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Sensory Evaluation of Banana Bread With Varying Levels of Sugar Substitutes



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Abstract

This experiment was conducted to offer a healthier choice of banana bread that will provide for a better snack designed for diabetics. The original recipe for the banana bread contained regular table sugar; this was used as the control group. Three other variables of banana bread were made, each containing the different sugar substitutes: Splenda®, Stevia®, and Truvia®. The control group, along with the 3 variables were analyzed and evaluated for comparison using a scorecard by the students of Ouachita Baptist University. Results showed that 63% of students ranked the control group as the best overall sampling. The other 3 variables were each ranked closely with the sample containing Splenda® being the least liked overall.

Purpose Statement

The purpose of this experiment was to determine the satisfactory as well as the health benefits of using sugar substitutes in place of table sugar for people suffering with diabetes mellitus.

Significance of Study

Diabetes Mellitus is one of the most overlooked, but increasing diseases in the United States. The prevalence of diabetes has nearly doubled over the past two decades. Sugar substitutes can provide a smarter choice for diabetics when selecting foods or beverages to avoid a heavy carbohydrate load. As humans, we love to eat; nutrition is instinct and our aptitude to survive. What many individuals have taken for granted are the kind of snacks being consumed and the health side affects associated with them. This study is important to humanity as it offers methods to those who look to better their physiological well being through nutrition.

Banana Bread Recipe:

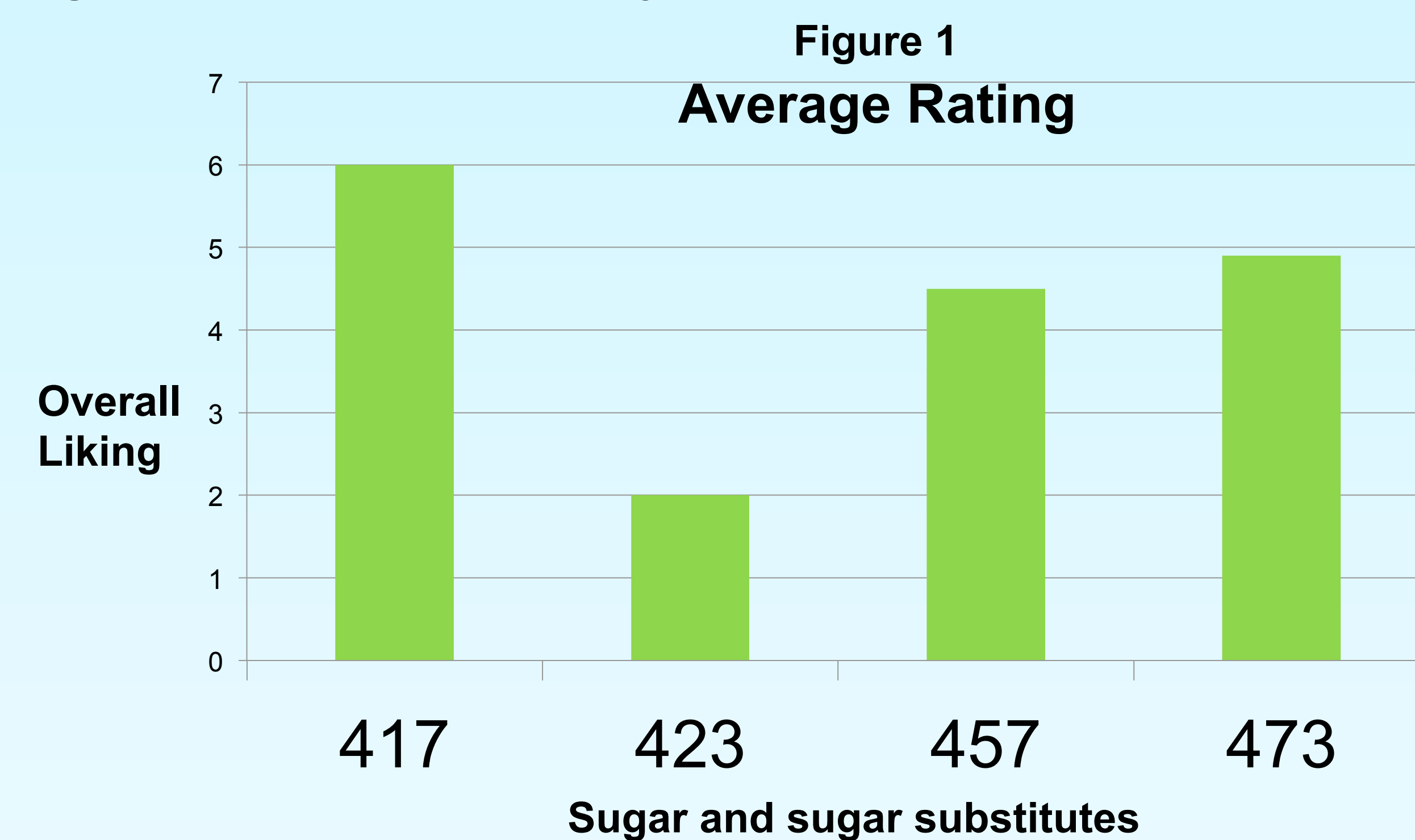
- ¾ c Margarine
- 1 ½ c Sugar
- 4 Bananas
- 1 tsp Vanilla
- 2 c Flour
- 1 tsp Baking soda
- 2 Eggs
- ¾ tsp salt
- ½ c Buttermilk

