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SENSORY ATTRIBUTES AND ACCEPTABILITY OF CASSAVA (*Manihot Esculenta*) FLOUR AS DUMPLING WRAPPER

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ABSTRACT

This study investigated the use of cassava flour (Manihot esculenta) blended with all-purpose flour as a dumpling wrapper, focusing on sensory qualities and overall acceptability. The research also sought to identify the most suitable dumpling type for the cassava-based wrapper. Sensory evaluation included appearance, aroma, taste, and texture across four dumpling types: wonton, siomai, gyoza, and empanada. An experimental research design was implemented, involving 80 participants comprising wrapper makers, dumpling makers, consumers, and food entrepreneurs from Tagbilaran City and Panglao, Bohol. Sensory attributes were assessed using a modified 5-point Hedonic Scale by Peryam and Pilgrim (1957). Data analysis utilized descriptive statistics and the Friedman test, followed by Durbin–Conover post hoc analysis. The results indicated that all treatments received high acceptability ratings across sensory attributes. Among the four dumpling types, empanada achieved the highest overall mean rating ($M = 4.73$), followed by wonton and siomai. Gyoza received the lowest rating but remained within the highly acceptable range. The Friedman test identified a significant difference in acceptability among treatments ($p < .001$), indicating that dumpling type significantly influenced consumer preference. The study established a standardized procedure for product development, including proper mixing, kneading, resting, flattening, and portioning techniques, which improved dough consistency and wrapper quality. The use of tools such as a rolling pin, pasta maker, and digital weighing scale ensured uniform thickness and size. Half-film greaseproof packaging was identified as the most suitable option due to its durability, visibility, and consumer preference. Shelf-life assessment demonstrated that the product maintains quality under refrigeration or freezing, although further research is needed to evaluate extended storage and long-term stability. Cost and profitability analysis indicated that the product is economically viable, with a production cost of ₱169.53 per batch and a net profit of ₱34.47 per pack. Nutritional analysis showed that the wrapper is high in carbohydrates, low in fat, contains moderate protein, and has reduced gluten content. In summary, the findings demonstrate that cassava flour blended with all-purpose flour provides a practical and innovative alternative for dumpling wrapper production. The product is acceptable, cost-effective, and suitable for commercialization, with empanada identified as the most compatible application. Additionally, the study encourages the use of locally available resources and supports sustainable food innovation.

Chapter 1
THE PROBLEM AND ITS SCOPE
INTRODUCTION

Rationale

Dumplings are widely popular snacks and dishes in Asia, particularly in the Philippines, with daily consumption exceeding 100 million pieces (DA-PRDP, 2020). Such demands create a high-value market for cassava-dominant wrappers blended with all-purpose flour, serving as a more economically advantageous and eco-friendlier substitute for fully wheat-based wrappers. (Otekunrin & Sawicka, 2019). In addition, consumers are becoming more health-conscious and seeking nutrient-rich foods (Perdon, Poutanen, & Schonauer, 2020). Hence, producing clean, healthy, and exceptional food is essential for enhancing the wrapper's performance and nutritional value.

Cassava is inherently low in protein compared to wheat (Montagnac et al., 2009). To address this nutritional gap, all-purpose flour was precisely incorporated into the formulation. The addition of all-purpose flour likely increased the wrapper's overall protein content compared to pure cassava flour, while still achieving a reduced-gluten formulation (Chisenga et al., 2019). This balanced approach allows the product to retain desirable functional properties such as structure and elasticity while improving its nutritional profile. With projected growth in dumpling consumption and rising consumer awareness of gluten sensitivity, incorporating cassava flour blended with all-purpose flour is a promising strategy to meet market demand while improving nutritional value.

Hence, this study aimed to determine the acceptability of cassava flour as the main ingredient for making dumpling wrappers, with all-purpose flour as the binding agent, since cassava flour alone lacks sufficient elasticity or cohesion, making it difficult to form stable, flexible wrappers. It also aimed to determine which type of dumpling the cassava–all-purpose flour wrapper is most suitable for, based on its sensory attributes and overall acceptability.

Overall, the study aimed to highlight the health, economic, functional, and environmental advantages of using a cassava–all-purpose flour blend in dumpling wrappers, positioning it as a viable and innovative alternative in the dumpling production industry.

