GCSE Biology food tests: summary sheet (AQA)

For AQA GCSE Biology (8461) required practical 4 and Combined Science: Trilogy (8464) required practical 3. On another board, check your own specification.

The food tests

Testing for	Reagent	What you do	Positive result	Negative result
Sugars	Benedict's reagent	Water bath at 80 °C or above, about 5 minutes	Blue turns green, yellow, orange or brick red	Stays blue
Starch	Iodine reagent	Add a few drops, no heating	Orange-brown turns blue-black	Stays orange-brown
Protein	Biuret reagent	Add, mix gently, no heating	Blue turns lilac or purple	Stays blue
Lipids	Ethanol	Add water, then ethanol; shake gently	A cloudy white emulsion forms	Stays clear
Lipids	Sudan III	Add several drops, shake, let it stand	A separate red-stained oil layer	No red-stained oil layer

AQA's mark schemes also accept brown for Benedict's, and black or dark blue for iodine. The tests are qualitative: they show whether a substance is there, not how much. Benedict's detects reducing sugars such as glucose, so sucrose (table sugar) leaves it blue. For lipids, AQA's method uses the ethanol emulsion test.

Prepare the food first: grind it with a little distilled water using a pestle and mortar, and use a clean, labelled test tube, a fresh portion and a clean pipette for each test.

Hazards and how to reduce them

Hazard	Risk	How to reduce it
Bunsen flame, hot glass, boiling water	Burns or scalds	Use a water bath and a test-tube holder; let equipment cool before touching it
Benedict's reagent being heated	Spitting into the face or eyes	Wear eye protection; point the test tube away from faces
Benedict's and iodine reagents	Irritant	Wear eye protection or gloves; use a dropper bottle; clean up spills straight away
Biuret reagent	Contains copper sulfate, which is poisonous, and sodium hydroxide, which is corrosive	Handle with care; wash skin immediately if splashed; wipe up spills
Ethanol	Highly flammable	Turn off Bunsen burners first; keep it away from any flames

For a 6-mark method: give each test's reagent, whether to heat, and its positive and negative results in the order you'd do them, plus a hazard with how to reduce it.