



Adlai-Enriched Maja Blanca as a Fiber-Enhanced Functional Filipino Coconut Pudding: Product Development and Consumer Acceptability

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Originality: 100% • Grammarly: 95% • Plagiarism: 0%

ABSTRACT

Article History

Received: 17 Feb 2026
Revised: 15 Sept 2026
Accepted: 09 Oct 2026
Published: 31 Oct 2026

Keywords— Adlai; consumer acceptability; fiber-enhanced; Filipino coconut pudding; functional food; Maja Blanca; product development; sensory evaluation; underutilized crop.

This study developed and evaluated Adlai-enriched Maja Blanca as a fiber-enhanced functional Filipino coconut pudding. It determined the respondents' demographic profile, the estimated nutritional profile of the formulations, their sensory acceptability, and the formulation recommended as a standardized recipe. The study used a product development and descriptive consumer acceptability design. Three formulations were prepared: a control with 0% Adlai flour, a 40% Adlai flour substitution, and a 60% Adlai flour

substitution. Eighty respondents from the Philippine Women's University evaluated the samples using a 9-point hedonic scale in terms of appearance, aroma,



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taste, texture, and overall acceptability. The estimated nutritional profile per 30 g serving was reviewed by a Licensed Nutritionist-Dietitian. Results showed that the 60% Adlai formulation had the most favorable estimated nutritional profile, with slightly lower energy and carbohydrate values and slightly higher protein and total dietary fiber content. All formulations were rated as Like Moderately across sensory attributes. The 60% Adlai formulation obtained the highest mean scores in appearance, taste, and overall acceptability. The novelty of the study lies in the use of Adlai flour as a partial substitute for cornstarch in a traditional Filipino dessert, contributing to functional food development using a locally relevant and underutilized grain. Based on the combined nutritional and sensory results, the 60% Adlai-enriched Maja Blanca formulation is recommended as the standardized recipe. The findings may support future foodservice application, culinary education, community nutrition initiatives, and small-scale product development.

INTRODUCTION

Filipino food is deeply intertwined with culture, memory, hospitality, and communal identity. Among traditional Filipino delicacies, Maja Blanca remains one of the most recognizable coconut-based desserts and is commonly served during fiestas, birthdays, Christmas gatherings, family celebrations, and other communal occasions (Fernandez, 1994; Gascon & Orr, 1973; Kirshenblatt-Gimblett & Fernandez, 2003; Kirker & Newman, 2022). Its familiar creamy texture, coconut aroma, mild sweetness, and ease of portioning make it a culturally appropriate base for culinary innovation that seeks to improve nutritional value while preserving Filipino food identity.

Contemporary food product development increasingly promotes reformulation strategies that improve nutritional quality while maintaining sensory appeal and cultural relevance. Adlai (*Coix lacryma-jobi* L.), also known as Job's tears, is an underutilized cereal crop recognized for its complex carbohydrates, moderate protein, dietary fiber, minerals, and bioactive compounds (Magpantay et al., 2021; Weng et al., 2022). These characteristics make Adlai a promising ingredient in functional food development, particularly when used to improve familiar foods rather than replace them with unfamiliar alternatives (Temple, 2022).

Recent studies in the ASEAN and Asian context support the growing interest in Adlai and other underutilized crops for food product development. In the Philippines, Aquino and Cruz (2021) explored Adlai in gluten-free pasta and reported its potential as a functional ingredient for sensory-based product

development. Related Philippine studies on probiotic malunggay ice cream, mango-based products, and pastry products with tropical liquid seaweed further show that local ingredients can be evaluated through sensory quality, consumer response, marketability, and value-added product development (Gisulga, 2018; Jorge et al., 2020; Macas et al., 2020). In Indonesia, fermented Adlai flour has also been studied in gluten-free cookies, demonstrating the regional relevance of Adlai in sensory evaluation and functional food innovation (Marta et al., 2024). These studies suggest that Adlai is not only a local Philippine crop but also part of a broader regional interest in underutilized grains, sustainable food systems, and culturally adaptable food reformulation.

