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Sensory Acceptability and Characterization of Snack Bar Using *Artocarpus Blancoi* Fruit Seed Flour

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Abstract: *This study aimed to develop a flour and snack bar using Antipolo fruit seeds (Artocarpus blancoi) as the primary raw material, focusing on phytochemical content, sensory acceptability, physicochemical composition, and nutritional value. A developmental research design with a quantitative approach was employed. The phytochemical analysis revealed the presence of beneficial bioactive compounds, including alkaloids, steroids, flavonoids, and saponins, with the absence of tannins and quaternary bases—indicating potential nutritional and therapeutic benefits with reduced astringency and toxicity.To evaluate the sensory attributes of three snack bar formulations, a hedonic scale was utilized. Data gathered from food technology experts and consumer respondents were analyzed using the median to interpret sensory evaluations, while the mean was used to describe the nutritional and physicochemical properties. A One-Way Analysis of Variance (ANOVA) was employed to determine significant differences in sensory acceptability across formulations. Findings showed that Formulation B consistently received higher median scores for appearance, aroma, taste, texture, and overall appeal, with a statistically significant difference observed among the three formulations.The most preferred formulation exhibited a balanced nutritional profile: 39.07% moisture, 7.56% fat, 1.45% ash, 5.45% protein, and 146.34 mg sodium per 100g. Based on the updated 2016 FDA Nutrition Facts Label and FNRI RENI guidelines, a serving contains approximately 140 calories, 4g fat (5% DV), 75mg sodium (3% DV), 23g carbohydrates (8% DV), and 3g protein (6% DV), contributing 5% of the daily calorie requirement and 4% of protein needs for adult Filipino males aged 19–29. These results affirm the potential of Antipolo fruit seed flour as a sustainable, nutritious, and health-conscious ingredient for innovative snack food development.*

Keywords: Snack Bar, *Artocarpus Blancoi*, Fruit Seed Flour

I. INTRODUCTION

Antipolo, also known as Artocarpus blancoi, is a tropical fruit native to Southeast Asia, particularly the Philippines, known for its high nutritional value. Belonging to the Moraceae family, which includes mulberry and fig trees, Antipolo fruit is typically consumed fresh but holds untapped potential as a sustainable and nutrient-dense ingredient in food product development. The increasing global demand for healthy and eco-friendly food alternatives presents an opportunity to explore Antipolo fruit seeds as a novel resource. This study focuses on developing a snack bar using flour derived from Antipolo fruit seeds, showcasing its viability as a key ingredient for the food industry.The utilization of alternative flour sources has grown in recent years due to their nutritional benefits and contributions to health-oriented innovation. Research on quinoa flour (Aguilar et al., 2019) and cactus flour (Dick et al., 2020) highlights the potential of alternative flours to enhance food products with high phenolic content, antioxidant properties, and other health-promoting compounds. Similarly, Antipolo fruit seed flour holds promise as a nutrient-rich, sustainable ingredient, but existing research primarily addresses its direct consumption and medicinal properties (Luzon et al., 2021), energy potential (Ramos et al., 2022), and nutritional composition (De la Cruz et al., 2020). This leaves a

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significant gap in its application as a processed ingredient for value-added products like snack bars, which this study aims to address.

The development of Antipolo fruit seed flour contributes to the United Nations' Sustainable Development Goals (SDGs), particularly Goal 2 (Zero Hunger) by promoting food security through nutrient-dense products, and Goal 12 (Responsible Consumption and Production) by repurposing agricultural byproducts, reducing food waste, and supporting sustainable practices. Moreover, the transformation of fruit waste into a valuable ingredient aligns with i2Fame's focus on innovation, inclusivity, food security, and agricultural sustainability, emphasizing the use of local resources to create competitive and health-promoting food products.This initiative also supports Ambisyon Natin 2040, the long-term vision for a prosperous and sustainable Philippines. By addressing consumer demand for affordable, nutritious, and eco-friendly food options, this study contributes to a matatag (strong), maginhawa (comfortable), and panatag (secure) life for Filipinos. The snack bar developed through this research exemplifies the balance between health, sustainability, and economic opportunity, fostering a future where local resources are utilized to their fullest potential.

