

SB1 - Key Concepts in Biology (Paper 1 and Paper 2)

SB1f Testing Foods

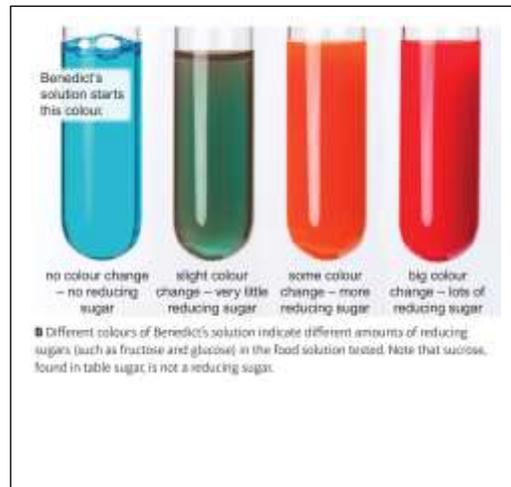
What happens to bananas as they ripen?
As bananas ripen, enzymes break down the starch into smaller carbohydrates, including sugars such as sucrose and glucose.

How do we test for these changes in food?
We can use chemical reagents in food tests to identify these changes.

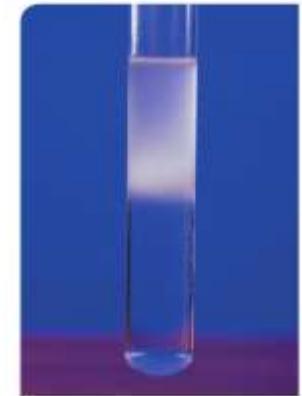
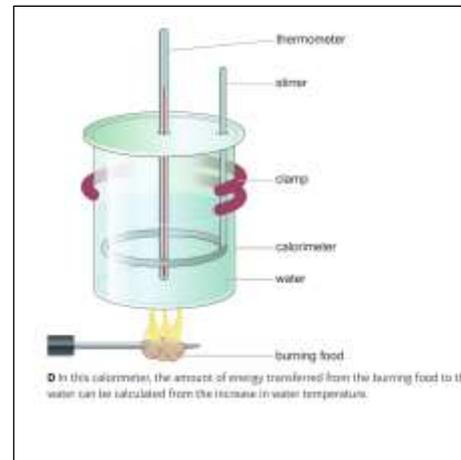
What is a biuret test?
Potassium hydroxide is mixed with a food solution. Two drops of copper sulphate are added. If the pale blue solution turns purple, this indicates protein in the food.

What does iodine solution indicate?
Iodine solution changes from a yellow-orange to a blue-black colour when in contact with starch.

What does Benedict's solution indicate?
All of the smaller sugars are reducing sugars. When a food solution is mixed with an equal volume of Benedict's solution and placed in a hot water bath, reducing sugars in the food cause a reduction reaction, which changes the colour of the solution and form a precipitate.



What is the ethanol emulsion test?
Fats and oils can be tested for by using this test. The food is mixed with ethanol and shaken. Some of the mixture is then poured into water and shaken again. Fats and oils dissolve in the ethanol float to the surface, forming a cloudy emulsion, when the mixture is left to stand.



■ A positive result for lipids (fats and oils) using the ethanol emulsion test. A cloudy emulsion forms at the top.

What is a calorimeter?
Food provides us with energy that we can transfer to other processes that keep us alive. Foods that contain large amounts of sugar and fat are good sources of energy. We can measure the amount of energy in a food by burning it in a calorimeter.

Key Vocabulary Definitions

Benedict's solution – a solution used to detect the presence of reducing sugars (such as glucose) in food.

Biuret test – a test that uses copper sulphate solution and potassium hydroxide solution to test for proteins. The blue of the copper sulphate solution turns purple in the presence of proteins.

Calorimeter – apparatus used to measure the energy content of substances by burning them and measuring temperature increase.

Chemical reagents – substances that are used up in a chemical reaction.

Ethanol emulsion test – a test using ethanol to detect lipids in foods.

Iodine solution – solution used to test for the presence of starch.

Precipitate – an insoluble substance that is formed when 2 soluble substances react together in solution.

Reducing sugars – Small sugar molecules, such as fructose and glucose, that react with Benedict's solution to produce a precipitate.