Literature Background

Chinese culture has greatly influenced Filipino cuisine. For centuries, Chinese traders came to the Philippines and used local ingredients to recreate dishes from home. Filipinos embraced these foods and made them their own, turning lumpia, pancit, siopao, and taho into popular festival and celebration dishes. Dumplings, introduced by Chinese immigrants, also became part of Filipino food, showing the

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long and close connection between China and the Philippines. (Uy, J., et al., 2022)

Dumplings are typically defined as foods consisting of dough wrapped around a filling and cooked by steaming, boiling, or frying. While commonly associated with Asian cuisine, similar dishes exist in many cultures. For instance, empanadas, which are prevalent in Spanish and Filipino cuisines, share the fundamental characteristics of dumplings: dough encasing various fillings and cooked by frying or baking. Culinary experts classify dumplings as a broad category of filled dough foods, including wontons, gyoza, and empanadas (McGee, 2004). Although empanadas may differ in appearance and flavor, their structure and ingredients align them with the broader definition of dumplings.

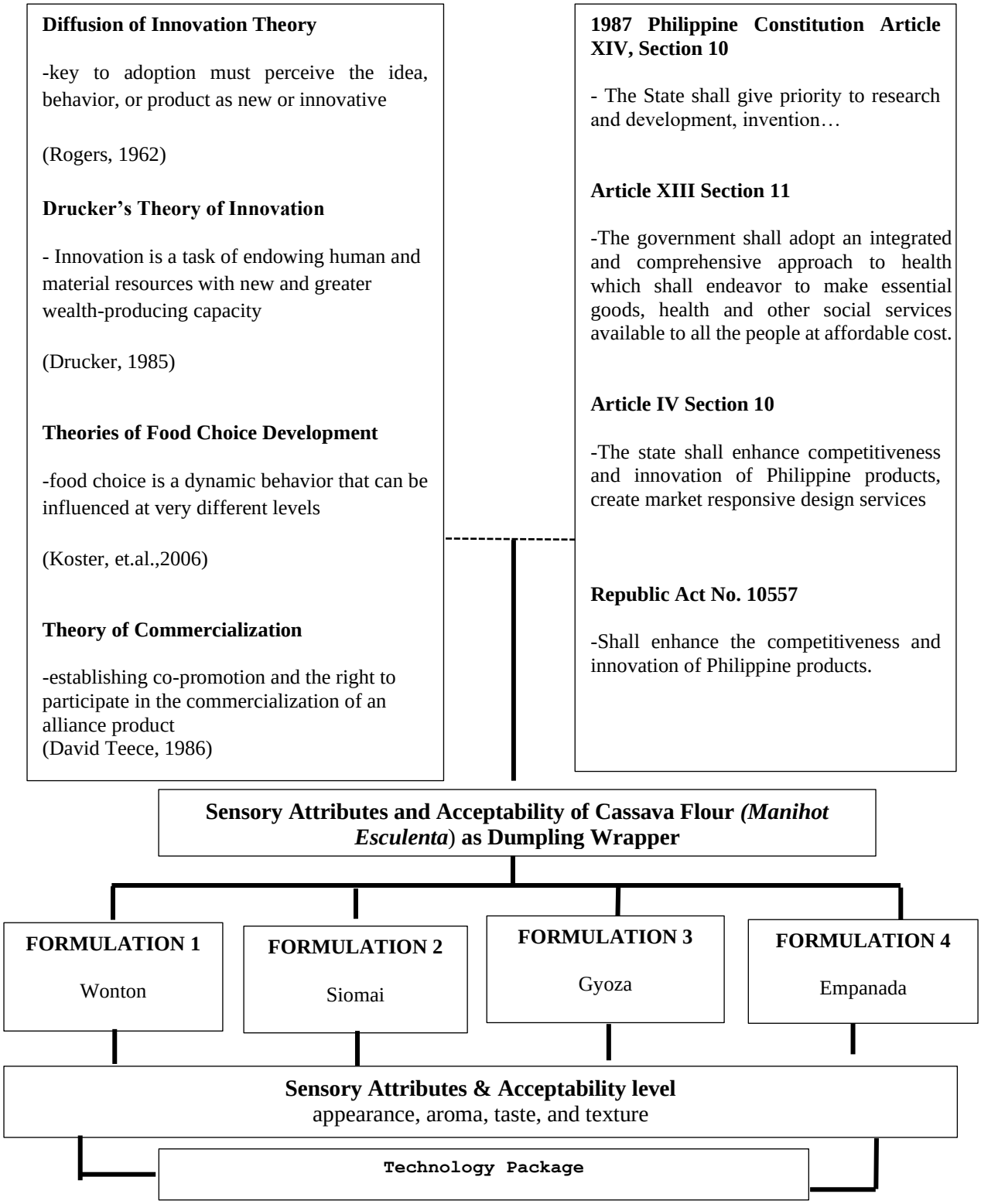


Figure 1: Theoretical and Conceptual Framewor

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THE PROBLEM

Statement of the Problem

This study aimed to determine the Sensory Attributes and Acceptability of Cassava Flour as a dumpling wrapper across four formulations: Wonton, Siomai, Gyoza, and Empanada. This study was conducted in Tagbilaran City and Panglao District in the academic year 2025-2026.

Specifically, this study sought to answer the following:

1. What is the product description of Cassava Flour Wrapper as applied to wonton, siomai, gyoza, and empanada in terms of:
   - 1.1. ingredients and cost;
   - 1.2. tools and equipment;
   - 1.3. procedures;
   - 1.4. proximate analysis;
   - 1.5. packaging; and
   - 1.6. shelf-life.
2. What is the sensory evaluation of Cassava Flour Wrapper as applied to wonton, siomai, gyoza, and empanada in terms of:
   - 2.1 appearance;
   - 2.2 aroma;
   - 2.4 taste; and
   - 2.5 texture?
3. What is the acceptability level of Cassava Flour Wrapper as applied to wonton, siomai, gyoza, and empanada in terms of:
   - 3.1 appearance;
   - 3.2 aroma;
   - 3.3 taste; and
   - 3.4 texture?
4. Is there a significant difference in the acceptability level of Cassava Flour Dumpling Wrapper as applied in:
   - 4.1 Wonton;
   - 4.2 Siomai;
   - 4.3 Gyoza; and
   - 4.4 Empanada?
5. What technology package may be proposed as an output of the study?

Chapter 2
PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

