

1ST EDITION

E-EXTENDED
ABSTRACT

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



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INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS)

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Faculty of Plantation and Agrotechnology UiTM Cawangan Melaka Kampus Jasin

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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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DIETARY MUSHROOM NOODLES

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ABSTRACT - This study was designed to develop mushroom-enriched noodles to varying degrees and nutritionally compared to commercially available branded noodles. *Pleurotus sajor-caju* because their benefits include lowering blood sugar, lowering blood pressure and boosting the immune system against infectious viruses and bacteria, an anti-cancer agent that is also rich in antioxidants. Mushroom noodles can provide a source of fiber, protein and minerals such as calcium, potassium and iron as well as some medicinal effects for consumers. Noodles are one of the best food options for all ages that can be served in many ways. Mushroom noodles are lower in carbs than wheat-only noodles. It is considered as a healthy food because it is low in calories and fat but rich in proteins and dietary fibers. In addition, adding mushrooms to the production of noodles will simultaneously increase the content of protein, fat, fiber, ash, calcium, and iron. These test noodles were developed by mixing mushrooms puree with other ingredients such as flour, salt, and corn starch in different proportions respectively. Other elements such as ionized salt, cornstarch, eggs, and water are kept for all recipes. Moreover, mushroom noodles also have nutritional potential. This result also showed lower levels of carbohydrates, fat and sodium in the tested processed noodles. Thus, mushroom noodles can be a potential superfood.

Keywords: Mushroom, Noodles, Nutritional potential, Protein, Dietary fibers

INTRODUCTION

Grey oyster mushroom, common name *Pleurotus sajor-caju*, is one of the most commonly cultivated mushrooms in the world. They are also known as Grey oyster mushrooms or tree oyster mushrooms. It is grown commercially in many countries. They can be dried and are usually eaten cooked. Grey oyster mushrooms are loved around the world for their delicate texture and mildly delicious flavor. It is also very nutritious and contains many functional substances such as statins, beta-glucose and secondary metabolites. It is considered a healthy food because it is low in calories and fat but rich in protein and fiber. Mushrooms have good quality in protein 20% - 40% by dry weight, vitamins and minerals.

Noodles are one of the favorite foods of many Asian countries. These test noodles were developed by mixing mushrooms puree with other ingredients such as flour, salt, and corn starch in different proportions respectively. Other elements such as ionized salt, cornstarch, eggs, and water are kept for all recipes. Therefore, this study was conducted to evaluate different combinations of Grey oyster mushroom on growing noodles to nutritionally and sensory acceptable levels to compare with existing noodles on the market.

The optimum cooking time of noodles was recorded when the white bubble reaction of the cooked noodles was disappeared. The shorter the cooking time indicates raised water absorption with more rapid heat transfer and quicker gelatinization during cooking. Thus, noodles with lower cooking time are more desirable for both manufacturers and consumers.

MATERIAL AND METHOD

Sample collection

The main ingredient in making the Dietary Mushroom noodles is innovated from the comparison of eight brands of locally available noodles and other ingredients such as wheat flour, salt and com starch main ingredient is Grey Oyster mushroom can be found from the local market. Mushrooms were sliced into 3 mm thick and followed by blanching in boiling brine (2% NaCl for 3 min) and cooled into chilled water. Using boiling method because this method improved the total glucans content by enhancing the β -glucans fraction (Irene Roncero, 2016) and to prevent food safety in avoiding the cross contamination during the preparation. We choose *Pleurotus sajor-caju* because their benefit include lower the blood sugar level, minimize the hypertension and boost immunity system towards infectious virus and bacteria, anti-cancer chemical compound also rich with antioxidant. Then we soaked the mushroom into cold water to stop the cooking process then directly blending mushroom until it became mushroom puree.

Noodles preparation

Experimental noodles were developed by mixing mushroom puree with other ingredient such as wheat flour, salt, com starch different percentages respectively. Other elements like ionized salt, com starch, eggs, and water were kept constant for all formulations. The composition of experimental noodles is mentioned in Table 1. Noodle's dough was prepared by kneading techniques where, ingredients were blended with water and continuously mixed the dough with mushroom puree, food coloring and eggs for 15 minutes then dough proofing by cover them with plastic wrap for 1 hour at room temperature 19°C - 32°C for uniform hydration and moisten the dough. Dough (100 g) was been rolled using rolling pin until thin elastic noodles achieved. Noodles were prepared by handmade kneading. Each noodle strand was approximately 1.5mm x 1.5 mm (thickness x width). Later the noodles were placed in stick and dry in the solar dryer for about 4 h (temperature range is 35°C - 55°C). After drying, dried noodles were collected and packaged in transparent polythene bags. Next, the noodles were steamed for 5 min in a kitchen steamer followed by sauces. The preparation and formulation of mushroom containing noodles have been depicted in Fig. 1 and Fig. 2.

