

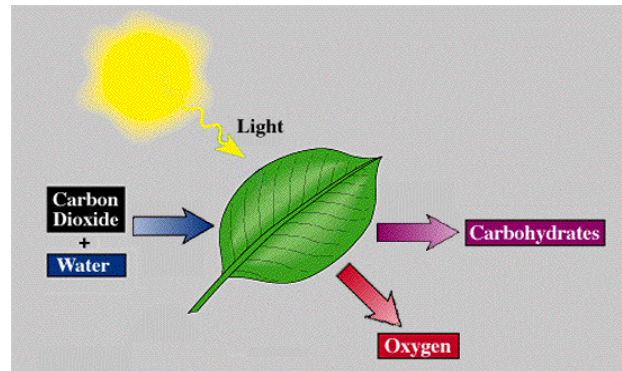
FOOD AND DIET

All living things need food.
Food is needed for energy and growth.



Plants

Plants can make their own food by **photosynthesis**.
They mix Carbon Dioxide (CO₂) and water (H₂O) to make sugar.



Animals

Animals cannot make their own food.
Some eat plants, some eat other animals and some eat both.

What are these types called?

There are 5 main Food Nutrients.
Can you name them?

NUTRIENT	FUNCTION	SOURCE

FOOD TESTS



These are mandatory experiments and must all be written up in your white experiment books.

To Test for the presence of Starch

Test various foods for starch in test tubes.

We must use a control to compare our results too.

Water is a good control for this experiment.

We add **iodine** to our samples and look for a colour change.

What colour change did you see?

A change from **brown** to **Blue/Black** is a positive result.

This means that starch is present.

Conclusion - Iodine turns Blue/Black when starch is present.





To Test for the presence of Glucose (Reducing Sugar)

Set up the test tubes as shown in book and leave in a water bath for 5 minutes.
The chemical we use is known as Benedicts Solution.
Water is our control once again.
Record any colour changes.

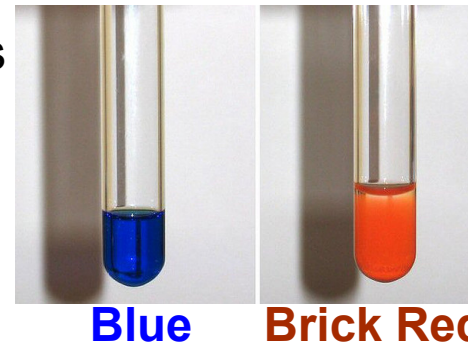
What colours do you see in the picture



What colour change did you see in the experiment?

For a positive result the Benedicts solution turns from **Blue** to **Brick Red** when heated.

Conclusion - a Brick Red colour shows that Glucose is present.



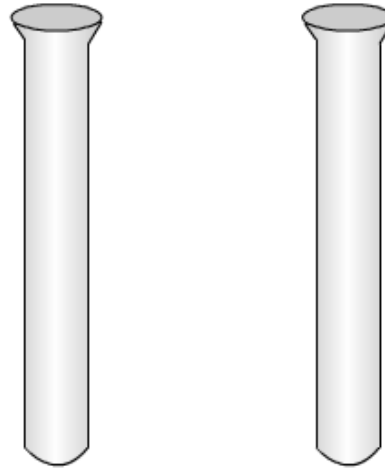
A TEST FOR GLUCOSE

Copyright Paul Whelan 2002, BioCertNet on www.biology.ie

The Test

The Control

Reset



Step1

Click to Add distilled water with dissolved glucose to the test
and
distilled water without glucose to the control

To Test for the presence of Protein

Can you name some foods that have protein in them?



Method:

Make sure you are wearing safety glasses.

Take **two test tubes** and call them A and B.

Add about 5cm^3 of milk into A and the same amount of water into B.

Test tube B will be the **control**.



Now add 5cm^3 of **Biuret Reagent** to both test tubes.

Be careful with this as it contains Sodium Hydroxide and Copper Sulfate.

Swirl the test tube carefully to mix the contents.

Note any colour changes.

Results:

The Test tube with milk turns from white to **Purple**.

Remember - **P**rotein = **P**urple.

To Test for the presence of Fat

Take some **brown paper** and cut it into 2 squares.

Label one square A and the other B.

Take some food containing fat, e.g. **butter** or **oil** and rub into square A.

Take square B and drop some water onto it. (This is the Control)

Hold the 2 squares up to the light and note any differences.



What do you notice?

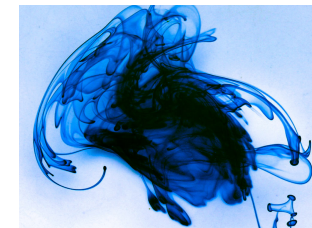
Results:

The square A with oil/butter should go **Translucent** and stay that way.

The square B with water may go 'Translucent' but it goes back to normal (**opaque**) when it dries.

Food Experiments Summary

1. Reducing Sugar (**Glucose**) - **Heat** required
Benedicts Solution
Colour change from **Blue** to **Brick Red**.
2. **Lipids** (Fats/Oils) - No heat required
Brown paper and butter/oil
Colour change from **Brown** to translucent.
3. **Proteins** (Milk) - No heat required
Biuret Solution
Colour change from White to **Purple** (lilac).
4. **Starch** - No heat required
Iodine Solution
Colour change from clear to **Blue/Black**.



Food and Energy

Different foods give different amounts of Energy.
We need energy from our food to power our cells for growth and repair.
Food is mixed with Oxygen and 'burned' in our body.
It gives out heat, energy and wastes.

Which food below would give you more energy? Pasta or peanut butter?



Pop for answer!



The energy from food is measured in **Kilo joules** per gram (**kJ/g**).
Fat has twice as much energy as Carbohydrates.
Most foods have their **energy value** written on their labels.

Energy Values

Energy values and nutritional information are given on **food labels**.
 The energy is usually given as **kilo joules (kJ) per 100 grams** of food.
 Each ingredient is listed by its mass (how much there is).

So, if sugar is at the top of the list then there's more sugar than anything else in it.

Do you think Girls or Boys need more food?

The answer is below



Ingredients		
Sugar, Wheat Flour, Whole Egg, Humectant (Glycerol), Whey Powder, Powdered Egg White, Salt, Raising Agents (Disodium Diphosphate, Sodium Bicarbonate), Flavouring, Preservative (Potassium Sorbate).		
Nutrition		
Typical Composition	Each trifle sponge (20g) provides	100g (3 1/2oz) provide
Energy	284kJ	1418kJ
	67kcal	335kcal
Protein	1.7g	8.3g
Carbohydrate	13.5g	67.7g
of which sugars	9.5g	47.4g
Fat	0.7g	3.4g
of which saturates	0.2g	1.0g
mono-unsaturates	0.3g	1.7g
polyunsaturates	0.1g	0.6g
Fibre	0.2g	1.1g
Sodium	trace	0.2g
This pack contains 8 trifle sponges.		

Burning food to show energy



What do you think will happen to the water when the food is burnt underneath it?

A Balanced Diet



This is a diet with the right amount of all the foods necessary to stay healthy.

How much fruit and veg should you have everyday?
How many do you actually have?

The Food Pyramid

