Received: May 15, 2022 Revised: July 5, 2022 Accepted: September 14, 2022

P-ISSN: 0119-3058
E-ISSN: 2945-4093

Acceptability of Green Jackfruit (Artocarpus heterophyllus) Rind and Core as an Alternative to Flour in Noodles

Rona E. Escolano[1], Erica B. Tabuac[2]
[1]Gulod National High School-Mamatid Extension, Philippines
[2]Laguna State Polytechnic University-Los Baños Campus, Philippines
[1]rona.escolano@deped.gov.ph
[2]ericatabuac@lspu.edu.ph

ABSTRACT

Jackfruit (Artocarpus heterophyllus) is also known locally as "nangka" or "langka." After consuming the edible portion of the unripe fruit, the rind and core were discarded as waste. This research aimed to look into the functional properties of green jackfruit rind and core flours to provide helpful information for their use as a flour substitute in noodles and significantly reduce food waste. Having tested the sensory qualities of green jackfruit rind and core powder (JRCF), the three formulations were made by substituting all-purpose flour with 33%, 50%, and 67% green jackfruit rind and core flour. The physicochemical and proximate composition of the most acceptable treatment, a mix of 33% JRCF and 67% APF was analyzed. The noodles made from green jackfruit rind and core flour had a moisture content of 12.05 %, 1.40 % crude ash, 17.56 % crude fat, 6.05 % crude fiber, 4.42 % crude protein, and a pH of 5.63. It was observed that since young green jackfruit contains more acid and is more fibrous, it is preferable to use matured jackfruit. Furthermore, to make it more aesthetically acceptable to consumers, the produced jackfruit rind and core noodles must also enhance their sensory attributes in terms of color and texture.

Keywords: *Jackfruit flour, noodles, sensory analysis, proximate and physicochemical properties*

INTRODUCTION

In most Asian nations, including the Philippines, jackfruit is frequently grown as a backyard crop. The actual origin of the jackfruit is unknown; however, it is known to be native to India's Western Ghats. Since then, most South-East Asian nations have adopted it for farming and naturalization; this is demonstrated by its vast distribution and cultivation, primarily in Region 8 Eastern Visayas. The nation's tenth-largest jackfruit-producing region necessitates various tactics to advance in the jackfruit sector (Meniano, 2018).

Jackfruit is distinguished by its enormous size weighing 10 to 15 kg on average, prickly exterior skin, and green or yellow color. Several things can be made, such as making rope, clothing from the bark, and musical instruments like guitars. A compost that is safe for plants and animal feed from the leaves, glue, and pastes from its latex, handles for farm equipment from the roots, and lumber from the trunk. The rind of the jackfruit is not edible due to its hardness and prickliness. Removing the rags from the inner rind may be unpleasant or flavorless. Detaching the center of the fruit, the white core, will lose and separate the pods from each other. Both rind and core were rarely

P-ISSN: 0119-3058
E-ISSN: 2945-4093

The Vector: International Journal of Emerging Science, Technology and Management
Volume 31, Issue 1, January - December 2022

used and were frequently considered waste. The edible part of jackfruit is the fleshy pod, seed, and rag (Elliott, 2018).

The advantages of green jackfruit flour were made known with the introduction of the well-known Jackfruit365. James Joseph, the founder, stated that this flour has scientific evidence that jackfruit is beneficial for a variety of lifestyle disorders, particularly diabetes, as well as weight loss (Jackfruit365 Digital, 2020).

Depending on the stage of development, jackfruit's chemical structure changes. Each species of jackfruit has a distinct chemical component. Jackfruit has a lot of calories, which is a good energy source, but Simmonds and Preedy (2016) point out that it is also low in saturated fats and cholesterol. In addition to other nutrients, vitamins A, C, thiamin, riboflavin, calcium, potassium, iron, sodium, zinc, and niacin are all abundant in jackfruit.

Since it became a common part of daily consumption, jackfruit has been ignored. Consumer acceptance of jackfruit rind as a value-added element in commercial flour in bread baking and related goods has been demonstrated in previous studies. The conversion of jackfruit byproducts from animal feed to a sustainable diet will tremendously benefit consumers (Feili et al., 2013).

