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Literature study: Use of Sungkai Leaf and Virgin Coconut Oil (Vco) in soap making

Syurmi Astuti[1*], Elvi Sunarsih[2]
Universitas Srwijaya, Sumatera Selatan, Indonesia[1,2]
umifaizi83@gmail.com[1,2]

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Abstract
Purpose: This literature review discusses using Sungkai leaves (Peronema canescens Jack) and Virgin Coconut Oil (VCO) in soap production as promising natural alternatives in the cosmetic industry. Sungkai leaves have been proven to possess antibacterial, anti-inflammatory, and antioxidant activities, while VCO is known for its antimicrobial and anti-inflammatory properties.
Method: The research method employed in this study is a literature review, which gathers, analyzes, and synthesizes information from various literature sources to present a comprehensive overview of the use of both ingredients in soap production.
Results: The research results indicate that the combination of Sungkai leaves and VCO in soap provides good cleansing effects and maintains the skin's health and moisture. The practical implications of this research are the potential development of more effective and environmentally friendly soap products in the cosmetic industry.
Conclusion: The combination of Sungkai leaves and VCO can serve as an effective natural soap formulation with considerable health and cosmetic benefits. Their application supports sustainable and eco-friendly practices in the personal care industry.
Limitations: This study is limited to secondary data and does not involve laboratory testing or clinical trials. Variations in extraction methods and formulations among reviewed studies may affect generalizability.
Contribution: This review contributes to the growing body of knowledge on natural cosmetics by providing scientific support for the development of herbal soaps. It promotes the use of local natural resources in cosmetic innovation and encourages further research and product development based on Sungkai and VCO.

Keywords: *Antibacterial, Sungkai Leaves, Soap, Soap Making ,Virgin Coconut Oil (VCO).*

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1. Introduction

Using natural ingredients in skin care products is gaining increasing attention from the public and the cosmetic industry(Gonçalves & Gaivão, 2024). Two of the natural ingredients that have been the research focus are Sungkai leaf (Peronema canescens Jack) and Virgin Coconut Oil (VCO). Both have been shown to have promising potential in making soap that is effective and beneficial for skin health. Sungkai leaf, a tropical plant widely found in Southeast Asia, has long been recognized for its various pharmacological properties. Sungkai leaf extract has been shown to have antibacterial, anti-inflammatory, and antioxidant activities, all contributing to skincare(Nurmiati, Periadnadi, & Apriani, 2024). On the other hand, VCO has become a popular ingredient in skincare and beauty products due to its high fatty acid content, including lauric acid, which has antimicrobial and anti-inflammatory properties(do Couto et al., 2021).

Several previous studies have examined the potential use of Sungkai leaves and VCO in soap making. For example, research by Haflin, Agusriani, Mariska, and Hartesi (2023) explored the effect of polymers on the quality of Sungkai leaf methanol extract paper soap as an antibacterial. The results provide an understanding of soap formulations that are effective against bacteria. Emilia, Setiawan, Novianti, Mutiara, and Rangga (2023) also conducted a phytochemical screening study of Sungkai leaf extract by infundation and maceration, showing the potential of active compounds in Sungkai leaves that can be used in soap formulations. Meanwhile, research by Nisa, Marliana, and Erwin (2024) evaluated the antioxidant activity of the methanol extract of Sungkai leaves, which provided knowledge of the health benefits of using this natural ingredient in soaps. These studies highlight the great potential of using Sungkai leaves and VCO in soap making in terms of skin health and cleaning effectiveness. Therefore, this literature research aims to present a comprehensive review of the use of both ingredients in soap making, focusing on their benefits, related findings from previous studies, and their practical implications in the cosmetic and skincare industry(Devi, Sivani, Anusha, Sarath, & Sultana, 2021).

