
Development of Squid Jerky Snack Moringa Flavor

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Abstract

Squid is abundant in Agno, Pangasinan, Philippines. During the pandemic, several squids were rotten because the community does not have the technology to process the squid. With this, the researchers came up with the idea to process the squid by creating a squid jerky snack flavored with moringa.

The jerky snack shall be nutritious with its moringa flavor. Moringa was identified as a superfood. Moringa oleifera is a plant that is often called the drumstick tree, the miracle tree, and the ben oil tree. Moringa has been used for centuries due to its medicinal properties and health benefits. It also has antifungal, antiviral, antidepressant, and anti-inflammatory properties. The tree is native to India but also grows in Asia, Africa, and South America. Moringa contains a variety of proteins, vitamins, and minerals. Moringa contains many healthful compounds such as vitamin A, vitamin B1 (thiamin), B2 (niacin), B6, folate and ascorbic acid (vitamin C), calcium, potassium, iron, magnesium, phosphorus, and zinc. It is also extremely low in fats and contains no harmful cholesterol (DR Wilson, 2020).

Due to the popularity and many health benefits of moringa and the abundant supply of squid, different variants evolved from the usual port ingredient of processed squid. One of them is Squid Jerky Snack flavored with Moringa. It is a dried, seasoned, and ready-to-eat seafood product, made from squid. The Squid Jerky Snack shall be nutritious with its moringa flavor. The researchers aim to develop Squid Jerky Snack flavored with moringa, serving as an alternative or innovation to usual beef jerky. Unlike beef jerky, Squid Jerky is healthier, more nutritious, and inexpensive compared to beef, to be able to create a livelihood for the people of Pangasinan, and to be able to maximize the utilization of Squid, the researchers came up with the idea of creating an innovative product Squid Jerky Snack flavored with moringa which will be liked by many.

This study covers the essential aspects of developing Squid Jerky Snack flavored with moringa in terms of the product description, ingredients, procedure, and tools and equipment needed in its preparation. Also, this will investigate the acceptability of the sensory quality of Squid Jerky Snack flavored with moringa in terms of taste, aroma, texture, and overall acceptability. The study was conducted on selected tourists and residents of Agno, Pangasinan, and the faculty and staff of Pangasinan State University – Asingan Campus.

1. Introduction

Food innovation continues to evolve, focusing on sustainability, nutrition, and taste. The increasing demand for nutritious and convenient snacks has led to the development of various seafood-based products (Barrett et al, 2020). Squid is an excellent protein source with essential nutrients such as omega-3 fatty acids, vitamins, and minerals (Guerra et al., 2019) and the development of squid jerky snack moringa flavor has been ongoing research in the food industry. This new flavor of squid jerky snacks is the result of an effort to create a product that is both healthy and tasty.

Moringa also has gained attention due to its medicinal and nutritional benefits (Wilson,2020). Moringa, also known as the “miracle tree”, has been used in traditional medicine for centuries. It is a nutrient-dense plant with many beneficial compounds, such as vitamins, minerals, antioxidants, and amino acids. The high nutritional value of moringa makes it a popular ingredient in snacks and supplements. Moreover, moringa is widely cultivated in the Philippines, and has been highlighted as an effective dietary supplement with potential application in food processing (Reyes & Santos, 2022). Combining squid and moringa presents an opportunity to introduce a novel, highly nutritious, and sustainable snack option.

The development of squid jerky snack moringa flavor began with the study of squid as an ingredient. Squid is rich in proteins, minerals, and vitamins and is a low-fat source of essential fatty acids. Furthermore, the unique texture and flavor make squid an attractive ingredient for snacks. Scientists then studied the potential of moringa as a flavoring agent for squid jerky snacks. They discovered that the combination of the two ingredients can provide a unique flavor and texture.

In order to make the product commercially available, several studies were conducted to determine the most suitable cooking process. Through these studies, the researchers were able to find the optimal temperature and time to preserve the nutritional content while producing a delicious and crunchy snack. The combination of ingredients and the cooking process was then tested in consumer research studies to ensure that it would be successful in the market.

The development of squid jerky snack moringa flavor has been a successful venture in the food industry. People are now able to enjoy a delicious and healthy snack that provides a variety of nutritional benefits. This new product is sure to gain popularity as more people become aware of its potential health benefits.

