

MN SCIENCE OLYMPIAD

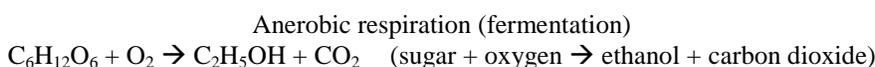
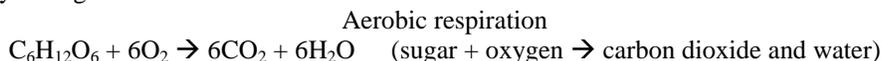
Experimental Design

Division C

Brian and Colleen Bizzell, Event Supervisors

Your little brother does not believe you when you tell him that yeast are living organisms. You try to explain to him that without living yeast, bread would not rise. Design and conduct an experiment to show him that yeast is alive and more specifically that it is their respiration that causes bread to rise. Your experiment must deal with some aspect of yeast respiration/fermentation.

Some equations you might find useful include:



TOPIC AREA: Yeast Respiration

Materials:

1 flask with yeast
Thermometer
Tape
Scissors
4 large test tubes
4 small test tubes
7 plastic cups
1 packet with:
 5 graduated plastic pipetters
 4 1.5ml tubes
 4 nuts
 5 popsicle sticks
 5 assorted rubber bands
 2 thumb tacks
 1 straw
 2 paper plates
 2 small balloons
 2 large balloons
 1 plastic spoon

At Distribution Center

95% Ethanol (up to 50 ml)
0.2M HCl (up to 50ml)
0.2M NaOH (up to 50 ml)
Vegetable oil (up to 25ml)
Sugar (reasonable amt)
Salt (reasonable amt)
Flour (reasonable amt)
pH paper (reasonable amt)
Graph paper
Lined paper

If you want anything at the distribution center: 1) Bring this sheet with you to get the stuff checked off 2) Bring a container to hold the substance. No containers will be available at the distribution center. Graduated cylinders are available for use at the distribution center ONLY! If you have any questions about what a "reasonable amount" is please ask.

You must use at least two of the items listed under Materials and your experiment must involve YEAST RESPIRATION. Your report should include all of the following parts (clearly labeled):

Statement of Problem (4 pts)
Hypothesis (4 pts)
Variables (10 pts)
 Independent, Dependent, Controlled
Standard of Comparison (3 pts)
Materials and Procedure (8 pts)
Qualitative Observations (4 pts)
Quantitative Results
 Data Table (6 pts)
 Graph (6 pts)
 Statistics (4 pts)
Analysis and Interpretations of Results (10 pts)
Possible Experimental Errors (3 pts)
Conclusion (4 pts)
Recommendations for Further Experimentation (4 pts)

Questions or comments about this test?

See www.experimentwisconsin.com

or send email to

experimentwisconsin@yahoo.com