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VIRTUAL INNOVATION CHALLENGE
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ULAM COOKIES

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Highlights: The aim of this project is to create and introduced the cookies that made of traditional vegetables or known as ulam as the natural flavouring. Ulam is the traditional vegetables which are normally consumed in a raw form among South East Asian populations. Ulam are rich in carbohydrates, proteins, minerals, and vitamins. In Malaysia ulam are popular and they are considered the most economical vegetables available throughout the year. However, their application in processed foods for enhancement of nutritional characteristics are still limited. Knowing bakery products such as cookies are the better vehicles for fortification. Therefore, this project was carried out to (1) produce healthy cookies made of ulam, (2) proposed a suitable formulation for the ulam into cookies by considering at the texture and taste, (3) introduce the cookies that made from ulam into the local market.

Keywords: *Ulam, Cookies*

Introduction

The amazing healing power of Malaysian herbs is often overlooked. Many of us would by-pass the *ulam* section at a buffet and miss out on the natural healing powers of these unassuming local herbs. Ulam are rich in carbohydrates, proteins, minerals, and vitamins. Normally *ulam* is consumed in a raw form among South East Asian populations such as in Indonesia, Thailand, and Malaysia and it is also eaten together with rice and another accompaniment such as *budu*, *cincaok* or *sambal* (Huda-Faujan et al. 2007; Reihani & Azhar 2012). On average, Malaysian adults consumed 40 g/person/day of ulam and it tends to increase the serum of Vitamin C, E, folic acid, β -carotene, and lycopene (Nurul Izzah et al. 2012). However according to National Health & Morbidity Survey by the Ministry Health Malaysia (MOH) (2015) reported that, 94% of the population in this country do not take vegetables in sufficient quantities, based on recommendations by World Health Organization (WHO). Nevertheless, Lembaga Pemasaran Pertanian (FAMA) through their campaign *Lebihkan Makan Ulam* has encourage more people especially young generation to consume ulam in their daily life (Sinar Harian 29 Jun 2020).

Ulam Cookies

Cookies have become one of the most desirable snacks for both young and elderly people due to reasonably cheap cost, more convenience, long shelf-life, and ability to serve as a vehicle for important nutrients. Usually, the main ingredients for making cookies are wheat flour, fat, sugar, water, while other ingredients such as milk, salt, aerating agent, emulsifier, colour, and flavour can be included (Jeantet, Croguennec, Schuck & Brulé 2016). Since consumers are much more concerned about their health and demand the food products conferring health benefits, they tend to look for the products that are more natural-like (Amin, Bashir, Dar & Naik, 2016). It is scientifically show that, *ulam* has potential as food that could bring health benefits to the consumer (You, Shahr, Haron & Yahya 2018). Within Asian countries, more than 120 species of ulam have been discovered, and it is including *Ulam raja* (*Cosmos caudatus*), *Pegaga*, (*Centella asiatica*), *Kacang botol* (*Psophocarpus tetragonolobus*), *Pucuk gajus* (*Anacardium occidentale L.*) and many more. For this project these four types of ulam has been chosen as the additional ingredients for making cookies.

Figure 1.1: *Cosmos caudatus*



Cosmos caudatus or *ulam raja* originated from Latin America but can be found growing wild around Malaysia. They can grow to a height of 2 meters from seeds found in the dried flowers. The part of the plant that is normally eaten is the young shoots. The health benefits of eating *ulam raja* are that is said to clean the blood of toxic materials and can also strengthen bones (You, Haron, Shahar & Yahya 2018)

Figure 1.2: *Centella asiatica*



Centella asiatica or *pegaga* grows in relatively moist soil. It originated from India but can easily be found anywhere in South East Asia. It is rebuilding the energy, helps to reduce stress and increase mental power. It is said be able to reduce high blood pressure, slow down ageing process, and help the body protect itself against toxins (You, Haron, Shahar & Yahya 2018)

Figure 1.3: *Psophocarpus tetragonolobus*



Psophocarpus tetragonolobus or known as *kacang botol* are a complete package. Its leaves, stems, flowers, seeds, tubers, are all edible in some way or the other. This veggie is packed with nutrition and offers us a number of benefits. This *ulam* are rich source of protein, vitamins A and minerals. The high dose of antioxidant present in this bean ensures that the skin maintains its elasticity and keeps it looking young (You, Haron, Shahar & Yahya 2018).

Figure 1.4: *Anacardium occidentale L.*



Anacardium occidentale L or *pucuk gajus* is an evergreen tree that is native to North Eastern Brazil and is sophisticated in various tropical countries. The tree produces edible fruits with nuts which are widely consumed as a food. It belongs to Anacardiaceae family (You, Haron, Shahar & Yahya 2018).

