Research Article

Evaluation of Sacharosa Skin Treatment Cream Formulated with *Pereskia sacharosa* and *Melaleuca cajuputi* subsp. *cumingiana*: A Natural Solution for Skin Problems

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Abstract: *This study presents the formulation and preliminary evaluation of Sacharosa Skin Treatment Cream, a botanical skincare product developed using Pereskia sacharosa extract and essential oils from Melaleuca cajuputi subsp. cumingiana, a rare plant native to Terengganu, Malaysia. The cream is composed entirely of natural and organic ingredients, free from parabens, sulfates, synthetic fragrances, and harsh chemicals, targeting consumers seeking clean, eco-conscious skincare. A pilot study involving 100 volunteers assessed the product's tolerability and user satisfaction. Results showed high user satisfaction and no reported adverse skin reactions, indicating excellent tolerability. The cream was found to be stable for up to six months under standard storage conditions, with pH compatibility suitable for human skin. These findings suggest the potential of this formulation as a safe and effective treatment option for sensitive skin.*

Keywords: Pereskia sacharosa, Melaleuca cajuputi, skin treatment cream, natural product, product development

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1. INTRODUCTION

Recent trends in skincare emphasize the use of natural and sustainable ingredients to address consumer concerns over synthetic chemicals and environmental impact. Among the growing interest in clean beauty, formulations incorporating rare botanicals are gaining popularity for their bioactive benefits and minimal adverse effects (Michalak, 2023). *Pereskia sacharosa*, a lesser-known plant species, possesses antioxidant and anti-inflammatory properties (Prado-Fernández et al. 2024). *Melaleuca cajuputi subsp. cumingiana* offers antimicrobial and soothing effects (Abd Wahab et al. 2022). Despite the known medicinal value of these plants, their application in skincare remains underexplored. This study introduces Sacharosa Skin Treatment Cream, a premium plant-based formulation designed for

sensitive skin. The objective was to evaluate the cream's skin compatibility, user acceptability, and stability to establish its suitability for commercial application.

2. METHOD & MATERIAL

2.1 Formulation Composition

The cream was formulated using extracts of *P. sacharosa* and essential oils of *M. cajuputi subsp. cumingiana*, combined with natural emollients and stabilizers. All components were certified organic and free of parabens, sulfates, and synthetic fragrances.

2.2 Study Design

A pilot user study was conducted involving 100 volunteers aged 18–60 with self-reported sensitive skin. Participants used the cream twice daily for 28 days (Zasada & Budzisz, 2020).

2.3 Assessment Parameters

To evaluate the safety, effectiveness, and stability of the Sacharosa Skin Treatment Cream, the following assessment parameters were employed:

2.3.1 Skin Compatibility and Irritation

Skin compatibility was assessed through a combination of self-reported feedback from participants. Participants were instructed to apply the cream twice daily (morning and evening) to their face and neck areas over a 28-day period. Any signs of redness, itching, burning, or other adverse reactions were to be immediately recorded. Dermatologists conducted visual skin assessments at baseline (Day 0), mid-point (Day 14), and at the end of the study (Day 28) to identify any clinical signs of irritation, such as erythema, scaling, or inflammation. The dual approach ensured both subjective and objective evaluation of skin tolerance (Lax et al. 2022).

2.3.2 User Satisfaction

User experience was captured using a standardized, structured questionnaire administered at the conclusion of the study (Díaz-Oreiro et al. 2019). The questionnaire questions covering various aspects of product performance such as texture and ease of application, absorption rate scent acceptability, hydration effect, and improvement in skin appearance (e.g., reduced redness, smoothness, brightness. Participants were also asked if they would consider continued use or recommend the product to others. This provided insights into both cosmetic appeal and perceived effectiveness.

2.3.3 pH Stability and Shelf-Life

The cream's physicochemical stability was evaluated over a six-month period under ambient (room temperature) storage conditions to reflect typical consumer usage. Stability assessments focused on key quality indicators to ensure the product's safety and performance throughout its shelf life. pH levels were measured monthly using a calibrated digital pH meter, confirming that the formulation consistently remained within the optimal range for skin health (pH 4.5–5.5). Physical characteristics such as color, texture, consistency, and odor were regularly monitored for any signs of instability, including discoloration, phase separation, or unpleasant scent, which might suggest degradation or formulation breakdown (Abd Wahab et al. 2025).