By harnessing the abundance of Antipolo fruit in the Philippines and transforming its seeds into a functional and sustainable flour, this study not only introduces a new food innovation but also promotes environmental conservation and sustainable development. The resulting snack bar serves as a testament to the potential of alternative ingredients in meeting global health and sustainability goals, paving the way for competitive, healthy, and eco-conscious food products in the market.

II. LITERATURE REVIEW

Nature and Characteristics of Antipolo Fruit

Antipolo fruit, scientifically known as Artocarpus blancoi, is a tropical fruit indigenous to the Philippines and Southeast Asia. As a member of the Moraceae family, it shares similarities with jackfruit (Artocarpus heterophyllus) and breadfruit (Artocarpus altilis), both in botanical classification and nutritional profile. The fruit is oblong-shaped with a spiny exterior and contains a fleshy pulp and seeds, both of which are edible and nutrient-rich (Galang et al., 2019). The tree thrives in tropical climates and begins fruiting as early as four to five years after planting. Its abundant yield makes it a promising agricultural resource. The seeds, which are often discarded as waste, are rich in starch, protein, and essential bioactive compounds, making them suitable for flour production and various food applications (Ramos et al., 2022).

Nutritional Composition of Antipolo Fruit Seeds

Recent studies highlight the nutritional potential of Antipolo fruit seeds, particularly their moisture content (30–55%), protein (11–15%), fat (20%), and carbohydrates (54–72%) on a dry weight basis (McKay et al., 2019). These components indicate the potential of Antipolo seeds as a high-energy food ingredient. The presence of dietary fiber and essential amino acids enhances its value in food systems, addressing both nutritional gaps and consumer demands for health-oriented products (Ribotta et al., 2020). The seeds also exhibit significant antioxidant properties due to their phenolic and flavonoid content, which contributes to their health benefits and potential as a functional food ingredient (De la Cruz et al., 2020).

Antipolo Fruit (Artocarpus blancoi)

Antipolo seeds, similar to those of jackfruit and breadfruit, are rich in starch and have been identified as a viable raw material for flour production (Del Rosario et al., 2023). Typically, the seeds undergo cleaning, drying, and milling to produce flour. Recent studies have also highlighted the applications of seed-based flours, such as breadfruit seed flour and pumpkin seed flour, in various food products, showcasing their versatility and nutritional benefits (Liu et al., 2021; Patel et al., 2023). The transformation of Antipolo fruit seeds into flour follows similar processing techniques used for other tropical fruit seeds, such as jackfruit and marang (Artocarpus odoratissimus). The seeds are cleaned, dehydrated, and milled into a fine powder, which retains their nutritional value while improving shelf life and usability (Galang et al., 2019). Antipolo seed flour has been identified as a viable substitute for wheat flour in baked goods and snacks.

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Studies on seed-based flours from other sources, such as pumpkin and breadfruit, have demonstrated their ability to enhance the nutritional profile of products, particularly by increasing protein and fiber content (Bello et al., 2020). The functional properties of Antipolo seed flour, including water absorption and gelling, make it suitable for applications in snacks, bread, and cookies (Ramos et al., 2022).