Demand in exploring locally available alternatives will be advantageous to Filipino farmers and the food industry regarding the consumption of flour, specifically noodles. It will also provide value-added items to the gluten-free market, which is increasing. Similar to how some business owners could profit by adopting concepts from freshly created goods to increase their output and standard of living. Locals who are curious about product creation and the development of new skills may be contacted by community extension service research. As a result, jackfruit farmers may decide to grow additional jackfruit.

Objectives of the Study

Considering jackfruit benefits, the researchers aimed to determine green jackfruit rind and core noodles through its:

a. sensory qualities,
b. general acceptability,
c. proximate analysis, and physicochemical characteristics.

METHODOLOGY

The researchers employed product development and experimental techniques to determine consumer acceptance of jackfruit rind and core noodles.

To create a decent final product by trial and error, the researchers created three jackfruit noodle combination treatments to evaluate their sensory qualities. The most widely used tool, the 9-point Hedonic Measure, was employed to assess the acceptability of food based on color, taste, texture, odor, and general appearance. To make the scale easier to understand, the descriptive categories were converted to numerical values, such as like extremely = 9, like very much = 8, like moderately = 7, like

P-ISSN: 0119-3058
E-ISSN: 2945-4093

slightly = 6, neither like nor dislike = 5, dislike slightly = 4, dislike moderately = 3, dislike very much = 2, and dislike extremely = 1. The sensory qualities of the three different treatments of noodles were evaluated and rated by 60 teachers for their color, appearance, texture, taste, odor, and general acceptability.

Figure 1

Flour preparation

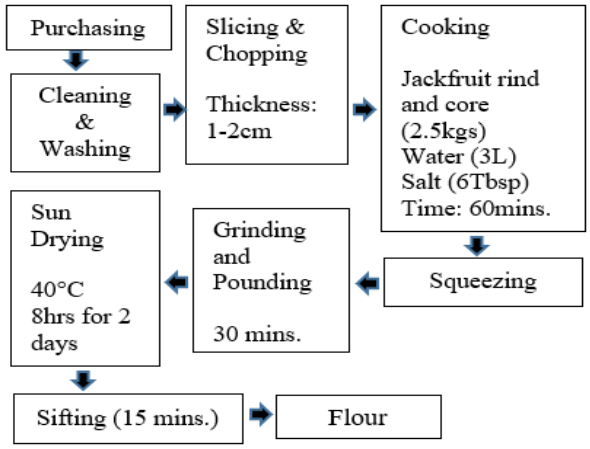


Figure 1 displays the flour production; the jackfruit rind and the core collected from a whole fruit, which cost 200 pesos and weighed 6.5 kilos. It was thoroughly cleaned, washed, and sliced to about 2 cm thickness, 1 cm for the rind, and 1 cm for the core. The 2.5 kilograms of sliced pieces were then diced, boiled in three liters of water, and softened with six teaspoons of salt. It was drained to remove excess water after cooking and sun-dried for three days before being ground into flour with a blender and sifter. For a finer powder, it was pounded using mortar and pestle and sieved with a fine mesh screen to refine the texture and separate particles. A whole jackfruit contains 1 cup of core flour and 4 cups of rind flour. The researcher took other rinds and cores to produce more powder for the noodle formulation and future use.

Figure 2 shows the study's protocol concerning the development of jackfruit rind and core flour as an alternative to making noodles. The process included a sensory evaluation of three sets of treatments on its color, appearance, texture, taste, odor, and general acceptability. According to the statistical analysis, the most acceptable treatment would necessitate proximate analysis, which would check for moisture, crude fat, crude ash, crude fiber, and crude protein, as well as physicochemical analysis by examining the pH level and water activity.