Methodology

This project involves the lab test, it is necessary to see the various effects on each ingredient until get the right formulation. Therefore, sensory evaluation is needed each time of the lab test. This project is using the hedonic rating scales from range 1 to 5, dislike extremely to like extremely. In this project *ulam* is the additional ingredients in these making *ulam* cookies. It is undergoing the drying process in the oven at 140°C for 20 minutes.

Product Formulation of *Ulam* Cookies

The basic formulation (Table 1.1) was modified from brown sugar, butter, eggs, vanilla extract, salt, baking soda, flour and 11.4% (100gm) dried mix *ulam*. These formulations were modified to obtain the taste and texture to suit the developed product.

RIZBRUNANA: ADVANCES IN HIGH-FIBRE BISCUIT USING BROWN RICE AND BANANA PEEL**Nurul Hafizah Mohd Yasin**Faculty of Hospitality, Tourism and Wellness, Universiti Malaysia Kelantan, Malaysia
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Highlights: Malaysian adults consumed less than the recommended dietary fiber intake of 20-30 g/day. Therefore, study was conducted to develop a product of high-fiber brown rice biscuits made from Saba' banana peel flour. This high fiber biscuit contained 463.40g/100 of energy, 9.23g/100 of protein, 18.98g/100 of fat, 60.16g/100 of carbohydrate, and 7.53g/100 of dietary fiber. The consumer test shows good potential of commercialization as 77% of respondents like and would buy this biscuit.

Keywords: High-fibre biscuit, brown rice, banana peel, commercialization, product development.

Introduction

The food industry is now primarily concerned with functional food ingredients that are high in fiber. In this light, the development of this product is sparked by the awareness on the importance and benefits of dietary fiber contents of food products available in the current market. Dietary fibers have been shown to have many health benefits. For instance, it can improve the function of the digestive system and are able to reduce the risk of many chronic diseases such as cancer, diabetes and heart disease (Cui & Robert, 2009). According to the American Dietetic Association (ADA), the proposed dietary fiber intake for adults is 20g to 35g/1000 Kcal for Americans. Meanwhile, the recommendations for fiber intakes among Malaysians are 20g to 30g per day for all ages. However, 77% of these populations failed to achieve the recommended average intake; Americans were found to take about 14g to 15g dietary fiber per day, while Malaysians consumed 13g to 16g per day. These figures are lower than the proposed recommendations (Ng et al., 2010).

Rice is an example of high-fiber cereals. There are more than 40,000 varieties of rice grown around the world. Rice is the staple food in Malaysia and white rice is commonly consumed. On the other hand, brown rice is rarely consumed because of its dreadful tastes and takes longer time to cook compared to white rice. However, brown rice has gained its popularity in recent years due to its health benefits, brown rice is recognized for its food value content and its potential as a source of antioxidants, anti-carcinogenic and others (Paretti et al., 2002).

Bananas are one of the foods with high fiber contents. They also have high nutritional values. Banana is easily reproduced at an optimal temperature of 27°C, easily grown and available in tropical Malaysia and could be bought at low prices. However, the high consumption of bananas also caused an increase by product of banana peel wastes. High amount of waste has been giving problems to the disposal system of this material without affecting the environment (Emaga et al., 2008). There are various studies conducted regarding the use of other waste products that has been utilized into marketable products, and reported that most of these waste materials contain greater nutritional value than its fruits and vegetables. A study by Emaga et al. (2008), found that 50% of the fibre in bananas are contained in the banana peel. Production of flour from banana peel is able to address the issues of minimizing food waste disposal and maximizing the use of natural resources. Therefore, this issue also provides an opportunity for researchers to develop a product that could solve this problem.

Methodology

The main raw materials in the production of the high-fiber biscuits are brown rice and banana peels. The details about the processing of biscuits are discussed as follows.

Processing of High-Fiber Brown Rice Biscuit and Banana Peel Flour Mixes

To ensure the quality of biscuits produced, brown rice flour and banana peel flour were sifted to remove the impurities. Each ingredient including the brown sugar, baking powder and butter, was weighed respectively. Then, the brown sugar, baking powder, egg yolks and butter were put into the mixer and mixed thoroughly until they become smooth. Brown rice flour and banana peel flour were added into the dough. The dough was refrigerated for 20 minutes, then, it was shaped and divided into portions weighting 10.0± 0.5g for each dough. The dough were then baked in the oven with a temperature of 170 ± 5°C for 20 minutes. The cooled biscuits were wrapped with plastic polypropylene (PP).