The sustainability implication of this study is also important because Adlai is a locally relevant crop that may help diversify food sources and encourage greater use of underutilized grains in familiar food products. Reformulating Maja Blanca with Adlai therefore supports not only nutritional improvement but also local crop utilization, food heritage preservation, and sustainability-oriented culinary innovation.

Cornstarch is traditionally used in Maja Blanca because it provides thickness and gel-like structure. However, it is primarily a refined starch with limited protein and dietary fiber. In comparison, Adlai offers a more nutrient-dense direction for partial substitution. The challenge in reformulating a culturally familiar dessert is that nutritional improvement alone is insufficient; the reformulated product must also retain the appearance, aroma, taste, texture, and overall acceptability expected by consumers (Drake et al., 2023; Lawless & Heymann, 2010).

The present study addressed the limited research on the use of Adlai flour as a partial substitute for cornstarch in traditional Filipino desserts, particularly Maja Blanca. While previous studies have examined Adlai in pasta, cereal-based products, cookies, beverages, and other functional food applications, limited evidence is available on its use in Filipino coconut-based desserts. Specifically, no identified study has evaluated Adlai-enriched Maja Blanca in terms of estimated nutritional profile, sensory acceptability, and standardized recipe development. This gap justified the present study, which positioned Adlai-enriched Maja Blanca as a fiber-enhanced functional Filipino coconut pudding that combines heritage cuisine, nutrition-sensitive product development, ASEAN-oriented food innovation, and consumer acceptability.

FRAMEWORK

This study was anchored on the Functional Food Concept and Sensory Evaluation Theory. The Functional Food Concept explains that foods may provide benefits beyond basic nourishment when they are intentionally developed or reformulated to improve nutritional value through the inclusion of biologically valuable ingredients (Temple, 2022). In this study, the incorporation of Adlai into Maja Blanca supported this concept because Adlai is recognized for its dietary fiber, nutrients, and bioactive compounds that may contribute to a more nutritionally purposeful dessert formulation (Chen et al., 2011; Magpantay et al., 2021; Weng et al., 2022).

Sensory Evaluation Theory supported the consumer acceptability component of the study. It recognizes that the acceptability of food products is influenced by sensory attributes such as appearance, aroma, taste, texture, and overall liking (Drake et al., 2023; Lawless & Heymann, 2010). Since Maja Blanca is culturally familiar, respondents were expected to evaluate the reformulated product not only as a new food item but also in relation to their memory and expectation of the traditional version.

The conceptual framework linked Adlai flour substitution with product reformulation, nutritional quality, sensory attributes, consumer acceptability, and the proposed standardized recipe output. Adlai flour substitution at 40% and 60% served as the product development input. The reformulated Maja Blanca was then evaluated in terms of estimated nutritional quality and sensory attributes. These factors collectively informed consumer acceptability and provided the basis for identifying the formulation recommended for future product development, recipe reformulation, and possible foodservice application.