Methods

For this experiment, one banana bread loaf was made with regular table sugar, this was the control group. Three other loaves were made each containing different sugar substitutes consisting of Splenda®, Stevia®, and Truvia®, these were the 3 variables and were used in place of table sugar. Each sugar substitute was a 1 to 1 ratio substitution with the table sugar excluding Truvia® which was a ½ to 1 ratio substitution. Twenty-one male and female students from Ouachita Baptist University were randomly selected to participate in this study. The students were asked to taste each sample of banana bread and evaluate the piece using the score card. Nine characteristics including: crust color, contour of surface, interior color, thickness of cell walls, cell size, flavor, aftertaste, and overall liking and disliking were evaluated and scored during the tasting examination.

Results

Once the participants completed the scorecard, the results were tallied.
Figure 1: Shows the overall liking of the loaves.



- 417= Table sugar
- 423 = Splenda®
- 457 = Stevia®
- 473 = Truvia®

The banana bread loaf 417, containing table sugar was the overall favorite and loaf 423 encompassing of Splenda® was the least favorite. The loaf 473, which was Truvia® was the 2nd most liked and loaf 457 containing Stevia® closely followed Truvia®, but ranked as 3rd most liked. Summary of the results proved that table sugar among sugar substitutes was the most preferred ingredient in this recipe. Although table sugar ranked the highest, the carbohydrate content and kilocalories of the loaves containing sugar substitutes remained lower. This phenomenon proved sugar substitutes to be the healthier snack choice.

Figure 2: Shows the break down of macronutrients and kilocalories in 1 serving of banana bread with Splenda®, Stevia®, Truvia®, and table sugar.

Figure 2

Banana bread loaf	Calories (Kcal)	Carbs (g)	Protein (g)	Fat (g)
Splenda®	68	8.4	1.2	4
Stevia®	68	8.4	1.2	4
Truvia®	68	8.4	1.2	4
Table sugar	93	14	1.2	4

Using Nutritionist pro® The macronutrients and calories were evaluated and compared. The kilocalorie and carbohydrate content decreased vividly in the banana bread loaves baked with sugar substitutes compared to baking with table sugar.

Conclusion

As one may have guessed, table sugar won the overall rating in taste, but not by a landslide. Sugar and sugar substitutes play a major role in the texture and also the sweetness of the banana bread. If one is looking to reduce their caloric intake, or looking for better ways to control their blood glucose levels, sugar substitutes are a prime example. So when considering a healthier snack, sugar substitutes show a decrease in calories and carbs per serving, and still offer a tasty treat.

