



E-PROCEEDINGS

INTERNATIONAL TINKER INNOVATION & ENTREPRENEURSHIP CHALLENGE (i-TIEC 2025)

"Fostering a Culture of Innovation and Entrepreneurial Excellence"



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23 January 2025
PTDI, UiTM Cawangan Johor
Kampus Pasir Gudang

ORGANIZED BY:

Electrical Engineering Studies, College of Engineering
Universiti Teknologi MARA (UiTM) Cawangan Johor
Kampus Pasir Gudang
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A-ST036: HALWA TIMUN

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ABSTRACT

The surplus production of cucumber (*Cucumis sativus*) leads to significant post-harvest and income losses for farmers. A value-added product, halwa timun, is innovated to sustain the shelf-life of cucumbers, aiming to reduce food wastage and to identify the potential market of products. Halwa timun, known as a sweet confection, is produced through the process of pickling using sugar coating. The product has a soft, chewable, mild crispy texture with a classic sweet taste that is suitable for any occasion and for diverse consumers at affordable prices. The innovation of halwa timun fosters agropreneurship skills that empower local communities to adopt value-added processing techniques, creating a new revenue stream for them. The innovation aids in reducing economic loss as well as enhancing sustainable agribusiness, contributing to Malaysia's broader goals of food security and green innovation. The development of halwa timun products also aligns with SDG-3 that highlights the nutritious value of cucumber-based products and SDG-12, elevating farmer's income and promoting sustainable agriculture.

Keywords: Surplus production, halwa timun, nutritional benefits, reduce waste, sustainable

1. Product Description

Halwa timun is a sweet confection product made from cucumbers (*Cucumis sativa*). The seasonal overproduction of cucumber has led to market saturation, resulting in significant post-harvest losses and economic challenges for farmers. Therefore, a *halwa timun* product is innovated to transform the surplus cucumber production into a value-added product that enhances the marketability and sustains the shelf life of cucumbers. A grade B or surplus cucumber is selected to produce *halwa timun*. The cucumber seeds and skins are removed and cut into the desired 3cm elongated shape, and then the cucumber slices are washed thoroughly with clean water. The cucumber slices are soaked with lime water solution for 3-4 hours to obtain a crisp texture, then washed and rinsed thoroughly with clean water. After that, 600 g of white sugar is added to 1 kg cucumber slices and cooked with low fire until it is caramelized. Then, the *halwa timun* is dried under sun exposure to dehydrate the moisture content, and the color of the *halwa timun* will turn yellowish with a pale green color. **Figure 1** illustrates the handling and processing of *halwa timun*.