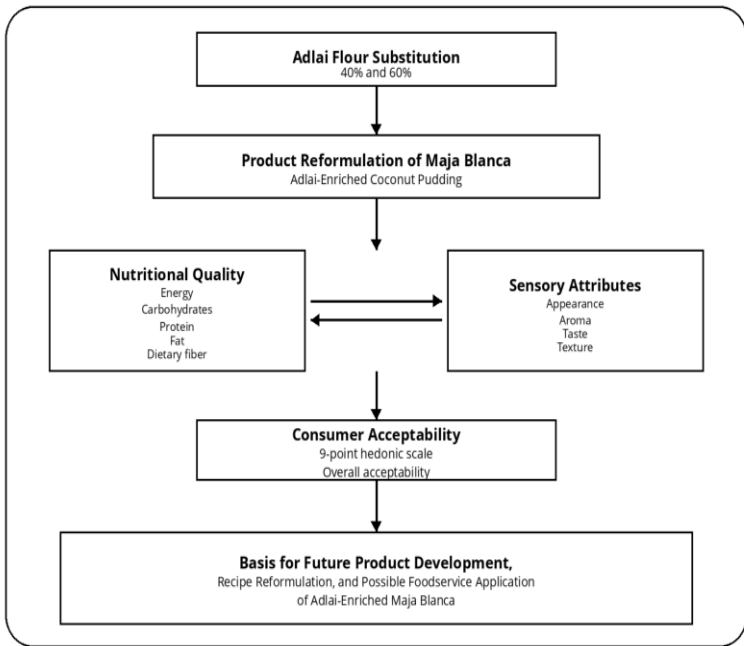


Figure 1. *Functional Food Development and Consumer Acceptability Model.*

OBJECTIVES OF THE STUDY

This study aimed to develop and evaluate Adlai-enriched Maja Blanca as a fiber-enhanced Filipino coconut pudding. Specifically, it sought to: (1) Describe the demographic profile of the respondents in terms of age, sex, respondent category, school/unit, and familiarity with Filipino desserts, particularly Maja Blanca; (2) Determine the estimated nutritional profile of the control Maja Blanca and the Adlai-enriched formulations with 40% and 60% Adlai flour substitution in terms of energy, carbohydrates, protein, fat, and total dietary fiber; (3) Evaluate the level of sensory acceptability of the control and Adlai-enriched Maja Blanca formulations in terms of appearance, aroma, taste, texture, and overall acceptability; and (4) Identify the formulation of Adlai-enriched Maja Blanca that may be recommended as the standardized recipe based on its estimated nutritional profile and sensory evaluation results.

METHODOLOGY

Research Design

The study used a product development and descriptive consumer acceptability design. It consisted of two major phases: product development and consumer sensory evaluation. In the product development phase, three Maja Blanca formulations were prepared: a control formulation with 0% Adlai flour and two Adlai-enriched formulations with 40% and 60% Adlai flour substitution. In the consumer evaluation phase, the three formulations were evaluated using a structured 9-point hedonic scale.

Adlai Flour Preparation and Product Formulation

Adlai grains were procured from a local supermarket in Manila City, Philippines. The grains were oven-dried, ground using a blender, and passed through a sieve to obtain a finer flour consistency. The Maja Blanca formulation was adapted from Daza (2019), with modification through partial substitution of cornstarch with Adlai flour. The 40% and 60% substitution levels represented moderate and high partial replacement levels that allowed the researcher to examine whether nutritional improvement could be achieved while maintaining the expected texture and acceptability of traditional Maja Blanca.

Table 1

Formulation of Maja Blanca

Ingredients	Recipe 1 0% Adlai	Recipe 2 40% Adlai	Recipe 3 60% Adlai
Adlai flour	0 g	48 g	72 g
Cornstarch	120 g	72 g	48 g
Coconut cream	240 ml	240 ml	240 ml
Coconut milk	480 ml	480 ml	480 ml
Sugar	120 g	120 g	120 g
Whole corn kernels	180 g	180 g	180 g
Whole corn kernels (topping)	30 g	30 g	30 g
Water	120 ml	120 ml	120 ml

The same preparation procedure was applied to all formulations, with variation introduced only through the specified level of Adlai flour substitution.

Coconut cream was cooked to produce latik, the pan was greased with coconut oil, ingredients were combined and stirred until dissolved, and the coconut milk mixture was cooked until thickened. The warm mixture was poured into the prepared pan, cooled until set, topped with corn kernels and latik, and portioned into approximately 30 g sensory samples.

Respondents and Instrument

The study was conducted at the Philippine Women's University, Taft, Manila. Eighty respondents were selected through purposive sampling from the School of Hospitality Management, School of Nutrition, School of Food Science and Technology, Graduate School, and active academic and non-academic staff. Respondents were 18 years old and above, willing to taste all samples, able to provide informed consent, and had no known dietary restrictions or allergies related to the samples.

