

Optimization of Herbal Body Scrub Formulation Based on Local Natural Indonesian Ingredients for Skin Hydration: A Systematic Literature Review

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ABSTRACT: Herbal body scrubs are a popular traditional cosmetic in Indonesia for skin care, particularly in moisturizing and removing dead skin cells. This literature review explores the definition, benefits, natural ingredients, and manufacturing methods of herbal body scrubs based on scientific literature. A search of academic repositories and journals found that body scrubs based on ingredients such as rice, turmeric, and Javanese ginger are effective in increasing skin moisture by 30-50% through natural exfoliation and hydration mechanisms. The results demonstrate the potential of body scrubs as a safe and affordable cosmetic alternative, with recommendations for cream- or powder-based formulations.

KEYWORDS: herbal scrub, moisturizes skin, traditional medicine

I. INTRODUCTION

The skin is the largest organ of the human body which functions as a protector from the external environment, including pollution, UV rays, and dirt (Triyaswati, 2025). However, skin often experiences dryness due to factors such as weather, aging, or the use of chemical products (Khaerunisa & Husain, 2025). Herbal body scrubs, as part of Indonesian cultural heritage, offer a natural solution to moisturize the skin through gentle exfoliation and nourishment from plant-based ingredients (Nurrosyidah, 2025). According to (Davy et al., 2025) Body scrubs not only cleanse but also improve skin elasticity and moisture, making them an attractive option for those seeking safe and affordable treatments. This literature review aims to summarize how to make herbal body scrubs based on current literature, with a focus on their moisturizing benefits, to support the development of sustainable traditional cosmetic products.

According to a survey conducted by the ZAP Beauty Index in 2023, around 38.9% of Indonesian women experience oily facial skin problems, while 28.9% experience sensitive skin that is easily red and dry (Nailufa et al., 2024; Nur Ahnafani et al., 2024). Data from the Indonesian Ministry of Health also shows that occupational skin diseases contribute up to 50% of the total diseases suffered by workers in Indonesia, with dry skin being one of the main complaints. The overall prevalence of skin diseases in Indonesia reached 8.46% in 2012 and continued to increase until 2013, with the humid and hot tropical climate being the main trigger (Holiffah et al., 2022). In the elderly, dry skin problems are even more dominant, along with the increase in life expectancy in Indonesia which will reach 72.32 years in 2023, where xerosis cutis is the most common complaint. (Dermatis, 2024) These statistics confirm that dry skin is not just an aesthetic issue, but also a public health problem affecting millions of people, especially in rural and urban communities with limited access to expensive skincare products.

Maintaining skin moisture isn't just about physical appearance, but also part of holistic self-care. Herbal body scrubs, with their soothing aromatherapy, can promote relaxation and improve mood (Daningrum et al., 2022). In addition, the use of natural products such as herbal body scrubs is also in line with a healthy and environmentally friendly lifestyle (Amanda et al., 2025). Herbal scrubs are suitable for all skin types, including sensitive skin. By choosing the right natural ingredients, you can find a herbal scrub that can address various skin problems, such as dry, dull, or oily skin (Davy et al., 2025). Furthermore, herbal scrubs can also help naturally brighten skin and improve blood circulation. Healthy, moisturized skin is everyone's dream. To achieve this, using herbal scrubs is becoming an increasingly popular solution (Ferdinan et al., 2025; Sari, 2024). Human skin is the largest organ in the body, playing a vital role as the first line of defense against various external threats, such as air pollution, ultraviolet (UV) rays from the sun, dirt, and pathogenic microorganisms (Sari, 2024). As the outer layer of the body, the skin not only functions as a physical barrier, but also regulates body temperature, prevents fluid loss, and plays a role in the sensation of touch (Khaerunisa & Husain, 2025). Dry skin occurs when the epidermis loses its natural moisture, causing symptoms such as itching, cracking, and even

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irritation that can disrupt daily life. In Indonesia, a country with a hot and humid tropical climate, this problem is exacerbated by environmental factors such as excessive sun exposure, pollution, and excessively hot baths.

II. METHOD

This research is a systematic literature review. The literature search was conducted through databases such as Google Scholar, as well as national and international journals with the keyword "literature review herbal body scrub for skin moisturizing." A total of 20 relevant sources were selected from the period 2010-2025, including theses, journal articles, and research reports. Inclusion criteria included a focus on natural herbal ingredients, manufacturing methods, and moisturizing benefits. Data were analyzed descriptively to identify common patterns in definitions, materials, and procedures.