The basic formulation was modified from flour, brown sugar, butter and made into 8 new formulations using experimental design factorial 4 x 2 where 4 levels of the ratio of brown rice flour and banana peel flour and 2 levels of the ratio of brown sugar and butter. Based on the basic formulation by Nagao (2001), the ratio of butter and brown sugar is 2:2. The formulation developed in the initial test was changed based on the results obtained in all three best formulations with the butter and brown sugar ratio of 3:2. Thus, the ratio of butter and brown sugar formulations developed for the next test using the formulations with the butter and brown sugar ratio of 3:2 and 2:3

to test the formulation that will be most accepted by the expert panel. These formulations were modified to obtain the taste and texture to suit the developed product.

Findings

Sensory Evaluation

Sensory evaluation tests were carried out on eight biscuit formulations, which were divided into three sessions. Each session consists of four sample formulations. The data obtained from test using BIB designs were analyzed using Friedman test to get the T value on the degree of accuracy and the level of differences of 5% to determine significant differences between the data obtained. It was found that there was no significant difference ($p > 0.05$) between F6 samples and other samples. Three samples which had the lowest amount of the composition, as well as showing a significant degree of difference are sample 6, 8 and 4. These samples were selected to undergo Hedonic Test. Sample 6 was the sample that has the lowest score among respondents; this sample had the second largest banana peel content, which is 13.5% while the ratio of butter and brown sugar content was 2:3. In conclusion, majority of the respondents favoured the formulation containing a moderate amount of banana peel flour (7:3), and followed by formulation with the highest ratio of banana peel content (6:4).

Hedonic Test

Three best formulations of sample F4, F6 and F8 were selected to undergo Hedonic Test. Table 1 shows the results obtained from one-way ANOVA analysis for the Hedonic Test. Based on the results of sensory evaluation, the F6 formulation is the most accepted formulation by the panellists in all attributes tested and there were significant differences ($p < 0.05$) exists in every attribute tested. This means that there are significances in each attribute.

Nutrition Information

The energy content of the biscuits obtained is shown in Table 1 below.

Table 1: Nutrition information

Nutrition	100g	Serving size (10g)
Energy (kcal)	463.40	46.34
Protein (g)	9.23	0.92
Fat (g)	18.98	1.90
Carbohydrate (g)	60.16	6.02
Dietary Fiber (g)	7.53	0.75

Storage Quality Study

The storage quality study for high-fiber brown rice with banana peel flour biscuits was carried out for 8 weeks. Throughout this study, these biscuits were packed in polipropena plastic (PP) and stored at room temperature. In this study, physicochemical analysis, microbiological test and sensory evaluation tests were conducted on the biscuits during storage period.

Product Novelty and contribution to education/community

Dietary fiber have been studied in the prevention of cardiovascular and colon diseases, and diabetes; these consist about 50% of the dry matter of banana peel. Thus, there is a huge potential in the valorization of this food waste into value-added food products.

Transforming banana peels to powder extends its shelf-life, eases transportation and storage, and broadens its possible food applications.

A waste material such as banana peel can be transformed to a tasty and value-added product of high-fiber biscuit.

Commercial Value

This high-fiber biscuits has good commercial value as 77% of respondents said they would buy these biscuits.

Rizbrunana biscuits are a great start in exploiting the potential of this waste; other products such as cakes, breads can also be explored as food applications.

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APPLICATION OF THE KIRKPATRICK MODEL: EFFECTIVENESS IN ACCOUNTING COURSE

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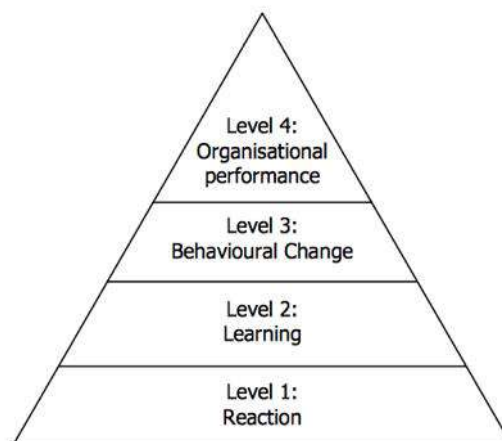
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Highlights: The Coronavirus pandemic has affected educational systems worldwide, leading to the widespread closure of schools and higher institutions in the affected countries. This pose challenges to the students especially in learning calculation subject through online. The accounting subject is being regarded as killer subject by some students. The failure rate for this subject is quite high prior the COVID-19 pandemic when traditional face to face classes is present. Therefore, this study is keen to know the effectiveness of the model for the accounting subject since learning accounting via online is very challenging. The methodology of this study is quantitative survey administered through Google forms to students who take accounting subject. This study examined the effectiveness of the accounting course by using four essential elements of the Kirkpatrick Model (Reaction, Learning, Behaviour and Results). The novelty of this study is the application of the Kirkpatrick Model pre- and post-learning process in order to highlight the differences of outcome throughout the learning process.