The study used a structured sensory evaluation form employing a 9-point hedonic scale. Participants rated each coded sample from 1, meaning dislike extremely, to 9, meaning like extremely. The instrument assessed appearance, aroma, taste, texture, and overall acceptability and included demographic items on age, sex, respondent category, school/unit, and familiarity with Maja Blanca. Water or plain crackers were provided between samples to minimize taste interference and sensory carryover (Lawless & Heymann, 2010).

To address instrument validity and reliability, the sensory evaluation form was reviewed by expert validators and administered using standardized procedures. Since appearance, aroma, taste, and texture represented distinct sensory dimensions rather than repeated indicators of one identical construct, Cronbach's alpha was not used as the sole basis for reliability interpretation. Instead, the study treated overall acceptability as a formative construct and examined it through collinearity diagnostics and redundancy analysis. The VIF and tolerance values showed that the sensory attributes did not excessively overlap, while the redundancy analysis confirmed that taste and texture contributed meaningfully to overall acceptability. Reliability was further supported through uniform sample preparation, coded presentation, rotated serving order, equal portion size, palate cleansing, and consistent testing conditions.

Data Gathering and Ethical Considerations

Before data gathering, the researcher secured the necessary academic permissions and submitted the instrument for expert validation. Three formulations were prepared using standardized procedures and food safety practices. The samples were served in identical containers and coded as Sample

A, Sample B, and Sample C. The sample order was rotated among respondents to minimize order bias. The actual formulation represented by each code was recorded separately and was not disclosed during the tasting session.

This study involved the collection of anonymous sensory evaluation feedback from qualified respondents for the purpose of food product development and recipe improvement. Participation was voluntary, and respondents were informed of the purpose of the study, tasting procedure, possible risks, confidentiality measures, and their right to decline or withdraw. The data were anonymized at the point of collection to protect participant identity.

Data Analysis

Frequency and percentage were used to describe the demographic profile of respondents. Estimated nutritional values for energy, carbohydrates, protein, fat, and total dietary fiber were computed from food composition references, including the Philippine Food Composition Tables and USDA FoodData Central, and were reviewed by a Licensed Nutritionist-Dietitian. Sensory ratings were summarized using mean, standard deviation, median, and interpretation. The Friedman test was used to determine whether significant differences existed among the three related samples, and the Durbin-Conover pairwise comparison was used when a significant or borderline result was observed. The level of significance was set at $\alpha = .05$, while $\alpha = .10$ was treated as borderline and interpreted cautiously (Field, 2018).

The regression-based procedures were used only for instrument validation and were not used to determine the best formulation. The recommended formulation was identified based on the combined interpretation of estimated nutritional improvement, descriptive sensory results, Friedman test findings, and Durbin-Conover pairwise comparison results where applicable.

RESULTS AND DISCUSSION

Demographic Profile of Respondents

The respondents were appropriate evaluators because they represented different age groups, sex groups, respondent categories, and school or unit assignments. More importantly, all respondents had some degree of familiarity with Maja Blanca, which provided a meaningful basis for evaluating whether the Adlai-enriched formulations retained the expected qualities of the traditional dessert.

Table 2*Demographic profile of the respondents*

Variable	Category	Frequency	Percent
Age	18-20 years old	9	11.25
	21-30 years old	43	53.75
	31-40 years old	12	15.00
	41 years old and above	16	20.00
Sex	Male	34	42.50
	Female	46	57.50
Respondent category	2nd Year	26	32.50
	3rd Year	9	11.25
	Graduate Student	16	20.00
	Academic Staff	3	3.75
	Non-Academic Staff	26	32.50
School / Unit	SHM	35	43.75
	SN	5	6.25
	SFST	15	18.75
	Non-Academic Staff	25	31.25
Familiarity with Maja Blanca	Very familiar	35	43.75
	Familiar	36	45.00
	Slightly familiar	9	11.25
	Not familiar	0	0.00

Most respondents were 21-30 years old (53.75%), followed by those 41 years old and above (20.00%), 31-40 years old (15.00%), and 18-20 years old (11.25%). Female respondents (57.50%) slightly outnumbered male respondents (42.50%). The largest respondent categories were second-year students and non-academic staff, each representing 32.50% of the sample. Most respondents came from the School of Hospitality Management (43.75%), followed by non-academic staff (31.25%), the School of Food Science and Technology (18.75%), and the School of Nutrition (6.25%). In terms of familiarity, 45.00% were familiar and 43.75% were very familiar with Maja Blanca, indicating that respondents had sufficient basis for evaluating the reformulated product.