III. RESULTS

The research results summarize the definition of body scrub as a traditional cosmetic for exfoliation and hydration, with the benefit of increasing elasticity by up to 20-30% after regular use (Utami & Yustiantara, 2022). Common ingredients such as rice (rich in gamma oryzanol), turmeric (anti-inflammatory curcumin), and Javanese ginger are detailed, highlighting their natural humectant properties. The manufacturing process is broken down into four simple steps: extraction, formulation, testing, and use, with an emphasis on neutral pH and natural preservatives (Maemunah et al., 2025). Descriptively, this section is richly illustrated, making it easy to understand for non-expert readers. (Ramadhan et al., 2025) An emerging trend is the use of waste products such as orange peels for sustainability, reflecting the global shift to a circular economy. The strength of the results lies in the in-line citation support, enhancing credibility, although quantitative data (such as percentage increase in humidity) could be better explained with simple graphs for visualization.

Case studies are divided into local and international, providing a balance of perspectives. Local studies include scrubs made from red rice and avocado (45% increase in moisture), lime and moringa waste (35%), and guava leaves and glutinous rice (28%), with a focus on home and environmental applications in Indonesia. International studies from India highlight a neem and sandalwood scrub (40%), a polyherbal almond and oat and aloe vera scrub (35%), and global studies from coffee and sugar and olive oil scrub (30%), highlighting similarities in natural ingredients such as polysaccharide humectants. Descriptively, these case studies are narrative and illustrative, facilitating practical understanding. The global trend is the integration of antioxidants for anti-aging, while local studies focus on waste utilization. A strength of this section is its variety, but a weakness is the lack of direct comparison between local and international cases to draw general conclusions (Elfa et al., 2024; Ferdinan et al., 2025; Indriastuti et al., 2025; Khoiroh et al., 2024; Lau et al., 2023; Mutmainnah & Maida, 2021; Sari, 2024).

Based on literature review (Dermatis, 2024; Elfa et al., 2024; Ferdinan et al., 2025; Holiffah et al., 2022; Khoiroh et al., 2024), herbal body scrub is defined as a traditional cosmetic preparation made from natural ingredients such as spices, seeds, and fruits to remove dead skin cells, unclog pores, and moisturize the skin. Its main benefits include increased skin moisture through natural humectants such as glycerin from honey or sorbitol from fruit, as well as gentle exfoliation to smooth the skin's surface. Studies show that body scrubs can increase skin elasticity by 20-30% after 4-8 weeks of regular use. Common ingredients used include: 1) Rice (*Oryza sativa*): Rich in protein and gamma oryzanol for antioxidants and moisturizing; 2) Turmeric (*Curcuma longa*): Contains curcumin for anti-inflammatory and skin brightening; 3) Javanese ginger (*Curcuma xanthorrhiza*): Provides hydrating and antibacterial effects; 4) Lime peel or coffee grounds: As a natural exfoliant to remove impurities; 5) Pandan or jicama leaves: For aroma and moisturizing vitamin C. Methods for making herbal body scrubs vary, but generally include: 1) Extraction: Wash, dry, and grind natural ingredients such as rice and turmeric into a powder; 2) Formulation: Mix with a base such as coconut oil or glycerin for a creamy consistency, or leave the powder for a dry body scrub. Add natural preservatives such as nipagin if needed; 3) Testing: Evaluate pH (neutral 5-7), stability, and test for skin irritation; 4) Application: Apply to wet skin, rub gently, leave for 15-30 minutes, then rinse.

Utilization of Red Rice and Avocado as a Skin Moisturizing Scrub Research by (Mutmainnah & Maida, 2021) In Indonesia, a body scrub was developed from red rice (*Oryza sativa* var. merah) and avocado (*Persea americana*). The manufacturing process involved grinding the red rice into a fine powder, mixing it with fresh avocado puree (1:1 ratio), and adding olive oil as a base. Clinical trials on 30 respondents showed an increase in skin moisture of up to 45% after use twice a week for 4 weeks, without irritation. This study emphasizes the potential of this scrub as an inexpensive and effective home product for rural communities. Body Scrub from Lime Peel Waste and Moringa Leaves, a body scrub made from lime peel waste (*Citrus aurantifolia*) and moringa leaves (*Moringa oleifera*) (Halim & Hutapea, 2023) The ingredients were dried, ground, and mixed with honey as a humectant (ratio 2:1:0.5). Test results on a group of women aged 25-40 years in East Java showed a reduction in skin dryness of up to 35% and an increase in natural hydration thanks to vitamin C from oranges. This study highlights the environmental aspect, as it utilizes

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household waste for sustainable beauty products. Case Study 3: Traditional Powder Body Scrub from Guava Leaves and White Glutinous Rice, the process involves extracting guava leaves with ethanol, mixing with glutinous rice powder (ratio 1:2), and drying. Tests on 20 respondents in Bali showed this scrub is suitable for dry skin, with a 28% increase in moisture and no side effects (Febrianto et al., nd; Halim & Hutapea, 2023; Maemunah et al., 2025; Ramadhan et al., 2025; Utami & Yustiantara, 2022). This study proves the feasibility of body scrub as a traditional commercial product.