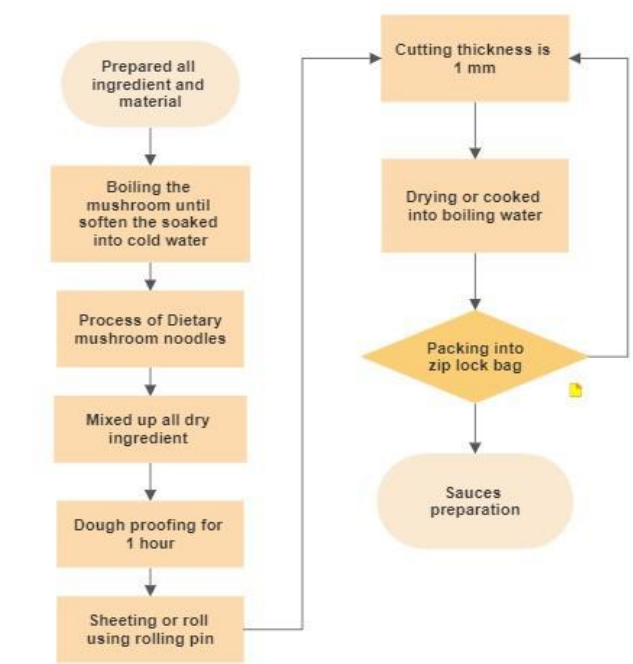


Figure 1

RESULTS AND DISCUSSION

Quantitative analysis of mushroom noodles

According to the researcher, a mushroom noodle containing less content of carbohydrate than the noodle made with only wheat flour. Moreover, with supplementation of mushroom in order to producing a noodle, it will concurrently increase the protein, fat, fibre, ash, calcium and iron content. The result in producing mushroom noodle is shown in the pictures below:

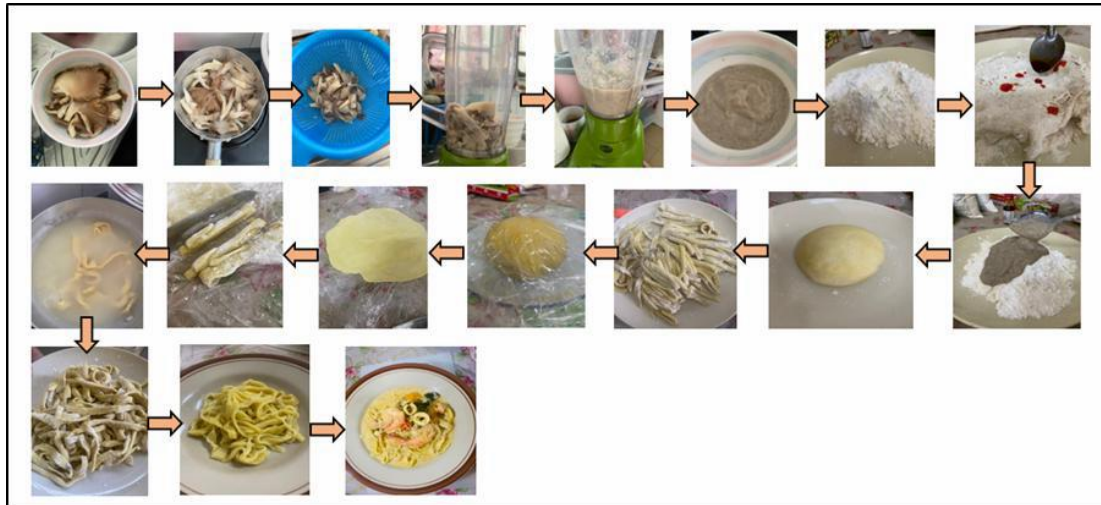


Figure 2: The progress of making mushroom noodle's prototype.

Based on the result of mushroom noodle's prototype obtained, the mushroom noodle had a chewy texture which required short cooking time with addition of blended oyster mushroom with flour around 1-2 minutes. According to the researcher, a short cooking time with negligible loss of solid into the boiling water which able to improve sticky mouth feel.

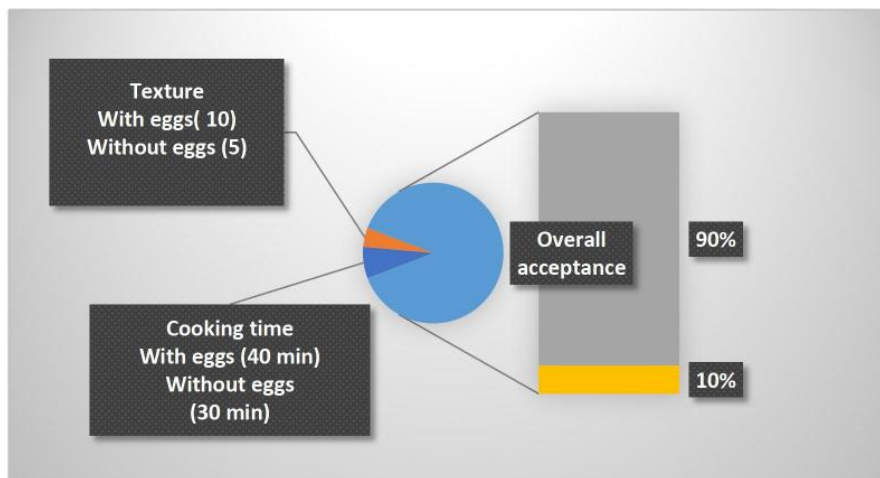


Figure 3: sensory evaluation towards two different ingredients

Table 1: Sensory evaluation with eggs and without eggs testimony

Method	Cooking time	Texture	Taste
With eggs	40 min	Chewy	10
Without eggs	30 min	Blend well	5

CONCLUSION

As a conclusion, noodle is one of best choice of food regardless of ages that can be serve in many ways. However, in maintaining the dietary fibres, protein and minerals, the noodle which made up of only wheat flour contained poor sources. A mushroom noodle has a potential to supply the sources of dietary fibres, protein and minerals like calcium, potassium, and iron as wells as some therapeutic actions to the consumers. Moreover, the

mushroom noodle also has a potential to be nutritionally. The application of mushroom in food production should be widely expose as it helps in improving the food in many aspects.

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