E-BOOK OF EXTENDED ABSTRACT

THE 14TH INTERNATIONAL INVENTION, INNOVATION & DESIGN COMPETITION 2025

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GLOW & BRIGHT: AN INNOVATIVE NATURAL SOAP INFUSED WITH HARUM MANIS MANGO

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ABSTRACT

This project introduces an innovation called Harum Manis Soap, a handmade soap created using natural ingredients, especially the Harum Manis mango. The goal of this project is to produce a skincare product that is safe, eco-friendly, and beneficial to the skin while promoting the use of local fruits. The soap is made from Harum Manis mango extract, coconut oil, and glycerin, which help to cleanse, moisturise, and refresh the skin. It also gives off a pleasant natural fragrance. Through this project, students learn about science, entrepreneurship, and environmental care. The result is a creative and useful product that reflects local culture and supports healthy lifestyles. Research and development of this project were conducted at Sekolah Kebangsaan Kampong Salang in collaboration with members of the PIBG committee of Sekolah Kebangsaan Kampong Salang.

***Keyword*:** Harum Manis extract, handmade soap, natural fragrance.

1. INTRODUCTION

Nowadays, people are becoming more aware of the benefits of using natural skincare products. Handmade soap using natural ingredients can be a healthier and more environmentally friendly alternative to commercial soaps. Harum Manis mango, known for its sweet fragrance and nutritional value, offers great potential for use in cosmetic products. This project aims to utilise Harum Manis mango extract to create a unique, fragrant, and skin-friendly soap.

2.1. Literature Review

The development of handmade soap using natural ingredients has been widely explored due to increasing awareness of the harmful effects of synthetic chemicals in commercial skincare products. Natural soaps are typically made using plant-based oils, herbal extracts, and essential oils that provide both cleansing and therapeutic benefits (Ali et al., 2020). Mango (Mangifera indica) is a tropical fruit rich in vitamins A, C, and E, as well as antioxidants and moisturising agents. These nutrients are beneficial for skin health, as they help improve skin tone, prevent dryness, and promote skin regeneration (Kumar & Sharma, 2019). Harum Manis mango, in particular, is a premium variety known for its strong fragrance and high sugar content. Although widely consumed as food, limited research has been conducted on its potential in cosmetic or skincare products. Previous studies have shown that fruit-based ingredients in soap can enhance its moisturising and antioxidant properties (Rahman et al., 2018). In addition, the inclusion of natural fruit extracts can improve user experience due to their unique scent and natural appeal. Furthermore, handmade soap projects have been successfully used in educational settings to teach students about chemistry (saponification), biology (skin health), and environmental science (sustainability). Combining local resources like Harum Manis mango with practical science offers a valuable opportunity for innovation and learning. This project builds on past research while introducing a novel element: the use of Harum Manis mango as a key ingredient in natural soap. It aims to highlight the fruit's skincare potential and encourage local resource utilization in product innovation.

2. METHODOLOGY

This project follows a systematic process that includes research, planning, production, testing, and presentation. Each phase is designed to ensure the final product is effective, safe, and appealing.

2.1 Research and Planning

Ingredient Study: Students research the properties of natural soap ingredients such as mango extract, coconut oil, glycerin, and lye (sodium hydroxide). Soap-Making Method Selection: The project uses the cold process method, which preserves nutrients and fragrance due to low-temperature mixing. Safety Planning: Basic safety precautions are discussed and applied, especially during the handling of lye, which is a caustic substance.

2.2 Ingredient Preparation

Mango Extract: Ripe Harum Manis mangoes are peeled, blended, and strained to obtain a smooth extract or puree. The extract is then slightly reduced (optional) to increase concentration and shelf life. Measurement: All ingredients are measured precisely using digital scales to ensure accurate saponification.

2.3 Soap Production

2.3.1 Mango Integration: The mango flesh is dried and then ground into a fine powder. The mango powder is added to the soap mixture at light trace (when it starts thickening), along with optional essential oils or natural colorants.

2.3.2 Powder Mixture: Alpha arbutin powder, Gluthatione powder and Hyaluronic acid powder are combined. To enhance skin brightening, alpha arbutin powder and glutathione powder are included. Hyaluronic acid powder is used to boost hydration.

