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The Increased Antioxidant Content in Grain and Dairy Free Banana Bread versus Regular Banana Bread while Considering the Acceptance of Texture and Taste

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The Increased Antioxidant Content in Grain and Dairy Free Banana Bread versus Regular Banana Bread while Considering the Acceptance of Texture and Taste

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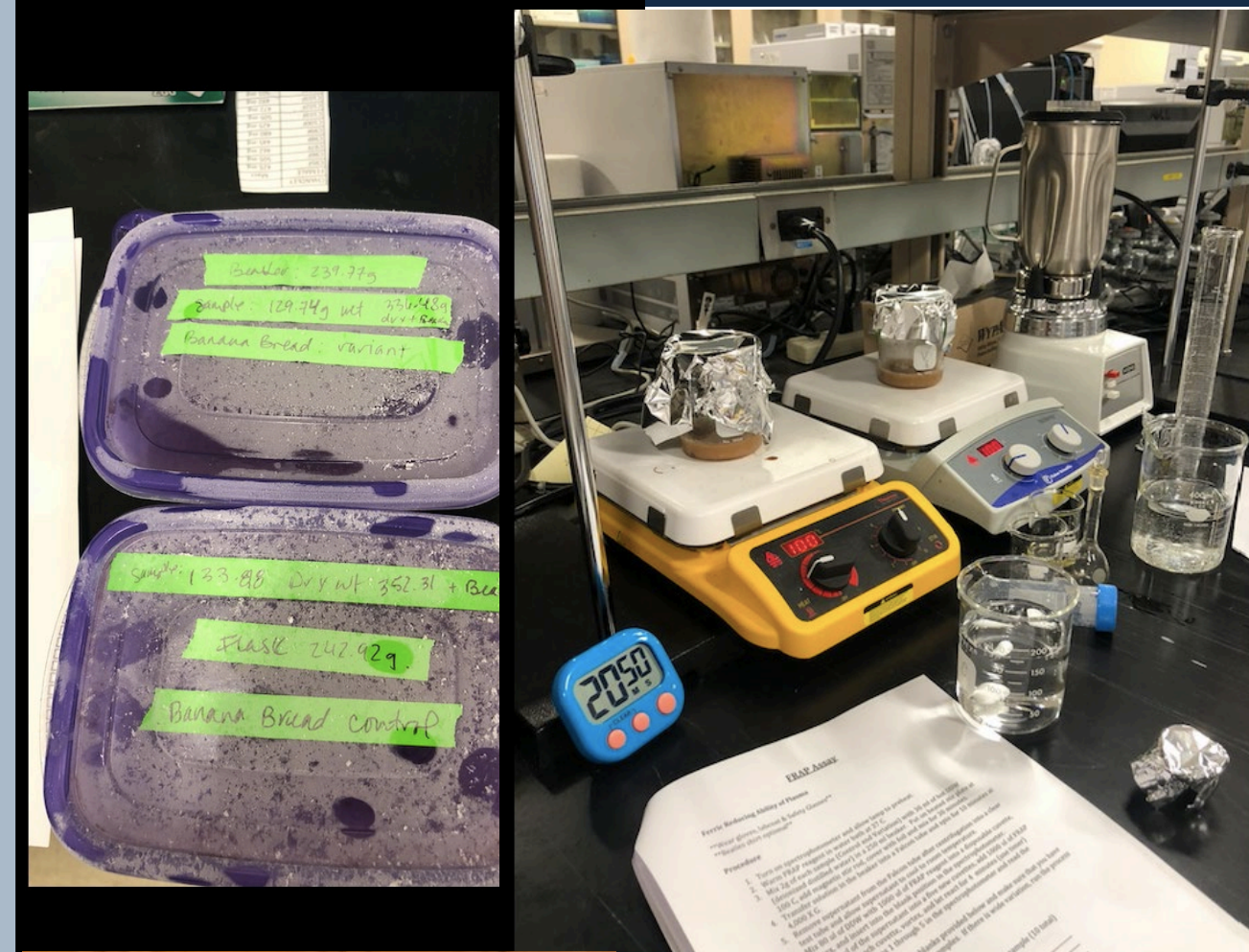
Abstract

