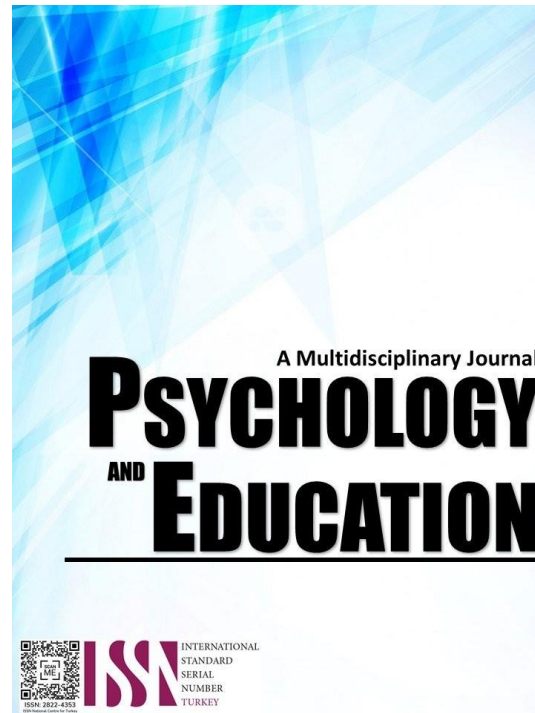


UTILIZATION AND ACCEPTABILITY OF CATFISH, ASHITABA LEAVES AND BARLEY POWDER AS INGREDIENTS IN MAKING SIOMAI



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Utilization and Acceptability of Catfish, Ashitaba Leaves and Barley Powder as Ingredients in Making Siomai

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Abstract

This study aimed to use catfish, ashitaba leaves and barley powder as ingredients of siomai and to determine the acceptability and marketability of the product. Experimental research methodology with the use of a questionnaire as instrument enables the researcher to gather the data needed for this research. Based on the findings, the students, adults, and siomai entrepreneur respondents evaluated the level of acceptability of the fried Siomai and steamed siomai with catfish, ashitaba leaves and barley powder as Very Acceptable (VA). Likewise, the respondents evaluated the level of marketability of the product as Very Acceptable (VA). The results also showed no significant difference on the evaluation of the three groups of respondents on the level of acceptability and marketability of the fried and steamed siomai with catfish, ashitaba leaves and barley powder. It was concluded that the respondents indicated that the both products are acceptable to them by their ratings given in consideration of its nice appealing look, herbal smell, soft texture, unique taste due to the herbs mixed, even color, and health benefits it can offer for the consumers. Furthermore, the fried and steamed siomai appeared to have a great marketing potential with its great packaging, cost efficient and supply availability.

Keywords: *fried and steamed siomai, catfish, ashitaba leaves, barley powder*

Introduction

Good nutrition is the key to good mental and physical health. Food provides our body with energy, protein, essential fats, vitamins, and minerals to live. Eating a balanced diet is an important part of good health for everyone. The kind and amount of food you eat affects the way you feel and how your body works.

One of the most efficient way to optimize intake of these healthy food is to add or mix it with other food item like bread, cookies, fruit juice, smoothies and in this product, siomai. In this way, people can learn to embrace this nutritious food if served in different ways suited in their personal flavor preferences. In other words, they can get the benefit of eating these nutritious foods without the noticeable taste.

Siomai is ancient food and was believed to have originated in inner Mongolian region of China known as Huhhot. It was introduced here in the Philippines when the Chinese traders came to trade with our country and stayed on, certainly they used local condiments, they taught their Filipino wives about their favorite dishes and thus, Chinese siomai came to be.

Siomai or dimsum in Chinese means a light snack. The Chinese people take siomai usually in the middle of the afternoon while sipping hot oohlong tea. Filipino, however, have taken dimsum into a different level, instead of taking it as light snack, most Filipino now consider siomai as main course taken with steamed rice and also as appetizer and as merienda or in between meal snack.

Meanwhile, catfish is the leading aquaculture produced seafood product in the U.S. Catfish are grown in controlled ponds using special formulated feeds based on natural grains. On average, it takes approximately 18 months for catfish to grow to a harvestable size. During this period the fish receive constant attention, and water quality, growth rates, and health are monitored. Production is controlled and staggered to assure that fresh and frozen catfish products are available throughout the year.