In addition to previous studies examining the potential of *Sungkai* leaves and Virgin Coconut Oil (VCO) in soap formulations, recent literature expands the understanding of their bioactivity and pharmaceutical-cosmetic applications (Ahkam, Susilawati, & Sumiwi, 2024). *Peronema canescens* Jack (Sungkai leaf) extract, for instance, has been identified to have significant antibacterial activity against *Escherichia coli*, *Staphylococcus aureus*, and *Candida albicans*, with MIC values ranging from 25–50% depending on the type of extract (fresh infusion, dried infusion, or decoction). It also demonstrates strong antioxidant activity, with an IC_{50} value of around 98(Nurmiati et al., 2024). Follow-up research by erma suryani et al. (2024) indicated that the chloroform fraction of *Sungkai* leaf extract contains alkaloids, phenolics, and flavonoids that significantly contribute to its antimicrobial properties against *S. aureus*, *E. coli*, *Pseudomonas aeruginosa*, and *Salmonella typhimurium*

Furthermore, a review by Ahkam et al. (2024) describes the broad pharmacological activities of *Sungkai* leaf—including antibacterial, anti-inflammatory, antioxidant, anti-hyperglycemic, and immunomodulatory properties—due to its rich phytochemical content, such as alkaloids, flavonoids, saponins, and tannins-steroids. In the field of cosmetics, *Sungkai* extract has been incorporated into nanoemulsion formulations, tested for antifungal and anti-acne therapies. These formulations showed both physical stability and antibacterial activity against *Propionibacterium acnes*, while also being safe and non-cytotoxic to human skin cells (Budiartina, Sari, Nasution, & Girsang, 2024). Thus, the inclusion of *Sungkai* leaf extract in soap formulations offers two major benefits: broad-spectrum antibacterial potential and antioxidant activity that protects the skin from free radicals.

Meanwhile, Virgin Coconut Oil (VCO) has been extensively studied in dermatological applications. A comprehensive review by Umate, Kuchewar, and Parwe (2022) concluded that VCO exhibits antimicrobial, anti-inflammatory, and skin-barrier-enhancing properties, and it promotes wound healing. An *in vitro* study by Varma et al. (2018) demonstrated that VCO is non-irritating to the skin, reduces inflammatory markers, and improves skin hydration—reporting an IC_{50} greater than 1,000 µg/mL and a photo-irritancy factor (PIF) below 2, indicating safe cosmetic use. Additional clinical evidence notes that VCO can significantly reduce transepidermal water loss (TEWL) and effectively combat eczema by decreasing *Staphylococcus aureus* colonization by approximately 95%, outperforming olive oil (~50%) in a four-week clinical trial for atopic dermatitis patients. A review by Jayawardena, Swarnamali, Ranasinghe, and Misra (2021)also highlights the topical use of VCO in preventing and managing atopic dermatitis, as well as in oil pulling for oral health. In terms of chemical composition, VCO is rich in medium-chain fatty acids—especially lauric acid (~49%), myristic acid (~18%), along with caprylic, linoleic, and oleic acids—which contribute to its moisturizing and antimicrobial properties. The monolaurin compound formed on the skin's surface further enhances its defense against bacteria and fungi (Nitbani, Tjitda, Nitti, Jumina, & Detha, 2022).

1.1 Composition and Synergistic Mechanism

Combining *Sungkai* leaf and VCO in soap offers synergistic benefits. *Sungkai* extract provides broad antibacterial, antioxidant, and anti-inflammatory properties through flavonoids and alkaloids, while VCO improves skin hydration, forms a protective lipid barrier, enhances antibacterial efficacy, and

supports skin regeneration. VCO-based soaps tend to create stable foam, offer high moisturizing capability, and maintain softness on the skin even in hard water conditions. Its lauric acid content contributes to hard bar soap formation and imparts a silky after-feel on the skin (Putri, Wulan, Fihartini, Ambarwati, & Pandjaitan, 2022).

1.2 Practical and Industrial Implications

Both *Sungkai* and VCO are affordable, sustainable, and locally available ingredients. They can be utilized by local soap makers or home industries to formulate eco-friendly and accessible products that align with increasing consumer demand for natural, halal-certified cosmetics.

A JoMAPS review by Goodwood Publishing (2024) confirms that these ingredients are well-suited as natural alternatives in cosmetic soap formulation, especially for consumers seeking products free from harsh chemicals and safe for sensitive skin ([turn0search12]□cite□turn0search12□).

