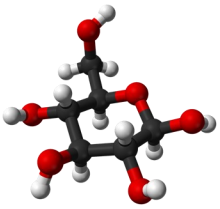
Name _____ Class _____ Date _____ /_____ /20_____

Biotechnology 01



Biotechnology is the use of biochemical organisms / processes to create useful products, many of which are food and drinks.

Yeast is a microorganism. It is used in the production of bread and many alcoholic drinks. These products are made using the chemical reaction **fermentation**. Fermentation is a type of anaerobic respiration – the yeast respires without needing oxygen.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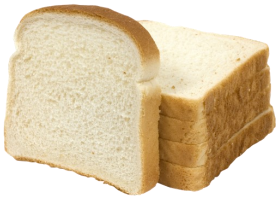
Warm environment

Allow to RISE then BAKE



Glucose (fermentation) = Ethanol + Carbon Dioxide + Energy

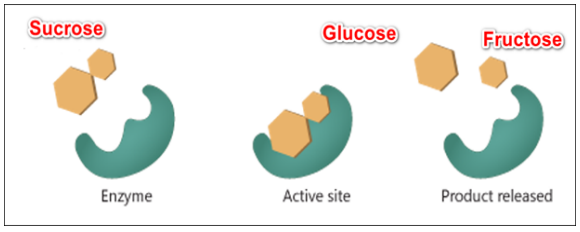
Biotechnology is the name given to the science where biological processes or organisms are used to create useful products. For example, bread is made when the enzymes in yeast are used to convert the sugars found in flour into ethanol and carbon dioxide. The carbon dioxide is a waste gas and causes the dough to rise, when the dough is baked the ethanol boils off and the carbon dioxide expands making the bread rise further.

The word equation for this type of biochemical activity is:

glucose (fermentation) gives ethanol plus carbon dioxide plus energy

Some types of bread are made without using yeast. Suggest and explain how these breads would differ in appearance from bread made with yeast.

Bread made without yeast will look flatter, with no air bubbles as there won't be any 'rising', no carbon dioxide is made because no fermentation takes place.



Glucose and Fructose are then converted to ethanol and carbon dioxide through the fermentation process

Enzymes are sensitive to temperature changes (and pH), the activity of the enzyme rises with increasing temperature but after an optimum is reached, the enzymes will be damaged = "denatured"

Q. What is the name of the process that causes sugars to be converted into ethanol? FERMENTATION
Q. Respiration using oxygen is known as _____ respiration? AEROBIC
Q. Water, Yeast and _____ are used to make bread? FLOUR
Q. The place where substrates go in an enzyme is the _____ site? ACTIVE
Q. The gas produced during fermentation is ? CO_2

Q. What is the word equation for fermentation? Glucose(F) > Ethanol+ CO_2+ Energy
Q. Respiration without oxygen is known as _____ respiration? ANAEROBIC
Q. Name one TYPE of bread made without yeast BISCUITS / UNLEAVENED
Q. An enzyme has been _____ when the substrates no longer fit? DENATURED
Q. Bread made without yeast will look _____ as no gases are produced? FLATTER