OCR (A) Biology GCSE

PAG 02: Food Tests

Practical Notes

Basic Food Tests

Aim

Investigate the presence of starch, reducing sugars, lipids and protein using various food tests.

Equipment

- Iodine solution (0.01 mol/dm^3)
- Spotting tile
- Sugar paper
- Ethanol
- Test tube
- Boiling tube
- Water
- Benedict's reagent
- Beaker
- Boiling water bath
- Biuret reagent

Method

The Iodine test for starch

Equipment

- Food sample
- A test tube
- Iodine solution
- Pipettes.

Method

1. Put some of the food sample into a test tube.
2. Add a few drops of iodine solution to the food sample using a pipette.
3. If starch is present, the solution turns from brown to blue-black. Note any colour change in a table of results.

The Benedict's test for reducing sugars

Equipment

- Food sample
- A test tube
- Benedict's solution
- Hot water bath
- Thermometer
- Pipettes

Method

1. Add an equal volume or excess of Benedict's solution to the food sample in a test tube.
2. Place in a hot water bath for a few minutes.

3. If reducing sugar is present, a brick red precipitate is formed. If reducing sugar is absent, the solution remains blue. Note any colour change in a table of results.

Test for lipids

Equipment

- Food sample
- Test tube
- Ethanol
- Distilled water

Method A

1. Add a few cm^3 of ethanol to the food sample.
2. Pour this mixture into a test tube of equal volumes of distilled water.
3. If lipids are present, a white emulsion is formed on the surface of the mixture.
4. This is called the emulsion test.

Method B

1. Rub or place a drop of the food sample onto a piece of sugar paper and allow time for it to dry.
1. View the paper against a light source. If a translucent spot remains, lipid is present.

Test for protein

Equipment

- A test tube
- A $10cm^3$ measuring cylinder
- Biuret solution

Method

1. Add a few drops of Biuret's reagent (sodium hydroxide and copper (II) sulphate) to the food sample in a test tube.
2. Shake the solution to mix and wait for a few minutes.
3. If protein is present, the solution turns from blue to purple.

Sources of error

Colour change of Benedict's test and Biuret test may be subtle and difficult to judge if the concentration of the tested molecule is low.

Safety precautions

Tie hair back and wear safety goggles when performing the Benedict's test using a Bunsen burner and hot water bath.
Handle Biuret solution with care as it contains copper sulphate (poisonous) and sodium hydroxide (corrosive). Wash immediately if it comes into contact with skin and wipe away any spills to surfaces.
Keep ethanol solution away from flames as ethanol is highly flammable.