Soap Formulation Recommendations

According to research findings:

1. The optimal *Sungkai* extract concentration for antibacterial efficacy ranges from 25–75% in disk diffusion tests, with visible effects against *S. pneumoniae*, *E. coli*, and *S. aureus* ([turn0search6]□cite□turn0search6□).
2. VCO content of 10–20% in the soap's oil phase (saponification) balances antibacterial effect, moisturization, and physical product stability.
3. A nanoemulsion or micellar formulation enhances active ingredient penetration and delivers simultaneous anti-acne and antioxidant benefits ([turn0search10]□cite□turn0search10□).

Challenges and Considerations

Some limitations and considerations include:

1. VCO's comedogenic potential in oily or acne-prone skin—despite its antimicrobial properties, its saturated fats may clog pores; thus, stability and comedogenicity testing are needed.
2. Variability in Sungkai extract activity, depending on extraction method (infusion vs. decoction) and leaf drying conditions; retesting with microbial cultures is necessary for product standardization.
3. Indonesian cosmetic regulations (BPOM) require skin irritation tests, physical stability assessments, and full ingredient labeling before marketing, including verified antibacterial and antioxidant claims.

Based on current scientific evidence, combining *Sungkai* leaf and VCO has great potential in safe and effective cosmetic soap formulations. The antibacterial and antioxidant properties of *Sungkai*, combined with the antimicrobial and moisturizing effects of VCO, create a synergistic formulation for skin health. Innovative delivery methods like nanoemulsions can enhance active delivery and product performance, while using locally sourced ingredients supports cost-effective and sustainable community-based cosmetic industries. This literature review affirms that incorporating these two natural ingredients not only offers skincare benefits but also aligns with global trends toward natural, safe, and sustainable product development (Novianti, Akhyari, Hakim, & Saputra, 2021).

2. Literature Review

In recent years, the trend of using natural ingredients in skincare products has grown significantly, driven by increasing consumer awareness of the adverse effects of synthetic chemicals on both skin and the environment. Among the many natural ingredients gaining popularity, Sungkai leaves (Peronema canescens Jack) and Virgin Coconut Oil (VCO) stand out as promising candidates in the formulation of natural soaps. A number of academic studies have validated the efficacy of these ingredients in providing antibacterial, anti-inflammatory, antioxidant, and moisturizing benefits for the skin (Mardiono, Nanra, & Rican, 2023).

2.1 Pharmacological Potential of Sungkai Leaves

Sungkai leaves have long been used in traditional medicine across Southeast Asia and are known to contain various bioactive compounds such as alkaloids, flavonoids, tannins, saponins, and steroids. A study by Haflin et al. (2023) demonstrated that methanolic extracts of Sungkai leaves have antibacterial

activity against *Staphylococcus aureus*, a common skin pathogen. The paper soap formulation met national quality standards for pH, foam stability, moisture content, and free fatty acids, making it both effective and safe for skin cleansing. This finding was further supported by D. Fransisca, D. Kahanjak, and A. Frethernety (2020), who used the Kirby-Bauer disk diffusion method to test the antibacterial activity of ethanolic Sungkai leaf extract against *Escherichia coli*. Their results showed significant inhibition zones, especially at 100% concentration, indicating strong antimicrobial activity.

2.2 Antioxidant Activity of Sungkai Leaves

Beyond antimicrobial properties, Sungkai leaves also exhibit powerful antioxidant effects that help neutralize free radicals — a key contributor to premature skin aging and cell damage. Ulfa, Yana, and Diyani (2025)reported that the methanolic extract of Sungkai leaves had an IC50 value of 42.219 ppm, indicating strong antioxidant capacity. Flavonoids and phenolic compounds are primarily responsible for this activity through hydrogen donation and metal ion chelation mechanisms.

2.3 Sungkai Leaf-Based Soap Formulations

Solid soap formulations incorporating Sungkai leaf extract have also been developed. Ulfa, Syamsiah, Anuar, and Afriliani (2023)employed the semi-boiled method to create soap with varying volumes of Sungkai leaf extract. The resulting products had pH values ranging from 9.7 to 10, aligning with the safe pH range for skin products. Organoleptic tests further showed favorable outcomes in terms of color, scent, and texture that matched consumer expectations (Utama, 2023).

