

Chapter 3 - Food

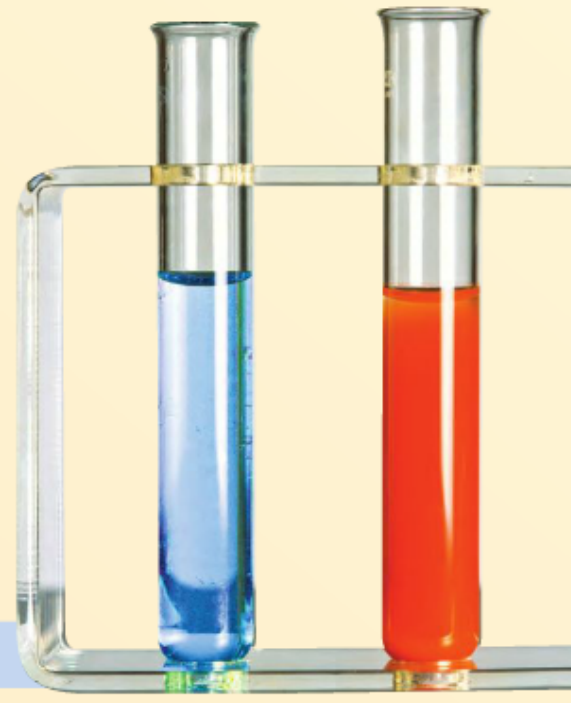
Activity 1 To conduct qualitative tests for food

A qualitative test measures whether a substance is present or absent.

Activity 1a To test for reducing sugar

1. Dissolve glucose in water in a test tube.
2. Add an equal volume of Benedict's solution (which is blue).
3. In a second test tube mix equal volumes of water and Benedict's solution. This will act as a control.
4. Heat the test tubes in a boiling water bath.
5. If reducing sugar is present, the solution turns red (often called brick red).
6. If reducing sugar is not present the solution remains blue.

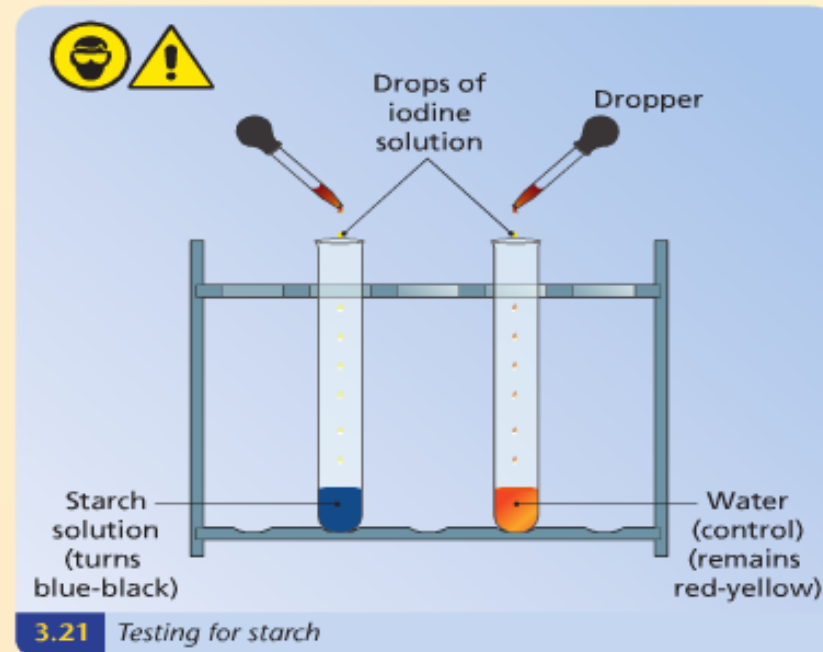
Note: Fehling's solution can be used instead of Benedict's solution.



