

3rd EDITION

E-EXTENDED

ABSTRACT

**INTERNATIONAL
AGROTECHNOLOGY
INNOVATION
SYMPOSIUM (i-AIS)**



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INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS)

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ABOUT FACULTY OF PLANTATION AND AGROTECHNOLOGY

The Faculty of Plantation and Agrotechnology was established in 2010 at Universiti Teknologi MARA (UiTM). The mission of the faculty is to play the vital role of producing well-trained professionals in all areas of plantation and agriculture-related industries at national and international levels.

Bachelor of Science (Hons) Plantation Technology and Management is a three-year program that strongly emphasizes the various aspects of Production Technology, Management, and Information Technology highly sought after by the agricultural and plantation sectors. Students in this program will be fully trained to serve as professionals in the plantation sector and related industries. They will have ample opportunities to fulfill important positions in the plantation industry such as plantation executives. This program provides a strong balance of technology and management courses essential for the plantation industry such as management of plantation crops, soil fertility, plantation management operation, plantation crop mechanization, and agricultural precision. As an integral part of the program, students will be required to undergo industrial attachment to gain managerial skills in the plantation industry.

The faculty is highly committed to disseminating, imparting, and fostering intellectual development and research to meet the changing needs of the plantation and agriculture sectors. With this regard, numerous undergraduate and postgraduate programs have been offered by the government's intention to produce professionals and entrepreneurs who are knowledgeable and highly skilled in the plantation, agriculture, and agrotechnology sectors.

PREFACE

International Agrotechnology Innovation Symposium (i-AIS) is a platform to be formed for students/lecturers/staff to share creativity in applying the knowledge that is related to the world of Agrotechnology in the form of posters. This virtual poster competition takes place on the 1st of December 2022 and ends on the 8th of January 2023. This competition is an assessment of students in determining the level of understanding, creativity, and group work for the subject related to agrotechnology and being able to apply it to the field of Agrotechnology. The i-AIS 2022 program takes place from December 1, 2022, to January 8, 2023. The program was officiated by the Dean of the Faculty of Plantation and Agrotechnology, namely Prof. Madya Ts. Dr. Azma Yusuf. The program involves students from faculties of the Faculty of Plantation and Agrotechnology (FPA) and HEP participating in i-AIS 2022, namely, the Faculty of Education and Pre-Higher Education. This program involves the UiTM student and some of the non-UiTM students which come from the international university and the local university. Two categories are contested, namely UiTM and non-UiTM. To date, students from these programs have shown remarkable achievements in academic performance and participation in national as well as international competitions.

This competition is an open door for the students and lecturers to exhibit creative minds stemming from curiosity. Several e-content projects have been evaluated by esteemed judges and that has led to the birth of this E-Poster Book. Ideas and novelties are celebrated, and participants are applauded for displaying ingenious minds in their ideas.

It is hoped that such an effort continues to breed so that there is always an outlet for these creative minds to grow.

Thank you.

Dean
On behalf of the Organizing Committee
Conference Chair
Universiti Teknologi MARA
Faculty of Plantation and Agrotechnology
<http://fpa.uitm.edu.my>

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BRAZILIAN SPINACH FISH PATTIES (IKAN PATIN)

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ABSTRACT - Brazilian spinach fish patties are sustainable product development made from the using of Brazilian spinach or its scientific name (*Alternanthera sisso*). Individuals especially children do not like eaten fresh or cooked vegetables and fish. This product innovation is developed to make the community eat vegetables and as effort to overcome the food trade deficit by producing their own food products. Also to reduce risk that consumers are facing increasing health problems, among others due to chemical residues in vegetables, antibiotics in livestock, consumption of processed foods and junk food. Growing your own food will ensure food safety and food security are consumed. The ingredients to produce these Brazilian Spinach Fish Patties will be ground until blended and form a dough. The next process involves steaming and grilling. The products that have been grilled or frying will be evaluated for acceptance through a sensory evaluation test using a hedonic scale to find out the respondent's acceptance of this new product. The results of the test evaluation that was done stated that 97% of the respondents choose to really like Brazilian spinach fish patties product that includes color, texture, aroma and overall acceptance. Hope in the future this product will be commercialized and do more research for better quality and to fulfill healthy lifestyle. The food safety and sustainability start from home of continuous practice.

Keywords: Fish Patties (ikan patin), Brazilian Spinach, Healthy food, Sensory evaluation, Commercial value

INTRODUCTION

The Brazilian spinach patties burger product is a product made from less commercialized for main ingredients, which are Brazilian spinach vegetables and catfish or *Pangasius hypophthalmus* (ikan patin). The purpose of producing this innovative product is to diversify fish patties products that contain vegetables and are easy to produce because of the low cost. And the most important thing is to support the government's efforts to overcome the food trade deficit by producing its own food products. Brazilian spinach or *Altenanthera sisso* is a leafy vegetable plant species that is very rich in natural nutrients and contains large amounts of carotenoids, vitamin c, vitamin K, folic acid, iron and calcium [1]. In addition, it has properties that act against cancer, giving good health to the eyes and bones [2]. Brazilian spinach and other spinach have differences in terms of food composition, antioxidants and nutrition produced which are influenced by the soil and the environment [3]. The use of catfish also provides its own benefits and benefits such as low cholesterol content, unsaturated fat content and protein high and high calcium [4]. The demand for healthy and easy to produce food is also a factor that needs to be seen in the production of food products.

