1ST 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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EXTRACT OF NATURAL DYES FROM BUTTERFLY PEA (*Clitoria ternatea*) TO MAKE A MARSHMALLOW CUBE

Nur Anisa Nordin[1], Nur Arina Zawani Ramli[1], Nur Nabila Natasha Daud[1]

[1]*Faculty of Plantation and Agrotechnology Universiti Teknologi Mara (Melaka), Malaysia*

Corresponding author e-mail: nranisanordin@gmail.com

ABSTRACT - *Clitoria ternatea. L* is a species of the Fabaceae plant family also known as Asian pigeonwings, bluebellvine, butterfly pea, cordofan pea, and Darwin pea. The flower is employed as a natural culinary colouring in Southeast Asia. More people throughout the world are using medicinal plants and herbs for health reasons. The purpose of the study carried out an innovation based on this *Clitoria ternatea* flower in food production is to test the natural dyes from this flower and its benefits for the human body regardless of age. The material used was fresh flowers *(Clitoria ternatea),* plain yogurt, marshmallow, lemon, and salt. All ingredients undergo 3 repetitions to obtain a result that has the desired texture and taste. After doing this we conduct product testing through the questionnaire survey method in the app JotForm for 26 respondents. The results for the 3rd trial, the look of the butterfly pea marshmallow cube is an attractive light blue color with a texture chewier and the taste is not tasteless but moderately sour and sweet. The result of the product testing survey most of them very interested and likely this product. So, the *Clitoria ternatea* have a natural color and benefits nutrients for humans that can be used in food production providing our product butterfly pea marshmallow cube made from this fresh extract of butterfly peas *(Clitoria ternatea),* and other ingredients that must undergo process to get the best result of texture, taste, look and smell that can be accepted by Asian people tongue.

Keywords: *Clitoria ternatea. L*, butterfly pea, Asian pigeonwings, and Natural dyes.

INTRODUCTION

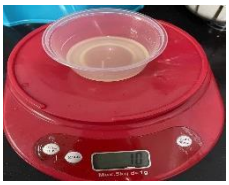
A species of the Fabaceae plant family, *Clitoria ternatea. L* is also known as Asian pigeonwings, bluebellvine, butterfly pea, cordofan pea, and Darwin pea. The flower is employed as a natural culinary colouring in Southeast Asia. It is a perennial plant. *Clitoria ternatea* leave is elliptic and sharp. It grows in damp, neutral soil and develops as a creeper. The blossoms of this plant stand out the most due to their beautiful deep blue hue and light golden outlines. More people throughout the world are using medicinal plants and herbs for health reasons. There are medicinal uses for all plant components, including leaves, seeds, bark, fruits, sprouts, and stems. Although it was imported to Africa, Australia, and America, this plant is native to tropical equatorial Asia (Indonesia and Malaysia). It is said to have a variety of effects in conventional Ayurvedic medicine, such as memory-improving, nootropic, antistress, anxiolytic, antidepressant, anticonvulsant, ranquilizing, and sedative properties (Mukherjee et al., 2008).

The *Clitoria ternatea* became a famous thing of value addition in the food industry in Southeast Asia such as Indonesia, Malaysia, and Madagascar. Traditionally, a beautiful blue natural color in this flower that suitable for beverages which are herbs and tea that are ready to serve with full of antioxidant and phytonutrients. In addition, some people used it to appeal to the dish with natural color in this flower on desserts or cereals such as porridge and rice. The dyes acquire from this flower are natural sources of dyes and suitable as substitutes for synthetic ones. The use of natural dyes can increase environmental awareness of health hazards caused by synthetic dyes. From all these nutrients and natural dyes that have in *Clitoria ternatea* we decide to be carried out an innovation based on this flower in food production.