The process of making squid jerky snacks flavored with moringa is comparable to how the typical jerky is made. Unlike typical jerky, squid Jerky is healthier, more nutritious, and inexpensive with the addition of moringa powder that makes it nutritious. To make one, the following ingredients and materials should be prepared with accurate measurements. Brown sugar, soy sauce, Worcestershire sauce, cayenne pepper, ground pepper, onion powder, garlic powder, and moringa powder are mixed to create a marinade. After cleaning the squid, removing internal organs, ink, and head add it to the marinade and toss until all the pieces are

evenly coated. Cover with plastic wrap or transfer to a large zip lock bag and marinate in the refrigerator for at least 12 hours. Arrange the marinated squid in the dehydrator and dehydrate it for 5-8 hours.

This research aims to develop a squid jerky snack moringa flavor as an alternative traditional jerky snacks, which are typically made from beef. Unlike beef jerky, squid jerky offers a leaner protein source, while the addition of moringa enhances its health benefits. This study investigates the product's sensory characteristics and consumer acceptability.

Specifically, it aims to:

1. Identify the optimal formulation for squid Jerky snack moringa flavor
2. Assess consumer perceptions regarding the taste, texture and aroma
3. Determine the innovation level of the product from the perspective of the respondents;
and
4. Gather recommendations for improving squid jerky snack.

2. Methodology

2.1. Research Design

This part of the paper tackled the different methods and components used in the development of Squid Jerky Snack Moringa Flavor such as the research design, research method, and data analysis used.

This study used experimental design to study the effectiveness of using moringa powder as an additional ingredient for squid jerky. Specifically, this design contributed to developing nutritious squid jerky through various parameters such as the variation in the squid specie that has been used and the measurement of the moringa powder that has been added. Three trials were performed during the conduct of the study. Each trial was composed of different species of squid and different measurements of moringa powder.

2.2. Research Method

The preparation process consisted of the following steps

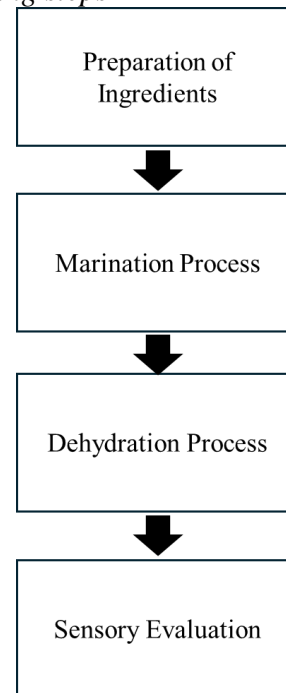


Figure 1. Squid Jerky development process

The initial step is the preparation of the needed ingredients. The squid was cleaned properly, and the internal organs, ink, and head were discarded to maintain uniformity and avoid unwanted flavors. For the next step, the squid samples were marinated in a well-prepared mixture, which consisted of brown sugar, soy sauce, Worcestershire sauce, cayenne pepper, ground pepper, onion powder, garlic powder, and different concentrations of moringa powder. Marination was for at least 12 hours to allow the squid to absorb the flavors.

The marinated squid samples were dehydrated at controlled temperatures for 5-8 hours. The dehydration time and temperature settings were modified based on texture and moisture retention observations.

To evaluate the sample, selected respondents, including faculty members, tourists, and residents of Agno, Pangasinan, were invited to assess the product. They evaluated taste, aroma, texture, and overall acceptability using a 5-point Likert scale.

2.3. Tools and Data Analysis

The study used mixed quantitative and qualitative methods of data gathering. The researchers provided a 5-item questionnaire and interview questions to be answered by the respondents. All answers were consolidated and transcribed accordingly. The results were reported in the form of statements. Descriptive analysis was also applied for questions requiring the respondents to answer according to their level of acceptance of the product.

3. Results and Discussion

This section described the results of the study. Specifically, the result of this study was divided into two parts: the observation from the researchers and the observation from the respondents.

3.1. Observations from the Researchers

Table 1. Researchers observations on the product output

CRITERIA	TRIAL 1 Tarorot (Ballpen Squid)	TRIAL 2 Bigfin Squid	TRIAL 3 Pusit Kalawang (Brown Squid)
Thickness	Too thin Breaks easily	Moderately firm	Firm and well-structures
Drying Time	Shorter	Longer	Longer Consistent texture
Aroma	Too strong	Too strong	Well-balanced
Texture	Not chewy enough	Slimy	Chewy and jerky-like
Seasoning Blend	Overpowered by moringa	unbalance	Well-complemented flavors

From the observation, trial 3, was identified as the most promising formulation due to its firm texture, balance aroma and well-integrated seasoning. Trial 1 was observed to be too brittle while trial 2 exhibited a slimy texture, requiring a longer drying process.

