

Sensory Evaluation of Hopyang Gabi (*Colocasia Esculenta*) Con Mais (*Zea Mays*) Pastry Product: Food Product Development

Glorilyn B. Alejandro

Industrial Technology Department, Isabela State University, City of Ilagan, Isabela, Philippines

ABSTRACT: This study focused on the development of the food product "Hopyang Gabi Con Mais" and evaluation of its quality and potential for acceptability in order to improve nutrition through organic foods and assist families in diversifying their food sources.

Hopyang Gabi Con Mais was produced from taro roots, and white corn. Increase in nutritive content like nutrients, vitamins and minerals of the product are obtained from taro root and white corn. Taro plant is a powerhouse of nutrients. Its roots contain vitamins like folate, niacin, pantothenic acid, pyridoxine, riboflavin, thiamine, vitamin A, vitamin C, vitamin E and vitamin K. Additionally, the root has antioxidants like cryptoxanthin and beta-carotene. Other minerals that are present in taro roots are copper, manganese, selenium, zinc, and magnesium, iron, and calcium. The electrolytes present in taro roots are potassium, sodium, and thiamine in white corn. The developed food product was evaluated by the respondents to determine its level of acceptability in terms of appearance, aroma, taste and texture which garnered an overall descriptive rating of highly acceptable. Moreover, there was no significant difference in the level of acceptability of hopyang gabi con mais in terms of appearance, aroma, taste, and texture as perceived by the respondents according to their age groups.

To make an outstanding hopya dough, combine equal parts taro root powder and other needed elements. The produced hopya product has more important nutrients derived from taro roots and white maize, which aids in the nourishment of human health. Because of its low production cost, ease of preparation, abundance and availability of taro, white corn, and other important ingredients, it is recommended that the developed food product be introduced and advertised in the City of Ilagan, the Philippines' Corn Capital, and the Province of Isabela as a whole.

KEYWORDS: Hopya, Taro, Corn, Acceptability

INTRODUCTION

One of the most significant root crops in the Philippines is gabi, or taro. While being widely grown, this crop is frequently planted in places that are not ideal for its growth since other crops, such as vegetables and traditional mainstays like rice and corn, are given preference for good production space. Gabi can thrive in marginal and submarginal places, but it often grows well and yields a lot when planted in more favorable locations with the correct soil and amount of rainfall for the crop.

The health benefits of taro include its ability to improve digestion, lower your blood sugar levels, prevent certain types of cancers, protect the skin, boost vision health, increase circulation, decrease blood pressure, aid the immune system and prevent heart disease, while also supporting muscle and nerve health. Taro root has been an integral part of global cuisines and diets for thousands of years. In fact, taro is one of the oldest cultivated plants in human history. *Colocasia esculenta* is its scientific name, and it has a rich history.

Health Benefits of Taro

Digestive Health: Taro root's role in digesting is one of its most essential functions in the diet. Taro root includes a high quantity of dietary fiber (a single serving comprises 27% of the daily requirement of dietary fiber), making it essential for supporting our gastrointestinal health. Fiber helps to bulk up our bowel movements, allowing food to pass more easily through the digestive tract and improving digestion.

Cancer Prevention: When it comes to cancer, taro root plays a vital role in antioxidant activity in our bodies. Taro root has significant levels of vitamin A, vitamin C, and other phenolic antioxidants that help enhance our immune system and destroy hazardous free radicals.

Diabetes: Because it regulates the release of insulin and glucose in the body, dietary fiber can also help reduce the risk of getting diabetes. You may manage your glycemic levels and minimize your risks of developing diabetes if you consume enough fiber,

Sensory Evaluation of Hopyang Gabi (Colocasia Esculenta) Con Mais (Zea Mays) Pastry Product: Food Product Development

which taro root provides. If you have diabetes, fiber-rich foods like taro root can help you avoid harmful blood sugar rises and drops.

Blood Pressure and Heart Health: Taro root has a high potassium content, which is another crucial mineral that humans require to stay healthy and effective. Potassium not only promotes proper fluid exchanges between membranes and tissues throughout the body, but it also aids in the relaxation of blood vessels and arteries.