MATERIAL AND METHOD

Research and Development (R&D) conducted in Kampung Seri Mendapat, Merlimau Melaka. This research was conducted several times throughout December 2022 and January 2023. The material used was fresh flowers *(Clitoria ternatea),* plain yogurt, marshmallow, lemon, and salt. All ingredients undergo 3 repetitions in producing butterfly pea marshmallow cubes according to the correct amount to obtain a result that has the desired texture and taste. Below is the step for making the product.

Step to Make Butterfly Pea Marshmallow Cube

a. Marshmallow  b. Butterfly pea  b. Natural yogurt  c. Lemon juice 	Step 1: Prepare all the above ingredients according to the prescribed grams: - a. Marshmallow – 250gram b. Butterfly pea (Bunga Telang) – 15gram c. Natural/Plain yogurt – 150gram d. Lemon juice – 10gram/2slice e. A pinch of salt
	Step 2: Then, melt the marshmallows over low heat and stir until the marshmallows melt evenly
	Step 3: Turn off the heat then add the natural yogurt, a little lemon juice, and a pinch of salt into it and stir until combined.
	Step 4: Add the blended fresh butterfly pea flowers and stir for 5 minutes
	Step 5: Prepare a suitable mold or container and pour it into it.

	Step 6: Leave it at room temperature for 15 minutes before putting it in the fridge for 12-13 hours.

To measure our product's taste, chewiness, and look parameters, we conduct product testing through the questionnaire survey method in the app JotForm for 26 respondents of all ages randomly selected with an evaluation based on score value criteria. This observation was made on the chewiness of mixed ingredients, liquid concentration, flower fibre rate, and texture and taste test. Score about look and smell (1- not very interested, 2 - not interested, 3 -moderately interested, 4 - interested, 5 - very interested). Next, for taste test (1- sweet, 2 - sour, 3 - tasteless). The score for chewiness (Not Good, Good, and Very Good).

RESULTS AND DISCUSSION

The results of making our butterfly pea marshmallow cube by using fresh flower extract that produces a naturally blue color after undergoing the 3repitions. The 1st trials are dark blue color and attractive look but, not chewiness and taste are not suitable for certain people due to high flowering color. Next for the 2nd trial, there has a light blue color with a texture like ice cream, but it was still not chewy, and the taste is too sour. Lastly for the 3rd trial, the look of the butterfly pea marshmallow cube is an attractive light blue color with a texture chewier and the taste is not tasteless but moderately sour and sweet.

The result tests our product parameters from look and smell, chewiness, and taste from a product testing survey in the app JotForm and among our respondents are aged from19-30 years old. From 26 respondent's majority choose very interested (22person), and the others choose moderately(2person) interested(2person) for smell and look. Meanwhile, in chewiness texture majority of respondent choice is very good and for taste testing of the product majority chooses and said not tasteless but moderately sweet and sour. If our product is marketed in the market many respondents choose likely to buy it. The recommendation mostly all respondents said this product is delicious, acceptance taste, and potential to be marketed in the food industry.

Below are the figure and table that based on our result on making butterfly pea marshmallow cube:

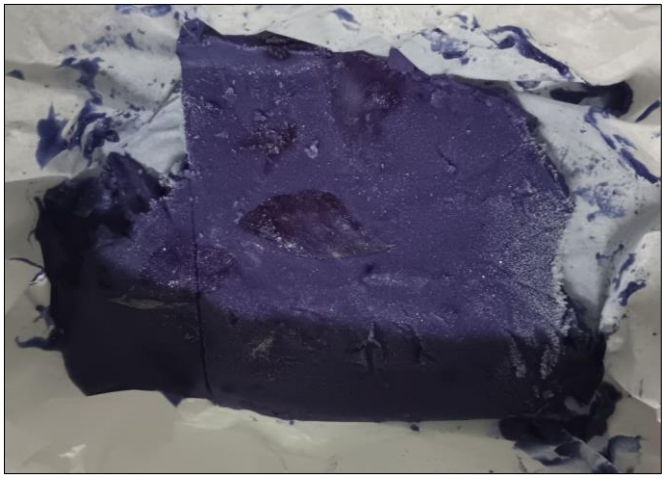


Figure 1: These are first trial result

Figure 2: These are second trial result

Figure 3: These are third trial result of butterfly pea marshmallow cube after 3 repetitions process