3.18 Benedict's test for reducing sugar: a negative result (blue) and a positive result (red-orange)

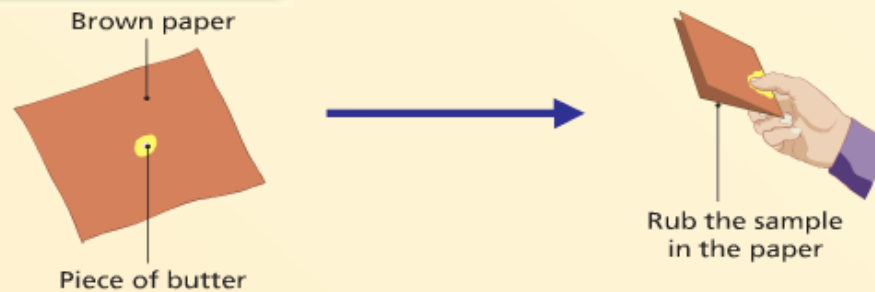
Starch

1. Add a few drops of iodine solution to some starch dissolved in water. (Iodine solution is a red-yellow colour.)
2. Add a few drops of iodine solution to some water. This acts as a control.
3. If starch is present the colour turns blue-black or purple.
4. If starch is absent the solution stays red-yellow.



Activity 1c To test for lipid

1. Label a piece of brown paper (or filter paper) as lipid.
2. Rub a small piece of butter or cooking oil (both lipids) on the paper.
3. Repeat the process using a few drops of water on a piece of paper labelled 'water'. (This acts as a control.)
4. Leave the two pieces of paper over a radiator to dry.
5. Lipid produces a permanent stain (or translucent spot) on the paper.
6. The water stain dries out.

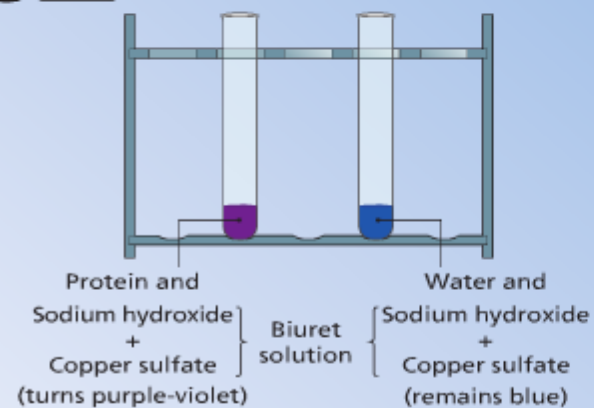
**3.22** Testing for lipid

Note: lipids can also be tested using Sudan III.

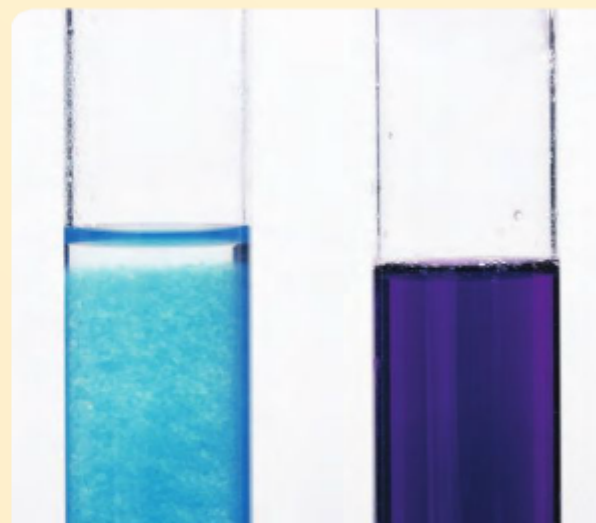
Activity 1d To test for protein

1. Dissolve a sample of soluble protein (e.g. egg white or milk) in water.
2. Add sodium hydroxide (colourless) until the solution clears.
3. Then add a few drops of dilute copper sulfate (blue).

Note: as an alternative to steps 2 and 3, add an equal volume of Biuret solution. This contains sodium hydroxide and copper sulfate and is blue.



3.23 Testing for protein



3.24 Biuret test for protein: a negative result (blue) and a positive result (purple)

4. As a control, add sodium hydroxide and copper sulfate (or Biuret solution) to water.
5. The appearance of a purple-violet colour shows that proteins are present.
6. If protein is not present the colour remains blue.