Statistical Treatment to Data

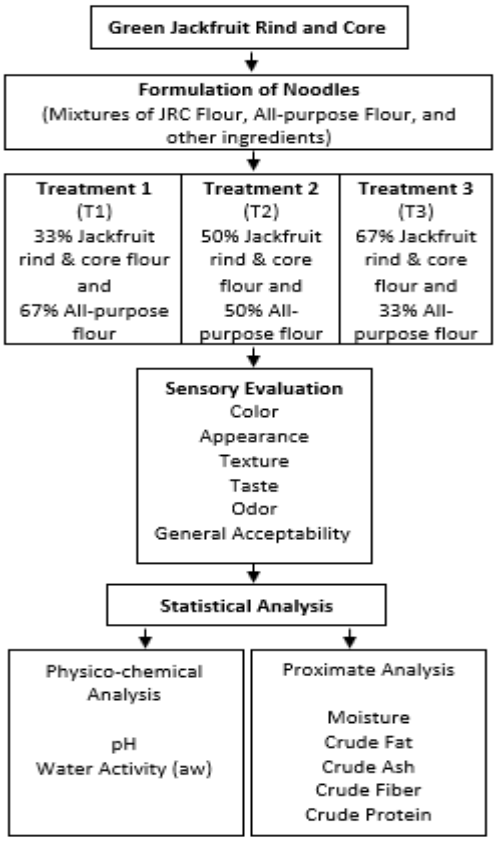
The mean and standard deviation were applied to describe the sensory qualities of green jackfruit rind and core noodles. The data's normality was determined using the Kolmogorov-Smirnov test. The p-values below 0.05 indicate that the data are

P-ISSN: 0119-3058
E-ISSN: 2945-4093

The Vector: International Journal of Emerging Science, Technology and Management
Volume 31, Issue 1, January - December 2022

not regularly distributed. It was determined whether there was a significant difference in the sensory quality of the three treatments using non-parametric tests such as the Kruskal-Wallis H-test. Having assessed whether there was a difference between the treatments, the data were analyzed using SPSS (Statistical Package for the Social Sciences) version 25.

Figure 2
Protocol of the study



RESULTS AND DISCUSSION

The scientific way of evaluating quality noodles is fundamental in research. In this study, noodle samples were developed in different treatments. They were rated by the selected teacher for their sensory qualities, such as color, appearance, texture, taste, odor, and general acceptability. The mean score, standard deviations, and interpretation were presented in the tables below using a 9-point hedonic scale.

Table 1 displayed the mean level of sensory qualities of green jackfruit rind and core noodles in terms of color. Based on the gathered data, Treatment 1 got the highest mean of 7.80, which falls under a like very much level of acceptance from the

P-ISSN: 0119-3058
E-ISSN: 2945-4093

evaluators. It was followed by Treatment 2 with a mean of 7.00, which was *like moderately*, then Treatment 3 with a mean of 6.60, which was also at a *like moderately* level.

Table 1

The mean level of sensory qualities of green jackfruit rind and core noodles in terms of color

Treatment	Mean	Std Dev	Interpretation
Treatment 1 33% JRCF, 67% APF	7.80	1.05	Like very much
Treatment 2 50% JRCF, 50% APF	7.00	1.09	Like moderately
Treatment 3 67% JRCF, 33% APF	6.60	1.11	Like moderately
Overall Color	7.13	0.97	Like moderately

Legend: 1.00 – 1.49 – Dislike Extremely, 1.50 – 2.49 -. Dislike Very Much, 2.50 – 3.49 – Dislike moderately, 3.50 – 4.49 – Dislike slightly,4.50 – 5.49 – Neither like nor dislike, 5.50 – 6.49 – Like slightly, 6.50 – 7.49 – Like moderately, 7.50 - 8.49 – Like very much, 8.50 –9.00 – Like extremely

Comparing their standard deviation, among the three evaluators rated for color, the most belongs to Treatment 1, which obtained a 1.05 standard deviation, Treatment 2 with 1.09, and Treatment 3 with a 1.11 standard deviation.

The color of the noodle base can range from white to various shades of yellow. In this study, the noodle turned light to dark brown after the formulation. As such, food color is considered the single most important element in sensory cues through expectations that the consumer holds concerning the foods they purchase and eventually consume (Spence, 2015). Evaluators examined each set of noodles and described which was the most acceptable for them.

Table 2

The mean level of sensory qualities of green jackfruit rind and core noodles in terms of appearance

Treatment	Mean	Std Dev	Interpretation
Treatment 1 33% JRCF, 67% APF	7.92	0.85	Like very much
Treatment 2 50% JRCF, 50% APF	7.15	0.71	Like moderately
Treatment 3 67% JRCF, 33% APF	6.73	0.84	Like moderately
Overall Appearance	7.27	0.66	Like moderately

Legend: 1.00 – 1.49 – Dislike Extremely, 1.50 – 2.49 -. Dislike Very Much, 2.50 – 3.49 – Dislike moderately, 3.50 – 4.49 – Dislike slightly, 4.50 – 5.49 – Neither like nor dislike, 5.50 – 6.49 – Like slightly, 6.50 – 7.49 – Like moderately, 7.50 - 8.49 – Like very much, 8.50 –9.00 – Like extremely

P-ISSN: 0119-3058
E-ISSN: 2945-4093

The Vector: International Journal of Emerging Science, Technology and Management
Volume 31, Issue 1, January - December 2022

The mean level of sensory qualities of green jackfruit rind and core noodles in terms of appearance were presented in Table 2. It can be seen from the result that Treatment 1 got a mean of 7.92, which falls like very much, while Treatment 2 had a mean of 7.15, which is like moderately. Lastly, Treatment 3, with a mean of 6.73, also had a like moderately level.