Production, Applications and Functional Properties of Antipolo Seed Flour

The transformation of Antipolo fruit seeds into flour involves cleaning, dehydrating, and milling processes. These steps not only retain the nutritional benefits of the seeds but also extend their shelf life and usability. Similar processing techniques have been successfully employed for other tropical fruit seeds, such as jackfruit, marang (*Artocarpus odoratissimus*), and breadfruit (Galang et al., 2019). The functional properties of Antipolo seed flour, including water absorption, emulsification, and gelatinization, make it a versatile ingredient in food product development. These properties contribute to the textural and sensory attributes of baked goods, snacks, and other food products (Galang et al., 2019; Ramos et al., 2022). Antipolo seed flour holds significant potential for use in snack bars, offering enhanced nutritional profiles through its high protein, starch, and antioxidant content. Snack bars formulated with Antipolo flour can cater to health-conscious consumers seeking sustainable and locally sourced food options (Luzon et al., 2021). The use of Antipolo seed flour in composite flours enables partial substitution of wheat flour, reducing dependency on imported wheat while improving the nutritional value of baked goods. Studies on similar seed-based flours have shown that they enhance protein and fiber content, making baked products more appealing to health-conscious markets (Sudha et al., 2021). The antioxidant and bioactive properties of Antipolo seed flour make it a suitable ingredient for functional foods. Incorporating this flour into food products can support health benefits such as improved digestion and antioxidant defense (De la Cruz et al., 2020).

Processing and Sustainability

The production of Antipolo seed flour involves simple yet effective processes, including drying and grinding. These steps maximize the seeds' nutritional potential while ensuring food safety and shelf stability. Similar techniques have been applied successfully to other tropical fruit seeds, such as jackfruit and marang, indicating the feasibility of scaling up Antipolo seed flour production (Galang et al., 2019). In addition to its nutritional benefits, the use of Antipolo seeds promotes sustainability by repurposing agricultural byproducts that would otherwise go to waste. This aligns with global efforts to reduce food waste and promote sustainable agricultural practices, contributing to environmental conservation and food security (Ramos et al., 2022).Consumer acceptance is crucial for the success of food products incorporating unconventional ingredients. Sensory evaluation focusing on attributes such as taste, texture, aroma, and appearance plays a pivotal role in determining the acceptability of Antipolo-based products. Studies on similar seed-based flours have shown that while sensory properties may differ from conventional products, emphasizing the nutritional and sustainability benefits can significantly improve consumer perception (Bello et al., 2020; Smith et al., 2023).

III. METHODOLOGY

This study utilized a developmental research design. The developmental research design was employed as the study focused on developing a food product using flour prepared from Antipolo fruit seeds (*Artocarpus blancoi*) as the primary ingredient for snack bar production. Quantitative design was also used to determine the acceptability of the product in terms of appearance/color, aroma/odor, taste, texture, and overall acceptability. This was also used to evaluate the nutritional value of the Antipolo fruit seed flour, ensuring that the snack bar product to be developed met safety and quality standards.The developmental research study on snack bar using Antipolo seed flour was carried out in Food Technology Innovation Center in Surigao del Norte State University, Surigao City. The acceptability of the three formulations was evaluated by 20 food experts and 30 potential consumers.For scoring, we utilized the nine-point hedonic scale (1 to 9), where 1 = dislike extremely; 2 = dislike very much; 3 = dislike moderately; 4 = dislike slightly; 5 = neither like nor dislike; 6 = like slightly; 7 = like moderately; 8 = like very much; 9 = like extremely (Pimentel et al., 2016). Three formulations were subjected to acceptability evaluation: Formulation A with the highest formulation of

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100%, Formulation C with the lowest formulation of 50%, and Formulation B with a concentration between 100% and 50%.

A letter of request was sent to the respondents to ask for their consent and cooperation in gathering necessary data for this study. Respondents who have superiors were also given letters to their respective heads of office to ensure that their participation in this study does not jeopardize any professional standard. Additionally, the respondents assured that the samples they are about to intake was free from harmful substances or any elements that could pose a risk to their health and sanitation. After the conduct, copies of the distributed survey instrument was retrieved, and the data collected was analyzed and interpreted. Median was used to determine the acceptability of the sensory attributes of the three formulations of Antipolo fruit seed flour-based snack bar in terms of appearance, aroma, taste, texture, and composite appeal. Mean was used to determine the physico-chemical and nutritional contents of the Antipolo fruit seed flour-based snack bar. Moreover, One-Way Analysis of Variance (ANOVA) for Repeated Measures was used to determine the significant difference on the acceptability of the Antipolo fruit seed flour-based snack bar based on the three formulations.

