

# Sweetened with Science

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# Statement of Purpose/Question

Does using different sweeteners impact baking results?

Will using maple syrup or applesauce instead of regular granulated sugar negatively affect the taste, texture, and consistency of the cookies? It might, because it might change required baking times, which could alter the texture or consistency. It might also cause them to not taste as sweet. With this project, I hope to find out if there is a sugar substitute that could help me make a unique but delicious cookie. I would also like to use this to find a way to make cookies for family members who can not have as much sugar due to health reasons.

# Variables and Constants

## Independent Variable

Sweetening agent

I will be replacing regular granulated sugar with maple syrup and then applesauce.

## Dependent Variable

Taste, texture, and consistency of the cookies

The baking results (taste, texture, and consistency) will depend on the sweetener used.

## Constant/Controls

Sugar cookie recipe (other than the sweetener), oven, baking materials

I will use the same recipe for all cookies, only swapping out the sweetener. All cookie batter will be made using the same baking utensils and materials. We will use the same oven for all cookies.

# Hypothesis

**Using different sweeteners will result in poorly cooked cookies.**

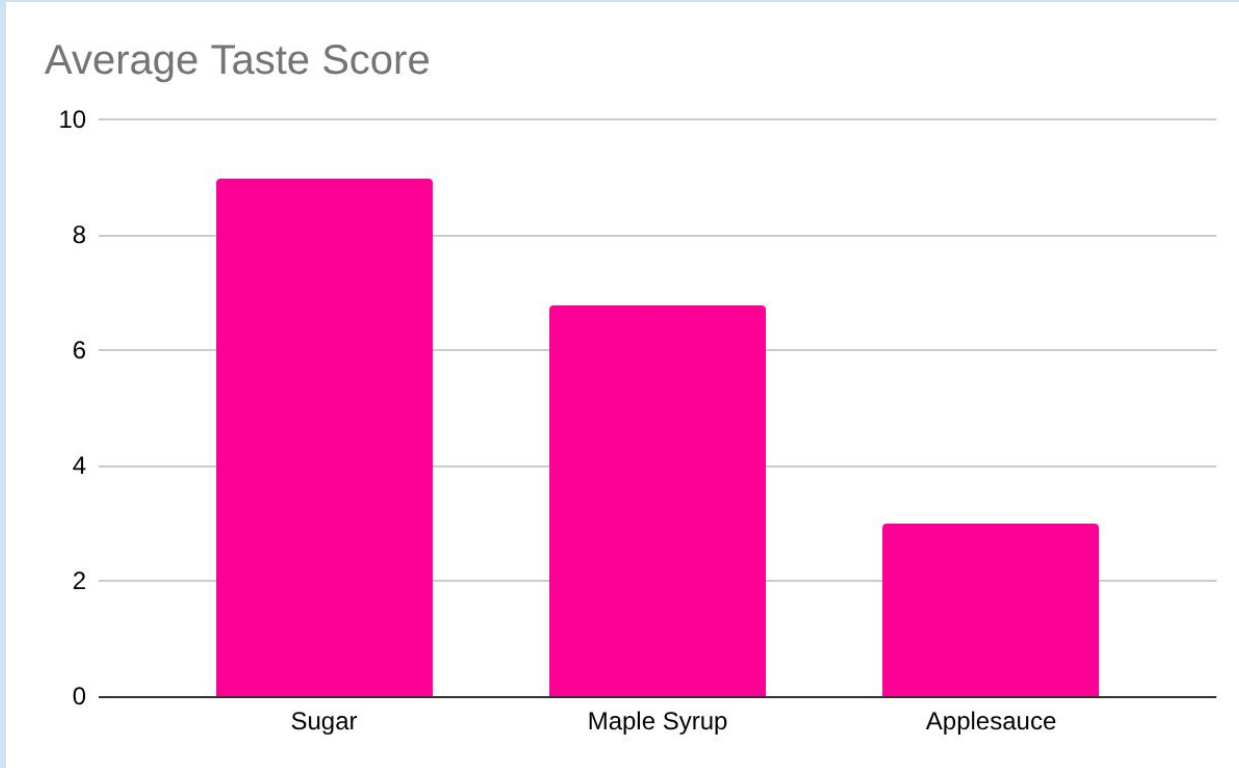
I believe that using different sweeteners will impact baking results. For example, using fruit could cause the cookies to be extremely wet and runny, causing them to be undercooked, but if you adjust the measurements and ratios of the sugar substitutes to granulated sugar, the cookies will cook properly. I believe that the taste, texture, and consistency of the cookies will ultimately be negatively impacted by the sugar substitutes though.

