CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
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Project Number
J1517

Project Title
How Much Metabolic Efficiency Does Yeast Grown with Sugar Substitutes Have Compared to the Amount Grown with Sugar?

Abstract

Objectives/Goals
The objective of this study was to determine the metabolic efficiency of yeast grown with sugar substitutes in comparison to yeast grown with sugar.

Methods/Materials
Yeast and 115º F water were mixed with, in turn, sugar, nothing, and the sweeteners saccharin, sucralose, and aspartame. The different mixtures were correspondingly attached to a gas collection apparatus, and the amount of carbon dioxide collected after 15 minutes was recorded by measuring the amount of water displaced in the gas collection apparatus. Each experiment trial was repeated 3 times.

Results
Sugar, collecting an average of 68 milliliters of carbon dioxide, had the highest metabolic efficiency, followed by sweeteners saccharin, sucralose, and aspartame at average amounts of 62 milliliters, 61.3 milliliters, and 57.3 milliliters, respectively. The yeast solution with nothing in it did not bubble, which resulted in that solution collecting the least average amount of 3 milliliters.

Conclusions/Discussion
The results suggest that sugar is the most likely to have the highest metabolic efficiency.

Summary Statement
My project observed and examined the question of yeast metabolism using various sugar substitutes in replacement of sugar, testing the metabolic efficiency.

Help Received
Borrowed graduated cylinder from teacher, Mrs. D. Shah; Mother helped cut and paste papers onto the board.