It is a type of fish that is quite popular in Indonesia and readily available either in the village or town. Compared to other type of animal products, catfish is rich in Leucine and Lysine. Leucine is an essential amino acid that is necessary for the growth of children and nitrogen balance and useful for an overhaul and the formation of muscle protein. Lysine is one of the essential amino acids needed for the growth and development of bone in children. Lysine is also needed to produce antibodies, hormones, enzymes and the formation of collagen, as well as tissue repair.

On the other hand, Ashitaba (*Gynura nepalensis*, *Gynura procumbens*, *Gynura acutifolia*) is the ashitaba grown in the Philippines. Ashitaba (*Angelica keiskei* Kodzumi) originated in the Island of Hachijo, Japan. Both ashitaba have been studied by researchers using animals and in test tubes and have been claimed to be antioxidant, anti-cancer, anti-aging, anti-inflammatory, antihypertensive, and anti-diabetic.

In addition, Ashitaba is a remarkable plant exhibiting the benefits of both land and marine plants. It is a dietary treasure, containing eleven vitamins, thirteen minerals, chlorophyll, enzymes, carotene, germanium, saponins, proteins, plant fibers, glycosides, coumarins, and a unique and rare class of flavonoids called chalcones. It is high in chlorophyll, also called "Green Blood", because it has a similar molecular structure to that of our blood. It helps the internal organs, the stomach, and the brain work better and has exhibited anti-allergy actions.

Furthermore, barley is considered to be the first cereal grain cultivated by humans. Its medicinal and food use dates back to 7000 BC. Crop reports on barley date back to 2440 BC, and the Chinese were cultivating barley circa 2000 BC. Since biblical times, ancient Asian and Middle Eastern cultures reportedly included young wheat and barley grass plants in their diets. Historically, the plant species was used in the treatment of skin, liver, blood, and GI disorders. Ancient Greeks used the mucilage derived from the cereal to treat GI inflammations. Gladiators ate barley for strength and stamina. The Roman physician Pliny used barley as part of a ritualized cure for boils.

The pure barley juice from young barley leaves in dried or powdered form, extracted when the plants are no more than 12 inches high. At this age, the leaves have an intense bright green color, indicating high amounts of vitamins, minerals, enzymes, chlorophyll, and protein. Green barley is 41% digestible protein. From the vitamins up to the enzymes, all these micronutrients appear to have a restorative and anti-aging effect. Barley is not a medicine or drug: instead, it is a live, natural, potent, organic food.

Research Questions

This study aimed to use catfish, ashitaba leaves and barley powder as ingredients of siomai and to determine the acceptability of the product. More specifically, it sought answers to the following questions:

1. How do the students, adults and siomai entrepreneur as respondents evaluate the level of acceptability of the produced siomai with catfish, ashitaba leaves and barley powder in terms of the following criteria?
 - 1.1. appearance;
 - 1.2. aroma;
 - 1.3. taste;
 - 1.4. texture;
 - 1.5. color; and
 - 1.6. health benefits?
2. What is the marketability of siomai with catfish, ashitaba leaves and barley powder in terms of the following criteria?
 - 2.1. packaging;
 - 2.2. production cost; and
 - 2.3. availability of supplies?
3. Is there a significant difference in the evaluation of respondents on the acceptability of siomai with catfish, ashitaba leaves and barley powder in terms of the above-mentioned criteria?
4. Is there a significant difference on the perception of the respondents on the marketability of siomai with catfish, ashitaba leaves and barley powder in terms of aforesaid criteria?
5. What comments and suggestions are given by the respondents to further improve the product?

Literature Review

Based on consumer's survey, siomai rank number one on the most preferred Dimsum delicacy that is acceptable to 95% of Filipino from segment A to D of the Philippine market. It is considered as the current "darling of public consumer" because siomai has just turned as one of the best-selling street food like the fish ball (Cristobal et al., 2011).

Dacome et. al (2016) stated that catfish have widely been caught and farmed for food for hundreds of years in Africa, Asia, Europe, and North America. Judgments as to the quality and flavor vary, with some food critics considering catfish as being excellent food. Catfish is high in Vitamin D. Farm-raised catfish contains low levels of omega-3 fatty acids and a much higher proportion of omega-6 fatty acids.

