

LAPORAN 3 PROJEK SEM TYPE III MRSM TUMPAT

KE PERTANDINGAN ICTC 2025

UPM (27/11/2025)



BIL	TAJUK PROJEK	NAMA PELAJAR	PENCAPAIAN
1	Homemade Sponge Gourd Scrub	1. SARAH ALIAH BINTI RASHDAN ZAKI 2. RAISYA QISTINA BINTI SUFIZAL 3. NURWARDINA BINTI MOHAMAD HAZUAN	PINGAT EMAS
2	Sireh Insect Guard	1. AFREENA BATRISYIA BINTI AZMI 2. NUR BATRISYIA BINTI YUSLI 3. NIK NURAI SYAH BINTI NIK ZUL-AZRI	PINGAT EMAS
3	Phytox- Coating Agent	1. WAN NUR FATNIN BINTI WAN MOHD NOR 2. NUR AYUNI SAFIYYAH BINTI AZMAN 3. NUR AISYA ZAHIRA BINTI AMRULHAFIZ	PINGAT EMAS

Guru penasihat

1. MOHAMMAD RAHIMY FITRY BIN ISMAIL
2. NUR FARHANA BT SAMSULSAHRI

Sireh Insect Guard

SIREH INSECT GUARD.

Afreena Batrisyia binti Azmi, Nur Batrisya binti Yusli, Nur Aina Syahira binti Khairul Idzuan, Nur Adibah Maisarah binti Khairulazmi, Nik Nuraisyah binti Nik Zul-Azri.



ABSTRACT

Sireh (Piper Betle), a plant recognized for its natural insect-repelling properties, presents a sustainable and eco-friendly solution for pest control. This study aims to highlight the effectiveness of sireh-infused candles in repelling insects, with objectives centered on analyzing its active compounds, formulation process, and practical applications. The purpose is to evaluate its potential as a safer alternative to chemical repellents while promoting environmental sustainability. Methodologies include the extraction of sire's essential compounds through oil infusions, incorporation into wax formulations, and testing for insect-repelling efficacy under controlled conditions. Comparative analyses assess the effectiveness of sireh-infused candles in reducing insect presence while ensuring optimal burning performance. Visual aids such as charts and tables illustrate key findings on its repellent properties and burning duration. The discussion interprets results, emphasizing the environmental advantages, non-toxicity, and practicality of sireh candles as a natural insect deterrent. The conclusion summarizes findings, reinforcing the potential of sireh-based candles as a sustainable and effective solution for insect repellent application.

PROBLEM STATEMENT

- Insect repellent products in the market contain harmful chemicals like DEET.
- Unpleasant odours.
- Release toxins to the air and environment.
- Fire hazard risks.
- Short-lasting effects.

OBJECTIVES

- To provide a safe, eco-friendly, and sustainable solution
- To evaluate the effectiveness of the candle in repelling common household insects such as mosquitoes and ants
- To promote environmental awareness by creating a biodegradable, non-toxic solution that minimizes harm to users and the ecosystem

BENEFITS

- **Protection from mosquito bites**
— Help prevent bites from mosquitoes, flies, ticks, and other insects.
- **Prevention of diseases**
— Reduces the risk of insect-borne diseases; dengue, malaria, Zika, and more.
- **Biodegradable and sustainable**
— Residues are biodegradable and reduces pollution.
- **Long-lasting effect**
— Extended protection for several hours.
- **Improved sleep quality**
— Keeps insects like mosquitoes away at night, allowing a restful and peaceful sleep.
- **Increased comfort**
— Makes outdoor activities more enjoyable, especially in tropical or forested areas.

PRODUCT POTENTIAL

- **Safe, Natural, and Eco-Friendly Alternative**
— Unlike commercial repellents that contain DEET and harmful chemicals, this product uses 100% natural betel leaf extract, making it safer for humans, pets, and the environment.
- **Low Cost, High Market Value**
— The materials are cheap, accessible, and easy to produce, but the final product falls under a high-value category (aromatherapy + insect repellent). It's a high profit margin and strong commercial viability.
- **Dual Function: Aromatherapy + Insect Repellent**
— Also works as a calming, pleasant-smelling candle. This multi-functionality increases user appeal and market demand.

