



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

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Project Title Carbon Catcher	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to find out which type of sugar substitute(Splenda, Sweet n' Low, or Honey) will produce the most amount carbon dioxide in the least amount of time using yeast.</p> <p>Methods/Materials You will be collecting carbon dioxide from the yeast, sugar and sugar substitute's reaction by displacing water trapped in a graduated cylinder. Here's how to set it up: 1. Fill the bucket about one-third full with water and then invert the graduated cylinder filled with water. 2. Attach some plastic tubing to the bottle cap by making a hole in the bottle cap, inserting the plastic tubing and sealing the tube to the cap with silicone sealant to make it air-tight. Once the silicone is fully dry, place the other end of the tubing inside the inverted graduated cylinder and start the actual experiment. 3. Make one solution at a time. Dissolve 1 tablespoon of sugar in 1 cup of warm water at 115°F into a glass cup. Then add 2 teaspoons of yeast. Mix and pour into a bottle and cap the bottle tightly with the tube cap. Start the timer. 4. Stop the timer when 140 mL of water in the graduated cylinder is displaced by CO₂. Keep a maximum time limit of 30 minutes for displacement of 140 mL water with CO₂ in the graduated cylinder for each experiment. Repeat Step 4 for 5 times for each sugar substitute.</p> <p>Results The first experiment was conducted with sugar and it took 9 min. and 21 sec. for 140 mL of water to be displaced by CO₂ in the graduated cylinder. Then 5 experiments were conducted with honey, giving an average time of 8 min. and 53 sec. Similar 5 experiments each were conducted with Sweet n' Low, giving an average time of 12 min. and 35 sec. Finally, Splenda displaced no water with CO₂ in the graduated cylinder in the maximum time limit of 30 minutes.</p> <p>Conclusions/Discussion My data did not support my hypothesis that Splenda will produce carbon dioxide in the least time. I found that Honey produced CO₂ the fastest of all the variables because it is a simple sugar even though regular granulated sugar can not be extracted from it. Sweet n' Low has fruit sugars which work well with yeast and produced CO₂ in resonable time. Splenda did not produce any CO₂ because its sugar molecules are backwards even though it is 99% sugar and 1% sucralose.</p>	
Summary Statement This project is about measuring the time taken to produce carbon dioxide when yeast is mixed with 3 different types of sugar substitutes	
Help Received My mom proof-read all of my work and my dad got the supplies and helped with the technical aspect of this project. They both helped with the actual experiment and the board. My science lab teacher Mrs. Seager and Ms. Crane from Ask # A # Scientist Night answered my questions.	