Additionally, Hullana (2016) claimed that catfish contains healthy fatty acids. Eating catfish is a tasty way to boost your intake of omega-3 and omega-6 fatty acids. One serving of this fish provides 220 mg of omega-3 fatty acids and 875 mg of omega-6. Both of these nutrients play a part in heart and cognitive health. It is also a good source of Vitamin B-12 in every serving. As a B vitamin, B-12 in catfish is critical to aiding your body in the breakdown of the foods you eat into usable energy.

Fish are healthy option for lean protein and although catfish are high in cholesterol, they contain polyunsaturated fatty acids that have a cholesterol lowering effect. A healthy cholesterol level is below 200 milligrams per deciliter. To keep your cholesterol in a healthy range, it is important to eat a balance diet high in fruits, vegetables and other whole foods. Eating foods rich in polyunsaturated fatty acids, such as catfish may help manage your cholesterol levels (Rosales, 2016).

Ashitaba is considered one of the elites among medicinal plants. It has been documented since the 16th century in Ming dynasty Chinese medicine documents. Known in Japan as "Longevity Herb", it has been heavily researched and consumed in Japan for its countless healing qualities. It has become part of indigenous people's local diet for thousands of years. It has been called King of Alkaline as it is known for its extremely alkalizing properties. It is considered as a unique super food that is rich in anti-oxidants. The ashitaba green leaf powder can be easily and quickly mixed with your favorite beverage. Additional benefits of ashitaba powder are its ability to stop acid reflux because of its high chlorophyll content (Borbe, 2014)).

Scientists discovered that it is the only plant to contain chalcones. It was discovered when researchers began to analyze the diet and environment in order to determine the health and longevity of the people in the Japanese Island of Hachijo. Residents have ashitaba as part of their diet, typically have some of the longest life spans on earth. The plant has been an integral part of their diet on this island for hundreds of years and a compulsory food for all Japanese (Monteclaro et al., 2014).

Another plant that possessed an anti-bacterial characteristic is Barley. Barley is one of those wonderful grains that don't get the attention it deserves. With a chewy texture and nutty flavor, barley is a delicious whole grain that can be used in cooking in different ways. It is also a very nutritious and healthy food, with lots of fiber and a number of trace minerals like selenium, manganese and phosphorous. Barley comes in two forms: hulled and pearl. Hulled barley has the tough, inedible outermost hull removed but still retains its bran and endosperm layer. It is the most nutritious of the two and can be considered a whole grain. A light golden-brown color, it's the nuttier and chewier version as well (Olino, et al., 2015).

In this connection, Salazar (2015) posited that barley, a member of the grass family is a major cereal grown in temperate climates globally. It is one of the first cultivated grains, particularly in Eurasia as early as 13000 years ago. Barley has been used as animal fodder, as a source of fermentable material for beer and certain distilled beverages, and as a component of various health foods. It is used in soups and stews, and in barley bread of various cultures. Barley grains are commonly made into malt in a traditional and ancient method of preparation.

Relatively, Rosales (2016) conducted a study entitled Utilization and Acceptability of Ashitaba (*Gynura nepalensis*) and Cat's Whiskers (*Orthosiphon aristatus*) powder as Ingredients in Making Doughnut. Findings of the study based on gathered data and treated using weighted mean and factor Anova was Extremely Acceptable based on the three groups of respondents in terms of appearance, aroma, taste and texture with 5g, 10g and 15g preparation for each proportion of ashitaba and cat's whiskers powder.

Furthermore, Lango (2013) conducted a study entitled Consumer's Acceptability Towards Veggie Siomai. A study conducted at Benguet State University. The study aimed to determine the level of acceptability of consumers towards veggie siomai. Two preparations of veggie siomai was evaluated; the fried and steamed siomai. The respondents comprising a total of 200 respondents evaluated the product as to taste, color, aroma, texture and appearance. Based on the results of the evaluation, the veggie siomai, both fried and steamed were liked by the students and employees.

Methodology

Research Design

This study used experimental method of research. The experimental method of research is use in the production of siomai using catfish, ashitaba leaves and barley powder as ingredients. As Calmorin (2000:51) stated that experimental design is a problem-solving approach that the study is described in the future on what will be when certain variables are carefully controlled or manipulated. It also utilized the descriptive method of research. According to Shields, Patricia and Rangarjan (2014) descriptive research is used to describe characteristics of a population or phenomenon being studied. It does not answer questions about how/when /why the characteristics occurred.