The preceding chapter explained the methodology underpinning data collection, while this chapter focuses on the systematic presentation, analysis, and interpretation of the collected data. To improve clarity and facilitate thorough comprehension of the material, a variety of presentation techniques were employed.

1. Product Description of Cassava Flour as Dumpling Wrapper

The product description for Cassava Flour as a Dumpling Wrapper clearly summarizes the key findings. The goal of this section was to have a thorough understanding of the quality parameters that were examined during the investigation. It covers several topics, including cost and ingredients, materials, tools and equipment, procedure, nutritional analysis, packaging, and shelf life. The introductory section lays the groundwork for a thorough investigation of the production process for cassava flour dumpling wrappers and its impact on the product's sensory evaluation and nutritional analysis.

1.1 Ingredients and Cost

Cassava-flour dumpling wrappers were prepared with set ingredients and measurements. All-purpose flour was included to help the dough hold together and improve its texture, as cassava flour alone is not elastic. The study looked at how these wrappers tasted and how acceptable they were when made from both cassava and all-purpose flour.

One recipe was used for all samples to maintain consistency. The study compared Wonton, Siomai, Gyoza, and Empanada to see which dumpling type worked best with the cassava-based wrapper and to explore its possible commercial use.

Four types of dumplings—Wonton, Siomai, Gyoza, and Empanada—were made using a standard recipe with cassava and all-purpose flour. The team followed set procedures to keep everything uniform. The cost of ingredients was based on current market prices.

Additionally, expenses such as utilities and incidental costs were considered in the overall computation. The total production cost was determined by summing the ingredient costs and operational expenses. The selling price per piece was calculated by dividing the total cost by the number of yields, ensuring that the product remains affordable while maintaining quality.

Each formulation was priced with 15% allocated to operating expenses, such as gasoline and water used in product processing, and 30% allocated to labor costs. The overall price was then increased by 20%. The selling price per 25-gram pack was calculated by dividing the total yield by the number of packs.

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Table 1.1
Ingredients and Cost of the Product

Table 1.1 presents the ingredient costs and production expenses of the formulation. The formulation employs the base ingredients: cassava flour, all-purpose flour, salt, and water.