Boosts Vision: Taro root, as previously stated, includes a variety of antioxidants, including beta-carotene and cryptoxanthin. These antioxidants can also help with vision improvement by stopping free radicals from damaging ocular cells and triggering macular degeneration or cataracts.

Skin Health: When we include taro root in our meals, we protect our skin with vitamins E and A. Both of these critical vitamins work to eradicate skin issues and improve overall cellular health, which means that our wounds and blemishes heal faster, wrinkles can be reduced, and our skin can regain its healthy glow. Taro root is nature's beauty secret for glowing skin.

Immune System Health: Perhaps the most essential aspect of taro root for health is its impact in the immune system. It has a high concentration of vitamin C in each meal, which stimulates the immune system to produce more white blood cells. Furthermore, vitamin C acts as an antioxidant, which helps to prevent the development of diseases such as heart disease and cancer.

Circulation Stimulation: Taro root's mineral content has dozens of useful applications, but the presence of iron and copper in taro root makes it a highly significant food to avoid anemia and increase circulation throughout the body. Iron and copper are both required for the creation of red blood cells, which transport oxygen throughout our bodies' systems and cells.

The abundance of taro root and white corn may provide an opportunity to create a nutritious and healthful food product. As a result, the researcher would want to start producing hopyang gabi con mais and analyze its quality and potential for acceptability, with the goal of improving nutrition and diversifying food supplies from organic crops abundant in the community.

OBJECTIVES OF THE STUDY

Food development launched the production of hopyang gabi con mais and evaluated its quality and potential for acceptance, with the goal of improving nutrition and diversifying food sources with locally plentiful organic crops in the City of Ilagan, Isabela. It specifically attempted to answer the following research questions:

1. What are the processes involved in preparing the hopyang gabi con mais pastry product?
2. What is the level of acceptability of the developed hopyang gabi con mais as perceived by the respondents in terms of
 - 2.1 Appearance;
 - 2.2 Aroma;
 - 2.3 Taste; and
 - 2.4 Texture?
3. What is the sensorial evaluation of the developed hopyang gabi con mais food product as evaluated by following age groups?
 - 3.1 Children
 - 3.2 Teenager
 - 3.3 Adults
 - 3.4 Experts
4. Is there a significant difference in the level of acceptability of hopyang gabi con mais in terms of appearance, aroma, taste and texture as perceived by the respondents according to their age groups?

MATERIALS AND METHODS

Taro root and white corn were purchased at the local market in Ilagan, Isabela. Table 3 lists the ingredients used to make the hopyang gabi con mais pastry product.

CONCEPTUAL MODEL OF THE STUDY

A conceptual model was built based on the previous concepts, theories, and findings of related literature, investigations, and insights as shown below.

Sensory Evaluation of Hopyang Gabi (Colocasia Esculenta) Con Mais (Zea Mays) Pastry Product: Food Product Development