Key words: Accounting, online learning, COVID-19, challenges, effectiveness.

Introduction

This model was developed by Dr. Donald Kirkpatrick (1924 – 2014) in the 1950s. The model can be implemented before, throughout, and following training to show the value of training to the business. This evaluation model involved four level (as depicted in Figure 1); 1) Level 1; it evaluates how individuals react to the training model by asking questions that establishes the trainees' thoughts; 2) Level 2; to gauge the level of participants that have developed in expertise, knowledge, or mindset; 3) Level 3; this level analyzes the differences in the participant's behavior after completing the course; and 4) Level 4; determines the overall success of the training model.



Source: from Kirkpatrick, 1996

Figure 1: The Kirkpatrick Model

The Kirkpatrick Model in teaching evaluation

The Kirkpatrick Model was created by Dr. Donald Kirkpatrick as a model for measuring training and development effectiveness. Originally pictured for corporate training. But little is known about the effectiveness of the model in measuring and assessing the accounting course. Therefore, this study applying the model to this accounting course in order to minimize the failure rate and improve the level of knowledge of the targeted student.

Background of the Kirkpatrick Model in teaching evaluation

Previous research in education specifically on the effectiveness and development has highlighted the vital role plays by educators in making educational institutions more effective and more successful in carrying out their duties and responsibilities. Subsequently, there are training programmes organised by educational institutions to help educators to perform their tasks and responsibilities effectively. Nevertheless, the evaluation of the training (the final stage of training), which plays a critical role in measuring training outcomes; commonly either marginalised or ignored (Alsalamah & Callinan, 2021). This represent barriers to the effectiveness of the training since room for improvement for both related parties largely being closed and ignored.

Importance to education

Kirkpatrick's Four-Level Training Evaluation Model can help educators to know their students' level of knowledge. By knowing this, the students can be categorized according to their level for better knowledge sharing and delivery of ideas. In addition, the educators also know how and where to improve in terms of teaching delivery process in order to ensure the knowledge delivered effectively. Hence, the improvement in learning process and environment perhaps being done smoothly in the future. Finally, the students' achievement is promising in the future by having this evaluation.

Advantages of the Kirkpatrick Model in teaching evaluation towards education and community.

Firstly, able to identify the level of knowledge among student for specific topic. Secondly, able to categorize the students based on their level of knowledge. Lastly, able to improve the level of knowledge and grade of students.

Commercial value of the Kirkpatrick Model in teaching evaluation

This application of the Kirkpatrick model hopefully brings some light on the students' achievement in the future. In addition, both related parties will have room for improvement in either teaching delivery and learning process. Hence, this evaluation highlights the vital roles of the educators in educational institutions for better future.

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AN INTEGRATED ONLINE HUB FOR MUSLIM FRIENDLY HOMESTAY OPERATORS IN MALAYSIA

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Highlights: The homestay is accommodation facilities that provides space or room for rent to the guests. They are four elements of Islamic built environment that will attract tourist to book Muslim friendly homestay which are facility and environment, safety and security, cleanliness and service and privacy (Rashidi, O. et al (2019)). Many operators receive monetary benefits from the Muslim homestay business, thus encouraging more participants in the homestay business. Moreover, the homestay activities give good impact to the Malaysian tourism sector. However, the registered Homestay statistics show that some operators have leave and the number of registered operators has decreased (Nor, S.M (2019)). There are many online hubs in Malaysia such as booking.com, Traveloka and Airbnb but there are no online hubs specifically for Muslim friendly homestay. The introduction of integrated online hub focusing for Muslim homestay operators which combine element of A.I.P.D model will boost the visibility of homestay by promoting using technology advancement. In consequence, it will ensure the sustainability of Muslim friendly homestay business.