Respondents

The evaluators of the study Utilization and Acceptability of Catfish, Ashitaba leaves and Barley powder Siomai were the 30 high school students, 30 adults of Rizza National High School, and 30 siomai entrepreneur of Antipolo City.

Instrument

The data gathering instruments were the questionnaire checklists that were prepared by the researcher, checked by the adviser, and validated by experts. The acceptability of the siomai made of catfish, ashitaba leaves and barley powder and its marketability were evaluated using the 9-Hedonic Scale.

Procedure

A letter of request address to the school head and to the respondents was first prepared seeking their approval to conduct the study. The cooperative procedure and effort in retrieving the accomplished questionnaires through the help of the head of the agency, secretaries and some researcher's friends in the respective schools had also been requested.

Results and Discussion

This portion presents the results and discussion based on the gathered data.

Level of acceptability of Fried Siomai with catfish, ashitaba leaves and barley powder as perceived by students, adults, and siomai entrepreneur

The table shows that students, adults, and siomai entrepreneur respondents evaluated the appearance of the fried siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by weighted mean of 8.27, 8.37, and 7.65 respectively.

Table 1. *Evaluation of the Respondents on the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Appearance*

Appearance	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The fried siomai with catfish, ashitaba leaves and barley powder tempts you to eat.	8.40	VA	8.47	VA	7.73	VA
2. It is attractive	8.30	VA	8.37	VA	7.50	VA
3. It has even color	8.43	VA	8.40	VA	7.73	VA
4. It has a good volume	7.97	VA	8.23	VA	7.53	VA
5. It has uniform shape	8.27	VA	8.37	VA	7.73	VA
Average WM	8.27	VA	8.37	VA	7.65	VA

The data clearly indicated that the fried siomai appealed to them due to its even color that made it tempting to the tasters. Fried siomai must be cooked in a low heat with enormous oil in a pan to achieve a relative color which is even at all sides. This has given the respondents the great impression that the fried siomai is of very good appearance.

Table 2. *Evaluation of the Respondents on the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Aroma*

Aroma	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The fried siomai with catfish, ashitaba leaves and barley powder has an appetizing smell	8.47	VA	8.37	VA	7.70	VA
2. It has a mouth-watering aroma	7.80	VA	8.17	VA	7.70	VA
3. It has a distinctive aroma.	7.93	VA	8.13	VA	7.83	VA
4. It has an alluring herb aroma	8.10	VA	7.83	VA	7.50	VA
5. It has a pleasant aroma	8.27	VA	8.23	VA	7.50	VA
Average WM	8.11	VA	8.15	VA	7.65	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the aroma of the fried Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.11, 8.15, and 7.65 respectively. The respondents gave a good evaluation on the fried siomai as to its smell which increases their appetite to eat it. The siomai makes the tasters more interested to eat it because of its pleasant and tasty smell. A cooked food must appeal to consumers not only by how it initially looks but also how its odor makes the consumer want to have more from it.

Table 3. *Evaluation of the Respondents on the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Color*

Color	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The fried siomai with catfish, ashitaba leaves and barley powder has a favorable color	8.40	VA	8.27	VA	7.77	VA
2. It is inviting.	8.47	VA	8.03	VA	7.77	VA
3. The ingredients blended well and gives an appealing color	8.23	VA	8.10	VA	7.77	VA
4. It has a delightful color	8.43	VA	7.97	VA	7.63	VA
5. It has a uniform color	8.30	VA	8.17	VA	7.63	VA
Average WM	8.37	VA	8.11	VA	7.71	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the color of the fried Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.37, 8.11, and 7.71 respectively. The fried siomai was greatly appreciated by the respondents in consideration to its favorable color which makes it inviting to eat. The evenness of its golden-brown color makes the siomai appear as attractive and mouthwatering to eat.

Table 4. *Evaluation of the Respondents on the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Texture*

Texture	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The fried siomai with catfish, ashitaba leaves and barley powder is smooth inside.	8.23	VA	8.03	VA	7.70	VA
2. It has tender texture	8.50	EA	8.13	VA	7.63	VA
3. It has a fine texture	8.50	EA	8.03	VA	7.63	VA
4. It has a crispy outer cover	8.27	VA	8.13	VA	8.79	EA
5. It is juicy.	8.27	VA	8.27	VA	7.70	VA
Average WM	8.35	VA	8.12	VA	7.89	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the texture of the fried Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.35, 8.12, and 7.89 respectively. The siomai gave an impression to the respondents that it is of great quality with its juiciness, tender texture when eaten and crispy outer cover. Its softness inside with the catfish flavor bring forward the impression to the tasters that it is not the typical siomai in the market which at times are not so soft being made of beef or pork which were not tenderly cooked.

