

## DRUGS

A drug is a substance which alters the way the body works.

e.g. **Caffeine**, present in coffee and tea, is a stimulant.

Some drugs like medicines are beneficial.

In our body, chemical reactions are going on all the time to keep the body working properly. Medicines are usually made up of many chemicals; the active ingredient is a drug which helps the body when it is not working correctly.

e.g. **antibiotics** fight the micro-organisms (germs) which can cause infections

Some drugs can damage our health because of the way they affect our bodies and our lifestyle.

e.g. **Nicotine**, present in cigarette smoke, speeds up the heart rate and raises blood pressure.

**Alcohol** gives a feeling of well-being but slows us down.  
It damages the liver and brain if we drink too much.

**LSD** causes hallucinations e.g. users think they can safely fly out of windows ten stories high!

**Cannabis** heightens the sense of colour, taste and music.  
It makes most users relaxed and talkative.

**Ecstasy** gives a feeling of well-being and increased alertness.  
Users push their bodies to the limit and heart failure can be the result.

Some drugs are **legal** e.g. medicines, alcohol, Nicotine and Caffeine.

Others are **illegal** e.g. Cannabis, LSD and Ecstasy.

Some drugs are **addictive**: we are unable to manage without them.  
Though we may know they are harmful, we cannot give them up. A common example of an addictive drug is alcohol.

## Alcohol

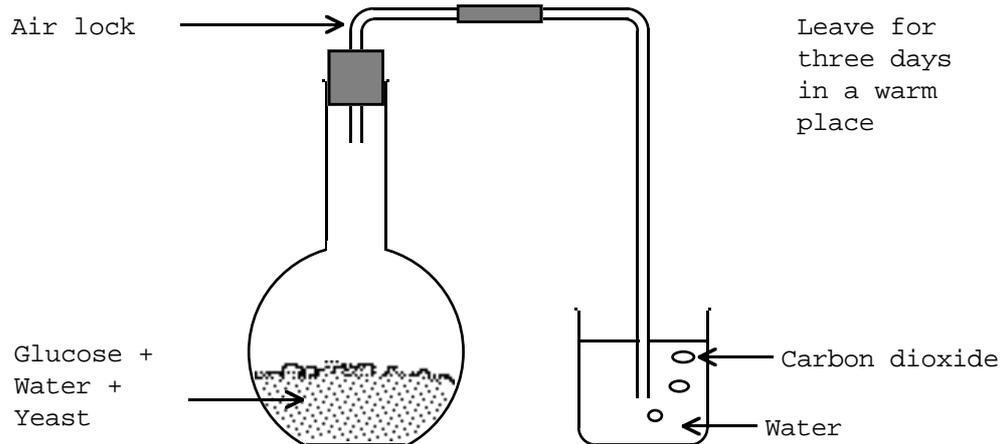
Alcohol is made by the reaction between Glucose and yeast, a reaction known as **fermentation**.

Enzymes in the yeast speed up the conversion of Glucose into an alcohol called Ethanol. Carbon dioxide gas is also produced.

Glucose  $\rightarrow$  Ethanol + Carbon dioxide



We can make alcohol from Glucose in the laboratory:



After a few hours bubbles of Carbon dioxide come out of the mixture. After a few days the froth dies down and the liquid smells of alcohol.

