3rd EDITION

E-EXTENDED

ABSTRACT

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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NUTRITIOUS PAPAYA CHIPS WITH ZERO SUGAR AND PRESERVATIVE

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ABSTRACT- Papaya fruit is one of the tropical crops that are widely consumed as a vegetable, fresh fruit, or processed goods. It has a various health benefits that are suitable to make a healthy snack such as chips. The objective of this study is to find out the suitable techniques in preparation of quality papaya chips with no sugar and no preservative for distinguishable features of the chips. Furthermore, the study also aim to identify and compare the effect of frying temperature, time, and thickness of papaya slices for their crispness and colour of papaya chip using the unripe papaya fruit. Papaya fruit was found to the best processed using unripe fruit in order to produce papaya fried chips with the correct physicochemical properties and testimony quality acceptability. A taste testing from testimony show that the chips fried with the temperature at 160℃ was unacceptable for its colour and crispness. While, a chips fried with the optimal temperature at 170℃ was acceptable for its colour and crispness. From the result suggest that, using unripe papaya fruit for making fried papaya chips can be as a natural fruits taste and healthier snacks which the fruit are rich in fibre and nutrients.

Keywords: Unripe papaya, Papaya fruit chips processing, Frying time, Temperature, and Acceptability crispness.

INTRODUCTION

Papaya (Carica papaya L.) is the popular edible fruit in the world and it is a fruit native to America which is possible southern Mexico and Central American (Saran et al., 2016). Almost all tropical and subtropical regions produce and consume a lot of papaya fruit. India, Brazil, and Mexico being the top producers (FAO et al., 2019). According to FAO statistics, on 440,629 ha across several nations, 13.02 million tonnes of papaya were produced in 2017. Almost the entire country is where it is farmed and sold in markets. Due to the fruit's natural and texture, it cannot be kept for an extended period of time and must be consumed quickly. Papaya is primarily sold as a fresh commodity, however it is a very perishable fruit, and post-harvest losses 30% of the production (Albertini et al., 2016).

Other than that, unripe papaya fruit may be completely loaded with health benefits. Due to its low cost and good nutritional value, papaya is a common fruit. In addition to proteins, lipids, and oils, enzymes, polysaccharides, flavonoids, vitamins, and minerals, papaya also includes a wide variety of phytochemicals. Papaya offers a high of vitamin C and relatively low calories. Here is a snack made of papaya which carries the benefits similar to that of the fruit. The first one is papaya is good for digestion, the chips that are made of papaya which is good for digestion and also contains an enzyme. Secondly, the snack may be a better alternative for diabetics. Papaya is a fruit that is suggested for diabetics since it rich in antioxidants and fibre. Lastly, rich in fibres and nutrients. Papaya is rich in fibre and nutrients. These nutrients can improve the skin and condition of hairs.

Papaya chips from fruit are very different from any other snack available in the market. This is because we offer fried papaya chips which are prepared using unique equipment. The papaya is fried at low temperature. This method ensures that the fruit does not lose its vital vitamins and minerals and remains crisp. The chip is more flavourful than any other snack in market. For instance, Wexler et al, (2016) optimized the frying conditions for unripe papaya (green skin), a food matrix that does not present carotenoids and has lower moisture and sugar content than ripe papaya. Also, other authors have studied the effect of pre-treatments of ripe papaya such as partial drying and freezing (Pandey et al., 2020) and the effect of frying temperature, time, and thickness of papaya slices (Pandey & Chauhan at al., 2019) on physicochemical and sensory properties of vacuum-fried papaya chips.

Under this context, this study compares physicochemical characteristics and carotenoid profile of pop fresh Pococí papaya and vacuum fried papaya chips obtained from different temperatures. In addition, the sensory acceptance of papaya chips and process results were considered. Looking at the gaps mentioned above, this study was conducted to find out the level of colour and crispness of chips using different temperature of frying.