Table 5. *Evaluation of the Respondents on the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Taste*

Taste	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The fried siomai with catfish, ashitaba leaves and barley powder taste delicious.	8.67	EA	8.50	EA	7.50	VA
2. It has well blended flavor	8.40	VA	8.27	VA	7.70	VA
3. It is palatable.	8.27	VA	8.27	VA	7.63	VA
4. It is appealing.	8.43	VA	8.30	VA	7.80	VA
5. It has aromatic herbal flavor.	8.63	EA	8.43	VA	7.90	VA
Average WM	8.48	VA	8.35	VA	7.71	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the taste of the fried Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.48, 8.35, and 7.71 respectively. The data is indicative on the great consideration given by the respondents to the fried siomai because of its delicious taste and aromatic flavor making it more appealing to them. Foods must be delectable enough to give a good impression to the tasters which the fried siomai achieved from its evaluators.

Table 6. *Evaluation of the Respondents on the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Health Benefits*

Health Benefits	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The main ingredients of the fried siomai such as catfish, ashitaba leaves and barley powder are very beneficial to health.	8.73	EA	8.40	VA	9.00	EA
2. The ashitaba leaves incorporated in the siomai is a unique “Super Food” that is rich in anti-oxidant.	8.43	VA	8.50	EA	7.90	VA
3. The barley powder incorporated in the siomai product is a natural remedy against diseases.	8.45	VA	8.47	VA	7.83	VA
4. The product is rich in energy, vitamins and minerals good for normal functioning.	8.40	VA	8.53	EA	8.10	VA
5. It is a good source of herbal supplement.	8.40	VA	8.33	VA	8.03	VA
Average WM	8.48	VA	8.45	VA	8.25	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the health benefits of the fried Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.48, 8.45, and 8.25 respectively. What make the fried siomai unique is its health benefits which the respondents appreciated so much. The main focus given by the respondents is the known additives that is beneficial to the health of those who will eat it which are beneficial with its energy, vitamins, and minerals content.

Level of acceptability of Steamed Siomai with catfish, ashitaba leaves and barley powder as perceived by students, adults, and siomai entrepreneur

Table 7. *Evaluation of the Respondents on the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Appearance*

Appearance	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The steamed siomai with catfish, ashitaba leaves and barley powder tempts you to eat.	8.40	VA	8.47	VA	7.73	VA
2. It is attractive	8.30	VA	8.37	VA	7.50	VA
3. It has even color	8.43	VA	8.40	VA	7.73	VA
4. It has a good volume	7.97	VA	8.23	VA	7.53	VA
5. It has uniform shape	8.27	VA	8.37	VA	7.73	VA
Average WM	8.27	VA	8.37	VA	7.65	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the appearance of the steamed Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.27, 8.37, and 7.65

respectively.

The steamed siomai got good rating due to the even color appearing on the first look including its uniform shape that adds to its tempting quality to be eaten.

Table 8. *Evaluation of the Respondents on the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Aroma*

Aroma	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The steamed siomai with catfish, ashitaba leaves and barley powder has an appetizing smell	8.07	VA	7.93	VA	7.73	VA
2. It has a mouth-watering aroma	8.03	VA	7.80	VA	7.50	VA
3. It has a distinctive aroma.	8.13	VA	8.00	VA	7.67	VA
4. It has an alluring herb aroma	8.13	VA	7.80	VA	7.50	VA
5. It has a pleasant aroma	8.10	VA	8.13	VA	7.53	VA
Average WM	8.09	VA	7.93	VA	7.59	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the aroma of the steamed Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.09, 7.93, and 7.59 respectively.

The pleasant and appetizing smell which a distinct herb can produce made the siomai more appealing to the respondents. Its flavor has risen to its unique smell casting great value for the tasters.