2. Procedures on producing the *halwa timun* product and packaging material to be use

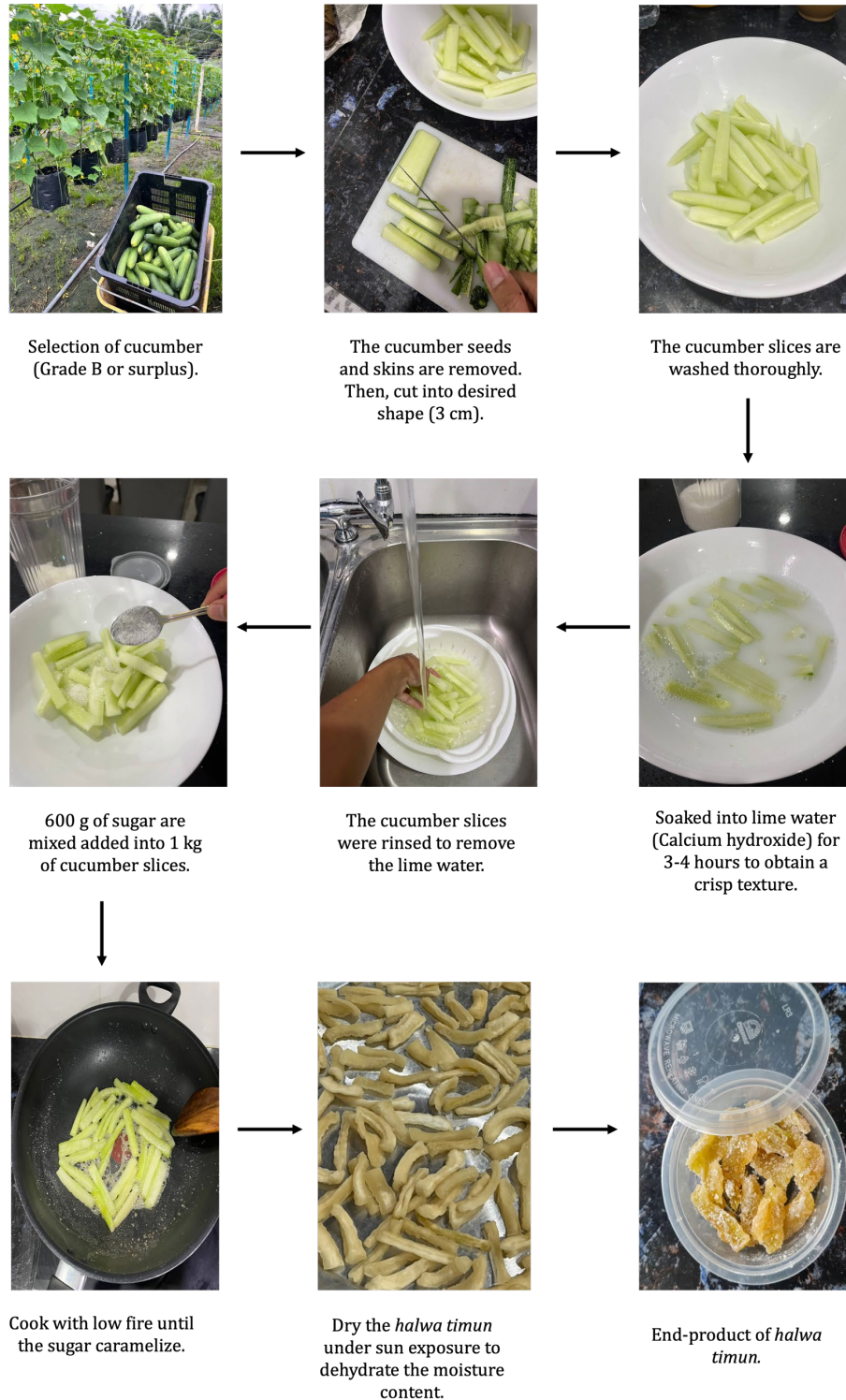


Figure 1. Flowchart for the *halwa timun* product handling and processing.



Figure 2. End-product of *halwa timun*.



Figure 3. A mylar-sealable bag will be used as a packaging material for the *halwa timun* product.

3. Novelty and uniqueness

The mass production of cucumbers has led to a dumping problem in the local market, and cucumbers rot on farms. In addition, the post-harvest issue also occurs when there are losses in fruit quality, and it is estimated that 20-50% of postharvest losses are recorded in developing countries. Thus, the novelty of this product is to mitigate the issue of agricultural food waste (dumping), aim for zero waste and preserve the quality of the product. Agricultural food waste can be reduced by processing the unsold cucumbers to *halwa timun*, and farmers or communities can generate side income, which helps to elevate their standard of living. The uniqueness of *halwa timun* (**Figure 2**) is it is locally produced and made from fresh cucumber. The classic sweet taste of *halwa timun* makes it taste unique. The product has a mild crispy texture with sweet sugar coated on the outside and soft, chewable, with cucumber savoury taste on the inside. It also has a sweet cucumber aroma and serves as a healthier alternative snack containing vitamin K, potassium, and antioxidant agents.

