Changing Ingredient Amounts in Muffins

5th Grade

Testable question

If I changed the amount of flour, and baking soda, (both separately) in a muffin recipe, how would that affect the taste, size, smell, appearance, texture and color?

Predictions/Hypothesis:

Ingredient subtracted	Results:	Results:	Results:	Results:	Results:	Results:
	Apperrance	Taste	Smell	Size	Color	Texture
Flour	Flat	Wet	Same	Falling apart	Tan-ish	Watery
Baking soda	Smaller	Same	Same	Smaller size	Tan-ish	Dense

Procedure:

1. Look at the recipe and start baking.
2. Take pictures of the batter and final result.
3. Take measurements of the muffins.
4. Convert the measurements into centimeters.
5. Then I put them on the table.
6. I put the images in a table.

I chose this project because...

I really enjoy baking things with my family, so I thought it would be fun to bring in the science part into it. I also thought that it would be fun to bake muffins almost every day and have a practically unlimited supply of muffins.

In my research I found out that brown sugar has molasses. The molasses in the brown sugar adds a rich, smokey like flavor. I also learned that you can use dark brown sugar for a more molasses-forward muffin. Furthermore I learned that flour provides the structure in baked goods. I had always thought that it was just there to make the muffin not soggy or moist.

This project is important because it might be able to find a new way to make muffins, or change the way that me and my family make our muffins.

Constant Conditions:

Independent Variable:
The amount of flour, baking soda, sugar and butter. (All in different batches).

Dependent Variable:
The taste, size, smell, appearance, texture and color.

Constant Conditions:
The temperature of the oven, the time in the oven and the amount of the other ingredients.

	Ingredient subtracted with amount:
Control	Original recipe
Test 1	Flour ½
Test 2	Baking soda

Control recipe:

¾ cup of Whole Wheat Pastry Flour

¾ cup Bob's Red Mill® Oat Bran Cereal

½ cup Brown Sugar

1 tsp Baking Powder

1 tsp Cinnamon

½ tsp Baking Soda

⅓ cup mashed banana

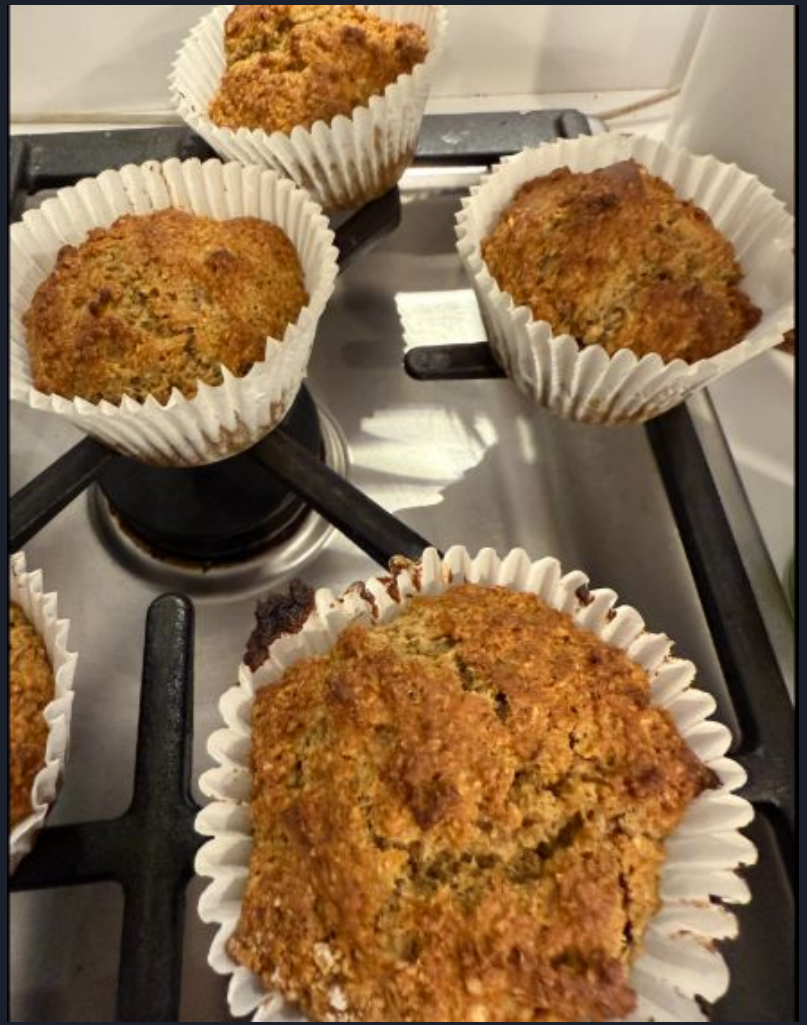
½ cup Plain Yogurt

1 Egg

2 tbsp Oil

	Appearance	Size	Taste	Smell	Color	Texture
Control	Lumpy on crust	W 7.9375 cm. L4.1275 cm.	Sweet and like a banana.	Tiny bit of banana and very slightly like cinnamon.	Dark tan	Crust is crunchy and bumpy. Inside is smooth in my mouth.

Control Muffins



Flour subtracted recipe:

⅜ cup of Whole Wheat Pastry Flour

¾ cup Bob's Red Mill® Oat Bran Cereal

½ cup Brown Sugar

1 tsp Baking Powder

1 tsp Cinnamon

½ tsp Baking Soda

⅓ cup mashed banana

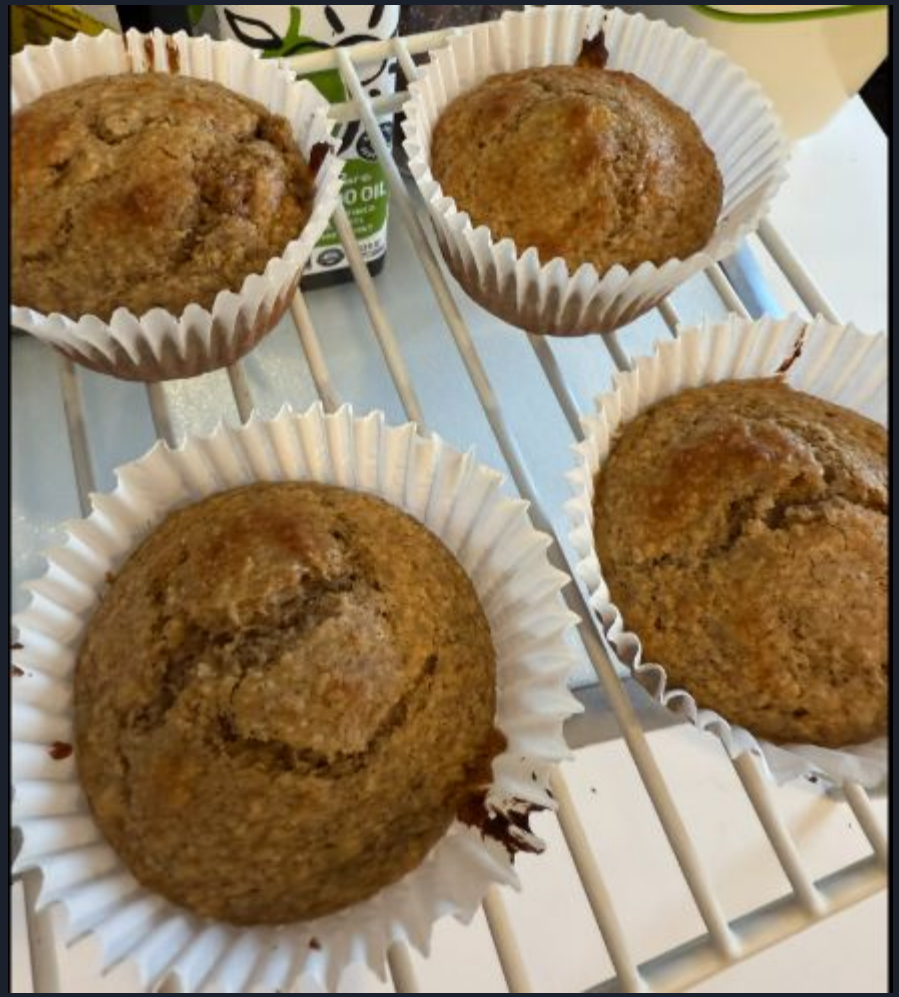
½ cup Plain Yogurt

1 Egg

2 tbsp Oil

	Appearance	Size	Taste	Smell	Color	Texture
Flour	The crust was smooth and the muffin was one the smaller size.	W 7.46125 L 4.7625	Everything had a more noticeable taste.	A little like banana.	Light brown.	The crust felt kind of moist but the inside was the same as the original.