Table 9. *Evaluation of the Respondents on the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Color*

Color	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The steamed siomai with catfish, ashitaba leaves and barley powder has a favorable color	8.17	VA	8.20	VA	7.50	VA
2. It is inviting.	8.03	VA	7.80	VA	7.50	VA
3. The ingredients blended well and gives appealing color	8.10	VA	8.00	VA	7.70	VA
4. It has a delightful color	8.17	VA	7.90	VA	7.63	VA
5. It has a uniform color	8.30	VA	8.17	VA	7.63	VA
Average WM	8.15	VA	8.01	VA	7.59	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the color of the steamed Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.15, 8.01, and 7.59 respectively.

The data implies that extraordinary attention was given by the respondents on the color of the siomai having its uniform luster white cover, and appealing color gained from a well-blended ingredients.

Uniformity of a food mixture is due to a good quality and well varied distribution of ingredients which can be attained by proper, timely and thorough blending done in a constant manner.

Table 10. *Evaluation of the Respondents on the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Texture*

Texture	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The steamed siomai with catfish, ashitaba leaves and barley powder is smooth	8.47	VA	8.17	VA	7.50	VA
2. It has tender texture	8.50	EA	8.03	VA	7.63	VA
3. It has a fine texture	8.30	VA	7.87	VA	7.63	VA
4. It is soft	8.63	EA	8.33	VA	7.60	VA
5. It is juicy.	8.43	VA	8.23	VA	8.57	EA
Average WM	8.47	VA	8.13	VA	7.79	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the texture of the steamed Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.47, 8.13, and 7.79 respectively.

The data implicate the approval of the respondents on the softness of the siomai and its juiciness when eaten. This makes the steamed siomai of great rating for the respondents because its texture corresponds to those siomai available in the market.

Table 11. *Evaluation of the Respondents on the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Taste*

Taste	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The steamed siomai with catfish, ashitaba leaves and barley powder taste delicious.	8.47	VA	8.30	VA	7.63	VA
2. It has well blended flavor	8.33	VA	8.37	VA	7.63	VA
3. It is palatable.	8.30	VA	8.13	VA	7.60	VA
4. It is appealing.	8.53	EA	8.13	VA	7.60	VA
5. It has aromatic herbal flavor.	8.30	VA	8.10	VA	7.63	VA
Average WM	8.39	VA	8.21	VA	7.62	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the taste of the steamed Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.39, 8.21, and 7.62 respectively.

The favorability of the steamed siomai was drawn from the data where respondents greatly appreciate its well-blended flavor that appeals to them easily. Its aromatic herbal flavor is another consequence that adds up to its good quality.

Table 12. *Evaluation of the Respondents on the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Health Benefits*

Health Benefits	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The main ingredients of the steamed siomai such as catfish, ashitaba leaves and barley powder are very beneficial to health.	8.57	EA	8.30	VA	7.77	VA
2. The ashitaba leaves incorporated in the siomai is a unique “Super Food” that is rich in anti-oxidant.	8.40	VA	8.30	VA	7.90	VA
3. The barley powder incorporated in the siomai product is a natural remedy against diseases.	8.47	VA	8.27	VA	8.30	VA
4. The product is rich in energy, vitamins and minerals good for normal functioning.	8.53	VA	8.10	VA	8.33	VA
5. It is a good source of herbal supplement.	8.53	VA	8.07	VA	8.13	VA
Average WM	8.48	VA	8.21	VA	8.09	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the health benefits of the steamed siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.48, 8.21, and 8.09 respectively.

In consideration of a good food to eat is its health benefits which the respondents of the study barely accept at a high scoring. They thought of the siomai as beneficial to their well-being considering it a healthy food with the necessary nutritional value that the body needs for functioning.

Level of Marketability of Fried Siomai with catfish, ashitaba leaves and barley powder as perceived by students, adults, and siomai entrepreneur

Table 13. *Evaluation of the Respondents on the Marketability of the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Packaging*

Packaging	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The fried siomai with catfish, ashitaba leaves and green barley powder has a convenient packaging material.	8.10	VA	7.93	VA	7.63	VA
2. It has colorful and attractive packaging.	7.57	VA	7.63	VA	7.63	VA
3. It has good use of imagery.	7.70	VA	7.40	VA	7.70	VA
4. It has unique and innovative packaging materials.	7.70	VA	7.30	VA	7.50	VA
5. Packaging serves as effective advertisement.	7.93	VA	7.50	VA	7.83	VA
Average WM	7.80	VA	7.55	VA	7.66	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the packaging of the fried Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 7.80, 7.55, and 7.66 respectively.