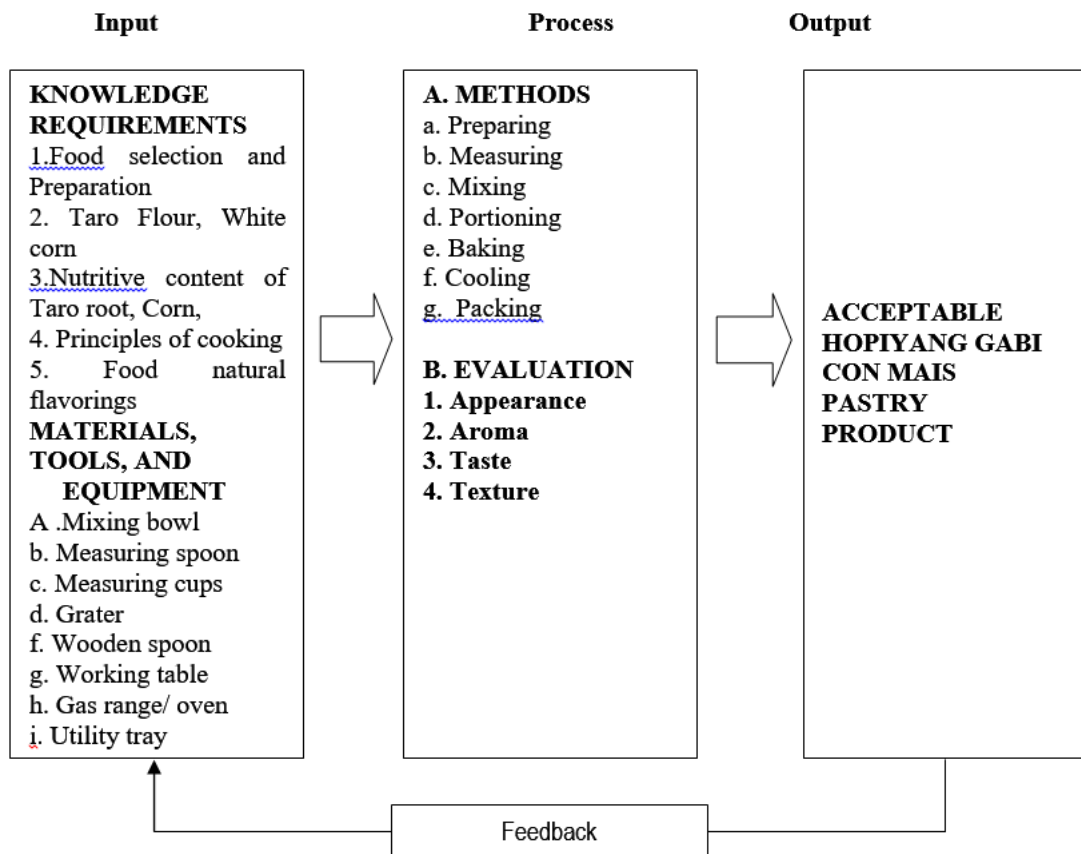


Figure 1. Conceptual Model of the Study

The conceptual model, as shown in Figure 1, shows the many stages of the processes involved in achieving the study's objectives.

RESEARCH DESIGN

The mixture of taro flour and white corn has undergone different stages of development, starting from measurement to cooking. Through these stages of development, observations and analysis were done to come up with feasible hopyang gabi con mais. Being qualitative in nature, the study made use of descriptive research design. Such research design was used considering that the study investigated the acceptability of hopyang gabi con mais pastry product, ways of preparation, baking, and health benefits that can be obtain from it.

DEVELOPMENTAL PROCEDURE

The procedure in making the hopyang gabi con mais pastry product was constantly followed in order to conduct the research properly. The development of the food product began with the preparation of ingredients. Peeling, grinding, boiling, mashing, and baking were all steps in the food development process.

SENSORY EVALUATION

Sensory evaluation was performed on the developed food product. Sixty (60) respondents were chosen from the population of the City of Ilagan, Isabela. Children, teenagers, and adults are among them. The food expert evaluators were faculty members from the Isabela State University, City of Ilagan Campus. The evaluators were in good physical condition. They were thoroughly instructed on what the food product was and how to evaluate it using a survey instrument. Each respondent was given a sample of the hopyang gabi con mais pastry product and asked to taste it. Data on the appearance, aroma, taste, and texture of the food product were gathered and statistically analyzed

The responses as to the level of acceptability of the developed hopyang gabi con mais pastry product in terms of appearance, aroma, taste, and texture were solicited using the five point Likert Scale and given weight as shown in Table 1.

Sensory Evaluation of Hopyang Gabi (Colocasia Esculenta) Con Mais (Zea Mays) Pastry Product: Food Product Development

Table 1. The Range Numerical Rating and its Equivalent Descriptive Rating

Average Weighted Mean Range	Descriptive Rating
4.50 - 5.00	Highly Acceptable
3.50 - 4.49	Moderately Acceptable
2.50 - 3.49	Acceptable
1.50 - 2.49	Slightly Acceptable
0.50 - 1.49	Not Acceptable

Statistical Tools Used

All data were gathered from the questionnaire/evaluation form given to the evaluators. The variables were analyzed and interpreted based on the computed results.