Estimated Nutritional Profile

The estimated nutritional profile was presented per 30 g serving. Sample C, the 60% Adlai formulation, showed the most favorable nutrient direction because it had the lowest energy value, lowest carbohydrate content, highest protein content, and highest total dietary fiber content. The differences were modest; therefore, the formulation should be described as nutritionally improved or fiber-enhanced compared with the control, not as a therapeutic or high-fiber product.

Table 3

Estimated nutritional profile of the Maja Blanca formulations per 30 g serving

Parameter	Sample A 0% Adlai	Sample B 40% Adlai	Sample C 60% Adlai
Energy / Calories	118.95 kcal	118.93 kcal	118.91 kcal
Carbohydrates	9.18 g	8.93 g	8.81 g
Protein	1.73 g	1.76 g	1.77 g
Fat	8.37 g	8.40 g	8.41 g
Total dietary fiber	0.72 g	0.83 g	0.88 g

The nutrient changes suggest that partial replacement of cornstarch with Adlai flour produced a modest but favorable nutritional shift. The reduction in carbohydrates and increase in protein and total dietary fiber were small per 30 g serving, but the direction of change supports the purpose of reformulating Maja Blanca with a more nutrient-dense grain. These findings are consistent with the literature describing Adlai as a source of dietary fiber and protein and with the broader view that familiar foods may be improved through appropriate ingredient substitution (Magpantay et al., 2021; Weng et al., 2022).

Sensory Acceptability

All three formulations were rated as Like Moderately across appearance, aroma, taste, texture, and overall acceptability. This indicates that partial substitution of cornstarch with Adlai flour did not compromise the general acceptability of Maja Blanca. Sample C obtained the highest mean scores in appearance, taste, and overall acceptability, while Sample B obtained the highest texture rating and Sample A obtained the highest aroma rating.

Table 4
Summary of sensory acceptability ratings of the Maja Blanca formulations

Sensory Attribute	Sample A 0% Adlai Mean / SD	Interpretation	Sample B 40% Adlai Mean / SD	Interpretation	Sample C 60% Adlai Mean / SD	Interpretation
Appearance	7.19 / 1.48	Like Moderately	7.33 / 1.38	Like Moderately	7.44 / 1.52	Like Moderately
Aroma	7.45 / 1.36	Like Moderately	7.22 / 1.47	Like Moderately	7.35 / 1.22	Like Moderately
Taste	7.14 / 1.46	Like Moderately	7.21 / 1.58	Like Moderately	7.28 / 1.47	Like Moderately
Texture	6.81 / 1.73	Like Moderately	7.17 / 1.44	Like Moderately	7.00 / 1.53	Like Moderately
Overall accep tability	7.36 / 1.33	Like Moderately	7.36 / 1.39	Like Moderately	7.39 / 1.44	Like Moderately

The sensory results are important because they show that nutritional reformulation did not lead to consumer rejection. For a traditional dessert, acceptability depends not only on nutrient improvement but also on the preservation of expected sensory qualities. The Like Moderately ratings across all samples suggest that Adlai-enriched Maja Blanca remained recognizable and acceptable to respondents who were familiar with the traditional product. This supports the use of sensory evaluation as a necessary step in product development (Drake et al., 2023; Lawless & Heymann, 2010).

The findings should be interpreted with certain limitations. First, the nutritional values were based on recipe computation using food composition references and were reviewed by a Licensed Nutritionist-Dietitian; therefore, they should be treated as estimated nutritional values rather than laboratory-confirmed proximate analysis. Second, the respondents were drawn from one university setting, which may limit the generalizability of the findings to wider consumer groups. Third, while the respondent pool included students and staff from different categories, the demographic diversity remained limited compared with broader household, community, and foodservice consumers. Future studies should therefore include laboratory nutrient analysis, shelf-life testing, microbial safety evaluation, and wider consumer trials across different communities and age groups.