The standard deviation of the three samples was also presented in the table. Treatment 1 got 0.85 which was only one point higher compared to Treatment 3, which obtained 0.84, and Treatment 2, with a standard deviation of 0.71.

The consumer's food selection determines the sensory features of a food product. Sensing techniques, such as sensory evaluation, are used to examine numerous factors of consumer ratings on the quality of a food product. It involves the physical appearance of noodles, which influences consumer perception and purchase decisions (Anggraeni et al., 2018).

In this study, evaluators compared the general appearance of each sample of noodles and told which was most acceptable.

Table 3

The mean level of sensory qualities of green jackfruit rind and core noodles in terms of texture

Treatment	Mean	Std Dev	Interpretation
Treatment 1 33% JRCF, 67% APF	7.98	0.72	Like very much
Treatment 2 50% JRCF, 50% APF	6.97	0.80	Like moderately
Treatment 3 67% JRCF, 33% APF	6.68	0.95	Like moderately
Overall Texture	7.21	0.71	Like moderately

Legend: 1.00 – 1.49 – Dislike Extremely, 1.50 – 2.49 -. Dislike Very Much, 2.50 – 3.49 – Dislike moderately, 3.50 – 4.49 – Dislike slightly,4.50 – 5.49 – Neither like nor dislike, 5.50 – 6.49 – Like slightly, 6.50 – 7.49 – Like moderately, 7.50 - 8.49 – Like very much, 8.50 –9.00 – Like extremely

The texture of the green jackfruit rind and core noodles' mean sensory quality level was interpreted in Table 3. The results presented that Treatment 1 had a mean of 7.98, which was like very much. Treatment 2 had a mean of 6.97, and Treatment 3 had a mean of 6.68; both were at *moderately* levels. Their standard deviations were presented, and as a result, Treatment 1 got 0.72, Treatment 2 with 0.80, and Treatment 3 obtained 0.95.

A soft and elastic texture frequently characterized flour and played a significant role in all elements of noodle pasting quality. Through various instrumental techniques, the textural characteristics of cooked noodles have been successfully measured, and this evaluation improves different noodle varieties and forms (Smewing, 2016).

In this study, evaluators used their fingertips to check and compare each set of cooked noodles' stickiness, elasticity, and brittleness. The gluten content of the all-

P-ISSN: 0119-3058
E-ISSN: 2945-4093

purpose flour influenced the texture of the jackfruit rind and flour. It was seen from the result that Treatment 1 had the most acceptable texture compared to others.

Table 4

The mean level of sensory qualities of green jackfruit rind and core noodles in terms of taste

Treatment	Mean	Std Dev	Interpretation
Treatment 1 33% JRCF, 67% APF	7.80	0.88	Like very much
Treatment 2 50% JRCF, 50% APF	6.82	0.87	Like moderately
Treatment 3 67% JRCF, 33% APF	6.57	0.87	Like moderately
Overall Taste	7.06	0.75	Like moderately

Legend: 1.00 – 1.49 – Dislike Extremely, 1.50 – 2.49 -. Dislike Very Much, 2.50 – 3.49 – Dislike moderately, 3.50 – 4.49 – Dislike slightly, 4.50 – 5.49 – Neither like nor dislike, 5.50 – 6.49 – Like slightly, 6.50 – 7.49 – Like moderately, 7.50 - 8.49 – Like very much, 8.50 –9.00 – Like extremely

Table 4 displayed the mean level of sensory qualities of green jackfruit rind and core noodles in terms of taste. Treatment 1 had the highest level of taste acceptance with a mean of 7.80, which was like very much, while Treatment 2 got a mean of 6.82, which was *like moderately*. Treatment 3 showed the lowest value of acceptance due to its flavor, with a mean of 6.57, which was also at a *like moderately* level.

