CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J1323

Project Title
Effect of Temperature on Gas Production of Active Dry Yeast and Rapid Rise Yeast

Abstract

Objectives/Goals
The purpose of my project was to determine the optimum temperature for yeast to produce carbon dioxide, and to see if Rapid Rise Yeast would produce gas faster than Active Dry Yeast.

Methods/Materials
I made a solution of Active Dry Yeast, sugar, and warm, distilled water. I placed a test tube of the solution in a water bath at my test temperature (0, 20, 40, and 60 degrees C) and measured how much gas was being produced every minute for fifteen minutes, using aquarium tubing and an inverted graduated cylinder filled with water. I repeated the procedure using Rapid Rise Yeast in my yeast solution.

Results
Tests at 0, 20, and 60 degrees C did not produce very much gas with either type of yeast. Yeast at 40 degrees C obviously produced the most gas in both types of yeast. By the end of 15 minutes at 40 degrees C, Rapid Rise Yeast had produced 28% more gas than Active Dry Yeast.

Conclusions/Discussion
I was incorrect when I hypothesized that 60 degrees C would be the optimum temperature, but I was correct that Rapid Rise Yeast would produce gas at a faster rate than Active Dry Yeast. I later decided to test the solutions I had tested at 0 and 60 degrees C to see if they were still alive. Yeast placed at 0 degrees C produced gas when brought to 40 degrees C. Yeast that had been brought to 60 degrees C still did not produce gas at 40 degrees C. Therefore, when yeast gets too hot, it dies, but when it gets too cold, it is temporarily deactivated.

Summary Statement
My project was to find out the best temperature for yeast to produce gas and whether Rapid Rise Yeast really produces gas at a faster rate than Active Dry Yeast.

Help Received
My mom took the pictures and recorded some of the data as I measured. My dad helped me set up the graphs on the computer.