2.3.3 Molding: The soap is poured into silicone molds and left undisturbed for 24–48 hours.

2.3.4 Oil Mixture: Organic fragrance oil and Vitamin E liquid are melted and combined. Also mixed opaque glycerin soap base.

2.3.5 Mixing: When both the lye solution and oil mixture reach similar temperatures (~40–45°C), they are combined and stirred.

2.4 Curing Process

After unmolding, the soap bars are left to cure for 4 to 6 weeks in a dry, cool place. This allows water to evaporate and ensures the soap hardens fully and becomes milder.

2.5 Testing and Observation

The soap is tested for texture, lathering, fragrance, and skin-friendliness. Feedback is collected from a small group of students and teachers to evaluate user satisfaction.

2.6 Packaging and Presentation

The finished soap bars are wrapped in eco-friendly packaging with labels that highlight the ingredients and benefits. Students prepare posters or presentation slides to explain the soap-making process and its innovation value for school exhibitions or science fairs.

3. FINDINGS

The Harum Manis Soap innovation project was successfully carried out through several stages, including research, soap formulation, production, and user testing. The following findings were observed:

3.1 Product Characteristics

i. Appearance: The soap bars were solid and smooth, with a natural yellowish color influenced by the mango extract.
ii. Texture: The final product had a firm yet smooth texture, making it easy to handle and apply.
iii. Fragrance: The soap retained a mild and pleasant mango scent, which was well-liked by users.
iv. Lathering: The soap produced a soft and creamy lather, thanks to the coconut oil and glycerin content.

3.2 Skin Effects

i. Moisturising Properties: Users reported that the soap left their skin feeling soft and hydrated, without causing dryness or irritation.
ii. Gentleness: The soap was gentle on sensitive skin and suitable for daily use.

3.3 User Feedback

A simple feedback survey was conducted among 20 users (students and teachers):

Table 1 Feedback survey using Harum Manis soap.

Criteria	Positive Response (%)
Pleasant fragrance	95%
Skin feels soft/moisturised	90%
Attractive appearance	85%
Willing to use again	90%
Eco-friendly impression	100%

3.4 Learning Outcomes

Students gained hands-on experience in soap making, scientific observation, and teamwork. The project enhanced awareness of sustainable product development and the value of local resources.

3.5 Challenges Encountered

Achieving the right texture and consistency requires careful measurement and timing. Lye handling needed strict supervision and safety procedures. Mango extract caused slight discoloration in some batches, which was resolved by adjusting the ratio.

4. CONCLUSION

The Harum Manis Soap innovation project has proven to be a meaningful and impactful educational experience that combines creativity, science, and local cultural appreciation. Through this project, students successfully created a functional handmade soap using Harum Manis mango extract and other natural ingredients, resulting in a product that is gentle, fragrant, and environmentally friendly. This initiative not only introduced students to the fundamentals of chemistry and product formulation but also nurtured valuable soft skills such as teamwork, critical thinking, and entrepreneurship. By using a local fruit that is well-known and appreciated in the region, the project demonstrated how traditional resources can be transformed into modern, value-added products. Feedback from users confirmed the soap's appeal in terms of fragrance, skin benefits, and sustainability. The project also raised awareness about reducing reliance on commercial soaps that may contain harsh chemicals and microplastics, encouraging healthier lifestyle choices and eco-conscious habits. Furthermore, the project highlighted the importance of safety, accuracy, and patience in practical science work. Students learned to handle ingredients with care, follow detailed procedures, and observe curing periods-skills that are transferable to many real-world applications. In conclusion, the Harum Manis Soap project was not only a success in terms of product creation but also served as a holistic educational tool. It fostered innovation,

promoted local pride, and proved that even simple school-based projects can contribute to sustainable practices and community enrichment.

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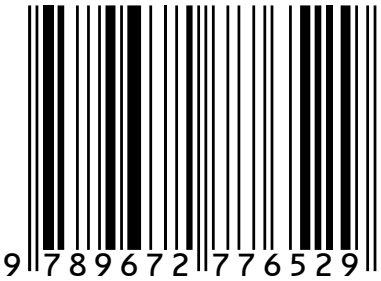

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