The standard deviation of the three samples was also stated in the table. Treatment 1 got a 0.88 standard deviation, and Treatments 2 and 3 both with 0.87. The only way to verify if the noodles were done is to taste them. A product's level of consumer approval was primarily determined by its taste. It is a sign that customers believe they can decide if the dish is delicious. Taste buds aid in food recognition, acceptance, and enjoyment (Choi, 2013).

In this study, evaluators tasted the treatments and analyzed how much they liked and disliked them. Through their assessment, it was revealed that the taste of Treatment 1 was appreciably high in all the noodle treatments.

Table 5 presents the mean sensory quality scores for the odor of the green jackfruit rind and core noodles. From the test, Treatment 1 obtained the highest score with an average of 7.67described as *like very much*, Treatment 2 got 6.98 which was *like moderately*, and Treatment 3 received 6.77, which was also at a *like moderately* level. To compare their standard deviation in terms of odor, Treatment 1 obtained 0.90, Treatment 2 with 0.85, and Treatment 3 at 0.91.

P-ISSN: 0119-3058
E-ISSN: 2945-4093

The Vector: International Journal of Emerging Science, Technology and Management
Volume 31, Issue 1, January - December 2022

Table 5

The mean level of sensory qualities of green jackfruit rind and core noodles in terms of odor

Treatment	Mean	Std Dev	Interpretation
Treatment 1 33% JRCF, 67% APF	7.67	0.90	Like very much
Treatment 2 50% JRCF, 50% APF	6.98	0.85	Like moderately
Treatment 3 67% JRCF, 33% APF	6.77	0.91	Like moderately
Overall Odor	7.14	0.78	Like moderately

Legend: 1.00 – 1.49 – Dislike Extremely, 1.50 – 2.49 -. Dislike Very Much, 2.50 – 3.49 – Dislike moderately, 3.50 – 4.49 – Dislike slightly, 4.50 – 5.49 – Neither like nor dislike, 5.50 – 6.49 – Like slightly, 6.50 – 7.49 – Like moderately, 7.50 - 8.49 – Like very much, 8.50 –9.00 – Like extremely

In evaluating food odors and volatile tastes, the sense of smell is the primary sensory system that contributes. One of the most crucial components of food is its aroma or the volatile molecules that make up its aroma. The dish's aroma triggers several associations and emotions in the brain before the first bite is even taken. Contrarily, chewing dissolves the soluble taste ingredients, allowing for the sensation of the aroma through mouth, throat, and nose contact. As a result, consumers may fully appreciate the product. (Simat et al., 2017). In this study, evaluators smelled each treatment and compared which was more likely the commercial ones.

Table 6

The mean level of sensory qualities of green jackfruit rind and core noodles in terms of general acceptability

Treatment	Mean	Std Dev	Interpretation
Treatment 1 33% JRCF, 67% APF	7.97	0.92	Like very much
Treatment 2 50% JRCF, 50% APF	7.03	0.86	Like moderately
Treatment 3 67% JRCF, 33% APF	6.68	0.79	Like moderately
Overall *General Acceptability*	7.23	0.75	Like moderately
Overall Sensory Qualities	7.17	0.66	Like moderately

Legend: 1.00 – 1.49 – Dislike Extremely, 1.50 – 2.49 -. Dislike Very Much, 2.50 – 3.49 – Dislike moderately, 3.50 – 4.49 – Dislike slightly, 4.50 – 5.49 – Neither like nor dislike, 5.50 – 6.49 – Like slightly, 6.50 – 7.49 – Like moderately, 7.50 - 8.49 – Like very much, 8.50 –9.1– Like extremely

In terms of general acceptance, Table 6 reveals the mean level of sensory quality of green jackfruit rind and core noodles. Evaluators considered the tests done in noodles and told which set they preferred the most.

P-ISSN: 0119-3058
E-ISSN: 2945-4093

The developed goods' general acceptability was determined by their color, appearance, texture, taste, and odor. The Treatment 1 registered to have the highest mean of 7.97, which was at *like very much* level of acceptance. It was then followed by Treatment 2 with a mean of 7.03, which was *moderately*, then Treatment 3 with a mean of 6.68, which was also at a likely moderate level. Their standard deviation was presented, and as a result, Treatment 1 got 0.92, Treatment 2 with 0.86, and Treatment 3 with 0.79.