Key words: *Muslim friendly homestay, A.I.P.D model, technology advancement, visibility, sustainability*

Content

Muslim Homestay program in Malaysia has giving a large contribution towards the growth of ecotourism and heritage tourism. This is because eco-tourism and heritage tourism was introduced to promote nature, culture, and adventure aspects of Malaysia. The setting up of homestay programs can provide effective mediums for Malaysians to share their lifestyle and culture to outsiders or tourists. Looking at the concept of homestay tourism can give a good impact and benefit especially to the development of the country's tourism sector. Muslims constitute one of the largest local tourist markets in Malaysia. This innovation is a must as there are a lack of online hub that totally focused on Muslim homestay. The online hubs for Muslim friendly homestay are needed and essential for Muslim tourist.

The main purpose of this innovation is to boost the visibility of homestay by promoting using technology advancement. Other than that, this online hub will offer an enjoyable experience in information searching to the guest via integrated online hub of all homestays. The integrated online hub will be used which combining element of A.I.P.D model. A.I.P.D model is a useful guideline to develop an effective website for a company. Therefore, the integrated online hub will be implemented element of attracting, informing, positioning, and delivering in collecting database of SMEs homestay in Malaysia and attracting guest for searching Muslim homestay in Malaysia. The guest will feel fun and exciting when doing information searching for homestay. The innovation of online integrated hub for Muslim friendly homestay will give impacts on improving socio economics of local community. In addition, increasing the visibility of homestay will ensure the sustainability of homestay business. It can be concluded that the innovation will benefit both sides which are Muslim homestay operators and Muslim guests around Malaysia.

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PROTOTYPE SNEAKER INSOLES SENSOR

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Highlights:: By wearing sneaker insoles, people's lifestyle quality becomes healthier. The more steps you have, the healthier you are. Therefore, everyone can have this insole. Our innovative sneaker insole mainly counts the number of steps. In addition, it also helps to reduce foot fatigue. Innovative sneaker insoles are formulated with comfortable materials, especially for people with flat feet and obesity problems. In addition, we also launched a premium insole, which contains alarm sensors and thermal insulation materials. This comfortable and convenient sneaker insoles concept is with the customer's brain, which we prepare for you.

Key words: sneaker insoles, healthier, number of steps, alarm sensors, thermal insulation material

Introduction

In this 21st century, science and technology are rapidly changing the world. Sneaker insole sensor has many differences with typical smart gadgets. There are some functions and benefits of our product. Cooperation with target stakeholders, let more people know our products. We have to provide a high-quality standard of sneakers insole sensor product that is needed to all customers. To develop dealings that make a positive difference in our customer's lives. We provide first-class customer service with value for money sneakers insole sensor products to satisfy our customers. At the same time to produce stylish and comfortable athletic shoes, combined with our products, multifunctional athletic sneaker insoles. Our sneaker insoles boast excellent quality and smart features that are also suitable for all ages people. Make it possible for all to buy and maintain good health.

Content

Sneaker insole is a count footstep sensor, more accurately about your steps to indicate your running biomechanics. The electronic digital screen shows the footsteps count, and it has a magnet sewn on the tongue to detect the insole. This excellent sneaker is for all ages of customer segment such as traveller, high income, active sportsman, Obese, and flat-foot person. Innovative sneaker insoles are formulated with comfortable materials and provide customized designs, colours, and sizes, especially for people with flat feet and obesity problems—this product battery-free but also waterproof. This innovation also has linkage with some brands such as Nike, Adidas, Puma, and others to fulfil what customers want to wear. We also launched a premium insole containing alarm sensors and thermal insulation materials that keep your feet dry and warm. This comfortable and convenient sneaker insoles concept is 'with the customer's brain, which we prepare for you'. After purchasing the product, will be given a QR code for people to install an application on their mobile phone to know the steps they walk and locate the shoes when it has gone.

The reason to innovate sneaker insole because many people have trouble with suitable shoes, especially a person who has a flat foot, having a standing posture problem, obese person, and standing or walking for a long time caused by foot pain. Smartwatches also cannot count steps accurately. Hence, the advantage of this innovative sneaker insole helps to reduce foot fatigue, ensure the flat foot user walks with a good posture and comfortable, more accurate to calculate the step and record the step easily. Besides that, insoles keep your feet warm and toasty, suitable for extremely cold conditions. Thermal insoles are usually highly absorbent, removing the moisture off of your feet quickly.

The process has three-stage, mapping impact value, measuring intended impact, and monitoring and evaluating progress to success this innovative product. For commercialization, we have collaborated with sneaker brand shops such as Nike, Adidas, Puma, etc. Next, sell this health sneaker in the hospital and promoting through social networking. Therefore, this is a great sneaker insole for all people. Sneaker insole suitable for people who love hiking, travelling and jogging, because it can help them to record the steps they walk and sneaker insole can warm the feet inside the shoes.



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