Inflammatory diseases such as PCOS, autoimmune diseases, irritable bowel syndrome, etc. are all highly uncomfortable diseases with several negative side effects. By adding antioxidants and omega-3 fatty acids to patients with inflammatory diseases diets, studies show that symptoms of these diseases will lessen. The objective of this study is to create a banana bread with increased omega-3 fatty acids and increased antioxidants to be served on trays of patients with inflammatory diseases and for patients to make at home to decrease symptoms related to inflammation. The experimental food should be an equal substitute for the control flavor, aroma, and texture wise. The control banana bread was substituted for an anti-inflammatory banana bread with the addition of cinnamon, dark chocolate, extra eggs, and pecans. The banana bread was made without dairy and grain for celiac patients and lactose intolerant patients. Both variations were equally accepted according to the hedonic scale, completed by 9 participants. Research was continued to confirm the of increased omega-3 fatty acids within the anti-inflammatory bread. Furthermore, walnuts were switched for pecans to test the antioxidant and fatty acid composition of both variations. Overall, we found that the walnut variation had more fatty acids, but pecans had more antioxidants. Our research suggests that both variations can be used to accommodate patients with inflammatory diseases. Further research can be done for long-term research for inflammatory disease patients that swapped the control for the variations.

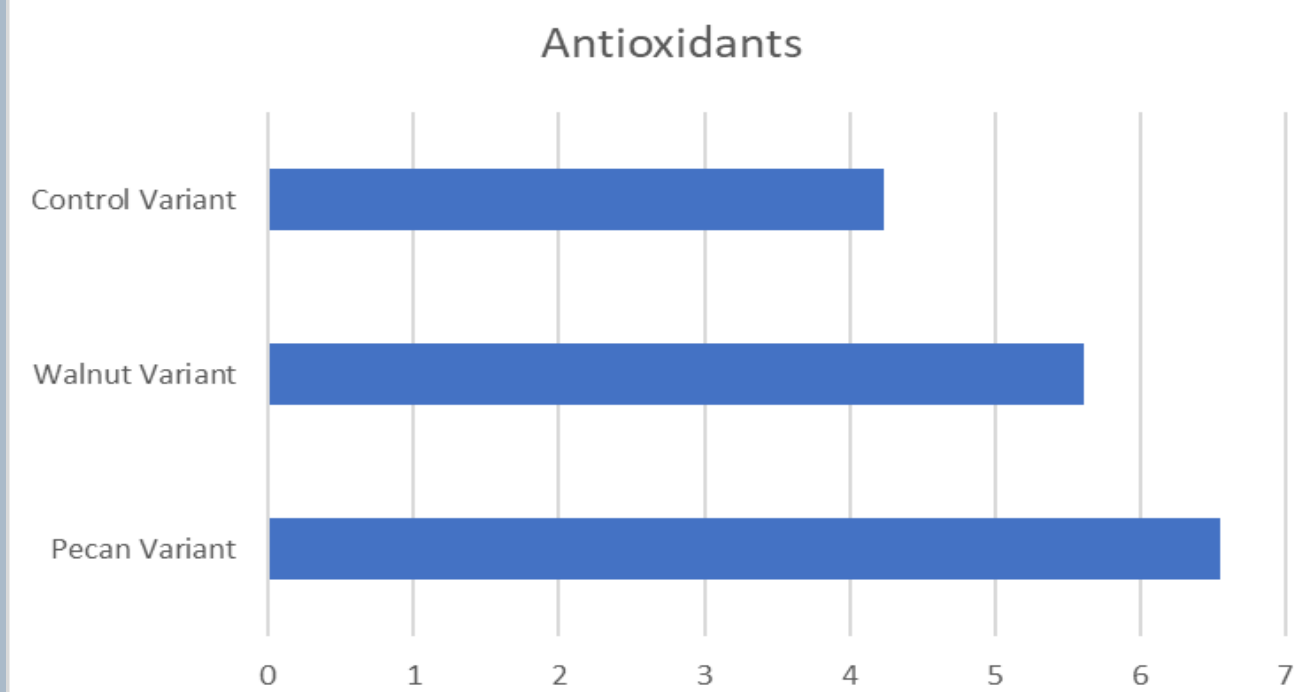
Materials and Methods

Pecans, dark chocolate, and cinnamon were added to the recipe to increase the omega-3 fatty acid and antioxidant content on the bread. A variation with walnuts instead of pecans was also tested to identify the variation with more omea-3 fatty acids and antioxidants. The recipe was made grain and dairy free to include patients with celiac disease and lactose intolerance. Nine participants evaluated each product by appearance, flavor, texture, and acceptability using a hedonic scale and descriptive scorecards. A FRAP assay, Soxhlet extraction, and Bomb calorimetry were run to ensure increased antioxidants and omega-3 fatty acids were achieved.

