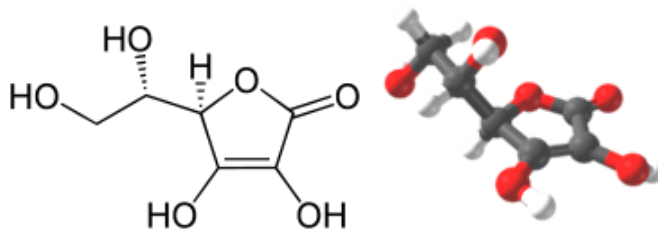


# Vitamin C Titrations

Vitamin C is an **antioxidant**, because it protects the body against harmful oxidants. Oxidants or oxidizing agents can harm molecules in your body by removing electrons. This process can cause unwanted reactions to occur in your body and make you ill. A healthy diet should provide about **70-90 mg per day**, but higher levels can be used to help fight or prevent a cold. Vitamin C is found in citrus and other fruits and some vegetables such as broccoli.

**Vitamin C or L-ascorbic acid**



**Titrations** are useful in quantifying the amount of vitamin C in a solution. Titrations involve quantitative addition of one reagent into another to determine the concentration of one of the reagents. Acid-base titrations are very common in chemistry, but many redox reactions allow quantitative analysis of solutions through titrations. The stopping point or **end point** of a titration can be observed by the color change of an indicator. In this experiment an Iodine solution is the oxidant that will react with vitamin C. Starch-iodine complex formation will serve as the indicator, changing light purple/brown just after a slight excess of iodine is added to a vitamin C solution containing starch. Standard solutions having known concentrations of vitamin C will be used to quantify the vitamin C in juices.

## Procedure:

1. Place 1 mL (20 drops) of vitamin C solution (standard or juice) into a plastic 3oz cup, then add 2-3 mL of starch solution to each.
2. In a control/comparison cup, place 1 mL of water and 2-3 mL of starch solution.
3. Carefully add iodine solution into each of the above cups, counting the number of drops necessary to observe a color change. Record the number of drops in the data table.
4. In a clean cup, place 1 mL of juice, then add 2-3 mL of starch solution. Count the number of drops of iodine solution necessary to observe a color change.
5. Quantify the amount of vitamin C in the juice by comparing with the standards.
6. Repeat above steps to obtain average values.

Juice	Concentration of Vitamin C	Sample volume	Starch volume	Drops of iodine solution			
				Trial 1	Trial 2	Trial 3	Average
Std A	500 mg/L	1 mL	2-3 mL				
Std B	250 mg/L	1 mL	2-3 mL				
Std C	125 mg/L	1 mL	2-3 mL				
Lemon Juice	<b>Exp. Results:</b>	1 mL	2-3 mL				
Juicy Juice	<b>Exp. Results:</b>	1 mL	2-3 mL				