Food tests

Biology required practical | AQA Combined Science 8464 and AQA GCSE Biology 8461 | 13 questions, 35 marks

GCSE science required practicals

This practical online

Name: _____ **Date:** _____ **Score:** _____ **/ 35**

Aim: To use chemical tests to find out whether foods contain reducing sugars, starch, protein and lipids.

Equipment: food samples; pestle and mortar; distilled water; test tubes and a test tube rack; measuring cylinder or graduated pipettes; filter funnel and filter paper; Benedict's solution; iodine solution; biuret reagent (or copper sulfate and sodium hydroxide solutions); ethanol; water bath at about 80 °C; spotting tile and dropping pipettes.

Results

Sofia ground up five foods with distilled water and carried out all four tests on each. She recorded the final colour of each test.

Food	Benedict's test	Iodine test	Biuret test	Ethanol emulsion test
Apple juice	brick red	orange-brown	blue	clear
Boiled potato	green	blue-black	blue	clear
Egg white	blue	orange-brown	purple	clear
Milk	orange	orange-brown	purple	cloudy white
Crushed peanut	blue	orange-brown	purple	cloudy white

Questions

1 a. Name the independent variable in Sofia's investigation.

b. Sofia added 10 drops of Benedict's solution to 2 cm^3 of each food solution. Explain why she used the same volumes each time.

(3 marks)

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2 Describe how to test a food solution for reducing sugar. Include the colour of a positive result.

(3 marks)

3 Give the reagent used to test for protein and the colour change for a positive result.

(2 marks)

4 Sofia's teacher told her not to use a Bunsen burner to heat the Benedict's test while anyone was doing the lipid test. Explain why, and give the safer choice.

(2 marks)

5 Sofia also tested a tube of distilled water with each reagent. Explain why.

(2 marks)

6 Use the table to answer these questions.

a. Which food contained starch?

b. Which **two** foods contained both protein and lipid?

c. Which food contained the most reducing sugar?

(3 marks)

7 Sofia said: "Milk contains more reducing sugar than boiled potato." Use the Benedict's results to explain whether she is right.

(2 marks)

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8 Sofia wants to make 20 cm^3 of 0.5% glucose solution to compare with her foods. She has a 2% glucose solution and distilled water.

Calculate the volume of 2% glucose solution and the volume of water she should mix.

(2 marks)

9 The label on Sofia's apple juice says it contains 10.2 g of sugar in every 100 cm^3. Calculate the mass of sugar in a 250 cm^3 glass of the juice.

(2 marks)

10 **Higher tier**

Sofia carried out the Benedict's test on glucose solutions of known concentration. 0.1% gave green, 0.5% gave yellow, 1.0% gave orange and 2.0% gave brick red. A sports drink gave a colour between yellow and orange.

Estimate the glucose concentration of the drink and explain why this test can only give an estimate.

(3 marks)

11 **Higher tier**

In the lipid test the food is shaken with ethanol, then the ethanol is poured into water. Explain why a cloudy white emulsion forms if lipids are present.

(2 marks)

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12 Kwame repeated Sofia's tests and got the same colours.

a. Does this show the results are repeatable or reproducible? Explain your answer.

b. Suggest how the Benedict's test could be made to give a number for the amount of sugar, and why this is better.

(3 marks)

13 A pupil has an unlabelled breakfast cereal. Describe how to find out which of the following it contains: starch, reducing sugar and protein.

(6 marks)

End of questions | Total 35 marks | The answers sheet has the full method as revision notes.

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