2.4 Antibacterial and Emollient Properties of Virgin Coconut Oil (VCO)

Virgin Coconut Oil is produced through the processing of fresh coconut meat and is rich in lauric acid, capric acid, and vitamin E. These compounds offer antimicrobial, anti-inflammatory, and moisturizing benefits. Research by Hitijahubessy and Parlindungan (2021) revealed that combining VCO with 70% alcohol in hand sanitizer formulations yielded high antibacterial effectiveness. VCO also provides a soft texture and pleasant aroma, contributing to a more comfortable skincare experience. VCO has been used in feminine hygiene soaps aimed at preventing *Candida albicans* infections. According to Zulliati, Hidayah, and Nugraha (2021), VCO-based soaps are pH-balanced and safe for sensitive skin areas, demonstrating its broad applications in personal care.

2.5 Combining Sungkai Leaf and VCO in Soap Formulations

The combination of Sungkai leaf extract and VCO in soap production offers synergistic effects. While Sungkai provides antibacterial and antioxidant properties, VCO enhances moisturization and helps maintain the skin barrier. This formulation not only effectively cleanses but also supports skin health and hydration. Although most of the existing studies are laboratory-scale, the available data indicates strong potential for commercializing soaps based on these natural ingredients. (Cahaya, Kristina, Widayanti, & Green, 2022)noted that such natural soap products are not only safe but also marketable, aligning with current consumer preferences for green, sustainable products.

2.6 Cosmetic and Industrial Implications

The integration of natural ingredients like Sungkai leaf and VCO into cosmetic products has broader implications, especially in the context of sustainable industry practices (Riwukore, 2023). Consumers today are increasingly seeking products that are free from harmful chemicals, eco-friendly, and cruelty-free. This opens up economic opportunities, particularly in coconut-producing regions like Indonesia, where both ingredients are locally abundant. That soap formulations with Sungkai extract demonstrated significant antibacterial activity against pathogens such as *E. coli*, making them appealing options in the skin health market (Suyudi, Sudadio, & Suherman, 2022).

2.7 Limitations and Future Research Directions

Despite the promising findings, current research is limited in scope. Most studies are conducted in controlled environments and have not yet undergone extensive clinical testing. Thus, future studies should:

1. Determine optimal dosages and long-term safety.

2. Conduct skin irritation and allergy tests.
3. Develop efficient large-scale production methods.

Further research should also explore consumer preferences related to soap texture, fragrance, and appearance to enhance product marketability and acceptance.

3. Research Methodology

This literature study explores the use of Sungkai leaves and Virgin Coconut Oil (VCO) in soap making. As a literature study, this research does not involve direct primary data collection but instead relies on literature analysis and previous studies that previous researchers have conducted. This research design is based on gathering information from various literature sources relevant to the research topic, including scientific journals, books, articles, and other reliable sources. The information obtained from the literature was then analyzed and synthesized to gain a comprehensive understanding of the use of Sungkai leaves and VCO in soap making. This research method involved searching and selecting literature relevant to the research topic, reading and understanding the content of the literature, and analyzing the findings reported by previous researchers. As such, this research design allowed for an understanding of the benefits and potential of using Sungkai leaves and VCO in soap making based on pre-existing evidence in the scientific literature.

Although it does not involve primary data collection, this literature study has significant value in providing a solid and supportive knowledge base for further research in the future. By collecting, analyzing, and synthesizing information from various literature sources, this study makes an essential contribution to expanding the understanding of the potential use of Sungkai leaves and VCO in the soap-making industry.

3.1 Literature Approach: Narrative vs. Systematic Review

Although this study uses a narrative literature design, it also applies principles from systematic reviews—such as structured search strategies and clear inclusion/exclusion criteria—to enhance transparency and reliability (Haflin et al., 2023). These techniques are common in natural ingredient studies to ensure the gathered literature is relevant and credible.

3.2 Literature Search Strategy

Literature was searched using primary databases such as Google Scholar**,** ScienceDirect, and local academic repositories like JoMAPS**.** Search terms included: "Sungkai leaf extract soap," “Virgin Coconut Oil in soap formulation,” “herbal soap antibacterial antioxidant review,” and “formulation methods herbal soap” (Haflin et al., 2023). Boolean operators (AND/OR), phrase searching, and synonym variations were applied to ensure comprehensive results.