3.2. Data Gathered from the Respondents

CRITERIA	TRIAL 1	TRIAL 2	TRIAL 3
Frist Impression	Strong arome	Slightly slimy, thick	Visually appealing Good aroma
Innovativeness	Nutritious and unique	First time seeing squid jerky	Similar to trial 1 but an improved version
Product Quality	good	good	excellent
Excellent Features	Taste and texture	The novelty of the bigfin squid jerky	It mimics the beef jerky; nutritious
Suggested Improvement	More uniform cuts, better packaging	More uniform cuts, Better packaging	More uniform cuts, Better packaging

The participants remarked that Trial 1 had a very strong aroma of squid and spices, some thought it was a bit overwhelming. Trial 2 was labeled viscous and unctuous and therefore unappealing. By far, Trial 3 received the best reviews, with the participants commenting on its attractive appearance and nice aroma.

The participants mostly viewed the Squid Jerky Snack Moringa Flavor as very innovative.

They acknowledged the use of moringa powder and nutritional benefits. The idea of squid jerky captivated many people, as there really are no products comparable to it. In terms of superior flavor balancing, Trial 3 stood out as the most sophisticated version of the product.

Most respondents indicated that they would recommend the product to their families and friends, especially Trial 3, which exhibited the most favorable sensory properties. They proposed achieving a more consistent size and utilizing better packaging to retain the moisture and flavor.

All samples were rated "good" on quality by the respondents, while Trial 3 was rated "excellent" by the respondents. They expressed that it was very similar in texture and taste to beef jerky but healthier. Respondents showed particular preference related to taste and texture to the Squid Jerky Snack Moringa Flavor, defining it as healthy, economical, and an innovative alternative to conventional meat-based jerkies.

All interviewees appreciated the product overall but suggested that size uniformity of jerky pieces be done as well as improving the packaging to ensure better shelf life and presentation.

4. Conclusion and Recommendations

4.1. Conclusion

The study has successfully developed a squid jerky snack with moringa flavor, with trial 3 emerging as most acceptable version. The combination of Brown squid and the optimized amount of moringa powder resulted in the most appropriate balance of texture, aroma and taste. It was also found that the impression of the participants regarding the product was positive. According to them, the taste and the texture of the Squid Jerky were great. They also thought that the squid jerky snack was innovative due to the addition of moringa powder which makes the product nutritious. They recommended to cut the squid jerky into uniform pieces.

4.2. Recommendations

Since the study was conducted in a limited time frame, suggestions and recommendations were listed below for improvement.

1. When developing a similar study, take into consideration the peak season of squid.
2. Invite more participants. The more data, the better the result of the tests to be conducted.
3. Since the study had limited time and budget, the conduct of laboratory studies was suggested to test the nutrients found in the squid jerky snack flavored with moringa.
4. Develop an enhanced recipe from the squid jerky snack. Other ingredients which can improve the taste, texture and the shelf life of the squid jerky snack.

References

- [1] Barrett, J., Thompson, M., & Lewis, K. (2020). The rise of seafood-based snacks: Trends and consumer preferences. *Food Science Journal*, 35(4), 214-230.
- [2] Bautista, R., & Perez, L. (2021). Indigenous resource utilization for sustainable food innovation in the Philippines. *Journal of Agricultural and Food Economics*, 28(2), 145-162.
- [3] Delos Reyes, C., & Manalili, P. (2023). Moringa infused snack foods: Nutritional benefits and market potential in the Philippines. *Philippine Journal of Food Technology*, 40(1), 89-104.
- [4] Guerra, A., Silva, R., & Torres, F. (2019). The nutritional profile and health benefits of squid-based products. *International Journal of Marine Science and Nutrition*, 12(3), 178-192.
- [5] Reyes, J., & Santos, M. (2022). Moringa oleifera as a functional food ingredient in the Philippine food industry. *Asian Journal of Food Science*, 19(2), 75-90.
- [6] Wilson, T. (2020). The medicinal and nutritional properties of Moringa oleifera: A comprehensive review. *Journal of Herbal Medicine*, 15(1), 101-119
- [7] Wilson D. What makes moringa good for you? [Internet]. MedicalNewsToday. 2020 [cited 2022 June 3]. Available from: <https://www.medicalnewstoday.com/articles/319916#risks-with-existing-medications>
- [8] SQUID GAME: Species of Squids in Panay Philippines [Internet]. Yodisphere. 2021 [cited 2022 June 3]. Available from: <https://www.yodisphere.com/2021/09/Squid-Game-Red-Light->

[Green-Light.html](#)

Appendix

Trials 1,2 & 3