Statistical Comparison and Recommended Standardized Recipe

The Friedman test showed no statistically significant differences among the three formulations in aroma, taste, texture, and overall acceptability. Appearance produced a borderline significant result at the 10% level. The Durbin-Conover pairwise comparison indicated that Sample C was significantly preferred over Sample A in appearance, with $p = 0.019$. These results should not be interpreted as proof that Sample C was statistically superior in all attributes; rather, Sample C had a supported advantage in appearance and maintained comparable acceptability in the remaining attributes.

Table 5

Summary of Friedman test results for sensory acceptability

Sensory Attribute	Sample A Median	Sample B Median	Sample C Median	Chi-square	df	p-value	Interpretation
Appearance	7.00	7.50	8.00	5.61	2	0.061	Significant at 10% / Borderline
Aroma	8.00	8.00	7.50	0.132	2	0.936	Not significant
Taste	7.00	7.00	8.00	2.14	2	0.344	Not significant
Texture	7.00	7.00	7.00	2.89	2	0.235	Not significant
Overall acceptability	7.50	8.00	8.00	0.249	2	0.883	Not significant

Based on the combined estimated nutritional profile and sensory evaluation results, Sample C or the 60% Adlai-enriched Maja Blanca formulation was identified as the proposed standardized recipe. It used the highest level of Adlai flour substitution, showed the most favorable nutritional direction, and achieved the highest mean scores in appearance, taste, and overall acceptability while remaining within the Like Moderately category for all sensory attributes.

This recommendation should be interpreted cautiously. Sample C was not statistically superior in all sensory attributes; rather, it showed a statistically supported advantage in appearance, comparable acceptability in the remaining sensory attributes, and the most favorable estimated nutritional direction. This balanced interpretation avoids overclaiming while supporting the 60% Adlai formulation as the most appropriate basis for further recipe refinement and validation.

Table 6
Proposed standardized recipe for 60% Adlai-enriched Maja Blanca

Ingredient	Quantity
Adlai flour	72 g
Cornstarch	48 g
Coconut cream	240 ml
Coconut milk	480 ml
Sugar	120 g
Whole corn kernels	180 g
Whole corn kernels for topping	30 g
Water	120 ml
Prepared latik	As needed for topping

CONCLUSIONS

The study concluded that Adlai flour may be used as a partial substitute for cornstarch in Maja Blanca to improve its estimated nutritional profile while maintaining consumer acceptability. Among the formulations tested, the 60% Adlai-enriched Maja Blanca showed the best balance between nutritional improvement and sensory acceptability. It had slightly lower energy and carbohydrate values, slightly higher protein and total dietary fiber content, and the highest mean scores in appearance, taste, and overall acceptability.

The findings support the use of culturally familiar foods as platforms for nutrition-sensitive culinary innovation. Maja Blanca did not have to lose its identity to be improved; rather, the incorporation of Adlai demonstrated how a locally relevant and underutilized grain may add value to a traditional Filipino dessert. The results also show that the acceptability of reformulated traditional foods depends on maintaining sensory qualities that consumers recognize and value.

The proposed 60% Adlai formulation should be treated as a starting point for further development rather than a final commercial or therapeutic product. The nutritional data were estimated and reviewed by a Licensed Nutritionist-Dietitian, but laboratory-based proximate analysis, dietary fiber verification, shelf-life testing, microbial safety testing, packaging evaluation, cost analysis, and market acceptability testing are recommended before wider foodservice, community nutrition, or commercial application. Future studies should also

conduct broader consumer trials involving households, community groups, institutional foodservice clients, and respondents from different regions.

