# Activity: How much water is in honey?

The amount of water in honey depends upon the type and quality of the honey. In this experiment, you can compare different honeys to see how much water they contain.

## Background

Have you ever wondered why honey doesn't go off, even after sitting in your kitchen cupboard for years? Food is ‘off’ or spoiled when microbes, like bacteria or yeast, grow in it. One of the main reasons honey doesn’t go ‘off’ is because it contains so much sugar; the sugar binds the water molecules so none are left for microbes to grow. However, if honey absorbs extra water, microbes can grow. These microbes ferment the sugar, making it taste and smell really bad. Honey can absorb water from the air. This is why honey is usually stored in a sealed screw-top jar.

The amount of water in honey varies. Generally, high quality or raw honeys contain less water, whereas liquid honeys or solid, crystallised honeys contain slightly more water.

## Aim

To compare the water content of several types of honey, including liquid or runny honeys and creamed honeys.

## Materials

Honey samples (of known price/amount)   
Weighing scales (accurate to 3 decimal places)  
3 Petri dishes for each honey sample

## Method

1. The water content of honey can be estimated by measuring the change in weight of the honey as it dries out.
2. Clean and dry Petri dishes.
3. Cover the bottom of a Petri dish with a layer of honey and record its weight.
4. Repeat so that you have three dishes of each honey type.
5. Place in an oven at about 30°C overnight.
6. Reweigh each of the samples.

## Results

Record your results in a table:

**Table 1. Percent water content of honey**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Honey sample** | **Start weight (g)** | **End weight (g)** | **Water content (g)** **(start weight – end weight)** | **Water content (%)** **(water content/start weight x 100)** |
| **A.** |  |  |  |  |
| **A.** |  |  |  |  |
| **A.** |  |  |  |  |
| **B.** |  |  |  |  |
| **B.** |  |  |  |  |
| **B.** |  |  |  |  |
| **C.** |  |  |  |  |
| **C.** |  |  |  |  |
| **C.** |  |  |  |  |

* Calculate the average water content of each honey sample, and record your results in the table below.
* Plot your results on a bar graph showing honey type versus average percent water content.

**Table 2. Average water content of honey**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Honey sample** | **Water content (%) # 1** | **Water content (%) # 2** | **Water content (%) # 3** | **Average water content (%)** |
| **A.** |  |  |  |  |
| **B.** |  |  |  |  |
| **C.** |  |  |  |  |

## Conclusion

* List the honey types in order from lowest to highest water content.
* List the honey in order from cheapest to most expensive.
* Assuming that low water content is an indicator for good honey quality, are there any honey samples that seem to be better value for money than others?