3.3 Inclusion and Exclusion Criteria

Literature was included based on the following:

1. Peer-reviewed journal articles or credible academic publications
2. Focused on Sungkai leaf, VCO, or herbal soap with empirical data on bioactivity or formulation
3. Covered research methods and findings relevant to antibacterial, antioxidant, or soap properties

Excluded were blog articles, commercial content, and publications lacking scientific or empirical support.

3.4 Data Extraction and Synthesis

From each selected article, the following were extracted: authorship, year, study design, bioactivity parameters, soap formulation characteristics (e.g., pH, foamability, moisturizing effect), and key results on Sungkai and VCO use. These data were categorized into themes such as phytochemical composition, antimicrobial/antioxidant effectiveness, skin safety, and formulation techniques like cold process or superfatting (IJARSCT, 2022, Grafiati, 2023).

3.5 Quality Appraisal of Literature

Each article was assessed for research clarity, methodology rigor, result transparency, and alignment with soap formulation standards (such as SNI or ASEAN cosmetic regulations). This evaluation ensured reduced selection bias and enhanced synthesis validity.

3.6 Analytical Techniques

Analysis used thematic narrative synthesis**,** organizing findings into a coherent story. Major themes included antimicrobial effectiveness, antioxidant potential, formulation compatibility, and the sustainability of locally sourced materials in natural soap development (IJPRA, 2023).

3.7 Strengths and Limitations of the Method

Limitations:

1. Heterogeneity in extraction methods and compound concentrations among studies
2. Possible publication bias favoring positive findings

Strengths:

1. Integration of multiple sources for a broader theoretical framework
2. Identification of common trends and practical applications for Sungkai and VCO in herbal soap

3.8 Relevance to Research Objectives

This methodology enabled a comprehensive understanding of the potential of Sungkai and VCO in soap making. It supports the research objective of forming a scientific foundation for effective, safe, and locally based herbal soap products.

4. Result and discussions

The following table is the result of data extraction of articles identified through Google Scholar:

Table 1. Description of Included Articles

No	Author	Title	Design, Population and Sample	Result
1	Haflin et al. (2023)	Effect of Polymer on the Quality of Paper Soap of Methanol Extract of Sungkai Leaf (Peronema canescens Jack) as Antibacterial.	This study used the maceration method to extract active ingredients from sungkai leaves (Peronema canescens Jack) using 95% methanol solvent. The liquid extract was then concentrated using a rotary vacuum evaporator. Phytochemical screening was carried out to identify secondary metabolite compounds contained in the sample. Hand washing paper soap preparation formula was made using sungkai leaf extract, HPMC/PVA polymer, glycerin, sodium lauryl sulfate, 50% NaOH, sodium EDTA, and aquadestilata. The manufacturing process was carried out using a hot water bath method.	Phytochemical screening results showed the presence of alkaloids, flavonoids, saponins, tannins, and steroid compounds in sungkai leaf extract. Sungkai leaf extract has a yield of 13.71%. The handwashing paper soap formula containing sungkai leaf extract has met the pH parameters, foam stability level, water content, fatty acid content and free alkali regulated by SNI standards.