4. Benefit to mankind

The product aligns with Sustainable Development Goals (SDG-3 and SDG-12). SDG-3 is good health and well-being as the product was initially made from fresh cucumber, a natural ingredient of various nutrients. It is a healthier snack option and safe for all age ranges. By consuming the product, the consumer will reminisce about their childhood, and it creates a memory with family. This *halwa timun* is the traditional candy of the 1990s. SDG-12 is responsible for consumption and production as it helps to elevate the farmer or community's standard of living, sustainably manage and produce agricultural products, and reduce food waste by innovatively processing the unsold cucumber to *halwa timun*. The product is available anywhere, at any time, and is reasonably priced. The product also applies to the eco-friendly packaging concept (**Figure 3**).

5. Innovation and Entrepreneurial Impact

The *halwa timun* product exemplifies innovation by transforming surplus cucumbers into a unique, value-added confectionery product. This approach addresses the critical issue of overproduction and food waste in the cucumber farming industry. By introducing *halwa timun* as a novel product, the project diversifies market offerings and creates new revenue streams for farmers. This initiative fosters a culture of entrepreneurship within the community by encouraging farmers, small business owners, and agropreneurs to adopt value-added processing techniques, thereby enhancing product marketability and profitability. Additionally, the project stimulates local economies by supporting small-scale production and commercialization opportunities. The innovation strengthens supply chain resilience, reduces waste, and promotes sustainable agricultural practices. Training sessions and knowledge-sharing platforms linked to *halwa timun* production empower community members with entrepreneurial skills, fostering self-sufficiency. Ultimately, this initiative not only reduces economic loss but also promotes sustainable agribusiness, contributing to Malaysia's broader goals of food security and green innovation.

6. Potential commercialization

The commercialization potential of *halwa timun* lies in its appeal to diverse customer segments. Retailers, including supermarkets and convenience stores (7-Eleven, Speedmart, Mesra), can position *halwa timun* as a unique, ready-to-eat traditional confectionery with a longer shelf life, ideal for grab-and-go purchases. For the younger demographic (children aged 7-12 and teenagers aged 13-18), *halwa timun* can be marketed as a healthier, naturally sweet snack alternative, appealing to parents seeking nutritious treats. Students represent a key target market as the product can be positioned as an affordable, convenient, energy-boosting snack. Adults seeking traditional yet innovative snacks will be drawn to *halwa timun*'s novelty and nutritional value. Families with children can view it as a family-friendly treat, supporting health-conscious parental buying decisions. Finally, restaurants can incorporate *halwa timun* as a dessert, garnish, or ingredient in fusion cuisine, enhancing its culinary appeal and creating opportunities for bulk purchases.

7. Authors' Biography



Muhammad Ikhwan Bin Shabudin is a student at the Universiti Teknologi MARA (UiTM) Sabah Branch, studying in Diploma in Agropreneurship (AT113). With over 2 years of experience, he has been involved in developing agro-based food products through his study. His background in agropreneurship and food industry, with the involvement in university and international competition has recognized his significant contributions to the modernizing food industry.



Grace Flavyeliz Sinong is a lecturer and researcher at the Universiti Teknologi MARA (UiTM) Sabah Branch. With over 3 years of experience, she specializes in crop production, soil science, plant microbiology, agropreneurship and agro-based products. Her commitment and passionate has earned her many innovation awards locally and internationally in agro-based products and educational innovation. She also passionate on community engagement and global networking as well as continues to inspire the young generation with her dedication in research and innovation.



Nur Aziemah Jasni is a lecturer and researcher at the Universiti Teknologi MARA (UiTM) Sabah Branch, specializing in plantation management, agribusiness, and agropreneurship. With over 10 years of experience, she has achieved many innovation awards locally and internationally. In addition to her academic role, she is passionate about community engagement and agro-based innovation. She inspires students and colleagues with her dedication to research and teaching. Her contributions to plantation management, agribusiness, and entrepreneurship have earned recognition, motivating future scholars.



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