1. Mean (M). This was utilized to gauge the level of acceptability of the hopyang gabi con mais pastry product as to respondents' age groups and criteria used.

Table 2. The Level of Acceptability of the hopyang gabi con mais pastry product was interpreted using the following scale.

Scale	Description
5	Highly Acceptable
4	Moderately Acceptable
3	Acceptable
2	Slightly Acceptable
1	Not Acceptable

RESULTS AND DISCUSSION

Product Development

The Hopyang gabi con mais pastry product recipe has undergone different stages of development starting from process to baking. Through these stages of development, careful observation and analysis were done to come up with feasible hopyang gabi con mais pastry product.

A. Materials

The following tools, equipment and ingredients were used during the conduct of the study.

1. Tools and Equipment

Preparation tools, measuring tools, mixing tools, cutting tools, cooking tools and equipment were used during the conduct of the study as shown in table 3

Table 3. Tools and Equipment used in the conduct of the study.

Preparation tools	Measuring tools	Mixing tools	Cutting tools	Cooking tools	Equipment
Flour Sifter	Measuring cups	Mixing bowls	Knife	Cookie sheet	Gas range
Grater	Measuring spoon	Wooden spoon	Chopping board	Casserole	Gas stove
Spatula				Food tong	Oven
Utility tray				Ladle	

B. Process

The developmental procedure began with the preparation of the hopyang gabi con mais. The procedure started with peeling, grinding, boiling, mashing and then baking.

Preparation of Taro Root and White Corn

Ingredients:

Crust:

2 cups taro flour

½ cups oil

½ cups water

Paste:

1 ½ cups apf

Sensory Evaluation of Hopyang Gabi (Colocasia Esculenta) Con Mais (Zea Mays) Pastry Product: Food Product Development

- ¼ cup purico
- ½ cups butter
- ½ cups refined sugar

Filling:

- 1 ½ white corn
- 1 can condense milk

Procedure:

Crust:

1. Combine the dry ingredients together.
2. Cut-in the shortening and gradually add water to form a ball of dough.
3. Flatten, and then spread the paste.
4. Roll thinly.
5. Portion, then flatten and place filling.

Gather side together then seal. Place upside down.

Paste:

6. Mix all ingredients, and then form into paste.

Filling:

7. Combine all ingredients. Cook into medium fire until thick.

C. Product Evaluation

To determine the acceptability of the hopyang gabi con mais pastry product, the proponent conducted the evaluation process. There were Sixty (60) respondents of the study. This includes students and faculty members/expertise of Isabela State University, Ilagan Campus and among the community people of City of Ilagan, Isabela which are children, youths, and adults.

To determine the level of acceptability of hopyang gabi con mais pastry product, the respondents evaluated the food products with regard to its **appearance, aroma, taste and texture**. For clearing understanding, the data were presented in table form were treated concisely.

Table 4. Extent of Acceptability of hopyang gabi con mais of Treatment 1

Criteria	WAM	Description
Appearance	4.46	Moderately Acceptable
Aroma	4.4	Moderately Acceptable
Taste	4.39	Moderately Acceptable
Texture	4.49	Moderately Acceptable

The table above shows the acceptability of hopyang gabi con mais pastry product from Treatment 1. It reflects a moderately acceptable level of acceptability from the respondents in terms of appearance (WAM: 4.46), aroma (WAM: 4.4), taste (WAM: 4.39), and texture (WAM: 4.49).

Table 5. Extent of Acceptability of Hopyang gabi con mais of Treatment 2

Criteria	WAM	Description
Appearance	4.55	Highly Acceptable
Aroma	4.50	Highly Acceptable
Taste	5.0	Highly Acceptable
Texture	5.0	Highly Acceptable

The table above shows the acceptability of hopyang gabi con mais from Treatment 2. It reflects a highly acceptable level of acceptability from the respondents in terms of appearance (WAM: 4.55), aroma (WAM: 4.50) taste (WAM: 5.00), and texture (WAM: 5.00).