The data illustrate the respondent’s valuable insight on the siomai with its conventional packaging which makes it easy to bring along and its inscriptions that is a very effective advertisement.

Table 14. *Evaluation of the Respondents on the Marketability of the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Production Cost*

Production Cost	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The raw materials and ingredients of fried siomai catfish, ashitaba leaves and barley powder are cheap and of abundant supply.	8.23	VA	8.00	VA	7.80	VA
2. The raw materials are economical.	7.87	VA	8.30	VA	7.80	VA
3. The raw materials are locally made.	8.30	VA	8.33	VA	7.97	VA
4. It has a competitive marketable quality.	8.27	VA	8.24	VA	8.10	VA
5. The product is affordable.	8.37	VA	8.50	EA	8.00	VA
Average WM	8.21	VA	8.27	VA	7.93	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the production cost of the fried Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.21, 8.27, and 7.93 respectively.

This entails that the respondents gave their consideration to the affordability of the siomai having a low costing which also makes it competitive in the market for the consumer to buy.

Table 15. *Evaluation of the Respondents on the Marketability of the Fried Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Availability of Supplies*

Availability of Supplies	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The catfish, ashitaba leaves and barley powder as ingredients of fried siomai product are locally available.	8.47	VA	8.40	VA	8.00	VA
2. The raw materials are available all year round.	8.37	VA	8.50	EA	8.13	VA
3. The raw materials such as catfish and ashitaba as ingredients of the product are grown locally.	8.47	VA	8.37	VA	8.20	VA
4. Raw materials are of high market demand.	8.17	VA	8.33	VA	8.13	VA
5. The products produced easily.	8.70	EA	8.43	VA	8.30	VA
Average WM	8.43	VA	8.41	VA	8.15	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the availability of supplies of the fried Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.43, 8.41, and 8.15 respectively.

The respondents give very good rating to the siomai due to its easy to produce quality that it will be very easy to be available in the market aside from having the ingredients which are year-round available.

Level of Marketability of Steamed Siomai with catfish, ashitaba leaves and barley powder as perceived by students, adults, and siomai entrepreneur

Table 16. *Evaluation of the Respondents on the Marketability of the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Packaging*

Packaging	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The steamed siomai with catfish, ashitaba leaves and green barley powder has a convenient packaging materials.	8.07	VA	7.67	VA	7.93	VA
2. It has colorful and attractive packaging.	7.70	VA	7.60	VA	7.93	VA
3. It has good use of imagery.	7.67	VA	7.67	VA	7.97	VA
4. It has a unique and innovative packaging materials.	7.57	VA	7.53	VA	7.53	VA
5. Packaging serves as effective advertisement.	7.60	VA	7.77	VA	7.77	VA
Average WM	7.72	VA	7.65	VA	7.83	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the packaging of the steamed Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 7.72, 7.65, and 7.83 respectively. This further means that the way the siomai was packed have considerable effect to its marketing potentials considering its convenience and advertising style found in the outer package. Packaging is what consumers would see in an instance therefore, it



must be well presented to appeal to the buyers.

Table 17. Evaluation of the Respondents on the Marketability of the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Production Cost

Production Cost	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The raw materials and ingredients of steamed siomai catfish, ashitaba leaves and barley powder are cheap and of abundant supply.	7.93	VA	8.10	VA	7.67	VA
2. The raw materials are economical.	7.90	VA	8.20	VA	7.63	VA
3. The raw materials are locally made.	7.90	VA	8.47	VA	7.90	VA
4. It has a competitive marketable quality.	8.10	VA	8.10	VA	7.93	VA
5. The product is affordable.	8.70	EA	8.53	EA	8.00	VA
Average WM	8.11	VA	8.28	VA	7.83	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the production cost of the steamed Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.11, 8.28, and 7.83 respectively. This implies that respondents gave their support on the marketability of the siomai in consideration of its low production cost which makes it competitive with other siomai brand.

