Qualitative biochemical tests on lipids and proteins

The presence of different chemicals in a substance can be demonstrated by using simple biochemical tests. These will show the presence or absence of a substance, usually by a change in colour. The tests will not give any information on how much is present. Such a test is called a qualitative test.

Safety

All the tests have some hazards associated with them. This is because the reagents are corrosive or irritants. Wear eye protection.

Sodium hydroxide and hydrochloric acid are corrosive. These should be washed off the skin immediately with cold water. Wear eye protection.

Ethanol is inflammable. When carrying out the lipid emulsion test, the ethanol must be kept away from a naked flame.

Lipid emulsion test

Method

**1** Place 2 cm3 solution to be tested in a test tube.

**2** Add 2 cm3 of ethanol and shake well for 30 seconds.

**3** Allow to stand briefly and then decant the top layer into a test tube of cold water. Observe and record the results.

A positive result for lipid would be the formation of a **white emulsion** when the water and the ethanol mixture come into contact.

Protein (biuret) test

**1** Place 2 cm3 of the solution to be tested in a test tube. Add 2 cm3 of potassium hydroxide and shake.

**2** Trickle some dilute copper sulfate solution down the side of the tube into the unknown solution.

**3** Record any observations.

If protein is present in the unknown solution, a purple ring forms when the copper sulfate is added to the potassium hydroxide solution.

When describing the appearance of solutions be sure to discriminate between a clear (allows light to pass through) and colourless (has no colour) solution. The terms clear and colourless are not interchangeable.