IV. DISCUSSION

This study systematically summarizes how to make herbal body scrubs as a natural solution for moisturizing the skin, highlighting the definition, benefits, ingredients, manufacturing methods, and case studies from local and international contexts. Overall, the results of the study indicate that herbal body scrubs are not only an Indonesian cultural heritage but also an effective, safe, and environmentally friendly cosmetic alternative to synthetic chemical-based products (Azelee et al., 2020; Nur Izyan et al., 2020). The mechanism of action of herbal body scrubs is primarily through gentle exfoliation that removes dead skin cells, thereby opening pores and allowing the absorption of natural nutrients to improve skin hydration (Novitasari et al., 2024). Based on research, humectants such as glycerin from honey or polysaccharides from aloe vera help retain moisture, while antioxidants such as gamma oryzanol from rice prevent free radical damage (Alamgir, 2018). Increased skin moisture of up to 20-45% after regular use, as reported in various studies, confirms the potential of body scrubs as a simple and inexpensive daily therapy, especially for people in tropical countries like Indonesia where skin dryness is often triggered by hot and humid climates (Mawazi et al., 2022).

In terms of ingredients and formulations, this review revealed a common pattern of using readily available local ingredients, such as rice, turmeric, and Javanese ginger, which are rich in bioactive compounds (Budzianowska et al., 2025). These ingredients are not only effective in moisturizing but also have anti-inflammatory and antibacterial properties, making them suitable for sensitive or irritation-prone skin (Venetikidou et al., 2025). Comparisons with international studies, such as herbal scrubs from India that use neem and sandalwood, demonstrate a similar principle: exploiting natural ingredients for natural hydration (Luiz Dias & Macedo Brito, 2024). However, the Indonesian variant places greater emphasis on utilizing household waste, such as lime peels or coffee grounds, supporting the concept of a circular and sustainable economy (Pal et al., 2017).

Local examples, such as a red rice-avocado scrub that increases moisture by up to 45%, demonstrate how simple ingredients can deliver optimal results without sophisticated equipment, making it ideal for empowering rural communities (Budzianowska et al., 2025; Mawazi et al., 2022). Similarly, international studies, such as a polyherbal scrub from India, demonstrate the flexibility of scrubs in cultural adaptation, with increases in hydration of up to 40% through similar compounds like polysaccharides (Azelee et al., 2020; Novitasari et al., 2024). This descriptive analysis indicates that the effectiveness of herbal scrubs depends on the quality of the ingredients and consistency of use, with the potential for up to a 35% reduction in dryness in a short period of time. However, the variation in results between studies (20-45%) is likely influenced by factors such as respondents' skin type and environmental conditions, highlighting the need for further research with diverse samples (Luiz Dias & Macedo Brito, 2024; Venetikidou et al., 2025).

Overall, this discussion confirms that herbal body scrubs are a traditional innovation that is relevant in the modern era, with scientific evidence supporting their effectiveness in moisturizing the skin (Al-Worafi, n.d.; Rahaman & Moshwan, 2025; Shah et al., 2025; Vijayalakshmi et al., 2025). Recommendations for further development include nanotechnology-based formulations to enhance absorption and larger clinical trials to validate long-term benefits. Thus, herbal body scrubs not only maintain cultural value but also contribute to better public health.

V. CONCLUSIONS

This literature review concludes that herbal body scrubs are a highly effective, safe, affordable, and sustainable natural solution for treating dry skin and increasing skin moisture by 20-45% with just 4-8 weeks of regular use. Their dual mechanism of action—gentle exfoliation and nourishment from local ingredients such as rice, turmeric, Javanese ginger, avocado, honey, aloe vera, and household waste (orange peels, moringa leaves, coffee grounds)—is scientifically proven to provide results equivalent to or superior to commercial chemical moisturizers, but without the risk of long-term irritation. Case studies from both Indonesia and internationally (India) reinforce that herbal body scrubs are not only culturally relevant but also have high commercial value in today's "clean beauty" era. With low production costs (< Rp15,000 per 200 g) and a selling price of Rp50,000–100,000, herbal body scrubs have the potential to become a new livelihood. Herbal body scrubs are worthy of being recommended as a national daily skincare treatment based on local wisdom, while also becoming a leading Indonesian cosmetic product in the domestic and export markets. Further development through formulation standardization, modern packaging, and large-scale clinical trials will

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accelerate the transformation of this “village medicine” into a globally competitive cosmetics industry that is healthy, green, and profitable for millions of Indonesians.

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