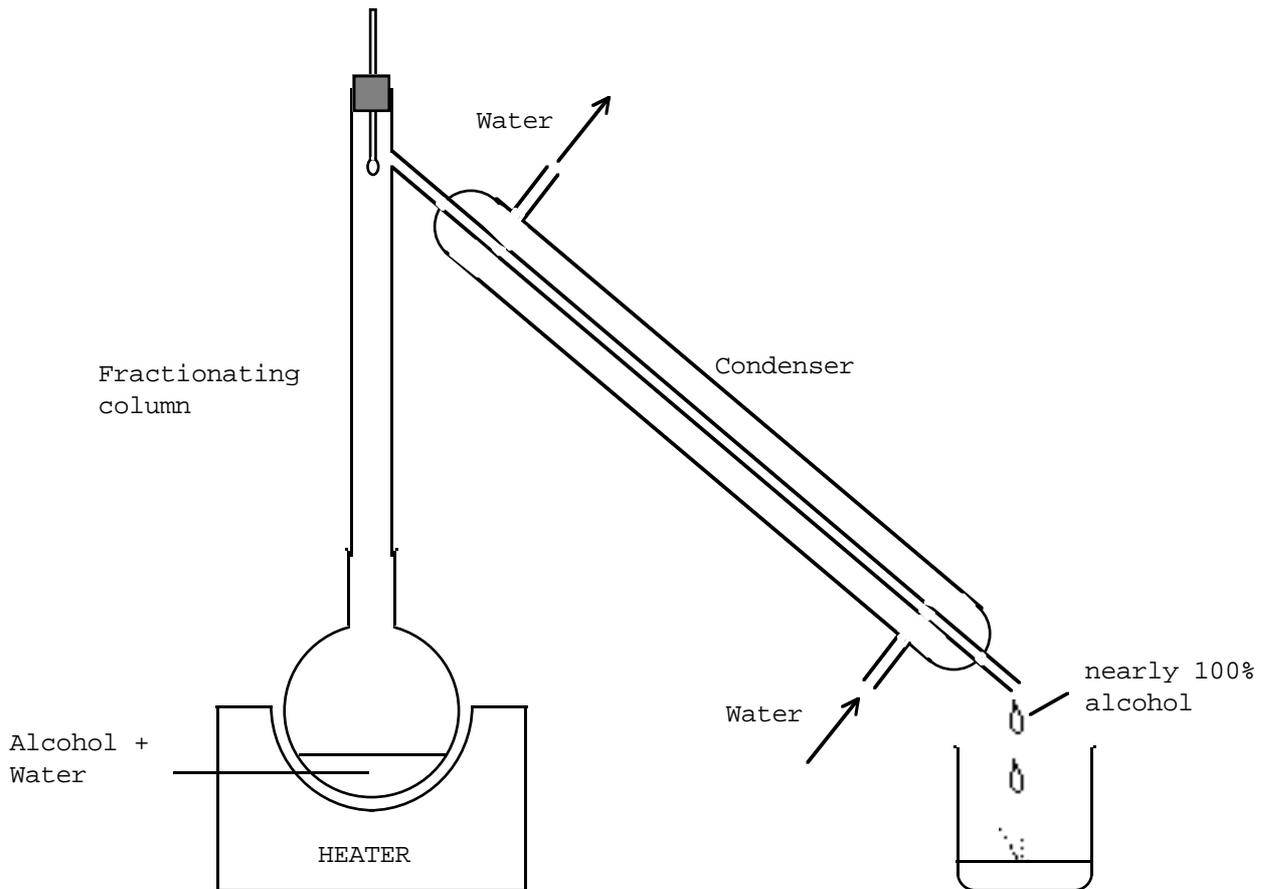
The Glucose required to make alcohol is obtained from plants. Alcoholic drinks are made by fermenting the actual plant material containing the Glucose. Different plants give different flavours and therefore different drinks e.g.

- \* Wine is made from grapes.
- \* Cider is made from apples.
- \* Beer is made from barley.

Fermentation produces very dilute alcohol (5-12%). Most of the mixture is water!

## Distillation

We can increase the concentration of the alcohol by a process called distillation:



Alcohol boils at 78 °C; Water boils at 100 °C. When we heat the mixture the alcohol boils out of the mixture first, condenses in the condenser and drips into the beaker as nearly 100% alcohol!

Spirits (whisky, gin, vodka etc) are made from this more concentrated alcohol.

Alcohol is usually measured in Units.

One unit = 10 cm<sup>3</sup> of 100% alcohol

A bottle of alcopop or a pint of beer contain about 2 units of alcohol.

A pub measure of spirit or a glass of wine contain about 1 unit of alcohol.

Alcohol is broken down in the body at about 1 unit per hour.

## Methanol

The alcohol made by fermentation of Glucose is called Ethanol. Ethanol is not the only alcohol.

Methanol is a very poisonous alcohol causing blindness and death! Methylated spirits (meths) contains Methanol. The purple dye is a warning. A bad-tasting substance is also added to prevent people from drinking it.