# Procedure

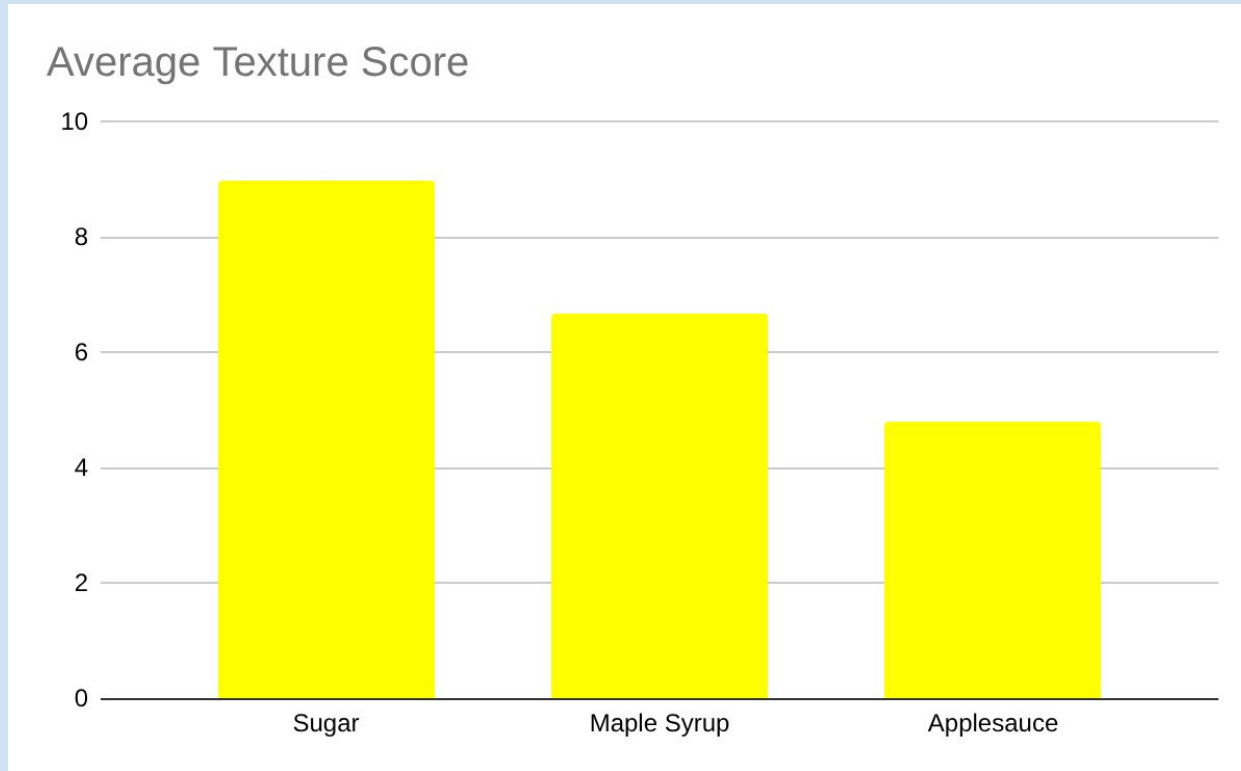
1. Bake sugar cookies using granulated sugar according to the recipe (provided in project report).
2. Have volunteers sample and score the cookies based on taste, texture, and consistency. (Find the average score for each category.)
3. Repeat steps one and two for five new batches of cookies, replacing the granulated sugar with maple syrup. ( $\frac{3}{4}$  cup maple syrup per cup of sugar)
4. Repeat steps one and two for five new batches of cookies, replacing the granulated sugar with applesauce. ( $\frac{1}{2}$  cup applesauce per cup of sugar)

(Note- The applesauce cookies required twice as long to bake due to the increased moisture in the batter.)

