

The Quest for the Perfect Loaf: An Investigation into the Creation of Banana Bread

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Introduction:

Banana bread is a tasty treat that is well-known across the globe. It is best described as a sweet and moist bread made from mashed up bananas, a fruit that originates from the tropics in Southeast Asia (Britannica). It is believed that banana plants were taken to the New World and disseminated throughout the Caribbean islands. From there, banana production soared and spread throughout the hemisphere. In the 18th and 19th centuries, bananas were considered to be a luxury good in the continental United States, making them a luxury good of reach for the average consumer. It was not until the early 20th century that the American-owned the United Fruit Company began importing bananas from Latin America, therefore making them more accessible in the U.S. (Smith, 2020)

It is widely believed that banana bread began to gain popularity in the early 1930s.

Some historians view the humble treat's rise in fame as a byproduct of the Great Depression; many people at the time were hesitant to throw away overripe bananas. From a culinary perspective, the aged bananas acted as a cheap substitute for sugar at a time when resources were scarce (Monaco, 2023). Recipes for banana bread were initially featured in American cookbooks and quickly became a staple in many households. It was common for people to make their own alterations to the classic banana bread recipe, often trading tips and tricks among different families due to how ubiquitous bananas were at the time (Smith, 2020). Ultimately, banana bread provided Americans with both a sweet treat to combat strenuous times, as well as a clever avenue to prevent food waste.

The invention and rise of baking powder also played an influential role in the growing popularity of banana bread. During the early 1930s, baking powder became readily accessible in grocery stores, leading cooks to

experiment with new baking techniques (Smith, 2020). Baking powder allowed bakers to leaven baked goods without the need for yeast or alkaline salts. Leavening agents—such as baking soda and baking powder—also provided extremely reliable results, issuing in a new type of baked goods. This new category was referred to as quick bread, which includes popular treats like banana bread. (Smith, 2020).

Many historians claim that banana bread's impact is partially due to its evolution over time. For instance, large loaves of banana bread with few additives became commonplace after WWII while the 1960s ushered in a wave of key ingredients like brown sugar and whole-wheat flour (Smith, 2020). Today, banana bread has withstood the test of time and cemented itself as an American classic. Its durability and simplicity make it easy for bakers of all experience levels to put their own spin on the treat. Our group chose banana bread for this project because it is a comfort food we all grew up eating. We all have countless memories of making and enjoying banana bread with our family and those close to us. This assignment offers us the unique opportunity to put our newfound knowledge about the chemistry behind cooking to the test. Baking banana bread for this project will allow us to compare our different taste profiles and combine our various preferences to make the perfect loaf.

Recipe:**Ingredients:**

- 4 or 5 ripe bananas
- ½ cups melted butter
- 1 cup sugar
- 1 egg, beaten
- 1 teaspoon vanilla
- 1 teaspoon baking soda
- Pinch of salt
- 1 ½ cups of all purpose flour

Method:

- Preheat the oven to 350°F (175°C).
- With a wooden spoon mix butter into the mashed bananas in a large mixing bowl.
- Mix in the sugar, egg, and vanilla.
- Sprinkle the baking soda and salt over the mixture and mix in.
- Add the flour last and mix.
- Pour the mixture into a buttered 4x8 inch loaf pan and bake for 1 hour.
- Once baked, cool on a rack before removing from the pan and slicing to serve.

Nutritional Information:

Serving Size: 108 g (the recipe yields 10 servings)

Carbohydrates	34 g
Protein	3.1 g
Fats	3.5 g
Calories	178 kcal
Fiber	1.7 g
Sugar	15.5 g

Science Behind the Recipe:

Understanding the science behind a banana's ripening process is quintessential to understanding how banana bread is made. When bananas are picked from the tree, they release a substance called ethylene gas that is responsible for the fruit's ripening ("The Science of Bananas"). As the fruit continues to age off the plant, the banana tastes progressively mellower. Chlorophyll causes the banana to yellow as the starches in the fruit are converted into sugar. The amount of fructose within the fruit continues to increase as it ages, which is why the ripeness of the banana affects the sweetness and flavor profile of the final dish ("The Science of Bananas"). It is for this reason that our recipe calls for very ripe bananas as they are the largest contributor to overall sweetness (Johnson, 2023).

Ripe bananas also retain a significant amount of water which is vital to creating a moist loaf. The bananas provide hydration that mixes with the flour while stirring, producing gluten. Overmixing the batter can overproduce the amount of gluten which can cause the bread to become tough ("The Science of Bananas"). Additionally, the baking soda is this recipe's base, and when activated by an acid, it serves as a leavening agent which causes the batter to rise. In this recipe, the ripe bananas act as acid due to the fact that bananas become more acidic as they age. Once the banana bread has fully baked, allowing it to cool permits the steam to condense and strengthen the integrity of the bread (Johnson, 2023). Excess moisture can cause the final product to get soggy or spoil quickly.

One of the most critical stages of the banana bread making process is the Maillard reaction, which takes place when the batter enters the oven. Once it becomes heated, the amino acids from the eggs and flour interact with the sugar, leading to a series of reactions (Extance, 2018). These reactions produce sweet flavors along with the crispy brown crust, enhancing the taste and overall final product. The Maillard reaction also results in the rich aromas that fill the kitchen after the bread is taken out of the oven. Another important reaction is the emulsification process, which involves the combination of fats, such as butter and egg yolk, and water to create a stable reaction (Larsen, 2019). Stirring provided the necessary action for the batter to be mixed and become emulsified. This process gives the bread its texture and softness, making for a moist and fluffy loaf.

Conclusion:

Ultimately, our final product demonstrated how our experience with cooking has evolved over the course of the semester. We gained a much deeper understanding of the chemistry behind cooking, allowing us to improve our technique. We deviated a bit from the original recipe as our

bananas did not age as quickly as expected. To overcome this challenge, we decided to age the bananas ourselves by placing them in a heated oven. This caused the banana to ripen and become more acidic which was critical in ensuring the bread would rise. It also affects the sweetness of the dish as the bananas' age dictates the amount of sugar they contain.

Ripening the bananas in the oven proved to be successful as the final product was incredibly fluffy and light. The dish also had a sweet flavor which primarily originated from the fructose in the aged banana. Overall, this project instilled a more profound appreciation for the art of cooking and the power it has to bring people together.

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