

Bitter Gourd Cracker

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Abstract: This bitter gourd cracker is a unique innovative product in its way as it is made from the world's most underrated vegetables due to its sharp bitterness which knew as bitter gourd and left-over rice. The purpose of this innovation is to introduce a new flavor of crackers and diversify the usage of bitter gourd in local snack food. This cracker was prepared in three different colors: green, red, and orange. The production of this product started with the preparation of treated bitter gourd such as soaking, straining, and dehydration for 3 hours at a slow temperature. Then the dry bitter gourd was ground to become powder and later mixed with the left-over rice, flour, and seasoning and knead until all ingredients are well blended. The dough later was rolled around using plastic wrapped and boiled. The boiled product was chilled, colored, and dry using the solar method. This product can be marketed for the global market as well as a local market because it's cost-effective and easy to prepare, making this product able to be produced in mass production. The scorecard has been used for the sensory evaluation involving 60 untrained panels. There are six attributes of the product i.e appearance, color, crispiness, oil uptake, flavor, and overall acceptance being evaluated. Based on 60 untrained panels assessment, showed the majority of the panels preferred Variation 2 (V2) with 35 panels (bitter gourds and chili flakes flavor) follow by Variation 3 (V3) with 16 panels (bitter gourd, chili flakes, and parmesan cheese) and lastly Variation 1 (V1) with 9 panels (bitter gourd flavor).

Keywords: innovation, diversify, marketability



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1. INTRODUCTION

Fruits and vegetable consumption have been linked to the prevention of diseases including cancer and cardiovascular disease (Amin and Lee, 2005). The vegetable is prepared in a variety of ways, including stir-frying, deep-fat frying, pickling, juicing, and drying. Vegetables have high ascorbic acid content (88mg/1000g), are a source of protein, and have low sugar content (Barwal, Sharma, and Singh, 2005). Bitter gourd fruits are also known as the world's most underrated vegetables due to their sharp bitter taste (WebMD, 2022). The bitter taste of bitter gourd makes it limited to a certain food process and suitable to certain food preparation such as preservation through dehydration and pickling.

It is believed that a good food product brand in the market should be able to provide customer needs and offer a new way to enjoy food based on home meal recipes that can reduce the cost and preserve the shelf life of the product. The usage of bitter gourd, which is high in antioxidants, flavonoids, and other polyphenol compounds, as the main ingredient in food products may help to lower the risk of a variety of health problems that can meet customer taste (WebMD, 2022). The difficulty to reduce and eliminate the bitter taste of bitter gourd makes this vegetable less in demand, especially among children and teenagers.

Proper treatment of bitter gourd can increase the demand and consumption among people, especially in the crackers formulation. Bitter Gourd Cracker is being healthier, is more attractive than raw fruit, and can increase the use of this bitter fruit. As a result, of having health-promoting properties, it may be considered a qualified option in value-added foods (Jan, Rizvi, Shams, Dar, Singh, & Khan, 2020). Thus, the purpose of this product produced which is known as bitter gourd crackers is to diversify the usage of bitter gourd vegetables into local snack crackers formulation and to increase the value of bitter gourd which can market locally and globally in the form of cracker. Besides that, the left-over rice also is being used in this formulation for the thickening and binding agent.

2. METHOD & MATERIAL

2.1 Materials

Materials in preparing bitter gourd crackers such as bitter gourd, leftover rice, garlic, salt, dried chili, and parmesan cheese were obtained from the laboratory, Faculty of Hotel and Tourism Management UiTM Dungun, Terengganu. These crackers were made based on three (3) different variations as stated below:

- 1) Control- basic formulation
- 2) Variation 1- additional 11.38 g of chili flakes
- 3) Variation 2- additional 28.45 g of parmesan cheese and 11.38 g of chili flake

2.2 Methodology

a. Drying method

Bitter gourd is cut and soaked in salt water. then place on a tray and dry using a food dehydrator at 160 degrees Celsius for 4 hours. After that, use the mixer to grind the dried bitter gourd into a powder.

b. Preparation of cracker

Left-over rice is used as much as 2 cups and ground together with 4 cloves of garlic. add 60 grams of bitter gourd powder and 600 grams of sweet potato flour little by little into the dough that has been ground. Knead the dough evenly until well blended.

Next place the dough on top plastic to be rolled around and then shaped slightly elongated. Then, blanch the dough in boiling water until well cooked. Color the dough with food coloring and later slice the dough thinly into cracker form.

c. Frying

A thin slice of crackers was deep fry with a temperature of 80 Celsius for about 3 minutes. Turned the crackers upside down every 1 minute to prevent them from over brown.

d. Storage

Before the Bitter gourd cracker was packed, the chips were dry using the solar dry method before being packed into a small plastic bag with 250g weight. Then it is sealed and later place into nice and decorative packaging for marketing.

3. FINDINGS

3.1 Sensory evaluation

The sensory evaluation aims to identify the acceptance of customers towards the product's attributes. Six product attributes have been evaluated comprising appearance, color, crispiness, oil uptake, flavor, and overall acceptance. They were 60 untrained panelists to taste the samples in determining the product preferred. The scale of evaluation is scaled from 1 (not) to 5 (very). The panels place product variation numbers on the preferred scale on the form to show the preferences of the product attributes.