IV. RESULTS AND DISCUSSION

The sensory evaluation of three snack bar formulations revealed distinct preferences regarding appearance and color attributes as presented in Table 1. Formulation B consistently outperformed the other variants, receiving the highest median scores across all color-related criteria. Respondents rated Formulation B as "like very much" (median scores of 8) for most attributes, including overall appeal, consistency/uniformity, suitability for product type, and matching expectations. The color vibrancy and freshness of Formulation B also received high ratings with a median score of 7.5 (like very much). Formulation C performed moderately well, with respondents rating its overall color appeal as "like moderately" (median score of 7), though all other color attributes were rated as "like slightly" (median score of 6). Formulation A received the lowest ratings, with respondents consistently rating all color attributes as "like slightly" (median score of 6). Overall, Formulation B emerged as the clear preference among respondents with a median score of 8 (like very much) as the preferred formulation, suggesting its color characteristics were most appealing to consumers.

TABLE 1: PERCEPTIONS OF THE RESPONDENTS ON THE ACCEPTABILITY OF APPEARANCE/COLOR OF THE *ARTOCARPUS BLANCOI FRUIT* SEED FLOUR

Appearance/Color	Formulation A		Formulation B		Formulation C	
	Median	Qualitative Description	Median	Qualitative Description	Median	Qualitative Description
1. The color of snack bar looks appealing.	6	like slightly	8	like very much	7	like moderately
2. The color is vibrant and fresh.	6	like slightly	7.5	like very much	6	like slightly
3. The product's color is consistent and uniform.	6	like slightly	8	like very much	6	like slightly
4. The color of snack bar is suitable for its type.	6	like slightly	8	like very much	6	like slightly
5. The snack bar's color matches my expectations for this type of product.	6	like slightly	8	like very much	6	like slightly

The aroma/odor sensory evaluation revealed dramatic differences among the three snack bar formulations, with a clear preference hierarchy emerging as shown in Table 2. Formulation B was overwhelmingly favored, receiving high ratings across all aroma attributes. Respondents particularly appreciated its appealing odor and natural quality, both rated as "like very much" (median score of 8). The consistency of Formulation B's odor with its intended flavor also scored highly at 7.5 (like very much), while its pleasantness and consumption appeal were rated as "like moderately" (median

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scores of 7). In contrast, Formulation C performed adequately, with all aroma attributes receiving moderate ratings in the "like moderately" range (median scores between 6 and 7). Most striking was the pronounced dislike for Formulation A's aroma profile, which received consistently negative evaluations. Respondents rated its pleasantness and consumption appeal as "dislike very much" (median score of 2), while its general appeal and natural quality were rated as "dislike moderately" (median scores of 2.5 and 3). Despite these variations, Formulation B emerged as the clear preference with an overall rating of 7.5 (like very much), indicating its aroma profile was significantly more appealing than the alternatives.

TABLE 2: PERCEPTIONS OF THE RESPONDENTS ON THE ACCEPTABILITY OF AROMA/ODOR OF THE *ARTOCARPUS BLANCOI FRUIT* SEED FLOUR-BASED SNACK BAR

Aroma/Odor	Formulation A		Formulation B		Formulation C	
	MEDIAN	Qualitative Description	MEDIAN	Qualitative Description	MEDIAN	Qualitative Description
1. The product has an appealing odor.	2.5	dislike moderately	8	like very much	7	like moderately
2. The product's odor is pleasant and not overpowering.	2	dislike very much	7	like moderately	6.5	like moderately
3. The product has a natural odor.	3	dislike moderately	8	like very much	6.5	like moderately
4. The odor of the product is pleasant enough to encourage consumption.	2	dislike very much	7	like moderately	6	like moderately
5. The product's odor is consistent with its intended flavor.	3	dislike moderately	7.5	like very much	6.5	like moderately