SDGs INVOLVED





Homemade Sponge Gourd Scrub



ABSTRACT

The matured fruit of *Luffa aegyptiaca*, or typically known as sponge gourd, emerges as a popular exfoliating agent in the eco-friendly cosmetic industry due to its gently abrasive quality of natural fibre. This study aims to make a scrub suitable for all skin types with the help of Luffa's special characteristics. In addition to that, it has many benefits for our delicate skin. The upmost important benefit is that the luffa aegyptiaca is a natural exfoliator. It can remove dead skin, unclog pores, and makes our skin smoother. Other than that, it is suitable for all skin types since it is anti-inflammatory & has antioxidant properties that helps calm irritate skins. Last but not least, it can detoxify impurities from the skin thus, improving the skin clarity. Furthermore, we discover that with the help of tea, sugar, chamomile oil, and almond oil, it will enhance the Luffa to work at its optimum in the form of scrub. The tea will act as an exfoliation boost and gives brightening glow to the skin. To add up, the sugar will give hydration boost and helps in maintaining a soft, smooth and bright skin. The chamomile oil will soothes irritate skin and give the scrub a nice fragrance. Other than that, the almond oil will be the base and powerhouse of the scrub, offering deep moisturization as it is rich with vitamin nourishment. With this eco-friendly scrub that is suitable for all skin types, it can overcome problems such as irritating the skin with its synthetic exfoliants ingredient (microbeads, AHAs, BHAs, or salicylic acid). This scrub can also reduce harm to the environment as it is 100% biodegradable and does not have any microbeads that will cause water pollution. This proves that natural homemade scrub is much more environmental friendly, easier on the skin, and is suitable for all skin types.

PROBLEM STATEMENT

- many scrub in the current market have chemical substance that could irritate and harm our skin while being overpriced
- is not environmental friendly

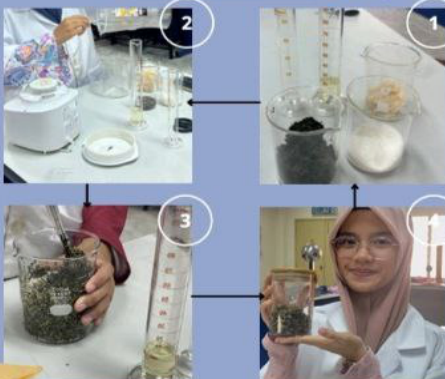
OBJECTIVE

- To make a scrub that is suitable for all skin types
- To make an environmental friendly scrub with natural ingredients
- having lower cost than the market scrub

BENEFIT

- Provides physical exfoliation with luffa and tea leaves.
- Free from synthetic chemicals, parabens, sulfates, and artificial fragrances.
- Less likely to cause irritation, making it better for sensitive skin
- Can be customized for all skin types by adjusting ingredients.
- Less risk of over-exfoliation compared to strong acids/skin
- have lower price compared to other scrubs available on the market and can DIY