3.2 Consumer acceptance

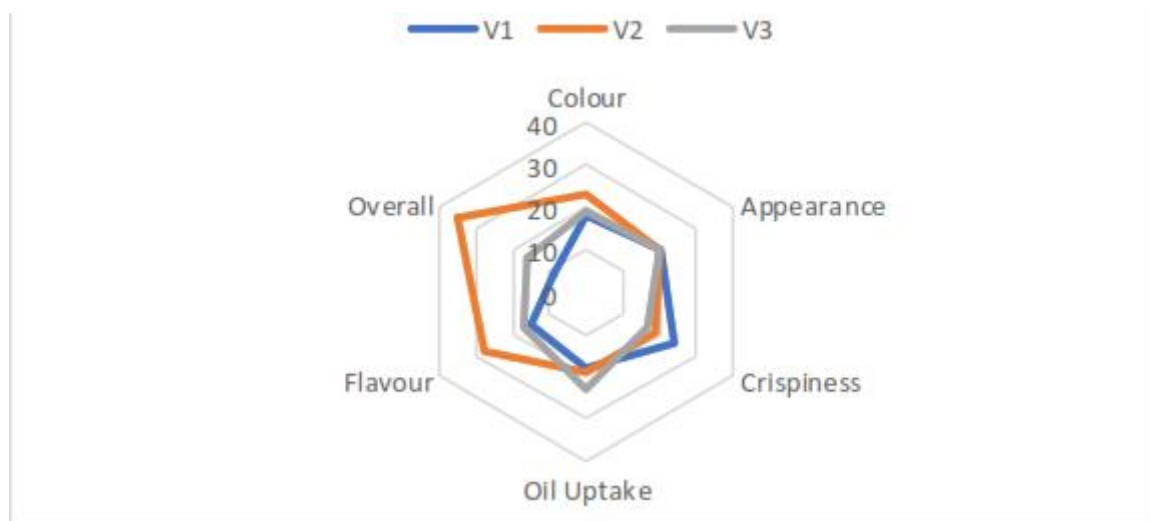


Figure 1: Preferences test among 60 untrained panels.

Preferences or also known as effective tests were conducted (60 untrained panels) using Microsoft Excel 2016. The hedonic scale was used from scale 1 (not) to scale 5 (very). Based on table 1 shows three different samples were evaluated (V1, V2 & V3) consisting of six attributes namely color, appearance, crunchiness, oil uptake, flavor, and overall acceptance. The results show Variation 2 (V2) with 35 panels (bitter gourds and chili flakes flavor) was the most preferred, followed by Variation 3 (V3) with 16 panels (bitter gourd, chili flakes, and parmesan cheese), and lastly Variation 1 (V1) with 9 panels (bitter gourd flavor). Therefore, variation 2 was chosen to be the sale product as it was the most preferred product compared to variations 1 and 3.

4. DISCUSSION

4.1 Product characteristic

The purpose of this product being produced is to diversify the usage of bitter gourd and leftover rice in making local snack crackers. In preserving the shelf life of the product, the crackers are sealed in vacuum packaging and placed in nice decorative packaging. The product is suitable to be consumed by any age of the consumer and it is a healthy product, especially for children who don't like to consume vegetables and fruit. This product is expected able to be marketed locally and globally and the product ingredients are easy to be accessible and low in cost production.

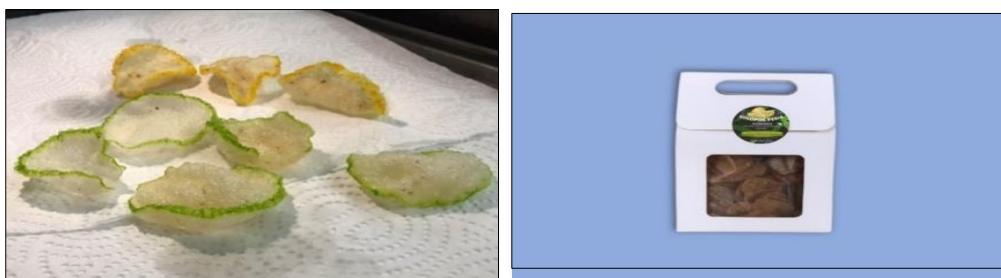


Figure 2: Picture of the product

5. CONCLUSION

Bitter gourd and left-over rice that be added in the processing of crackers as main ingredients are high in nutrients. This innovative product has diversified the manufacture of bitter gourd crackers with various flavors to be marketed and commercialized and made the crackers acceptable to people through consumer acceptance tests. The cost-effective and practical production method makes this product easy to be prepared and market locally and globally. These bitter gourd crackers are different compared to those existing in the market as the ingredient used are high in nutrient value and leftover food such as rice.

Acknowledgment:

This project was compulsory for the HTF525 subject (Principle of Food Science and Technology) which required students to propose and produce innovative products during the fourth semester. All ingredients, equipment, and facilities were provided by the faculty to the students. Special thanks to the supervisors; Mr. Mushaireen Musa, Madam Aniza Arifin, Madam Khazainah Khalid, and Madam Jazira Anuar for their support and knowledge as well as to our Faculty of Hotel and Tourism Management for the contribution given in completing this project.

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