



CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

Name(s) Emma M. Markey	Project Number J2121
Project Title Cookies Galore	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To test 3 gluten-free flours (corn, millet and white rice) against 1 wheat flour with gluten in cookie making to determine the effect on the baking and taste preferences of chocolate chip cookies. People who have Celiac disease and some children with autism, who may be intolerant of the gluten in wheat flour, need yummy cookies to eat that are gluten free. I would like to find a way to make them delicious cookies.</p> <p>Methods/Materials I did 1 trial and made 4 batches of cookies, each with different flours, and kept everything else the same. I obtained the informed consent from 20 taste testers and conducted a blind taste test of the 4 cookies. The cookies were ranked in the order of their taste preference and given scores of 1 (most favorite) to 4 (least favorite). Comments about appearance and texture were also recorded. I observed the dough while it was being mixed and the cookies while they were baking. I measured the height and diameter of the cookies. The score points for each cookie type were added up, the results analyzed, and a conclusion was made.</p> <p>Results The corn flour cookie received the highest score of 275 points. The white rice flour cookie received a score of only 15 points less than the corn flour of 260 points. The wheat flour cookie with gluten, the traditional flour that is used, was the 3rd most favorite with a score of 240 points. And the millet flour cookie was the least favorite with 195 points. These scores were surprisingly close to each other. Some of the taste testers liked some of the cookies and really disliked some of the other ones. Other taste testers felt completely differently about the cookies, which led to the scores being so close.</p> <p>Conclusions/Discussion My hypothesis was incorrect. I expected the cookies made with the gluten-free flours would not bake properly and would not be appealing to the taste testers. I was surprised that all 4 cookie types had just about an equal number of people that liked them and others who disliked them. I want to continue to work on this project, so that I can find a few delicious cookie choices for people who must follow a gluten-free diet.</p>	
Summary Statement My science project tested the effect of using 4 different flours, specifically 1 wheat with gluten and 3 gluten-free on the taste and appearance, as well as, the mixing and baking of chocolate chip cookies.	
Help Received My science teacher and I discussed project ideas. I choose which project I would do and how to do it. My parents showed me how to do the higher level functions in Word and Excel, so I could format my writing and generate the data charts and pie graph.	