CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
Nikki R. Fido

Project Number
J0405

Project Title
The Yeast Beast

Abstract

Objectives/Goals

Q: Will yeast mixed with sugar substitutes produce the same amount of carbon dioxide gas as yeast mixed with table sugar?

H: I think the yeast mixed with sugar substitutes will produce the same amount of carbon dioxide gas as the yeast mixed with table sugar.

Methods/Materials

Dry Yeast (2t), Table Sugar (1T), Sugar substitutes(1T), Warm Water (1C), Water Thermometer, 6 empty 16 oz plastic water bottle, 1 cap that fits all bottles, Plastic Tubing, Epoxy, Graduated cylinder, Plastic tub, Packing tape, Water

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I made a gas chamber by filling a 24 oz water bottle with water, turning it upside down in a tub of water to allow all of the oxygen to escape. My father drilled a hole in the cap of a 16 oz plastic bottle, stuck clear tubing through the hole and put epoxy glue around the tubing to prevent the air from escaping. I made a solution of water and yeast as a control and placed it in the 16 ounce bottle. I put the cap with the tubing on the bottle and stuck the end of the tubing underneath the gas chamber in the tub. I watched to see if there were any bubbles in the tubing and whether any of the water in the gas chamber was pushed out into the tub. I allowed the mixture to work for 50 minutes. I did the experiment twice for each solution.

Results

Unlike sugar, Aspartame and Saccharin which produced alot of gas, the solutions with stevia and sucralose produced no bubbles and did not move the water out of the gas chamber.

Conclusions/Discussion

I concluded that my hypothesis was right for two of the sugar substitutes, but that it was wrong for the other two sugar substitutes. Based on my experiment, if you baked bread with Sucralose or Stevia, the bread would not rise.

Suggestions For Further Study:

I would want to do further research to find out why the two sugar substitutes (Sucralose and Stevia) did not produce gas. I would also study what could be added to the sugar substitutes to see if it would change the results. Another way to do the experiment would be to bake different breads - - one with regular sugar

Summary Statement

My project explores whether sugar substitutes produce the same amount of carbon dioxide as table sugar when mixed with yeast.

Help Received

Dad helped drill hole in bottle and expoxy; mom helped me get articles off of internet; my sister Jami helped with printing the title on her computer; mom helped guide me with with organization of written report and tables; Mrs. Harvey supervised.