

Research Article

Jackaewah Loaf as an Alternative for Meat Based Food

Nurul Falah Hashim^{1*}, Hamizad Abdul Hadi², Mohd Zain Kutut³, Nur Farrah Yasmin Abdul Talib⁴, and Adibah Aishah Md Sahak⁵

¹ Faculty of Hotel and Tourism Management, UiTM Selangor, Puncak Alam Campus; 1; nurulfalah@uitm.edu.my; 0009-000908212-0690

² Faculty of Hotel and Tourism Management, UiTM Selangor, Puncak Alam Campus; 2; hamiz670@uitm.edu.my; 0009-0009-2412-0289

³ Faculty of Hotel and Tourism Management, UiTM Selangor, Puncak Alam Campus 3; mzain93@uitm.edu.my; 009-0006-7980-4635

⁴ Faculty of Hotel and Tourism Management, UiTM Terengganu, Dungun Campus 4; nurfarrah@uitm.edu.my; 0009-0003-5632-8160

⁵ Faculty of Technical Education and Vocational, Universiti Tun Hussein Onn Malaysia; adibah@uthm.edu.my; 0000-0001-8798-9963

* Correspondence: nurulfalah@uitm.edu.my; 018 5707567

Abstract: The global demand for vegan food products has surged in recent years, driven by health consciousness and environmental concerns. Traditional meat substitutes often lack the texture and taste consumers crave, leading to exploring alternative plant-based sources. Jackfruit is a tropical fruit that normally consumes only the fruit but leaves the jackfruit straw that still contains high fiber and nutrients. However, the jackfruit straw has a potential that is often overlooked by the nutrients that remain largely untapped. Thus, through this innovation of Jackaewah Loaf, the combination of Jackfruit straw, Kaduk leaves, and collaboration with FAIZA spice, which is Gulai kawah spice, has given a new profile flavor and interesting texture as an alternative meat for vegans and vegetarians with Malaysia flavor. The sensory evaluation test has been implemented to evaluate the acceptance of the product by untrained panelist, which to rate 1) taste; 2) texture; 3) Aroma; and 4) overall acceptability. By addressing the increasing demand for nutritional and nutritious plant-based food, this innovation not only contributes to the diversification of the vegan food market but also promotes the efficient use of waste from agricultural products, ultimately fostering an effective for sustainable food ecosystem.

Keywords: Food waste; Plant-based; Vegan Food; Malaysia.



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1. INTRODUCTION

Food waste was a major problem all throughout the world, including Malaysia. It became a vast issue due to its detrimental influence on food production costs, human health, and environmental degradation (Gustavsson et al., 2011; Lobo & Araujo, 2023). Recently, in Malaysia, it was reported that ten percent of the waste that was thrown every day contains edible food (Abdul Kader, 2022). These edible foods may be well-considered as leftovers. At some point, society might have misunderstood that leftovers could actually transform into new dishes. The leftovers of the jackfruit component which is the jackfruit straws (jackfruit rind or jackfruit rag) has been considered. Based on research, the majority of consumers simply use the jackfruit filling for cooking and discard its component such as

the jackfruit straws (Akter, F., & Haque, M.A., 2019). As a result of this prevalent issue, a concept for a new product has been introduced, where jackfruit straws have been used as the main ingredient for making this meatloaf look-alike product. Jackfruit straws were suitable as a substitution for meat analogue. Food that resembles meat in structure but differs in substance was known as a meat analogue. The creation of meat analogues to offer substitutes for meat has been popular in recent years. The demand for a healthy diet, worries about rising meat prices, the rise in vegetarianism's appeal, and rising consumer interest in related eating habits like avoiding or consuming less red meat have all contributed to this trend (Joshi & Kumar, 2015).

2. METHOD & MATERIAL

2.1 Material



Figure 1. Jackaewah Loaf's ingredients: jackfruit straw, soybean and Kaduk leaves.