Materials and Methods Graphics

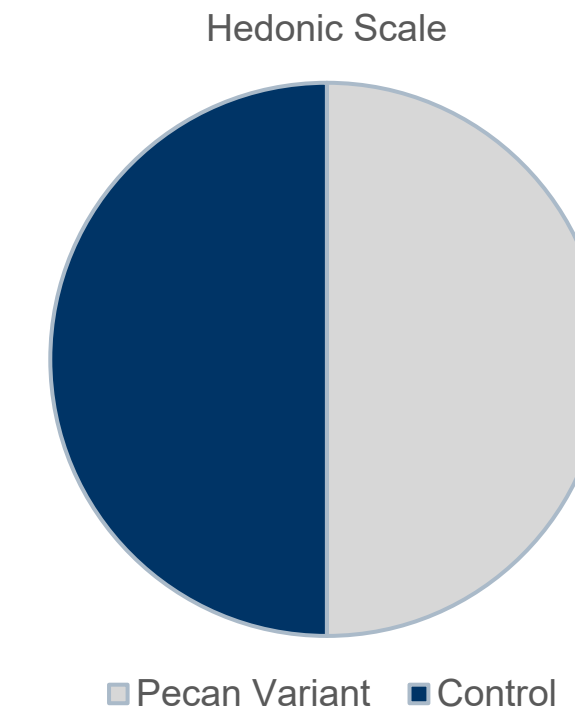


Nutrient Content Results



Acceptance Results of Texture and Taste

Characteristic	Control	100% Experimental Variation
Flavor	Banana/chocolatey/sweet	chocolatey/nutty/cinnamon
Texture	Moist/soft/smooth	Crumbly/moist
Appearance	Golden brown/full loaf	Dark brown/broken loaf
Consistency	Soft/fluffy	Chewy
Aroma	Sweet/chocolatey/banana	Cinnamon/chocolatey/sweet



Discussion

From the intervention testing, it is shown that the goal was met that the control and pecan variable banana bread would be equally accepted or preferred was correct. These results are based on Table 3 that shows the Hedonic tests being 50% and 50% on likeability between 1 to 5. However, from the descriptive testing they were not shown to be equal based on their differences in consistency, texture, and appearance were different, their scent and flavor were both positive but had some differences in descriptions. Unfortunately, the walnut variation was not tested with the Hedonic or descriptive tests. The average overall fat % of the experimental pecan variant banana bread being 56.7% while the average of the control was 29.51%, showing that the overall fat content did increase. The largest overall fat content came from our walnut variant with an 81.5% overall fat content. The addition of dark chocolate and pecans or walnuts did increase the antioxidant level significantly in the experimental loaf versus the control. In the FRAP assay that was ran in the lab, the average antioxidant content of four samples of the control was 4.2358, the average of the four pecan variant samples was 6.555, and the four walnut variant samples was 5.6156. This makes the pecan variation the one with the most antioxidants

Conclusions

The purpose was to make banana bread that would decrease the inflammation of inflammatory diseases by increasing omega-3 fatty acids and antioxidant content. In conclusion, the hypothesis that by adding antioxidant rich foods to the banana bread the overall antioxidant content of the banana bread will increase is now accepted based on the evidence provided. The hypothesis that by adding pecans into the banana bread, the overall healthy fat content (omega-3 fatty acids) will increase is also supported and accepted. Although the actual content of omega-3 fatty acids is unknown in the experimental banana breads, evidence behind omega-3 content in pecans, along with the addition of pecans, and the increased fat content in the anti-inflammatory breads lean toward a higher healthy fat content. Another variant was later tested adding in walnuts instead of pecans to research the fat content between the two where the fat content jumped significantly again. Further research is needed to assess the exact amount of omega-3 fatty acids within the anti-inflammatory banana bread variants that contain pecans or walnuts, and more research is needed to test the acceptance of walnuts for taste and texture versus pecans.

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