Variables like the consumer, the food, and the environment, may impact how acceptable food is. Acceptance or rejection depends on how closely it adheres to consumer wants and expectations (Maina, 2018).

In this study, noodles were within an acceptable range of sensory evaluation between very high to moderately high levels. Based on all attributes, the overall sensory qualities of the noodles were about 7.17 or like moderately and SD of 0.66. Results showed that Treatment 1 was considered different from the other samples, chosen as the best formulation, and therefore subjected to laboratory analysis of its physicochemical characteristics and proximate composition.

Table 7

The physico-chemical characteristics of jackfruit rind and core noodles in terms of ph and water activity from treatment 1 formulation

Parameter	Content
pH	5.63 ± 0.06
Water activity, a_w	0.846

Food experts use a food's pH value at 25 to 26 °C to assess how acidic it is. Seven on the pH scale, which ranges from zero to fourteen, is considered neutral. Any pH level greater than 7 was considered basic, whereas any pH level lower than 7 is considered acidic. The jackfruit rind and core noodles have a value of 5.63, plus or minus 0.06. As a result, the sample was labeled as acidic because it fell below the neutral line, proving that the more sour the fruit, the higher the acidity. Despite being high in fiber and healthful, jackfruit might cause gastrointestinal problems or make the stomach secrete more acid (Riya, 2021). According to the regulations, acidic foods must have a pH of 4.6 or lower to be preserved.

The jackfruit rind and core noodles were analyzed using Novasina equipment that measures the product's water activity. The results showed that the water extracted from the sample during the examination was 0.846. It signifies the product contains more water and would take longer to dry.

The water activity scale ranges from 0 to 1. A score of 0 indicates that there is no water available and is extremely rare in food. A number 1 means that all of the product's water is available and is pure according to Novasina AG Switzerland, 2019. Many food industry operations rely on raw monitoring. Noodles are produced from flour and water and can be made with or without eggs. Because it has a water activity of 0.92 to 0.99, it was classified as a product that needs to be refrigerated. This product

P-ISSN: 0119-3058
E-ISSN: 2945-4093

The Vector: International Journal of Emerging Science, Technology and Management
Volume 31, Issue 1, January - December 2022

is sensitive to salmonella, staphylococcus aureus, and spoilage molds (National Pasta Association, 2020).

Table 8
Proximate composition of noodles from treatment 1 formulation.

Parameter	Content
Moisture (%)	12.05 ± 0.03
Crude Ash (%)	1.40 ± 0.04
Crude Fat (%)	17.56 ± 0.31
Crude Fiber (%)	6.05 ± 0.16
Crude Protein (%)	4.42 ± 0.10

Table 8 presented the results of employing the most acceptable jackfruit noodles formulation, which had a ratio of 25% JRCF and 75% APF. In comparison to the pasta from the Philippine Food Composition Table (DOST-FNRI, 2019) as per 100g, it is evident in this study that the jackfruit rind and core noodle obtained 12.05 % moisture in which the typical moisture content of pasta is 11.4 %. It also contains 1.40 % crude ash, while other products only include 0.6%. The addition of eggs and vegetable oil may have raised the crude fat content of jackfruit noodles to 17.56 %, compared to 1.1 % for standard pasta, which is the most optimal ratio based on the total calories our bodies require. The finding showed that it had 6.05 % crude fiber, higher than 3.2% in regular pasta. Jackfruit noodles' protein composition was found to be 4.42%, close to the 5.5% protein concentration found in traditional pasta.

According to a related study, the nutritional component of employing seed flour yielded a moisture content of 7.75 %, which depends on drying time. The crude fat content was 2.317 %, and the crude ash level was 2.472 %, representing the organic material left after the organic matter was removed. The proportion of crude protein is 13.49 %, with maturity and environmental conditions being factors in seed development. The seed flour's crude fiber content was 3.25 % (Abraham et al., 2015). The proximate composition represents the nutritional quality of the product.