Artocarpus heterophyllus Lam., usually referred to as jackfruit, is a tropical climacteric fruit that belongs to the Moraceae family. It is indigenous to the Western Ghats of India and is prevalent in many countries of Asia, Africa, and certain parts of South America (Ranasinghe et al., 2019). Typically, the edible arils of this plant have been utilised in culinary contexts, whereas its seeds are subjected to processing and subsequently consumed as snacks. Nevertheless, the residue resulting from the processing of jackfruit, referred to as jackfruit straw is disregarded or not fully utilised. An extensive research was carried out on jackfruit straw, revealing its significant dietary fibre content. This finding highlights the potential of jackfruit straw as a desirable ingredient for augmenting the fibre composition of vegan food products (Akter, F., & Haque, M.A., 2019).

An experiment was conducted to ascertain the optimal technique and binding agent for the production of Jackaewah Loaf. Additionally, the study aimed to identify the most suitable wrapper for enclosing the loaf, which was prepared by combining soybean and enhancing it with *Piper Sarmenosum* (Kaduk leaves) to enhance its taste and nutritional value, along with Gulai Kawah as a seasoning flavour.

2.2 Method

The process involved in the development of Jackaewah Loaf encompasses four crucial stages: (1) formulation of innovation, (2) implementation of innovation, (3) evaluation and control, and (4) introduction of innovation. The following procedures are crucial to guarantee that the product is manufactured in accordance with the trial and sensory evaluation approach outlined below:

2.2.1 The Formulation of Jackaewah Loaf Innovation

The initial stage of product development entails the invention of ideas and the subsequent evaluation of the product's viability by innovators. This evaluation aims to determine the product's relevance and the market's need for its introduction. The subsequent phase of implementing innovation is determined by the innovators after deciding the product.

2.2.2 Implementation of Innovation

This stage of product development entails the process of identifying recipes, ingredients, and an appropriate methodology to produce Jackaewah Loaf. The trial phase of the product is designed to guarantee that the olfactory, tactile, and gustatory aspects of the product are satisfactorily addressed. During this phase, the identification of packaging is also established to ascertain the appropriateness of the packaging for the product's quality, storage, and mobility requirements during transportation.

2.2.3 Evaluation and Control

During the evaluation and control phase, the product undergoes a comprehensive final testing process to ensure that it meets the necessary criteria to be deemed marketable. During the conclusive phase of recipe testing, the methodologies employed are meticulously documented to serve as substantiating evidence for the progression of product development. Consequently, a sensory evaluation is performed to validate the acceptability of the product and ascertain its readiness for advertisement in the retail sector. Sensory assessment encompasses a systematic methodology for eliciting, quantifying, evaluating, and interpreting responses to products as perceived through the senses of vision, smell, touch perception, sensation of taste, and hearing.

2.2.4 Introduction of Innovation

Harrington and Ottenbacher (2013) contend that the implementation of innovation encompasses the process of commercialization. During this phase, the commercialization process for Jackaewah Loaf involves doing product costing analysis. This analysis entails calculating the expenses associated with the components used in the product, as well as the costs of packaging and materials required to produce the entire Jackaewah Loaf prototype.

3. FINDINGS

3.1 Product characteristics

The Jackaewah Loaf is a convenient food product that possesses a texture resembling that of a meat patty, rendering it suitable for consumption in various settings and occasions. The product possesses a substantial shelf life, which is advantageous for users seeking to store it in their kitchen. The product has undergone a steam and steam bake treatment prior to being securely packed within a vacuum-sealed plastic packaging, thereby extending its shelf life significantly. In addition to this, it enhances the longevity of the food product by mitigating the potential for recontamination throughout the storage process. This product has the potential to maintain its quality over an extended duration, provided that it has been appropriately stored in accordance with the instructions provided on the label.

In addition, the Jackaewah Loaf empowers clients to express their individual individuality. This device has the potential to enhance consumer creativity by enabling them to develop personalised recipes according to their preferences. The tofu can be prepared by frying it similarly to tempeh,

cooking it as a side dish, using it as a condiment in stir-fried noodles, or even incorporating it into a tempura meal. The meatloaf can be prepared according to individual preferences. The utilisation of jackfruit straw has traditionally been limited to its status as a residual by product, often discarded or allocated for consumption by livestock, particularly cattle. However, this product has undergone modifications to include jackfruit straw meatloaf, which offers individuals the flexibility to consume and prepare it according to their preferences.