Problem Statement

Market dumping of freshwater fish aquaculture products in the market is the main purpose of these products. This can also solve the problem of food trade deficit by producing own food products that is by producing commercial products using easily available ingredients. In addition, it is also to make Individuals, especially children who do not like vegetables, be able to eat vegetables through the production of patties. Brazilian spinach is a vegetable that has not yet been commercialized, but has begun to be widely grown in the community's homes today. Its crunchy and nutritious texture is beneficial to its products. But it needs to be produced in a product that is easy to eat and commercial. Catfish (ikan patin) is from the freshwater fish category where there is still no variety of commercially produced frozen products or snacks. Catfish also contains vitamins, nutrients, minerals and omega-3 fatty acids that are good for health. Both of these ingredients are easily available, cheap and can produce other products. However, more in-depth research is needed to produce a more sustainable and good product. This product also has good nutritional value and can be used as a healthy food.

Objectives

The main objective of this product innovation is to produce sustainable and developed healthy frozen food products like Brazilian Spinach Fish Patties. It also produces frozen food products that are healthy and have nutritional value. Also to study the level of acceptance of the Brazilian Spinach Fish Patties product. The balanced diet needs of an individual can also be met because it contains complete nutrition.

MATERIAL AND METHOD

Ingredients

Table 2.1 shows the formulation used for the developed of Brazilian spinach fish patties products. All ingredients will be weighed according to the formulation to produce a uniform product. Brazilian spinach will be semi-finely ground to get a beautiful patty in the final product. Catfish (ikan patin) will be finely ground together with other ingredients until crushed to get a good texture. After the ground ingredients form a dough, it will be mixed with Brazilian spinach vegetables that have been ground earlier.

Brazillian Spinach Fish Patties		
Bil	Bahan-bahan	Peratus
1.	Brazilian spinach	50%
2.	Flour	30%
3.	Catfish (ikan patin)	50%
4.	Egg	5%

Brazillian Spinach Fish Patties		
Bil	Bahan-bahan	Peratus
5.	Garlic	0.3%
6.	shallot	0.3%
7.	Salt	0.5%
8.	Sugar	0.5%
9.	Ice	0.4%

Table 2.1: Brazilian Spinach Fish Patties formulation

Methodology and processing

After finishing the process of grinding the ingredients, the dough will be weighed 60 gm equally to get a uniform shape and formed using a burger former. The finished patties will be steamed for 10 minutes to obtain an elastic shape at a temperature of 120° Celsius using an electric steamer. After that, let it cool for a while at room temperature and then make suitable packaging for the freezer using polyethylene (PE) plastic. The selection of this packaging material is to protect the product from damage and is easy to see from the outside of the packaging. The product will be stored at a freezer temperature of -18° Celsius.

Sensory evaluation

The purpose of sensory evaluation is to obtain acceptance measures based on basic sensory characteristics such as taste, appearance, aroma and texture. This sensory evaluation has been implemented to meet the acceptance criteria for the development of new food products. The sample uses 7 hedonic scales.namely scale 1 = dislike very much, scale 2 = dislike moderately, scale 3 = dislike slightly, scale 4 = neither like nor dislike, scale 5 = like slightly, scale 6 = like moderately and scale 7 = like very much. A total of 15 trained panel members and 30 untrained panelists consisting of students and lecturers from Pasir Salak Community College were selected to evaluate and taste the products produced. The panel members were given information and guidance to facilitate the sensory evaluation process. The sensory evaluation test can be carried out successfully and the results of the test are presented in the form of acceptance graphs. The 7-point hedonic scale method was chosen because of this test easy to implement and easy to understand by user panel.

RESULTS AND DISCUSSION

Result

Figure 4.1 shows the results of the sensory test evaluation conducted on a 45-person panel consisting of a trained panel and an untrained panel. A trained panel is an individual who has been trained to perform analytical sensory evaluation repeatedly and evaluated to ensure that the evaluation performed is consistent and accurate. For the evaluation of product aroma acceptance, a total of 38 panels chose like very much aromatic that product and only 6 panels chose like moderately and only 1 panel chose like slightly. That panel that did the aroma evaluation said the product produced has an attractive smell and does not smell fishy. Used of Brazilian spinach and garlic can hide the fishy smell. For the taste evaluation test, it was found that 40 panels chose to like very much and only 5 panels chose to like moderately. The taste of the patties combined with Brazilian spinach and other ingredients makes it even tastier. The density of the fish filling also plays an important role in this taste evaluation. Colour evaluation of new food products plays an important role, this is because the attractive color and not added with chemical food colouring can attract consumers to taste this product. Total of 23 panellists chose to like very much the colour of this patty and only 22 people chose to like moderately. This shows that consumer acceptance is good regarding this product. The colour, size, shape and uniform also are important to eye catching for new food products. Texture or mouth feel is one of the important aspects in introducing new food products. 42 panels chose to like very much about this new product and only 3 panels chose to like moderately during the sensory evaluation. A good patties texture is soft but not sticky. It can be evaluated during a sensory evaluation where the sample will be felt by a panel. The mixing of ingredients during mixing plays an important role in addition to the freshness of the raw materials used. Lastly, the overall acceptability about this product shows 43 panel like very much and only 2 panel like moderately. Acceptance of food products is also related through the interaction of food with consumers. It refers to factors that can influence the acceptance of food such as the characteristics of the food produced, the pleasure of enjoying food, sensory tendencies and attractive properties of food.