Table 18. Evaluation of the Respondents on the Marketability of the Steamed Siomai with Catfish, Ashitaba Leaves, and Barley Powder in terms of Availability of Supplies

Availability of Supplies	Students		Adults		Siomai Entrepreneur	
	WM	DV	WM	DV	WM	DV
1. The catfish, ashitaba leaves and barley powder as ingredients of steamed siomai product are locally available.	8.70	EA	8.33	VA	7.97	VA
2. The raw materials are available all year round.	8.37	VA	8.23	VA	8.03	VA
3. The raw materials such as catfish and ashitaba as ingredients of the product are grown locally.	8.40	VA	8.37	VA	7.93	VA
4. Raw materials are of high market demand.	8.17	VA	8.27	VA	7.97	VA
5. The products produced easily.	8.60	EA	8.37	VA	8.30	VA
Average WM	8.45	VA	8.31	VA	8.04	VA

The table shows that students, adults, and siomai entrepreneur respondents evaluated the availability of supplies of the steamed Siomai with catfish, ashitaba leaves and barley powder to be Very Acceptable (VA). This was proven by their weighted mean rating of 8.45, 8.31, and 8.04 respectively. The data prove the high rating given by the respondents due to the siomai because the ingredients are readily available in the local market place in all season.

Test of difference on the evaluation of the respondents on the acceptability of the produced siomai with catfish, ashitaba leaves and barley powder

Table 19. Test on the difference evaluation of the respondents on the acceptability of the produced siomai with catfish, ashitaba leaves and barley powder

Sources of Variations	Sum of Squares	df	Mean Square	F-test Computed Value	F-test Tabular Value	Decision	Interpretation
Between Groups	3.13	2	1.57	2.72	3.35	Accept	Not Significant
Within Groups	49.99	87	0.57			Ho	
Total	53.12	89	2.14				

Based on the data in the table, the f-test computed value is 2.72 while the f-tabular value is 3.35 at 0.05 level of significance with the degree of freedom of 2 and 87. Since the f-test computed value is less than the f-test tabular value, the null hypothesis is accepted. Therefore, there is No significant difference in the evaluation of the respondents on the acceptability of siomai with catfish, ashitaba leaves and barley powder in consideration of the different criteria. This means that the three groups of respondents have the same appreciation level on the acceptability of the fried siomai and steamed siomai as per its appearance, aroma, taste, texture, color, and health benefits.

Test of difference on the evaluation of the respondents on the marketability of the produced siomai with catfish, ashitaba leaves and barley powder

Based on the data in the table, the f-test computed value is 1.46 while the f-tabular value is 3.35 at 0.05 level of significance with the degree of freedom of 2 and 87. Since the f-test computed value is less than the f-test tabular value, the null hypothesis is accepted. Therefore, there is No significant difference on the evaluation of the respondents on the marketability of siomai with catfish, ashitaba leaves and barley powder in consideration of the different criteria. This implies that the three groups of respondents have the equivalent

evaluation level on the marketability of the fried siomai and steamed siomai as per its packaging, production cost, and availability of supplies.

Table 20. *Test on the difference evaluation of the respondents on the marketability of the produced siomai with catfish, ashitaba leaves and barley powder*

Sources of Variations	Sum of Squares	df	Mean Square	F-test Computed Value	F-test Tabular Value	Decision	Interpretation
Between Groups	1.95	2	0.98	1.46	3.35	Accept	Not
Within Groups	58.03	87	0.67			Ho	Significant
Total	59.99	89	1.64				

Respondents' Comments and Suggestions to Further Improve the Product

The respondents' comments and suggestions included: a. There is a need to add more filler to make the product more compact and be able to maintain its shape; b. Enhance the packaging to make it more appealing; c. Add more percentage of herb to make it healthier; and d. Provide an identifying color for the packaging of fried and steamed siomai.

Conclusions

Based on the findings, the following conclusions are drawn:

The respondents indicates that the fried siomai and steamed siomai are both acceptable to them by their ratings given in consideration of its nice appealing look, herbal smell, soft texture, unique taste due to the herbs mixed, even color, and health benefits it can offer for the consumers.

The fried and steamed siomai appeared to have a great marketing potential with its great packaging, cost efficient and supply availability.

The three groups of respondents have the same appreciation level on the acceptability of the fried siomai and steamed siomai as per its appearance, aroma, taste, texture, color, and health benefits.

The respondents have the equivalent evaluation level on the marketability of the fried siomai and steamed siomai as per its packaging, production cost, and availability of supplies.

The produced siomai obtained comments and suggestions worth considering for its further improvement.

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