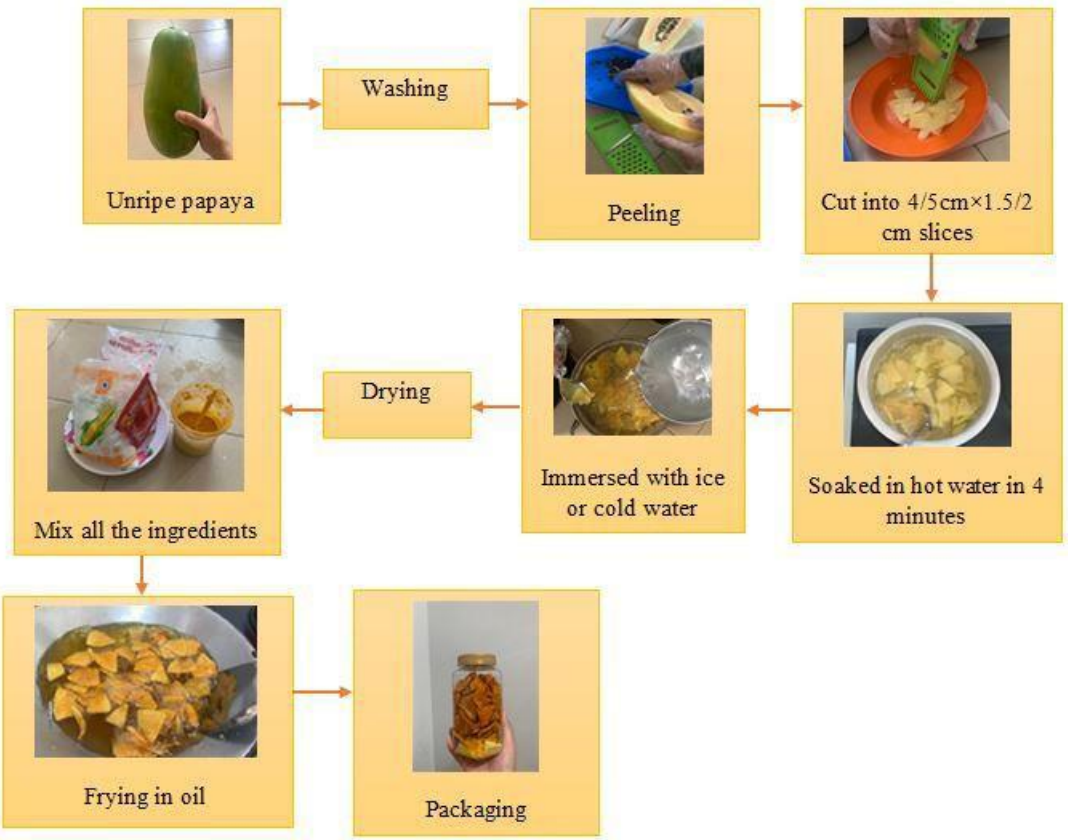
MATERIAL AND METHOD

Material used for making papaya chips:

Unripe papaya, cooking oil, corn flour, rice flour, chili powder, turmeric powder, sharp knife, container and gloves.

Procedure for making papaya chips :

Unripe papayas were picked and washed with clean water. Then exfoliation is done carefully. After peeling, the bulbs are collected and the seeds are removed from the bulbs. Then the bulb is cut into 4 cm X 2 cm slices. The slices that have been cut earlier are soaked in hot water for 4 minutes. Then the slices are weighed and soaked in ice or cold water for a while. After sieving water, the slices have been dried under the sun reduce to water content and mixed all the ingredient before frying process. After that, the slices were fried with temperature from 160℃ and 170℃. When the slices are obtained in a yellow to orange colour, the chips are removed from the pot. The process product of papaya chips are mixed with salt and spices in a bowl. After this, the processed product was packaged in different packaging in the container that namely; (1 containers with temperatures at 160℃, 2) containers with temperatures at 170℃.



RESULTS AND DISCUSSION

Results regarding the process of making papaya chips were described below:

Preparation of papaya chips

Determination of oil content of chips: To view the quality aspect, oil content of chips should be as low as possible. So, determination of oil content of papaya chips was essential. The oil content of freshly prepared of papaya chips was found 45% at 170℃.

Determination of the ratio of papaya slice to oil: Trial and error method was used for determining papaya chips slice to oil ratio. When papaya slices were placed in the hot oil, then the initial temperature dropped. So, papaya slices were fried at oil temperature of 170℃. To maintain this desired temperatures, papaya fruit slices to oil ratio was chosen to give an initial temperature drop of 10℃. The ratio of papaya slice to oil was 4:10.

Time and temperature required for frying to get 4% moisture content in chips: The rate of water removal depends on frying time and temperature. Getting 4% moisture content in papaya chips required fryin time was 10 minutes at 170 ℃.

Influence of frying temperature on colour of papaya chips: Papaya slices were fried at 160℃ and 170℃ for different periods to get desired colour of chips maintaining with final moisture content of 4%. For obtaining desired colour, the minimum time required for different temperature was recorded. The results are shown in Table 1.

Testimony of papaya chips

Based on taste testing from students UiTM Jasin, the percentage scores for crispiness, colour, flavour and overall acceptability of stored papaya chips were analysed statistically. A questionnaire was conducted for this testimony. The result revealed that the best performance have been obtained from the feedback regarding crispiness, taste, flavour, colour and overall acceptability of the papaya chips.

Overall acceptability by a scoring rate on a 5 point scale. most of the respondents scoring rate on five. 5=Like extremely, 4=Like very much, 3=Neither like nor dislike, 2=Dislike extremely, 1=Dislike very much

TABLE, IMAGE AND FIGURE

Table 1. Effect of Frying Temperature on Colour of Papaya Chips

Oil temperature	Time required (mins)	Colour
160℃	12	Yellowish to orange
170 ℃	10	Orange

From table 1, it revealed that papaya chips fried at temperature 160℃ was unacceptable for its colour. However, the orange colour given by frying at 170℃ for a minimum time of 10 minutes was acceptable.

Figure 1. Papaya chips frying with 160℃

Figure 2. Papaya chips frying with 170℃

CONCLUSION

In conclusion, the preparation of papaya chips is very simple and easily be processed which it just required a few easy steps to prepare. As a result, considering moisture content (%), weight gain (%), quality aspects and sensory attributes like crispiness, colour, taste and overall acceptability. Difference level of temperature brought significant variation texture papaya chips attribute. From the testimony acceptability result, papaya chips with temperature at 170oC at the highest for overall acceptability like colour, taste, and crispiness. For the recommendation, establishment of small-scale processing of papaya chips, will be helpful the farmers to minimizes postharvest losses of papaya.

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