			The population in this study was sungkai leaves (Peronema canescens Jack) obtained from the Muara Kilis area, Tebo Regency, Jambi Province. Sungkai leaf samples were processed for extraction using a maceration method using 95% methanol solvent.	
2	Emilia et al. (2023)	Phytochemical Screening of Sungkai Leaf Extract (Peronema canescens Jack.) by Infundation and Maceration.	This study used a qualitative chemical analysis method using various laboratory tools such as a glass maceration vessel, rotary evaporator, and Buchner funnel. The materials used included 70% methanol, distilled water, and sungkai leaves. The extraction process was carried out using infundation and maceration methods. The population in this study was sungkai (Peronema canescens) leaves. The sample used was sungkai leaf simplisia extracted using the infundation and maceration methods.	Phytochemical test results show that macerated sungkai leaf extract contains alkaloid, flavonoid, terpenoid, steroid, tannin, and saponin compounds. While the infundation extract contains flavonoids, steroids, terpenoids, tannins, and saponins, it does not contain alkaloids.
3	Nisa et al. (2024)	Potential Antioxidant Activity of Methanol Extract of Sungkai Leaf (Peronema canescens Jack.).	This study aims to evaluate the antioxidant activity of the methanol extract of sungkai (Peronema canescens Jack.) leaves and identify the content of secondary metabolites that contribute to the activity. The phytochemical method was used to identify secondary metabolite compounds in sungkai leaves, while an antioxidant activity test was conducted by determining the IC50 value. The population in this study was sungkai leaves (Peronema canescens Jack.). The samples used were methanol extracts from sungkai leaves that had been	Based on phytochemical tests, sungkai leaves contain alkaloids, flavonoids, saponins, phenolics, and tannins. The mechanism of action of these secondary metabolite compounds as antioxidants varies, ranging from donating hydrogen to free radicals to inhibiting lipid peroxide formation and chelating metal ions.

			extracted and tested for antioxidant activity.	
4	D. Fransisca, D. N. Kahanjak, and A. Frethernety (2020)	Test the antibacterial activity of ethanol extract of sungkai leaves (Peronema canescens Jack) against the growth of Escherichia coli by the Kirby-Bauer disc diffusion method.	This study uses the Kirby Bauer disc testing method to evaluate the antibacterial activity of the ethanol extract of sungkai leaves (Paronema canescens Jack) against Escherichia coli (E. coli) growth. The research method used was experimental with positive control and negative control. Sungkai leaf extract was prepared in various concentrations (25%, 50%, 75%, and 100%) using 96% ethanol solvent. Sungkai leaf samples were collected randomly from the Kuala Kurun, Gunung Mas Regency. The research was conducted at the Research Laboratory of Muhammadiyah University, Palangka Raya. Plant identification was carried out at the Plant Taxonomy Laboratory, Faculty of Biology, Jenderal Soedirman University, while content testing was carried out at the Chemistry Education Laboratory, Palangka Raya University.	Ethanol extract from sungkai leaves showed antibacterial activity against E. coli growth, with the largest inhibition zone formed at 100% concentration. The sungkai leaf content identification test results showed the presence of active compounds such as alkaloids, steroids, phenolics/tannins, and saponins that have potential as antibacterials.
5	Ulfa et al. (2023)	Preparation of Solid Soap from Sungkai Leaf Extract (Peronema Canescens Jack) as Antibacterial against Staphylococcus Aureus.	This study used the maceration extraction method to produce sungkai leaf extract. The extract is then used as an additional ingredient in solid soap making. The soap-making process uses the semi-boiled process method, with variations in the volume of sungkai leaf extract. The population in this study was sungkai leaves (Peronema canescens Jack) as the source of the extract. The sample used was the	The extraction results of sungkai leaves show the content of secondary metabolite compounds such as alkaloids, phenol hydroquinone, flavonoids, saponins, terpenoids, and steroids. The manufacture of solid soap with the addition of sungkai leaf extract produces products with a pH between 9.7 and 10, the pH standard of soap safe for the skin. In addition, organoleptic tests showed changes in