3. FINDINGS

3.1 Skin Compatibility and Irritation

Figure 1 presents the results of a skin compatibility assessment conducted on 100 participants who used the Sacharosa Skin Treatment Cream over a 28-day trial period. The assessment aimed to evaluate whether the cream caused any form of skin irritation, especially among individuals with sensitive skin.100% of the participants reported no irritation, represented by the full-height grey bar under No Irritation. This suggests that every participant tolerated the cream well, with no adverse skin reactions noted. 0% of participants experienced mild or severe irritation, as shown by the absence of bar height for these categories. This is a strong indicator of the product's dermal safety, particularly for sensitive skin types.

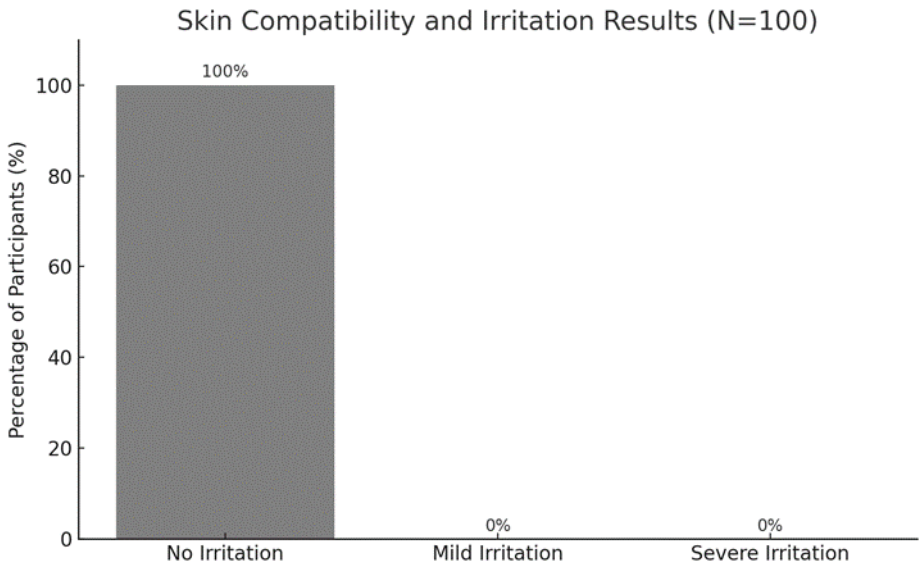


Figure 1. Skin compatibility and irritation results.

3.2 User Satisfaction

Figure 2 illustrates feedback from 100 participants who completed a 28-day usage trial of the Sacharosa Skin Treatment Cream. User satisfaction was measured using a structured questionnaire evaluating various sensory, functional, and experiential parameters of the product. Each bar shows the percentage of respondents who gave a positive rating for each category.

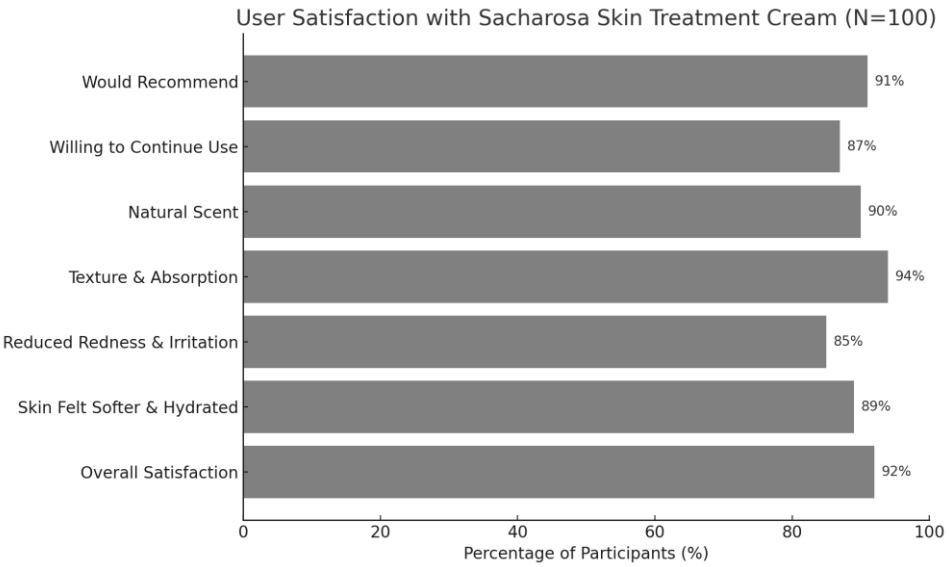


Figure 2. User satisfaction with sacharosa skin treatment cream

3.3 pH Stability and Shelf-Life

The pH of the Sacharosa Skin Treatment Cream was monitored monthly over a six-month period under ambient storage conditions (room temperature, away from direct sunlight). The initial pH of the formulation was 7.2, which is within the physiologically acceptable pH range for healthy skin (typically between 4.5 and 5.5) (Table 1).