PROCEDURE

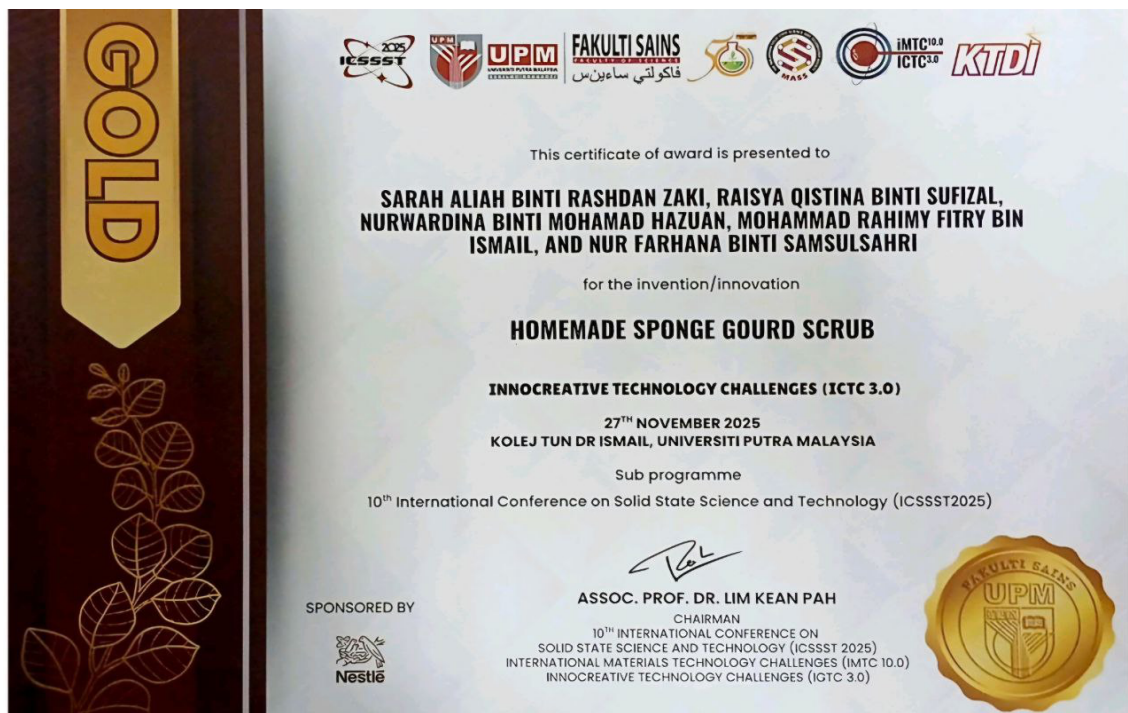


SDG

SDG 3 : Good Health and Well Being
SDG 12 : Responsible Consumption and Production

PRODUCT POTENTIAL

- 100% natural and biodegradable
- Suitable for sensitive skin
- Cheaper than commercial scrubs
- Customizable with different natural ingredients
- Free from synthetic chemicals
- Suitable for eco-shops, online sellers, and wellness centers
- Attractive to users who prefer natural skincare products
- Can become an educational or entrepreneurial school project



Phytox- Coating Agent

PHYTOX COATING AGENT

ABSTRACT

This project introduces an innovative and natural method for extending the shelf life of fruits and vegetables by utilizing Aloe Vera gel and mint leaf extracts. The primary aim is to address the issue of food spoilage caused by microbial activity and oxidation, especially in areas without refrigeration facilities. Aloe Vera contains vitamin C and other natural stuff that help slow down oxidation and retain moisture, while mint leaves possess natural antioxidants such as menthol and flavonoids, which inhibit bacterial growth. The methodology involves extracting Aloe Vera gel and mint leaf solution, then applying them as a coating on selected fruits and vegetables. Observations were recorded over several days to monitor physical changes, microbial growth, and shelf life. The results demonstrated a significant delay in spoilage and decay compared to untreated samples. This objective for this product not only reduces food waste but also promotes the use of sustainable, natural resources that are safe, affordable, and easily accessible. The project highlights the potential of combining traditional plant-based knowledge with scientific methods to support food security and community well-being. In conclusion, this natural preservative offers a promising alternative to chemical preservatives, supporting healthier lifestyles.

PROCEDURE

Boil the mint leaves → wait until mint cools down → aloe vera → Blend aloe vera & mint extract → Filter the mixture → pour it in a spray bottle

PROBLEM STATEMENT

To reduce the oxidation process in fruits which turn brown quickly after being cut. Oxidation affects the appearance and freshness of the fruit, and causes people to throw the fruits away even though they are still edible. This leads to food waste.

OBJECTIVES

- To slow down the oxidation process in fruits such as apples.
- To maintain the natural colour, freshness and appearance of cut fruits.

BENEFITS

- Slow down browning
- Maintains original taste
- Extends the freshness of the fruit
- 100% natural ingredients

EXPERIMENT

With phytoX, with lemon juice, After 4 hour, After 3 Days, After 4 Days, Applying PhytoX to apple

PRODUCT POTENTIAL

Target Users

- Individuals who enjoy eating fruits and prefer fresh, appealing, and long-lasting fruit products.
- Mothers who want to prepare fresh and long-lasting fruits for their children and family, especially for lunchboxes and daily meals.