The taste evaluation of the three snack bar formulations revealed stark contrasts in consumer preferences, with one formulation clearly outperforming the others. Formulation B received exceptional ratings across all taste attributes, consistently scoring in the "like very much" range (median scores of 7.5-8). Respondents particularly appreciated its enjoyable flavor, balanced taste profile, appropriate sweetness/saltiness level, and pleasant aftertaste, all scoring a median of 8. The uniqueness and refreshing quality of Formulation B also scored highly at 7.5. Formulation C performed adequately, with respondents rating its overall enjoyability as "like moderately" (median score of 7), while other taste attributes—balance, uniqueness, sweetness/saltiness level, and aftertaste—were rated as "like slightly" (median score of 6). Formulation A performed poorly across all taste parameters, with respondents expressing strong dislike for its balance and sweetness/saltiness level (both "dislike very much" with median scores of 2), while its general enjoyability, uniqueness, and aftertaste were rated as "dislike moderately" (median scores between 2.5 and 3). Unsurprisingly, Formulation B emerged as the clearly preferred option with a median preference score of 8 ("like very much"), establishing it as significantly superior in taste appeal compared to the alternatives.

TABLE 3: PERCEPTIONS OF THE RESPONDENTS ON THE ACCEPTABILITY OF TASTE OF THE *ARTOCARPUS BLANCOI FRUIT* SEED FLOUR-BASED SNACK BAR

Taste	Formulation A		Formulation B		Formulation C	
	MEDIAN	Qualitative Description	MEDIAN	Qualitative Description	MEDIAN	Qualitative Description
1. The taste of the product is enjoyable.	2.5	dislike moderately	8	like very much	7	like moderately
2. The product has a balanced taste.	2	dislike very much	8	like very much	6	like slightly

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3. The taste of the product is unique and refreshing.	3	dislike moderately	7.5	like very much	6	like slightly
4. The product has the right level of sweetness or saltiness	2	dislike very much	8	like very much	6	like slightly
5. The aftertaste of the product is pleasant.	3	dislike moderately	8	like very much	6	like slightly

The texture evaluation of the three snack bar formulations revealed a clear preference pattern, with one formulation distinctly outperforming the others as indicated in Table 4. Formulation B received consistently high ratings across all texture attributes, with respondents rating it as "like very much" (median score of 8) for every characteristic evaluated. Respondents particularly appreciated its smooth and pleasant texture, appropriate level of crunch or softness, consistency throughout the product, enjoyability while eating, and overall suitability for the snack bar product type. In stark contrast, Formulations A and C performed identically across all texture parameters, with respondents rating both as merely "like slightly" (median score of 6) for all attributes. This uniform scoring pattern suggests that while Formulations A and C offered acceptable textures, neither achieved the superior textural qualities found in Formulation B. The clear preference for Formulation B was confirmed by its overall preference rating of 8 ("like very much"), establishing it as significantly superior in textural appeal compared to the alternatives. The consistency of these findings across all texture attributes reinforces the conclusion that Formulation B offers a substantially more appealing textural experience for consumers.

TABLE 4: PERCEPTIONS OF THE RESPONDENTS ON THE ACCEPTABILITY OF TEXTURE OF THE *ARTOCARPUS BLANCOI FRUIT* SEED FLOUR-BASED SNACK BAR

Texture	Formulation A		Formulation B		Formulation C	
	Median	Qualitative Description	Median	Qualitative Description	Median	Qualitative Description
1. The texture of the product is smooth and pleasant	6	like slightly	8	like very much	6	like slightly
2. The product has the right amount of crunch or softness.	6	like slightly	8	like very much	6	like slightly
3. The texture is consistent throughout the product.	6	like slightly	8	like very much	6	like slightly
4. The texture makes the product enjoyable to eat.	6	like slightly	8	like very much	6	like slightly
5. The texture is suitable for the type of product.	6	like slightly	8	like very much	6	like slightly