Ingredient	Unit	Quantity	Purchase Price (Php)	Unit Cost (Php)
Cassava Flour	grams	220	500.00/1000 grams	110
All-Purpose Flour	grams	50	90.00/1000 grams	4.5
Salt	grams	5	48.00/1000 grams	0.24
Water	cup	½ cup water, or more as needed	-	-
Packaging	piece	1.00	109.00/50 pieces	2.18
			Cost of Ingredients	₱116.92
			Labor Cost (30%)	₱35.076
			Operating Expenses (15%)	₱17.538
			Total Cost and Expenses	₱169.53
			Mark up Price 20%	₱33.91
			Final Amount	**₱203.44**
		Yield	35 wrappers	
		Total Weight of the Finished Product	300 grams	
		Number of Wrappers per pack	35 wrappers	
		Proposed Selling Price per Pack	204.00/pack	
		Price per wrapper	₱ 5.8	
Item:			**Amount:**	
Proposed Selling Price Per Pack -Total Production Cost			204.00- 169.53	
Net Profit			**34.47**	

Core ingredients such as cassava flour (220g), all-purpose flour (50g), salt (5g), and water (1/2 cup, or more as needed) were used to formulate the wrapper.

The proposed selling price of the wrapper is 204.00/pack. Costing and profitability analysis demonstrate that producing cassava dumpling wrappers is economically viable. The total production cost was ₱169.53, encompassing ingredients, labor, and operating expenses. Applying a 20% markup, the product was priced at ₱204.00 per pack, with each batch yielding 35 wrappers.

The analysis indicates a net profit of ₱34.47 per pack, reflecting a reasonable profit margin and significant potential for commercialization, especially among small-scale food entrepreneurs.

According to studies on the impact of pricing, lowering food prices also increases customer purchases. The three formulas' comparatively low prices make the product accessible and unlikely to put a financial strain on customers.

Finding a good market niche requires careful analysis of the pricing environment for the suggested products. The table results demonstrate that the prices are accessible to many customers. Pricing has a major impact on product innovation, as noted by Al-Mamun and Raham (2014), with price being the primary determinant of most purchases rather than brand or accessibility.
However, this analysis is only at the anticipated cost and pricing level; it doesn't evaluate the proposed product's marketability. Therefore, more study is required to assess the product's market potential and successfully carve out its niche.

1.4 Proximate Analysis

Proximate analysis is a common method for determining the basic nutritional composition of food. It measures key components such as moisture, crude protein, crude fat, crude fiber, ash, and carbohydrates. These are the main nutrients that affect a food's nutritional value and quality.

In this study, we used proximate analysis to check the nutritional profile of the cassava dumpling wrapper. The results show important details about its energy content, macronutrient composition, and suitability for consumption.

This analysis also helps determine whether the product can be sold by verifying that the food meets nutrition standards and helping consumers make informed choices.

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Table 1.4
Proximate Analysis of Cassava Flour Dumpling Wrapper

Table 1.4 shows the nutrient content of the cassava flour dumpling wrapper. Based on the laboratory result, cassava flour dumpling wrappers have the following nutritional composition: moisture, ash, macronutrients, and micronutrients.

Nutrients	Unit	Result	Standard RDA	% RDA Contribution
Moisture	g	40.2	-	-
Crude Ash	g	0.888	-	-
Crude Protein	g	4.53	50 g	9.06%
Crude Fiber	g	1.54	28 g	5.50%
Crude Fat	g	6.23	78 g	7.99%
Carbohydrates	g	48.2	275 g	17.53%
Calories	cal	96.75	2000 kcal	4.84%

The proximate composition of the product included moisture (40.2 g), which is relatively high and may contribute to a soft texture and higher palatability in these products.

On the other hand, high moisture content can shorten their shelf life by making them more vulnerable to microbial growth (Fellows, 2017) if proper storage conditions are not maintained.

The crude ash value (0.888 g) indicates the total mineral present in the food, which plays an essential role in physiological processes such as bone formation and metabolic regulation (AOAC, 2019). While the Kjeldahl method gave a crude protein content of 4.53 g, the nature of such protein represents a moderate contribution to tissue repair and growth.