Sensory Evaluation of Hopyang Gabi (Colocasia Esculenta) Con Mais (Zea Mays) Pastry Product: Food Product Development

Table 6. Extent of Acceptability of Hopyang Gabi Con Mais pastry product of Treatment 3

Criteria	WAM	Description
Appearance	5.00	Highly Acceptable
Aroma	5.00	Highly Acceptable
Taste	5.00	Highly Acceptable
Texture	5.00	Highly Acceptable

The table above shows the acceptability of hopyang gabi con mais from treatment 3. It reflects a highly acceptable level of acceptability from the respondents in terms of appearance (WAM: 5.00), aroma (WAM: 5.00), taste (WAM: 5.00), and texture (WAM: 5.00).

Table 7. Sensorial Evaluation of Hopyang Gabi Con Mais 1 in Terms of Appearance, Aroma, Taste, and Texture

Age Group	OWAM	Description
Children	4.46	Moderately Acceptable
Teenager	4.50	Highly Acceptable
Adult	4.56	Highly Acceptable
Expert	4.77	Highly Acceptable

The table displays the respondent's sensorial evaluation of the hopyang gabi con mais from treatment 1 in terms of their age groups. It shows that all age group has a highly acceptable evaluation: teenagers (OWAM: 4.50), adults (OWAM: 4.56), and experts (OWAM: 4.77), except for children (OWAM: 4.46) which is moderately acceptable. The overall sensorial evaluation in is highly acceptable with a mean of 4.57.

Table 8. Sensorial Evaluation of Hopyang Gabi Con Mais 2 in terms of Appearance, Aroma, Taste and Texture

Age Group	OWAM	Description
Children	4.95	Highly Acceptable
Teenager	5.00	Highly Acceptable
Adult	4.90	Highly Acceptable
Expert	5.00	Highly Acceptable

The table above displays the respondents' sensorial evaluation of the hopyang gabi con mais from treatment 2 in terms of their age groups. It shows that all age group has a highly acceptable evaluation: children (OWAM: 4.95), teenagers (OWAM: 5.00), adults (OWAM: 4.90), and experts (OWAM: 5.00). The overall sensorial evaluation is highly acceptable with a mean of 4.96.

Table 9. Sensorial Evaluation of Hopyang Gabi Con Mais 3 in terms of Appearance, Aroma, Taste, and Texture

Age Group	OWAM	Description
Children	5.00	Highly Acceptable
Teenager	5.00	Highly Acceptable
Adult	5.00	Highly Acceptable
Expert	5.00	Highly Acceptable

The table above displays the respondents' sensorial evaluation of the hopyang gabi con mais from treatment 3 in terms of their age groups. It shows that all age group has a highly acceptable evaluation: children (OWAM: 5.00), teenagers (OWAM: 5.00), adults (OWAM: 5.00), and experts (OWAM: 5.00). The overall sensorial evaluation is highly acceptable with a mean of 5.00.

CONCLUSION

Taro root and white corn can be used to make Hopyang Gabi Con Mais. The produced food product is well received by respondents of all ages. As a result, the produced Hopyang Gabi Con Mais is strongly advised for production and marketing as a nutritious organic food product.

Sensory Evaluation of Hopyang Gabi (*Colocasia Esculenta*) Con Mais (*Zea Mays*) Pastry Product: Food Product Development

APPLICATION OF FINDINGS:

The manner in which food is grown or raised can have a significant impact on mental and emotional health, as well as the environment. Organic foods often include more beneficial nutrients, such as antioxidants, than conventionally cultivated foods, and those who are allergic to foods, chemicals, or preservatives may discover that their symptoms reduce or disappear when they eat only organic foods. Pesticides are less prevalent in organic vegetables. In conventional agriculture, chemicals such as synthetic fungicides, herbicides, and insecticides are frequently employed, and residues remain on (and in) the food we eat. Organic food is frequently fresher because it does not contain preservatives that extend its shelf life. Consequently, it is recommended that the developed food product will be introduced and advertised in the City of Ilagan being the Corn Capital of the Philippines and the province of Isabela as a whole.

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