CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J1331

Project Title
Yeast: Good, Bad, or Worse?

Abstract

Objectives/Goals
My objective is to discover how yeast grows, so people know to limit their intake of sucrose, lactose, or fructose to help prevent yeast infections. I also want to know other ways in which the fermentation process affects our daily lives. If I put yeast in three thermos bottles, one with sucrose, one with lactose, and one with fructose, then the yeast will produce more energy in the thermos with the sucrose.

Methods/Materials
The three thermos bottles had stoppers, tubing, and a thermometer. Inside of each, there was yeast and water, plus sucrose in one, fructose in another and lactose in the last. Three Erlenmeyer flasks had equal amounts of limewater and a stopper with tubing. The thermos bottles and Erlenmeyer flasks were connected with tubing. The temperature inside each thermos was taken at every hour for 6 hours. The pH in each thermos was taken before and after. Any odor, precipitate and cloudiness were noted.

Results
Throughout all three tests there were bubbles, cloudiness and precipitate in the sucrose and fructose flasks only. The sucrose thermos had the highest average temperature. There was a smell in all the thermos bottles, but was strongest in the thermos with sucrose and fructose. The pH changed from 6 to 4 in sucrose, 6 to 5 in fructose and lactose. These results pertain to my objectives because they indicate that the yeast grew differently in each sugar source.

Conclusions/Discussion
The yeast grew better in the sucrose, as shown by the foul smell (ethanol), bubbles (carbon dioxide), the most precipitate (calcium carbonate), and the lowest average pH (organic acids) after the tests. A standard test for the presence of carbon dioxide is its reaction with limewater, forming a milky-white precipitate of calcium carbonate.

All of the above findings support my hypothesis that the sucrose is a better food source for fermenting yeast than fructose or lactose.

Yeast aids in the digestion of food but if a person has too much yeast, they can get a yeast infection, they can help cure it by limiting their sucrose intake, along with anti-fungal medications. Yeast also is used in pastry making and alcoholic drinks. Yeast is indead good for people, but too much is bad, and some sugars make it worse.

Summary Statement
My project is about finding out which food source provides fermenting yeast with the most energy, sucrose, fructose or lactose.

Help Received
My dad helped me set up my experiment and proofread my final write-up. I borrowed glassware and rubber stoppers from my school. My Aunt Jeny helped me organize my board. Anders Dossing , a chemist at the University of Copenhagen in Denmark, helped me answer questions about my project results.