TRANSLATIONAL RESEARCH

The study offers practical value for culinary education, food product development, local crop utilization, and nutrition-sensitive recipe reformulation. For culinary education, the standardized 60% Adlai-enriched Maja Blanca recipe may be used as an instructional example of how traditional Filipino foods can be improved through evidence-based formulation, sensory testing, and careful interpretation of consumer acceptability data. The study demonstrates that product development is not limited to creating new recipes, but also includes preserving cultural identity while improving nutritional direction.

For food researchers and product developers, the 60% Adlai-enriched formulation may serve as a preliminary model for developing fiber-enhanced or nutritionally improved Filipino desserts. The formulation may be further tested, refined, and adapted for institutional foodservice, community nutrition programs, school-based food innovation activities, or small-scale food enterprise development, provided that further safety, shelf-life, cost, and market testing are conducted. This direction is supported by related food product development studies that used sensory quality, consumer response, product marketability, and local ingredient utilization as bases for evaluating product potential (Gisulga, 2018; Jorge et al., 2020; Macas et al., 2020).

For local agriculture and sustainability-oriented food innovation, the findings support the potential use of underutilized grains such as Adlai in culturally familiar products. This may encourage greater appreciation of local crops and promote food innovation that connects nutrition, culinary heritage, and sustainable ingredient utilization. With further validation, the product may also be explored as a model for community-based food innovation, school or institutional feeding discussions, and small-scale enterprise opportunities using locally relevant ingredients.

Future studies should conduct laboratory nutrient analysis, dietary fiber verification, glycemic response assessment, microbial testing, shelf-life evaluation, texture profile analysis, packaging evaluation, cost analysis, and wider consumer testing among household consumers, community groups, foodservice clients, and respondents from different regions. Additional formulation trials may also be conducted to improve texture and aroma while retaining the nutritional advantage of Adlai substitution.

ACKNOWLEDGMENTS

The authors express sincere appreciation to Mr. Jerico Cabotaje, RND, for his professional insights, encouragement, and technical assistance in reviewing the estimated nutritional profile of the formulations. The authors likewise acknowledge the Philippine Women's University, the School of Hospitality Management, the expert validators, and the respondents who participated in the sensory evaluation. Special thanks are also extended to the family of the primary author for their constant love, patience, and encouragement throughout the research process.

LITERATURE CITED

- Alahmari, L. A. (2024). Dietary fiber influence on overall health, with an emphasis on cardiovascular disease, diabetes, obesity, colon cancer, and inflammation. *Frontiers in Nutrition*, 11, Article 1510564. <https://doi.org/10.3389/fnut.2024.1510564>
- Aquino, S. G., & Cruz, C. (2021). Cooking properties and sensory quality of gluten-free Adlai (Coix lacryma-jobi L.) pasta. *Letran Research Center*. <https://research-manila.letran.edu.ph/article/210>
- Chen, H.-J., Chung, C.-P., Chiang, W., & Lin, Y.-L. (2011). Anti-inflammatory effects and chemical study of a flavonoid-enriched fraction from adlay bran. *Food Chemistry*, 126(4), 1741-1748. <https://doi.org/10.1016/j.foodchem.2010.12.074>
- Daza, N. V. (2019). *Let's cook with Nora* (New ed., updated by N. D. Puyat). Anvil Publishing.
- Department of Science and Technology-Food and Nutrition Research Institute. (2025). *Philippine Food Composition Tables: PhilFCT online database*. <https://i.fnri.dost.gov.ph/fct/>