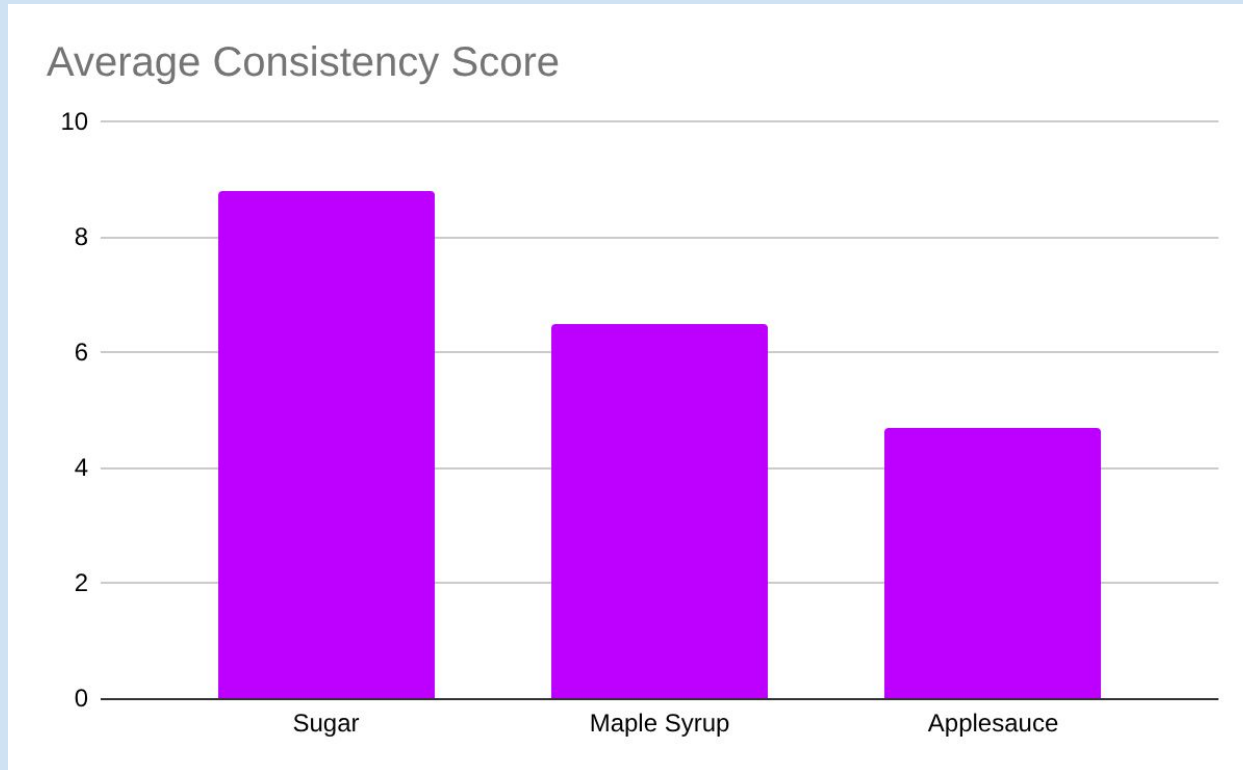
# Results



# Results (cont.)



# Results (cont.)



# Conclusion

My results do support my hypothesis that using different sweeteners will result in poorly baked cookies. For example, using fruit (applesauce) caused the cookies to have more moisture in the batter, which resulted in them needing a much longer cooking time (30 minutes as opposed to 15 minutes). According to my survey data, using different sweeteners also negatively affected the taste, texture, and consistency. The average taste scores varied the most. For my control batch, the average taste score was 9 out of 10, while using maple syrup resulted in an average of 6.8, and using applesauce resulted in an average of only 3. The average texture score for my control batch was 9 out of 10, while the maple syrup had an average of 6.7, and the applesauce had an average of 4.8. Finally, my control batch had an average score of 8.8 out of 10, while the maple syrup had an average of 6.5, and the applesauce had an average of 4.7. In conclusion, if you are able to use regular granulated sugar in your cookies, that is what I would recommend for the most consistent baking times, along with the best taste, texture, and consistency.

# Real-Life Applications and Future Trials

1. This project was important to me because diabetes is a common health concern, and it also runs in my family. I wanted to find an alternative sweetener for cookies that they would still enjoy.
2. I've considered working in or owning a bakery one day. Having healthy alternatives to sugar could be important to customers.
3. I would like to try this again using honey and other fruits, such as strawberries, to see if they improve the taste, texture, and consistency of the cookies.