



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> Alicia Roice; Ashlyn Roice	<b>Project Number</b> <b>J0620</b>
<b>Project Title</b> <b>Hidden Sugar Strikes Back: Investigating Hidden Sugars (Glucose and Sucrose) in Food Using Invertase</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of our project was to measure the concentration of glucose and sucrose(added sugars) in different food items. Our hypothesis for this project was that if we add invertase(sucrase) enzyme to food samples, then it will convert sucrose in the sample to glucose and fructose through a process called hydrolysis. The amount of glucose present can be measured using glucose test strips.</p> <p><b>Methods/Materials</b> Different food samples, glucose powder, table sugar, invertase enzyme, digital scale, plastic cups, graduated cylinders, measuring spoons, droppers, distilled water, and glucose test strips. The activity of invertase enzyme was measured by adding invertase to 10% sucrose solution and measuring the glucose concentration at intervals. The time at which the readings stabilized was taken as the duration of our tests. The value of duration we found from this step was 60 minutes. 10% solution of each food sample was prepared by mixing the sample with distilled water. The glucose concentration of the solution was measured and recorded. Then, 15 drops of invertase enzyme was added to the solution and the solution was mixed well. The glucose concentration of the solution was measured after 60 minutes, and the reading recorded. Three samples of each food item was tested.</p> <p><b>Results</b> The results of our experiment show that many food samples that we tested contain added sugar. Hidden or added sugar is the sugar added to food in addition to naturally occurring sugar in the ingredients. Among the samples, pancake syrup had the highest percentage of sucrose followed by Chewy Granola Bars. The highest percentage of glucose was found in the Sweet and Thick Barbecue Sauce and Tomato ketchup had the second highest percentage of glucose.</p> <p><b>Conclusions/Discussion</b> Results of our experiment support our hypothesis. Sucrose present in food sample was converted into glucose in presence of invertase, which we measured using glucose test strips. Added sugar is present in sweet food and in food that you would not expect to contain sugar, like pasta sauces and condiments like ketchup and salad dressings. The presence of added sugar in food items lead to excessive sugar consumption. Studies have linked excessive sugar consumption to various health issues like obesity, diabetes, heart disease, and tooth decay. When consuming processed food, a careful look at the nutrition information of the food is necessary to control the intake of sugar.</p>	
<b>Summary Statement</b> We studied the concentration of glucose and sucrose in various food samples and found that there is added sugar present in many of the food samples tested.	
<b>Help Received</b> Our parents assisted us in acquiring the materials for the project and in assembling the board. Our science teacher, Mr. Lee, gave us guidance during our project.	