

# Microbe Magic Experiments

<http://microbemagic.ucc.ie>

## All about microbes – Can a fungus fly?

### **What you will need**

Five sachets of yeast (these are easy to find at the supermarket)

Weighing scales

About 2 litres of warm water (ask an adult to help – it needs to be about the same temperature as your body – about 37°C)

Five clear 500ml plastic bottles (like 500ml empty, clean water bottles)

A funnel

Five small balloons (you may want to blow these up once and then let the air out before using them)

Five elastic bands

Five different liquids – fizzy drink (like coca cola, 7-up, fanta etc.), fruit juice, yoghurt drink, tea, water. You can use whatever liquids you would like to test but be sure to include one bottle of just water as your control.

### **What to do:**

- Open the sachets of yeast and mix them together.
- Add equal amounts of the yeast mixture to each of the five plastic bottles.
- Label each bottle with a different liquid name (remember - your control is just water).
- Fill each bottle with 200mls of warm water.
- Add another 200ml of each of the liquids to the water already in the bottles (e.g. add 200mls of fruit juice to the bottle labelled 'fruit juice' and so on). Your total in each bottle should be 400mls.
- Put a balloon on the top of each bottle and tighten it with the elastic band (make sure it is really tight so nothing can escape).
- Place the bottles in the hot press and check each hour.
- As time goes on, you will see some of the balloons begin to inflate!

### **What's happening?**

When yeast has the correct conditions for growth, warm water and sugar, it feeds on the sugar and produces carbon dioxide as a waste product. Carbon dioxide is a gas. The more sugar there is, the more the yeast can feed and the more carbon dioxide it produces. As the carbon dioxide gas builds up, it cannot escape and so it begins to fill the balloon. You should see that the more sugar a liquid contains, the more gas enters the balloon and the more the balloon inflates.

So, can a fungus fly? If the conditions are just right and the yeast has enough sugar to make enough carbon dioxide, the balloon could inflate enough for the bottle to take off like a hot air balloon and fly! Unfortunately, it is unlikely that this will happen in your experiment as the fungus will, most likely, use up all the sugar before there is enough gas to carry the weight of the bottle and water. However, science is all about having fun figuring things out so you could try adding increasing amounts of sugar syrup (just plain sugar, dissolved in water) to the warm water to see if that works!