The addition of all-purpose flour likely increased the protein level compared with pure cassava flour, since cassava itself is low in protein (Montagnac et al., 2009).

Additionally, the crude fiber content of 1.54 g indicates that this product contains dietary fiber, which supports digestive health and promotes bowel regularity (Slavin, 2013). Crude fat can range up to 6.23 g and is responsible for product energy density, taste, and mouthfeel (Damodaran et al., 2017).

Carbohydrate is calculated by difference, with a value of 48.2 g, the highest macronutrient component; therefore, they are classified as energy-dense food products. This is in line with wheat products. This food is classified as energy-contributing (it has a caloric value of 96.75 calories) and may be eaten by those who need carbohydrate-based energy.

Cassava dumpling wrappers provide a moderate amount of daily nutrients, especially carbohydrates, which account for about 17.53% of the recommended intake. This means they are a good energy source. Protein and fat provide 9.06% and 7.99%, respectively, so they contribute some macronutrients but are not the main sources. The fiber content is 5.50%, which is low but still helpful for digestion. The calorie content is also low at 4.84%, so these wrappers work well as a light food rather than a high-calorie meal

Difference in the Overall Acceptability Level of Cassava Dumpling Wrappers in Four (4) Formulations

Friedman Test			
χ^2	**df**	**p-value**	**Interpretation**
81.3	3	<.001	Significant
Formulations	**Statistic**	**p**	**Interpretation**
F1 Wonton-T2 Siomai	3.30	0.001	Significant
F1 Wonton-T3 Gyoza	7.70	<.001	Significant
F1 Wonton-T4 Empanada	2.74	0.007	Significant
F2 Siomai-T3 Gyoza	4.41	<.001	Significant
F2 Siomai- T4 Empanada	6.04	<.001	Significant
F3 Gyoza- T4 Empanada	10.44	<.001	Significant

Formulations	Descriptives	
	Mean	Median
F1 Wonton	4.46	4.75
F2 Siomai	4.45	4.5
F3 Gyoza	4.20	4.25
F4 Empanada	4.73	4.88

In this table, the results showed a statistically significant difference among the formulations ($\chi^2(3) = 81.30$, $p < .001$), indicating that respondents perceived significant variation in the overall acceptability of the dumpling wrappers across formulations.

To further identify which formulation differed significantly, Durbin–Conover pairwise comparisons were performed. The results showed significant differences between all formulation pairs.

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Specifically, significant differences were observed between Wonton and Siomai ($p = .001$), Wonton and Gyoza ($p < .001$), Wonton and Empanada ($p = .007$), Siomai and Gyoza ($p < .001$), Siomai and Empanada ($p < .001$), and Gyoza and Empanada ($p < .001$). These findings indicate that each formulation differed significantly from the others in overall acceptability.

The descriptive statistics revealed that formulation 4 (Empanada) had the highest overall acceptability rating ($M = 4.73$, $Md = 4.88$), indicating it was the most preferred dumpling wrapper among respondents. This was followed by formulation 1 (Wonton), with a mean score of 4.46 ($Md = 4.75$), and formulation 2 (Siomai), with $M = 4.45$ ($Md = 4.50$). Formulation 3 (Gyoza) obtained the lowest mean score ($M = 4.20$, $Md = 4.25$).

Overall, these findings suggest that while all formulations were generally acceptable, the Empanada formulation was the most acceptable among the four dumpling wrapper formulations.

PROPOSED TECHNOLOGY PACKAGE IN THE PRODUCTION OF CASSAVA FLOUR *(MANIHOT ESCULENTA*) AS DUMPLING WRAPPER

Rationale

Innovation has become an essential aspect of modern food production as it provides opportunities to develop alternative food products using locally available resources. One promising innovation in food processing is the utilization of cassava flour as an alternative ingredient for dumpling wrappers.

Dumplings are widely consumed food products, and their wrappers are traditionally made from wheat flour, which contains gluten and may not be suitable for individuals with gluten sensitivity.

Cassava (Manihot esculenta) is a locally available root crop that is naturally gluten-free and widely cultivated throughout the Philippines, including Bohol. It possesses desirable functional properties, including mild sweetness, elasticity, and a distinct aroma, which can enhance the sensory qualities of food products. When combined with all-purpose flour, cassava flour can produce dumpling wrappers with improved texture while reducing gluten content and enhancing nutritional value.