The ANOVA results in Table 5 presents a comprehensive analysis of the sensory acceptability of Antipolo fruit seed flour-based snack bar across three different formulations. The results show statistically significant differences ($p < .001$) for all sensory attributes evaluated: appearance, aroma, taste, and texture. For appearance, the analysis yielded an F-value of 49.401 (df = 2, 147), indicating substantial variation among the formulations. The aroma attribute demonstrated even greater differences with an exceptionally high F-value of 406.243 (df = 2, 147), suggesting that the three formulations had markedly distinct aromatic profiles that were easily distinguishable by evaluators. Taste showed the most dramatic differences among the formulations with the highest F-value of 533.986 (df = 2, 147), highlighting that taste was the sensory attribute with the greatest variation across the three formulations. Texture also showed significant differences with an F-value of 70.274 (df = 2, 147). The consistently low p-values (< .001) across all sensory

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attributes confirm that these differences are not due to chance but represent genuine variations in sensory acceptability among the three formulations. These findings suggest that the formulation has a profound impact on all sensory aspects of the Antipolo fruit seed flour-based snack bar, with taste and aroma showing particularly strong formulation-dependent variations. The consistent high F-values and extremely low p-values (less than 0.001) provide strong statistical evidence that substantial differences exist among the three formulations for all sensory attributes tested. The null hypothesis of no difference should be rejected based on these results.

TABLE 5: SIGNIFICANT DIFFERENCE ON THE ACCEPTABILITY OF THE SENSORY ATTRIBUTES OF THE THREE FORMULATIONS OF*ARTOCARPUS BLANCOI FRUIT* SEED FLOUR-BASED SNACK BAR

Sensory Attribute	F	p	Decision on Ho	Interpretation
Appearance	49.40	< .001	Rejected	Significant
Aroma	406.24	< .001	Rejected	Significant
Taste	533.99	< .001	Rejected	Significant
Texture	70.27	< .001	Rejected	Significant

The laboratory analysis of the Antipolo fruit snack bar revealed its comprehensive nutritional profile through standardized AOAC testing methods. The moisture content was determined to be relatively high at 39.07 g/100g, indicating a moderately moist product texture. The total fat content was measured at 7.56 g/100g, suggesting a moderate fat contribution to the overall caloric value of the snack bar. Ash content, which represents the total mineral content, was found to be 1.45 g/100g, indicating the presence of inorganic compounds. The crude protein analysis showed a protein content of 5.45 g/100g, providing a reasonable protein contribution to the snack bar's nutritional value. Additionally, the sodium content was determined to be 146.34 mg/100g, a moderate sodium level that could be relevant for consumers monitoring their salt intake. All analyses were conducted using standardized AOAC International 2023 methodologies (22nd edition), ensuring reliability of the results. This nutritional profile positions the Antipolo fruit snack bar as a moderately moist product with balanced macronutrient distribution, containing appreciable amounts of protein and fat, with a notable but not excessive sodium content.

TABLE 6: PHYSICO-CHEMICAL ANALYSIS OF THE MOST PREFERRED FORMULATION OF*ARTOCARPUS BLANCOI FRUIT* SEED FLOUR-BASED SNACK BAR

Parameters	**Unit**	**Result**	**Method**
Moisture	%	39.07 g/100g	AOAC No. 925.10 AOAC International 2023, 22nd ed., vol 2
Total Fat	%	7.56 g/100g	AOAC No.935.39 D International 2023, 22nd ed., vol 2
Ash Content	%	1.45 g/100g	AOAC No. 923.03, International 2023, 22nd ed., vol 2
Crude Protein	%	5.45 g/100g	AOAC No.935.39 C International 2023, 22nd ed., vol 2
Sodium	%	146.34 mg/100g	AOAC No.973.54 AOAC International 2023, 22nd ed., vol 1