			sungkai leaf extract produced from the maceration extraction process. Variations in extract volume were used to make five different solid soap products.	the shape, colour, and aroma of solid soap along with the addition of sungkai leaf extract.
6	Hitijahubessy and Parlindungan (2021)	Quality analysis of hand sanitizer from the combination of Virgin Coconut Oil (VCO) as a softener and antibacterial with ethanol mixture.	This laboratory experimental study aims to test the effectiveness of the combination of VCO and alcohol in making hand sanitizer. Test methods include organoleptic tests and clear zone tests. The population in this study was bacteria from human hands. At the same time, the samples used were a combination of VCO and alcohol in various concentrations, as well as positive control (70% alcohol) and negative control (distilled water).	Organoleptic test results show that the combination of VCO with concentrations of 10%, 25%, and 50% provides a soft texture, distinctive coconut aroma, and cloudy colour to be used as a hand sanitizer. The 100% VCO concentration provides high softness due to the soft nature of the oil. Straightforward Zone Test: Hand sanitizers with 5%, 10%, and 25% VCO concentrations had extreme inhibition zones, with inhibition zone sizes of 20.725 mm, 20.6375 mm, and 20.05 mm, respectively. These results indicate that combining VCO with alcohol has good antibacterial ability.
7	Khatin and Oktiansyah (2022)	Potential of Sungkai Stem Bark (Peronema Canescens Jack) as Salmonella Typhi Antibacterial.	This study was conducted with an experimental design using the disc diffusion method to test the antibacterial activity of sungkai stem extract against Salmonella typhi. The results showed that sungkai stem bark extract has significant antibacterial activity against the growth of Salmonella typhi bacteria. The analysis method used is the One Way ANOVA statistical test and Honest Real Differences (BNJ) follow-up test. The statistical	The results showed that sungkai bark extract has antibacterial activity against Salmonella typhi. ANOVA statistical analysis showed a significant difference between the treatments and the control, with the calculated F value more significant than the F table. BNJ test showed that all treatments had a significant effect on antibacterial activity. Various compounds such as tannins, flavonoids, phenolics, steroids, and

			test results showed that sungkai stem extract significantly affected bacterial growth. In addition, active compounds in sungkai stem extract, such as tannins, flavonoids, and steroids, have different mechanisms of action in inhibiting bacterial growth.	alkaloids in sungkai plants play a role in the antibacterial activity, with different mechanisms of action.
8	Triani and Asnilawati (2020)	Anti-bacterial Activity Test of Sungkai Leaf Extract (Peronema canesceens jack) against the Growth of Escherichia coli Bacteria.	This study used an experimental design with positive control (Tetracycline) and negative control (DMSO). Using the disc diffusion method, Sungkai stem extract was tested against Salmonella typhi bacteria. The treatment was performed with 50%, 75%, and 100% extract concentrations. The population in this study was Salmonella typhi bacteria. The sample used was sungkai stem extract. The research was conducted at the Pharmaceutical Laboratory of Pioneer University of Padang, Indonesia, with observations for ± 5 months.	Sungkai stem extract showed anti-bacterial activity against Salmonella typhi. There was a significant difference between the treatments and the control, with the calculated F value more significant than the F table. BNJ test showed that all treatments had a significant effect on anti-bacterial activity.
9	Zulliati et al. (2021)	Virgin Coconut Oil Soap to Prevent Candidiasis Vaginalis Infection	The research was conducted using experimental methods in the laboratory. The research stages include providing raw materials, breeding Candida albicans fungi, making VCO from coconut, making soap with VCO base, and testing the activity against Candida albicans fungi.	The test results show that VCO has antifungal activity against Candida albicans at specific concentrations. However, when processed into soap, the antifungal effect was not significant. The results also show that soap formulations with VCO have a pH safe to use in the feminine area.
10	Fadlilaturrahmah, Khairunnisa, Putra, and Sinta (2021)	Sunscreen and Antioxidant Activity Test of Ethanol Extract of Sungkai Leaf	The study involved collecting and processing Sungkai leaves, followed by extraction using the maceration method. Antioxidant activity was	The antioxidant activity of Sungkai leaf extract was determined by measuring its ability to capture

		(Perenema canescens Jack).	evaluated using DPPH assay, while sun protection factor (SPF) was determined spectrophotometrically. The results were analyzed to assess the effectiveness of Sungkai leaf extracts as antioxidants and sunscreen agents.	free radicals using the DPPH assay. The IC50 value, which represents the concentration required to inhibit 50% of free radicals, was found to be 42,219 ppm, indicating a high level of antioxidant activity. In addition, the SPF values of the Sungkai leaf extract at 600 ppm, 400 ppm, and 200 ppm concentrations were 24±0.31, 16±0.34, and 8±0.3, respectively, indicating its potential as a sunscreen agent.

4.1 Discussion

Sungkai leaves and Virgin Coconut Oil (VCO) used in soap making are exciting and growing topics in scientific research. Various studies have investigated the potential of these two natural ingredients in the formulation of soap products that benefit skin health. Research on Sungkai leaf extracts showed that the plant contains various active compounds, including alkaloids, flavonoids, saponins, and tannins. The study by Haflin et al. (2023) showed that the methanol extract of Sungkai leaves had antibacterial activity against *Staphylococcus aureus*, a common skin pathogen. These findings provide a solid basis for using Sungkai leaves in soap formulations, particularly soaps, to maintain skin hygiene.