Table 9
The significant difference among the sensory qualities of the three different treatments

Sensory Qualities	Computed H-Value	p-value
Color	43.315	<0.001
Appearance	50.831	<0.001
Texture	61.041	<0.001
Taste	51.925	<0.001
Odor	32.250	<0.001
General Acceptability	53.341	<0.001

Legend: Significant if p<0.05

P-ISSN: 0119-3058
E-ISSN: 2945-4093

Table 9 demonstrated how the sensory characteristics of the three treatments differ significantly at $p < 0.01$. It shows that there are considerable differences between the three treatments' sensory qualities (color, appearance, texture, taste, odor, and general acceptability). After applying the post hoc Bonferroni correction, it was determined that there is no significant difference between Treatments 3 and 2 (p=0.092), a significant difference was observed between Treatments 3 and 1 (p=0.000), and a significant difference exists between Treatments 2 and 1 (p=0.000). It also signifies that Treatment 1 was the most acceptable product among the three. The post hoc analysis and pairwise comparison results are shown in figure 3 below.

Figure 3
Pairwise comparisons of treatments

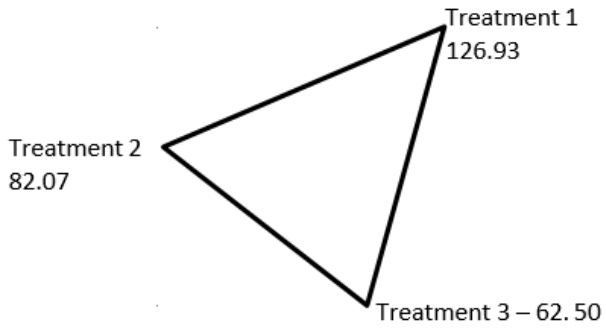


Table 10
Post hoc Bonferroni correction

Treatments	Test Statistics	Std Error	Std. Test Statistic	Sig	Adj. Sig.
Treatment 3-Treatment 2	19.567	9.046	2.163	.031	.092
Treatment 3-Treatment 1	64.433	9.046	7.123	.000	.000
Treatment 2 Treatment 1	44.867	9.046	4.960	.000	.000

Table 10 shows the sample average rank of treatments of jackfruit rind and core noodles.

CONCLUSIONS

In this study, noodles were within an acceptable range of sensory evaluation that is between very much to moderately. The findings demonstrated a range of consumer acceptance and appraisal levels. The total sensory qualities of the noodles were about 7.17 or like moderately different, with an SD of 0.66. There is a substantial

P-ISSN: 0119-3058
E-ISSN: 2945-4093

The Vector: International Journal of Emerging Science, Technology and Management
Volume 31, Issue 1, January - December 2022

difference in color, which received a mean of 7.13, appearance getting 7.27, texture obtaining 7.21, flavor having 7.06, and odor gaining 7.14. As a result, the null hypothesis, which stated that there was no significant difference between the sensory qualities of the three treatments, was rejected. According to the findings, the most preferred noodles formulation was examined in a lab for its proximate composition and physicochemical properties.

RECOMMENDATIONS

Based on the findings and a conclusion drawn, it was suggested that jackfruit rind and core noodles be made more aesthetically appealing to consumers. It is necessary to enhance their sensory qualities in color and texture. Since green jackfruit has a higher acid content and is more fibrous than ripe, it is preferable to use ripe and matured jackfruit. The drying and preparation of the noodles shortened the product's shelf life. Artificial dehydration is much more desirable because it can be completed in roughly 8 hours with the right equipment. Natural sun-drying takes at least two weeks to complete, depending on the humidity, sunlight, and temperature. Further investigation may be conducted using other variables suited to this study.

ETHICAL STATEMENT

In compliance with the *Inter-Agency Task Force* or IATF health protocol and with approval from some institutions, all experimental procedures and data collection were performed successfully.

ACKNOWLEDGMENT

The researchers wish to express gratitude to the persons whose names may not be listed below. Still, their contributions are gratefully acknowledged and appreciated for the success of this study. Laguna State Polytechnic University for providing a home for researchers where they discovered the joy of lifelong learning; Mentors and the Faculty members of LSPU-Los Baños have shared essential information and expertise since the beginning of their adventure at this campus. UPLB- Institute of Food Science and Technology and DOST-PCAARRD Los Baños, for conducting proximate and physicochemical analysis on the product. To the City Schools Division of Cabuyao, Cabuyao City Laguna, for granting permission to perform this research. Gulod National High School-Mamatid Extension, for allowing the researcher to undertake a sensory evaluation of her product with a faculty member she chose; All Selected Teachers of Gulod National High School-Mamatid Extension for enabling the researcher to administer the sensory assessment of the study to them as respondents; Family, Friends, colleagues, and relatives for the kind words of support and encouragement, especially at difficult times.