This technology guide aims to introduce cassava flour as a viable ingredient for dumpling wrappers and to promote its utilization in food processing. The innovation also provides an opportunity for students, entrepreneurs, and food producers to develop new food products using locally available agricultural resources.

Furthermore, the production of cassava dumpling wrappers may contribute to the economic development of local communities by creating additional income-generating opportunities and promoting cassava as an agricultural commodity.

This technology guide is intended for use by cookery teachers, food entrepreneurs, dumpling makers, cassava farmers, and others in the food production industry interested in developing innovative food products using cassava flour.

Objectives

The main objectives of this proposed technology guide are the following:

1. To introduce cassava flour dumpling wrappers as an alternative product for commercial production.
2. To encourage food entrepreneurs and dumpling makers to utilize cassava flour as an innovative ingredient in dumpling wrapper production.
3. To promote the value of cassava as a locally available agricultural resource that can be used in food product development.
4. To provide additional knowledge and skills in food processing and experimental cookery among students and food industry workers.

Chapter 3
SUMMARY, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the conclusion, findings, study overview, suggestions, analysis, and data interpretation

Summary

This study aimed to evaluate the acceptability of cassava flour–based dumpling wrappers blended with all-purpose flour as a potential substitute for traditional wheat-based wrappers. Specifically, it examined how consumers perceived the product in terms of appearance, aroma, taste, and texture. By assessing these key sensory attributes, the study sought to determine whether the cassava-based formulation could serve as a viable, nutritious, and appealing alternative for various dumpling preparations.

The study employed an experimental research design in which all respondents were exposed to the four formulations to determine which dumpling type was most compatible with the cassava–all-purpose-flour dumpling wrapper. Descriptive analysis was employed to summarize, interpret, and compare the data gathered from the participants' evaluations. Among the four formulations, a sensory evaluation tool was used to assess respondents' sensory preferences for appearance, aroma, taste, and texture. The respondents were given ample time to answer the 5-point Hedonic scale. An interval of 5 minutes was allowed between formulations.

The study was conducted in Tagbilaran City and Panglao District, involving 5 wrapper makers, 15 dumpling makers, 30 dumpling consumers, and 30 food business entrepreneurs.

The shelf life was assessed using an observation guide, in which the researcher observed changes in the sensory characteristics of cassava–all–purpose flour dumpling wrappers as a substitute for traditional wheat-based wrappers. Nutritive analysis is performed through laboratory sampling at First Analytical Services and the Technical Laboratory in Mandaue City. The researcher has interpreted and analyzed the collected data, which resulted in the following findings.

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Procedure
The procedures for creating cassava all-purpose flour dumpling wrappers were easy. It involves basic, well-known techniques for making dough. The challenging part of the preparation process was achieving the desired technique to produce a wrapper that does not tear easily when used as a dumpling wrapper.

Nutritive Value
The cassava flour dumpling wrappers offer a simple yet balanced nutritional profile, with carbohydrates making up most of their content, providing a good source of energy. Its relatively high moisture level gives the wrapper a soft, pleasant texture that makes it enjoyable to eat. It also contains essential minerals, moderate amounts of protein—enhanced by the addition of all-purpose flour—and a bit of dietary fiber that supports healthy digestion. The wrapper is low in fat and has a modest calorie count of 267 calories per 110g, making it a light option for those who want energy without excessive fats. While it contributes helpful nutrients, it is still best paired with other nutrient-rich foods to ensure a more complete and well-rounded diet.

Packaging
Cassava flour dumpling wrappers are most preferred to be packed in a Half Film Greaseproof Packaging and emerge as the data reveals the best choice, particularly for its balance of functionality, sustainability, aesthetic appeal, safety and health, and convenience and accessibility, while the Self-Adhesive Clear Packaging is the least favored due to its lower performance across key attributes.

Shelf-Life
The researcher placed the wrappers in Half Film Greaseproof Packaging and stored them in the chiller. The product's quality lasts for 26 days and remains unchanged physically or chemically.

2. Sensory Characteristics
Formulation 4 outperformed all formulations in all sensory attributes, closely followed by formulations 1 and 2, while formulation 3 had the lowest ratings, especially in texture.

