

## A 'Swell' Activity

### Background:

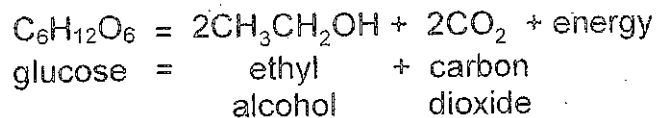
Yeast are tiny single-celled (unicellular) fungi. The organisms in the Kingdom Fungi are not capable of making their own food. Fungi, like any other organism, need food for energy. They rely on sugar found in their environment to provide them with this energy so that they can grow and reproduce.

Yeast, like bacteria grow in or on their food source. They produce and release digestive proteins (enzymes) into their environment where the sugar molecules are found. Sugar molecules then break down into smaller molecules that can be absorbed by the yeast and used for food (energy).

There are many species of yeast, and each has a particular food source.

- Certain yeast feed on a variety of natural sources of sugar such as fruits, nectar from plants, and molasses from the plant crop called sorghum.
- Others break down wood and corn stalks. In doing this, a compound called ethanol is produced. This compound can be used in our cars like gasoline.
- Another species break down sugar from grain into alcohol. Others break down fruits into wine, which is another type of alcohol.
- Bread recipes rely on yeast to break down sugar in our dough.

All of these processes are called fermentation. The formula for the yeast fermentation reaction is:



For the yeast cell, this chemical reaction is necessary to produce the energy for life. The alcohol and the carbon dioxide are waste products produced by the yeast. It is these waste products that we take advantage of.

The chemical reaction, known as fermentation can be watched and measured by the amount of carbon dioxide gas that is produced from the break down of glucose.

???? Do you think that the volume of carbon dioxide produced during fermentation would be affected by using different masses of sugar ????

In this exercise you will add the same amounts of yeast and water to different amounts of sugar in balloons and tie them off to see how much carbon dioxide gas is produced.