

CHEMISTRY

INVESTIGATORY PROJECT



©Elaine Barker * illustrationsOf.com/1082214

CHEMISTRY

2015-16

NAME -
DHARMENDER
CLASS-XII



CHEMISTRY

INVESTIGATORY PROJECT



©Elsaine Barker * illustrationsOf.com/1082214

CHEMISTRY

2015-16

NAME-PRAVEEN
CLASS-XII



INDEX

- # AIM
- # OBJECTIVE
- # INTRODUCTION
- #Theory
- # MATERIALS REQUIRED
- # PROCEDURE
- # OBSERVATIONS
- # BIBLIOGRAPHY

CHEMISTRY

AIM OF THE EXPERIMENT



To compare the rate of fermentation of given sample of wheat flour, gram flour, rice flour and potato using yeast

OBJECTIVE

The purpose of the experiment is – to compare the rate of fermentation of the given samples of wheat flour, gram flour, rice flour and potatoes. I became interested in this idea when I saw some experiments on fermentation and wanted to find out some scientific facts about fermentation. The primary benefit of fermentation is the conversion of sugars and other carbohydrates, e.g., converting juice into wine, grains into beer, carbohydrates into carbon dioxide to leaven bread, and sugars in vegetables into preservative organic acids.

INTRODUCTION



Fermentation typically is the conversion of carbohydrates to alcohols and carbon dioxide or organic acids using yeasts, bacteria, or a combination thereof, under anaerobic conditions. A more restricted definition of fermentation is the chemical conversion of sugars into ethanol. The science of fermentation is known as zymology. Fermentation usually implies that the action of microorganisms is desirable, and the process is used to produce alcoholic beverages such as wine, beer, and cider. Fermentation is also employed in preservation techniques to create lactic acid in sour foods such as sauerkraut, dry sausages, kimchi and yoghurt, or vinegar for use in pickling foods.

THEORY



Wheat flour, gram flour, rice flour and potatoes contains starch as the major constituent. Starch present in these food materials is first brought into solution. In the presence of enzyme diastase, starch undergoes fermentation to give maltose. Starch gives blue-violet colour with iodine whereas product of fermentation starch does not give any characteristic colour. When the fermentation is complete the reaction mixture stops giving blue-violet colour with iodine solution. By comparing the time required for completion of fermentation of equal amounts of different substances containing starch the rates of fermentation can be compared. The enzyme diastase is obtained by germination of moist barley seeds in dark at 15 degree Celsius. When the germination is complete the temperature is raised to 60 degree Celsius to stop further growth. The seeds are crushed into water and filtered. The filtrate contains enzyme diastase and is called malt extract.

MATERIALS REQUIRED



PROCEDURE

- # Take 5 gms of wheat flour in 100 ml conical flask and add 30 ml of distilled water.
- # Boil the contents of the flask for about 5 minutes
- # Filter the above contents after cooling, the filtrate obtained is wheat flour extract.
- # To the wheat flour extract. taken in a conical flask. Add 5 ml of 1% aq. NaCl solution.
- # Keep this flask in a water bath maintained at a temperature of 50-60 degree celsius. Add 2 ml of malt extract.
- # After 2 minutes take 2 drops of the reaction mixture and add to diluted iodine solution.
- # Repeat step 6 after every 2 minutes. When no bluish colour is produced the fermentation is complete.
- # Record the total time taken for completion of fermentation.
- # Repeat the experiment with gram flour extract, rice flour extract, potato extract and record the observations

OBSERVATIONS

Time required for the fermentation—

Wheat flour — 10 hours

Gram flour — 12.5 hours

Rice flour — 15 hours

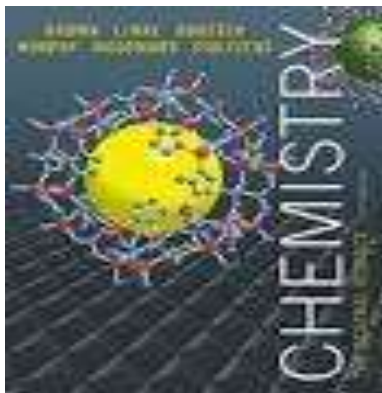
Potato — 13 hours

CONCLUSION

Rice flour takes maximum time for fermentation and wheat flour takes the minimum time for fermentation.

CHEMISTRY

BIBLIOGRAPHY



∅ Comprehensive Chemistry Practical Class-XII.



∅ <http://en.wikipedia.org/wiki/Anise>



∅ <http://www.essentialoils.co.za/essential-oils/aniseed.htm>