3. Acceptability Level of Cassava Dumpling Wrappers
Formulation 4 achieved the highest weighted mean of 4.73, placing it in the highly acceptable category. This was followed by formulation 1, with a mean score of 4.46, and formulation 2, with 4.45, both rated as highly acceptable. Formulation 3 obtained a weighted mean of 4.20, which also falls under the highly acceptable classification.

4. Difference in the Acceptability Level of Cassava Dumpling Wrappers
The results showed clear and meaningful differences in the overall acceptability ratings of all four dumpling formulations. Each pair of formulations—such as Wonton and Siomai, Wonton and Gyoza, Siomai and Empanada, and even Gyoza and Empanada—differed significantly from one another. This means the respondents were able to distinguish the dumpling types well and evaluate each one individually based on its sensory qualities.

Among all formulations, formulation 4 (Empanada) was the most preferred, earning the highest overall acceptability score (M = 4.73, Md = 4.88). This suggests that the cassava flour wrapper performed exceptionally well for empanadas, receiving strong approval across most sensory attributes. Next in rank was formulation 1 (Wonton) with a mean of 4.46, followed very closely by formulation 2 (Siomai) at 4.45. Although formulation 3 (Gyoza) received the lowest score (M = 4.20), it was still considered acceptable by most respondents.

Overall, the findings show that all four dumpling applications were well received, but the cassava-flour wrapper performed best for empanadas. This highlights its strong potential as an alternative wrapper, especially for certain dumpling varieties where it seems to complement the product particularly well.

5. Proposed Technology Package
The Proposed Technology Package for Cassava Flour Dumpling Wrappers aims to launch a food product that is not only healthy but also rooted in the people's culture and of such quality that it can economically sustain the growth of the health sector and local communities. The proposal presented a practical method for producing healthy, reduced-gluten dumpling wrappers by combining modern food-processing techniques with indigenous ingredients. This project provided a highly replicable production and distribution model, especially in rural areas, which would help address the high demand for healthy, affordable, locally produced substitutes for traditional wheat-based wrappers.

It would have a positive impact on local farmers, small-scale food businesses, and nutritional and economic development goals through food innovation. The implementation would involve collaborations with schools and local government units in Tagbilaran City, Bohol. Every phase of the project would be evaluated for its efficacy and its impact on the community.

There would be a highly organized production method, with the right instruments and raw materials, and a detailed guide for each step, so that the highest-quality wrappers that meet consumer needs would be produced consistently while also promoting sustainability and food security.

Conclusions
According to the findings, there were significant differences in the overall acceptability of the four dumpling formulations with a cassava-flour wrapper. Among these, formulation 4 (Empanada) received the highest ratings, followed by Wonton and Siomai, while Gyoza—though lowest—remained acceptable to respondents.

Throughout the preparation process, one challenge was creating wrappers that would not tear easily; however, adding all-purpose flour helped achieve the desired structure and durability. Overall, the study shows that the cassava–all-purpose flour wrapper was well-received across all formulations and has strong potential as an appealing alternative to traditional wheat-based dumpling wrappers.

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Recommendations

Considering the study's findings and conclusions, the researcher proposed the following recommendations:

1. Formulation 4 is recommended for adoption and mass production by product developers and food entrepreneurs, as it demonstrated the highest level of acceptability. This formulation is particularly suitable for pilot marketing and commercialization, while also ensuring consistency in both formulation and preparation.
2. Subsequent studies could investigate modifications to the cassava-to-all-purpose flour ratio to enhance the elasticity and overall quality of the dumpling wrapper.
3. Future Researchers may experiment with kneading time and dough-resting techniques to improve gluten development and dough structure.
4. Subsequent studies could investigate the use of alternative local starches, such as potato starch and rice flour, as binders to enhance stretchability and moisture regulation.
5. Packaging Designers and Producers use the Half Film Greaseproof Packaging as the standard packaging for its superior visibility, durability, and eco-friendliness, based on consumer preferences.
6. Food technology students may develop other processed products made with cassava flour and all-purpose flour, as this is feasible in the community.
7. DepEd Schools (TLE/TVL track) are encouraged to introduce the production of cassava flour dumpling wrappers in high school TLE classes to promote food innovation.
8. Nutritionists and Health Workers may educate parents and schools on the product's nutritional value to encourage healthier choices and stimulate demand for local, fortified alternatives.

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