Figure 2. Jackaewah Loaf's packaging

Furthermore, this particular product offers the added advantage of time efficiency, as it is conveniently prepared as a ready-to-eat item, requiring just a brief heating process before consumption. Heat and consume food items serve as optimal substitutes for conventional cooking methods, particularly in situations where individuals are constrained by time and unable to prepare nutritious and nourishing meals. In order to prepare a meal, individuals must first engage in the activity of grocery shopping, followed by the subsequent processes of cooking and serving, all of which collectively demand a considerable amount of time. The level of exertion required for food preparation is substantial and can be a source of stress for some individuals. Despite the intention of enjoying a satisfactory dining experience at a restaurant, patrons often encounter the need to endure a prolonged waiting period of approximately one hour or more for the preparation of their meal. These pre-prepared meals require minimal heating for a brief duration before being served. This choice is highly suitable for persons who are engaged in employment and college education, and who face constraints in allocating time for the preparation of a wholesome meal.

One further advantage of Jackaewah Loaf lies in its inherent convenience. In light of global societal shifts, a significant portion of individuals find themselves unable to allocate substantial amounts of time or exert extensive energy towards culinary pursuits. The convenience of ready-to-cook foods facilitates their preparation in a quick and efficient manner. The preparation of the task can be conducted at any given moment, regardless of whether it is during daylight hours or throughout the night. This particular kind of food provides considerable assistance to individuals in professional occupations, individuals who work throughout late hours, or those seeking to consume meals with less culinary exertion. Consuming home-cooked meals without the need for extensive preparation is a practical approach.



Figure 3. Jackaewah Loaf's packaging.

3.2 Consumer Acceptance

Through hedonic test for sensory evaluation on the product of Jackaewah Loaf by using Likert scale with 5 points to evaluate each attributes. It is comprising five attributes such as appearance, taste/flavour, texture, aroma/ smell rating and overall acceptability. In general, as depicted in Figure 4, all panels participated in the evaluation of Jackaewah Loaf found the product was acceptable in terms of overall acceptance. Therefore, this demonstrates that the utilisation of waste ingredients from jackfruit has the potential to be economically viable and meet the growing demand for vegan food in the present market.

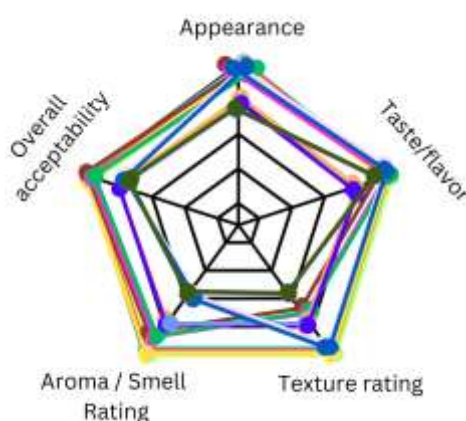


Figure 4. Preference level (n: 16) untrained panel (random public tester on sample Jackaewah Loaf)

4. CONCLUSION

The increasing demand for plant-based food items has created chances to enter a new market of plant-based products that cater to individuals adhering to a rigorous plant-based diet and environmentally-conscious consumers seeking eco-friendly options. The potential attainment of a significant market share can be achieved by introducing a snack product made from jackfruit straws, which could be distributed through popular convenience store chains such as 7-Eleven, Family Mart,

CU Mart, and others. The inherent nature of Jackaewah Loaf has the potential to capture a substantial market share among individuals who adhere to vegetarian dietary practises and prioritise environmentally sustainable choices. The anticipated target market for the product comprises individuals who adhere to a vegan lifestyle. In terms of age demographics, it is projected that older age groups would have a greater propensity to consume the product due to its association with a conventional snack. However, it is possible that a younger audience may be enticed and gradually transition to consuming a greater quantity of conventional snacks that have been seeing a consistent decline over time.

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