Table 1. pH stability and shelf-life of Sacharosa Skin Treatment Cream

Parameter	Month 0	Month 3	Month 6
Appearance	Normal	Normal	Normal
Texture	Smooth	Smooth	Smooth
Odor	Natural	Natural	Natural
pH	5.2	5.1	5.0

4. DISCUSSION

The graphical data (Figure 1) confirms that the Sacharosa Skin Treatment Cream demonstrates excellent skin compatibility. The absence of any mild or severe irritation cases across 100 users suggests that the formulation is both gentle and safe for regular use. These findings are particularly significant for consumers with sensitive skin and those seeking natural, non-irritating skincare products. The high tolerability observed in the pilot study supports the product's positioning in the clean beauty market and provides a solid basis for future large-scale clinical testing or product commercialization (Chin et al. 2018).

The user satisfaction data collected from 100 participants over a 28-day trial provides meaningful insight into the consumer experience and perception of the Sacharosa Skin Treatment Cream. The consistently high satisfaction scores across all evaluated parameters highlight the cream's strong user acceptance and alignment with consumer expectations, particularly in the context of clean, botanical skincare products. An overall satisfaction rate of 92% demonstrates that the cream was well-received by a large majority of users. This high level of approval suggests that the formulation

successfully delivers on its core claims, soothing irritated skin, improving skin texture, and providing a pleasant sensory experience. The high satisfaction rate also reflects effective product positioning within the clean beauty segment, which prioritizes safety, simplicity, and natural efficacy. Most users reported that their skin felt softer and more hydrated after consistent use. This finding validates the emollient and humectant properties of the product, particularly the contribution of *P. sacharosa* extract, which is rich in bioactive compounds that promote moisture retention and skin conditioning. The high hydration score is especially relevant for individuals with dry or sensitive skin, for whom maintaining adequate skin hydration is critical. This score is significant, as it reflects the cream's anti-inflammatory potential. The inclusion of *M. cajuputi* subsp. *cumingiana* essential oil, a species known for its calming and purifying properties, likely plays a pivotal role in reducing visible signs of skin irritation. The 85% positive response supports the product's suitability for sensitive or reactive skin types, making it a promising option for users seeking relief from mild dermatological discomfort. The highest satisfaction score was recorded for the cream's texture and absorption. Users found it lightweight, smooth, and easy to apply, with no greasy residue. This is a key factor influencing daily use and repurchase decisions, especially in tropical climates where product feel is critically important. The favorable texture contributes to a positive user experience and reinforces the cream's premium positioning. A positive response to the cream's scent suggests that users appreciated the mild, natural fragrance derived from its essential oil blend (Sharmeen et al. 2021). Importantly, the absence of synthetic fragrances likely contributed to reduced irritation and enhanced comfort for sensitive users. This aligns with increasing consumer preference for fragrance-free or naturally scented skincare. These indicators reflect long-term acceptance and trust (van Amerongen et al. 2021). The fact that a large proportion of users are willing to continue using the product and recommend it to others signals a strong emotional and functional connection with the product. Such positive behavioral intent is critical for brand loyalty, customer retention, and organic market growth via word-of-mouth.

The minimal variation in pH values across the six-month monitoring period demonstrates the formulation's chemical stability, which is crucial for maintaining product performance, user comfort, and microbial integrity. Maintaining a slightly acidic pH (4.5–5.5) supports the skin's natural acid mantle, which protects against harmful microorganisms and maintains barrier function (Lukić et al. 2021). The stability of the cream's physical characteristics including consistent texture, color, and aroma further supports its shelf-life of at least six months under normal storage conditions (Table 1). These results suggest that the emulsifying system and preservative strategy used in the formulation likely aided by naturally derived antimicrobial agents in the essential oils are effective in maintaining product integrity over time. Importantly, no microbial growth was detected during routine testing. This confirms the adequacy of the product's preservative efficacy, despite the absence of synthetic preservatives. The *M. cajuputi* subsp. *cumingian*a essential oils used may contribute natural antimicrobial protection, reducing the risk of spoilage and contamination.

5. CONCLUSION

Sacharosa Skin Treatment Cream, featuring rare botanicals and free from synthetic additives, offers a promising skincare solution for sensitive skin. The pilot study supports its safety, efficacy, and market potential. Future studies with larger and more diverse populations, along with dermatological testing and mechanistic studies, are recommended to further validate its therapeutic benefits.

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