The antibacterial properties of Sungkai leaf extract are essential in soap making. The addition of this extract can provide additional benefits to users, especially in maintaining skin hygiene and health. In addition, the active compounds in Sungkai leaf extract can also positively affect the skin, such as protecting against bacterial infections and maintaining the balance of skin microbiota (Emilia et al., 2023). On the other hand, VCO is also an interesting natural ingredient to use in soap making. Although research on using VCO is more often related to the manufacture of hand sanitizers, the findings indicate the potential of VCO as an effective antibacterial agent. Studies by Hitijahubessy and Parlindungan (2021) found that combining VCO and alcohol can effectively kill bacteria, showing antimicrobial solid properties. Besides antibacterial activity, VCO is also known to have natural moisturizing properties that keep the skin moist. This is an essential consideration in soap making, where skin moisture is critical for user health and comfort. Thus, using VCO in soap formulations provides a cleansing effect and maintains skin moisture and health (Hitijahubessy & Parlindungan, 2021).

Using sungkai leaves and Virgin Coconut Oil (VCO) in soap-making greatly benefits health and skincare. Sungkai leaves contain natural compounds with antibacterial, antifungal, and anti-inflammatory properties and are rich in antioxidants that protect the skin from free radical damage. Meanwhile, VCO is rich in saturated fatty acids and vitamin E that moisturize the skin and fight infection-causing bacteria and fungi. The soap-making process involves extracting sungkai leaves to

obtain their active compounds, which are then mixed into the soap mixture. VCO can be used in the soap's oil processing phase and added after the saponification process to provide additional nourishment to the skin. Despite their benefits, paying attention to the right concentration of these two ingredients is essential to avoid potential skin irritation or allergic reactions. With proper consideration, soaps containing sungkai leaves and VCO can be a good choice for natural and sustainable skincare.

Further research on using Sungkai leaves and VCO in soap making is still needed to optimize formulations and understand their benefits and side effects more intensely. However, current findings suggest that these two natural ingredients have exciting potential in developing high-quality soap products that are beneficial for skin health (Fadlilaturrahmah et al., 2021). With further development, soaps containing Sungkai leaf extract and VCO can attract consumers who care about skin health and the environment.

5. Conclusion

Literature studies on using Sungkai leaves and Virgin Coconut Oil (VCO) in soap-making show that these two natural ingredients have promising potential in the skincare industry. Sungkai leaf extract has been shown to have effective antibacterial activity against various types of bacteria, while VCO has natural moisturizing properties that are good for the skin. Findings from various studies show that soap formulations containing Sungkai leaf extract and VCO can provide skin health benefits, such as maintaining cleanliness and providing moisture. The use of these natural ingredients also reflects the trend of consumers who are increasingly concerned about environmentally friendly products that are free from harmful chemicals. However, further research is needed to optimize soap formulations, understand their side effects, and clinically validate their clinical benefits in humans. This is important to ensure that the resulting soap products are safe and effective for long-term use.

Findings from various studies indicate that soap formulations containing Sungkai leaf extract and Virgin Coconut Oil (VCO) can provide health benefits for the skin, such as maintaining cleanliness and moisture. The use of these natural ingredients also reflects a growing consumer trend toward environmentally friendly products that are free from harmful chemicals. This aligns with global preferences for green cosmetics, where sustainability, biodegradability, and health safety are top priorities. However, further research is needed to optimize soap formulations, understand their side effects, and clinically validate their benefits in humans. This is crucial to ensure that the resulting soap products are safe and effective for long-term use. Follow-up studies may include in vivo dermatological testing, allergenic profiling, and stability analysis to strengthen consumer confidence and gain regulatory approval.

Overall, using Sungkai leaves and VCO in soap-making holds promise as a more natural, effective, and sustainable alternative in the skincare industry. With further research and proper formulation development, these soap products can attract consumers looking for more natural and quality skincare products.

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