The nutritional analysis of the developed Antipolo fruit seed flour-based snack bar indicates a product with moderate caloric content, providing 257.72 calories per 100 grams, which translates to approximately 140 calories per serving as shown in Table 7. This caloric contribution represents about 5% of the Recommended Energy and Nutrient Intake (RENI) for males aged 19-29 years, suggesting it can be a suitable snack choice within a balanced diet. The snack bar derives approximately 26.4% of its calories from fat, amounting to 68.04 calories from fat per 100 grams.

TABLE 7: NUTRITIONAL CONTENTS OF THE MOST PREFERRED FORMULATION OF*ARTOCARPUS BLANCOI FRUIT* SEED FLOUR-BASED SNACK BAR

Food Nutrient	Result of Chemical Analysis(per 100g)	Amount of food nutrient per serving size (rounded value)	% Daily value (based on 2000 Calorie Diet,Rounded value)	%RENI(based on FNRI reference adult requirement of males 19-29 years old)
Calories	257.72	140		5
Calories from Fat	68.04	35		

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Total Fat(g)	7.56	4	5	
Sodium(mg)	146.34	75	3	
Total Carbohydrates(g)	46.47	23	8	
Protein(g)	5.45	3	6	4

It contains 7.56 grams of total fat per 100 grams, which equates to about 4 grams of fat per serving, accounting for 5% of the daily value based on a 2000-calorie diet. This moderate level of fat can contribute to satiety while delivering essential fatty acids. The sodium content of the snack bar is relatively moderate at 146.34 mg per 100 grams, or 75 mg per serving, which represents about 3% of the daily value. This level indicates that the snack bar could be an appropriate option for individuals who are mindful of their sodium intake. Carbohydrates make up a significant portion of the snack bar's nutritional profile, with a total of 46.47 grams per 100 grams (23 grams per serving). This contributes approximately 8% to the daily recommended carbohydrate intake, highlighting the snack bar's role as a source of quick energy, which is particularly beneficial for active individuals. The protein content in the snack bar is 5.45 grams per 100 grams, translating to about 3 grams per serving. This amount fulfills around 6% of the daily protein requirement and 4% of the RENI standards for young adult males. While the protein content is modest, it can still contribute to muscle maintenance and repair. Overall, the Antipolo fruit seed flour-based snack bar is primarily characterized by its carbohydrate content, complemented by moderate fat levels and a modest contribution of protein. Its relatively low sodium content enhances its suitability as a snack option for individuals who are mindful of their sodium intake.

V. CONCLUSION

Formulation B of the Antipolo fruit seed flour-based snack bar consistently received high acceptability across all attributes. In contrast, Formulation A showed lower acceptability, with respondents moderately disliking its aroma and taste, and only slightly liking its appearance, texture, and overall appeal. Formulation C received moderate acceptability, with respondents slightly liking most of its attributes.Formulation B of the Antipolofruit seed flour-based snack bar is most preferred by the respondents in terms of appearance/color, aroma/odor, taste, and texture.The most preferred Antipolo fruit seed flour-based snack bar exhibits a balanced nutritional profile with moderate levels of moisture, fat, and protein, making it a potentially healthy snack option. The moisture content suggests that the product retains sufficient softness and palatability, while the presence of essential nutrients such as protein and minerals enhances its nutritional value. The Antipolo fruit seed flour-based snack bar meets nutritional expectations for a health-conscious snack, in alignment with the updated 2016 FDA Nutrition Facts Label. It offers a balanced distribution of macronutrients and remains within recommended limits for fat and sodium intake. With its modest calorie content and beneficial carbohydrate and protein levels, the product has the potential to serve as a nutritious, energy-boosting snack for individuals seeking functional and sustainable food options.

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