Flour Subtracted Muffins



Baking soda subtracted recipe:

¾ cup of Whole Wheat Pastry Flour

¾ cup Bob's Red Mill® Oat Bran Cereal

½ cup Brown Sugar

1 tsp Baking Powder

1 tsp Cinnamon

¼ tsp Baking Soda

⅓ cup mashed banana

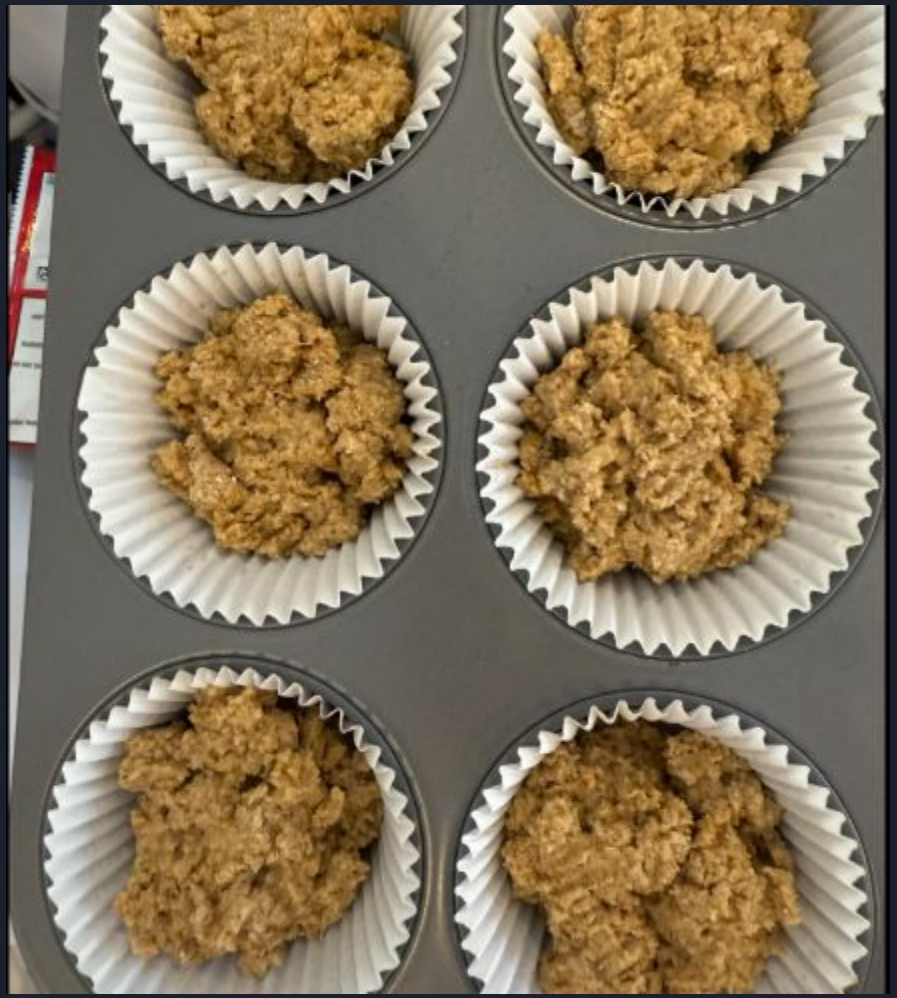
½ cup Plain Yogurt

1 Egg

2 tbsp Oil

	Appearance	Size	Taste	Smell	Color	Texture
Baking Soda	Bumpy and almost like mountains.	W 7 cm H 4.5 cm	Sweet and plain.	Banana and slightly like cinnamon.	Tanish - brown.	Bumpy and crumbly.

Baking Soda Subtracted Muffins



Conclusion and Reflection:

I found out that changing up just a little part of *one* ingredient can change the way that the entire muffin could taste, size, smell, look, feel and it's color.

I was surprised that by changing up the way you amount the ingredients, it can have drastic effects on the muffins.

If I did this project again change up the ingredients that I took away from because I feel like the ingredients were to similar.