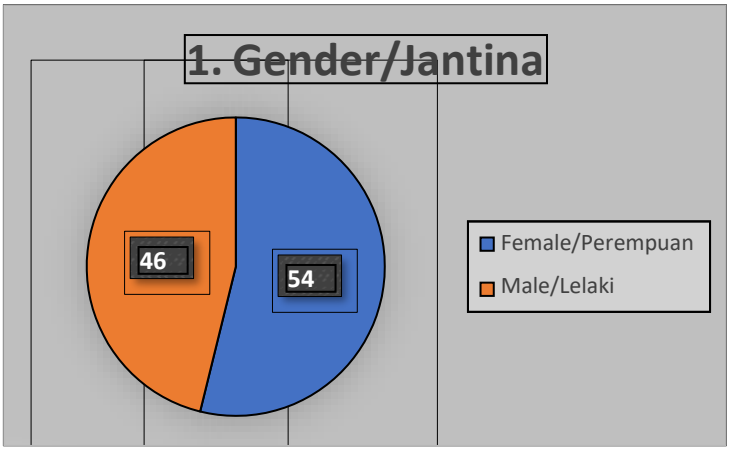


Figure 4: The gender of respondent

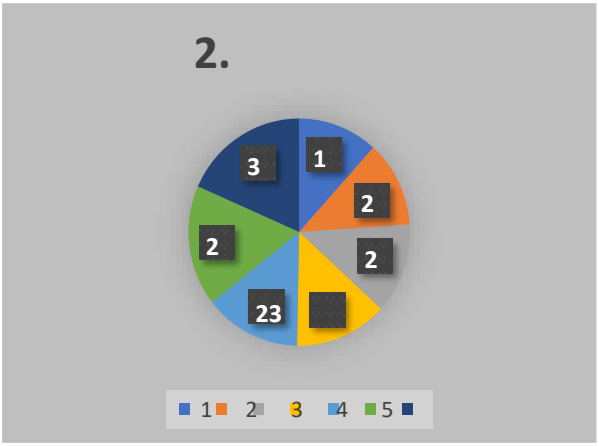


Figure 2: The Age of Respondent

Table 1: The Look and Smell of Our Product Among 26 Respondents

Rate	Look and smell
1 (Not very interested)	0
2 (Not interested)	0
3 (Moderately interested)	3
4 (Interested)	2
5 (Very interested)	21

Table 2: The result of taste testing

Taste Rate	Sweet	Sour	Tasteless
1 (Not)	1	4	26
2 (Moderate)	19	20	0
3 (Very)	6	2	0
Total	26	26	26

Table 3: The chewiness of the product

(4/5)	Good (4 Person)
(5/5)	Very Good (22 Person)

Figure 4: Giving Respondent Tester and Answering Survey

CONCLUSION

Putting it in a nutshell, the Clitoria ternatea have a natural dyes and benefits nutrients for humans that can be used in food production providing our product butterfly pea marshmallow cube made from this fresh extract of butterfly peas (Clitoria ternatea), and other ingredients that have to undergo 3 repetitions process with different methods to get the best result of texture, taste, look and smell that can be accepted by Asian people tongue. After that, the parameter to test the result of the testing or sensory survey done by 26 respondents, we gained the product with the taste, look, smell, and chewiness that most of our respondents very likely accept this innovation made from fresh butterfly peas. However, if these products are commercial in the market, we will make proper packaging to easy and more attract the customer to buy it. Thus, to market this product for large amounts and proper texture to easy people eat need to use freezer dried for the last procedure to prevent the butterfly pea marshmallow cubes from sticky to each other when stored in a container or packaging and hand of people when taken from the packaging.

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ais2023.fpa@gmail.com