- Drake, M. A., Watson, M. E., & Liu, Y. (2023). Sensory analysis and consumer preference: Best practices. *Annual Review of Food Science and Technology*, 14, 427-448. <https://doi.org/10.1146/annurev-food-060721-023619>
- Fanzo, J. (2023). Achieving food security through a food systems lens. In C. Bene & S. Devereux (Eds.), *Resilience and food security in a food systems context* (pp. 31-52). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-23535-1_2
- Fernandez, D. G. (1994). *Tikim: Essays on Philippine food and culture*. Anvil Publishing.
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.
- Gascon, H. C., & Orr, K. J. (1973). *About Filipino foods* (Home Economics Circular No. 347). University of Hawaii Cooperative Extension Service.
- Gisulga, J. B. (2018). Production and quality evaluation of probiotic Malunggay (*Moringa oleifera* Lam.) ice cream. *JPAIR Multidisciplinary Research*, 32(1), 67-89. <https://doi.org/10.7719/jpair.v32i1.576>
- Jorge, L. R., Paguia, H. M., & Realce, I. (2020). Marketability of mango-based products: Input to product development of locally farm produced mangoes in Central Luzon, Philippines. *JPAIR Multidisciplinary Research*, 40(1), 67-82. <https://doi.org/10.7719/jpair.v40i1.772>
- Kirker, C. L., & Newman, M. (2022). *Coconut: A global history*. Reaktion Books.
- Kirshenblatt-Gimblett, B., & Fernandez, D. G. (2003). Culture ingested: On the indigenization of Philippine food. *Gastronomica*, 3(1), 58-71. <https://doi.org/10.1525/gfc.2003.3.1.58>

- Lawless, H. T., & Heymann, H. (2010). *Sensory evaluation of food: Principles and practices* (2nd ed.). Springer. <https://doi.org/10.1007/978-1-4419-6488-5>
- Macas, L. C., Cano, J. B., Gucor, M. A. D., Olaso, L. M., & Lim, D. A. (2020). Developing a pastry product with tropical liquid seaweed *Eucheuma cottonii*. *JPAIR Multidisciplinary Research*, 40(1), 131-141. <https://doi.org/10.7719/jpair.v40i1.776>
- Magallon, W. N., & Cabahug, A. G. (2022). Field performance of adlai (*Coix lacryma-jobi* L.) under organic planting system in acidic marginal upland in the Philippines. *International Journal of Agricultural Technology*, 18(4), 1671-1682.
- Magpantay, R. L., Jr., Barrion, A. S. A., Dizon, E. I., & Hurtada, W. A. (2021). Influence of heat treatment on the nutrient composition and physicochemical characteristics of Adlai (*Coix lachryma-jobi* L.) and Obatanpa cross Lagkitan corn variety. *Food Research*, 5(1), 271-276. [https://doi.org/10.26656/fr.2017.5\(1\).420](https://doi.org/10.26656/fr.2017.5(1).420)
- Marta, H., Firmansyah, I. N., Febiola, C., Artati, P. R., Yuliana, T., Cahyana, Y., Yarlina, V. P., Djali, M., & Nurmala, T. (2024). Physicochemical properties and sensory evaluation of gluten-free cookies made from fermented adlay (*Coix lacryma-jobi* L.) flour using *Rhizopus* sp. *Cogent Food & Agriculture*, 10(1), Article 2381608. <https://doi.org/10.1080/23311932.2024.2381608>
- Ramezani, F., Pourghazi, F., Eslami, M., Gholami, M., Mohammadian Khonsari, N., Ejtahed, H.-S., Larijani, B., & Qorbani, M. (2024). Dietary fiber intake and all-cause and cause-specific mortality: An updated systematic review and meta-analysis of prospective cohort studies. *Clinical Nutrition*, 43(1), 65-83. <https://doi.org/10.1016/j.clnu.2023.11.005>

- Reynolds, A. N., Akerman, A. P., & Mann, J. (2020). Dietary fibre and whole grains in diabetes management: Systematic review and meta-analyses. *PLOS Medicine*, 17(3), Article e1003053. <https://doi.org/10.1371/journal.pmed.1003053>
- Temple, N. J. (2022). A rational definition for functional foods: A perspective. *Frontiers in Nutrition*, 9, Article 957516. <https://doi.org/10.3389/fnut.2022.957516>
- Weng, W.-F., Peng, Y., Pan, X., Yan, J., Li, X.-D., Liao, Z.-Y., Cheng, J.-P., Gao, A.-J., Yao, X., Ruan, J.-J., & Zhou, M.-L. (2022). Adlay, an ancient functional plant with nutritional quality, improves human health. *Frontiers in Nutrition*, 9, Article 1019375. <https://doi.org/10.3389/fnut.2022.1019375>