Discussion

From the sensory evaluation conducted, it was found that many consumers like and accept this product. The results of this sensory evaluation are presented in graph form to facilitate understanding regarding acceptance. The evaluation conducted is about acceptance of taste, aroma, texture, colour and overall acceptance. Sensory analysis is a basic concept along with marketing about consumer perception that focuses on the acceptance of quality products and actual acceptance in reality. Usually the good taste of food is that which can give a taste in the mouth, satisfaction, full of aroma where generally contributed by fat in food and a sense of satiety. Sensory testing is a suitable and accurate test to see the acceptance of newly created patty products. The five senses involved are shape and uniformity, taste, softness, texture and overall acceptance [5]. Catfish (ikan patin) patties products need to be processed and frozen immediately. It is important to avoid contamination in addition to maintaining a shelf life of 6 months. Using a vacuum packaging method can also help extend the product's shelf life. These patties have also been tested to find out the durability of the product as long as it is stored. As a result, it is suggested that these patties be tested again to improve the quality and shelf life.

TABLE, IMAGE AND FIGURE

Figure 4.1 are described about result of sensory test using hedonic scale for Brazilian spinach fish patties to know acceptance about this product. This graph is a combined graph where it shows the rising line of the sensory evaluation test. These results can be interpreted through the different colors of the graph.

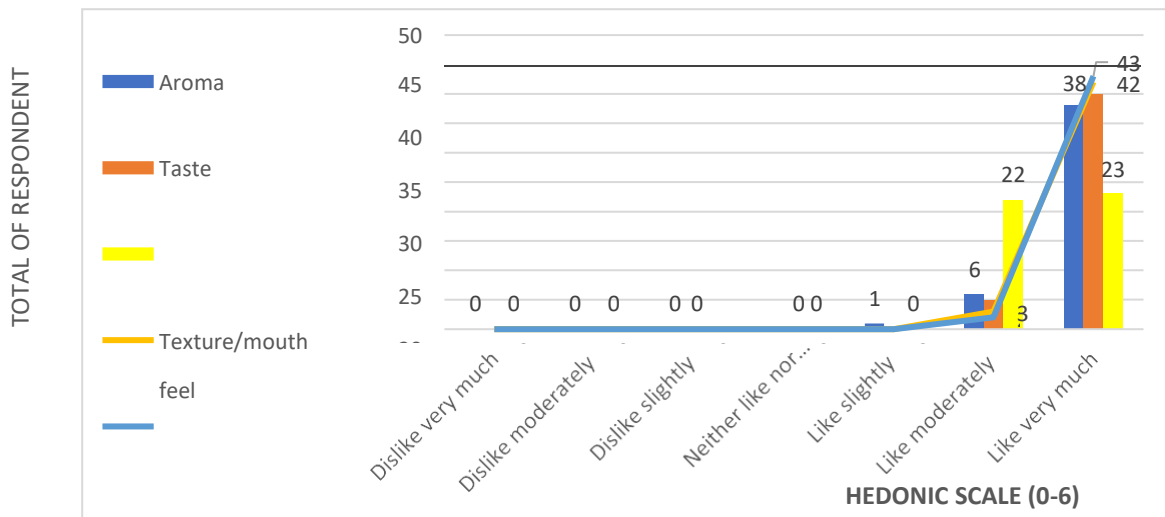


Figure 4.1: Result of sensory test using Hedonic Scale for Brazilian Spinach Fish Patties

CONCLUSION

Nowadays, people in Malaysia are encouraged to produce food products that use readily available ingredients and this is important to overcome the food trade deficit by producing their own food. The variety of food products that can be stored for a long time such as this innovative product can guarantee the safety and sustainability of food products in Malaysia. Another way to improve sustainability is to design processes that reuse materials that are already available. Therefore, the researcher took up the challenge to produce a sustainable and healthy food product. This Brazilian spinach fish patties was successfully produced according to the formulation and has been accepted by consumers. This can be seen through the results of sensory evaluation tests conducted by looking at aspects of colour, texture, taste, aroma and overall acceptance. This product also has the potential to be commercialized because it is easy to produce and uses readily available raw materials. A unique taste is also produced when researchers use fresh catfish (ikan patin) and Brazilian spinach, making this product unique compared to other patties products. For the future planning, this product will be able to expand the production of this product research including nutritional tests, shelf life and packaging to improve the quality of the product to a higher level.

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