P-ISSN: 0119-3058
E-ISSN: 2945-4093

REFERENCES

Abraham, A. & Jayamuthunagai, J. (2014). An analytical study on jackfruit seeds flour and its incorporation in pasta. Res. J. Pharm. Biol. Chem. Sci. 5(2): 1597-1610. https://www.rjpbcs.com/pdf/2014_5(2)/[190].pdf

Anggraeni, R., & Saputra, D. (2018). Physicochemical characteristics and sensorial properties of dry noodle supplemented with unripe banana flour. Food Research, 2 (3), 270–278. https://doi.org/10.26656/fr.2017.2(3).061

Choi, S. E. (2013). Sensory Evaluation. Jones and Bartlett Learning, LCC., 87. http://samples.jbpub.com/9781449694777/9781449603441_CH03.pdf

Department of Science and Technology, (2016). Innovative Food Products Up to the Taking.https://www.dost.gov.ph/knowledge-resources/news/45-2016-news/988-innovative-food-products-up-for-the-taking.html

Elliott, R. B. D. (2018). Why Is Jackfruit Good for You? Nutrition, Benefits and How To Eat It. Healthline. https://www.healthline.com/nutrition/jackfruit-benefits

Feili, R.W, Abdullah, W.N.W., & Yang, T.A (2013). Physical and Sensory Analysis of High Fiber Bread Incorporated with Jackfruit Rind Flour. Food Science and Technology, 1(2), 30 - 36. https://doi.org/10.13189/fst.2013.010203.

Fontana, A. (2001). Water activity's role in food safety and quality. ResearchGate.https://www.researchgate.net/publication/237758544_Water_activity's_role_in_food_safety_and_quality

Food and Drug Administration. (2014). Water Activity in Foods. https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/inspection-technical-guides/water-activity-aw-foods

Jackfruit365 Digital. (2020). Jackfruit365TM - Green Jackfruit Flour for Diabetes. https://jackfruit365.com/

Lawless, H. T., & Heymann, H. (2016). Sensory Evaluation of Food: Principles and Practices (Food Science Text Series) (Softcover reprint of the original 2nd ed. 2010 ed.). Springer.

Maina, J. (2018). Analysis of the factors that determine food acceptability. The Pharma Innovation Journal. https://www.thepharmajournal.com/archives/2018/vol7issue5/PartD/7-4-84-339.pdf

Meniano, S. (2018). DA eyes massive expansion of Region 8's sweet jack fruit. Philippine News Agency. https://www.pna.gov.ph/articles/1041556

National Pasta Association. (2020). Mitigation & Control of Salmonella in Dry PastaFacilities --V.1.0. https://ilovepasta.org/wp-content/uploads/2020/05/MITIGATION-CONTROLS-FOR-SALMONELLA-IN-DRY-PASTA-FACILITIES-FINAL-copyright-041516.pdf

Riya, S. (2021). Is Jackfruit Acidic or Alkaline? [Ripe & Unripe]. Health.in. https://healhealth.in/is-jackfruit-acidic-or-alkaline.html

Sales and marketing of Novasina AG Switzerland. (2019). Operation manual for the LabTouch-aw water activity meter from Novasina AG Switzerland. https://www.novasina.ch/wp-content/uploads/2021/05/Ba-LabTouch-aw-E-004106-05.pdf

Simat, T., Hader, B. S., Uhl, M., & Mleczko, M. (2017). Panel training on odour and aroma perception for sensory analysis - dlg.org. DLG. https://www.dlg.org/en/food/topics/dlg-expert-reports/sensory-technology/dlg-expert- report-1-2017

Simmonds, M. S. J., & Preedy, V. R. (2016). Chapter 14 - Jackfruit (Artocarpus heterophyllus). In Chayon Goswami and Rakhi Chacrabati (Ed.), Nutritional Composition

Spence, C. (2015). On the psychological impact of food colour. Flavour, 4(1). https://doi.org/10.1186/s13411-015-0031-3

Smewing, J. (2016). Noodle quality testing: a range of texture analysis methods for a wide variety of noodle types – Part 3. https://textureanalysisprofessionals.blogspot.com/2016/08/noodle-quality-testing-range-of-texture_92.html