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Therapeutic Effects of Patchouli (*Pogostemon cablin*) Essential Oil in Relieving Eczema Symptoms in Infants and Toddlers: A Literature Review

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Abstract

This literature review aims to investigate and analyze the therapeutic effect of Patchouli essential oil (*Pogostemon cablin*) in alleviating eczema symptoms in infants and young children. Eczema is a common skin condition characterized by inflammation, itching, and redness that can significantly affect the quality of life of affected children and their families. Conventional treatments often use topical corticosteroids, which can have potential side effects. This review systematically examines relevant studies, articles, and research from reputable databases, focusing on the use of patchouli essential oil as an alternative therapeutic approach to treat eczema symptoms in the pediatric population. Several aspects are considered, including the chemical composition of patchouli essential oil, its potential mechanisms of action, and its reported efficacy in reducing inflammation and relieving itching associated with eczema. The results of the literature review suggest that patchouli essential oil possesses anti-inflammatory, antimicrobial, and antioxidant properties that may contribute to its therapeutic effect in the treatment of eczema. Several studies have reported positive results, including a reduction in erythema, itching, and overall severity of eczema symptoms in infants and young children. However, the literature also has some limitations, such as the lack of standardized protocols, varying study designs, and limited long-term follow-up data. Overall, this literature review provides valuable insights into the therapeutic effects of patchouli essential oil in alleviating eczema symptoms in infants and young children. Further well-designed studies are needed to determine the optimal dosage, formulation, and long-term safety profile. The results of this review contribute to the growing body of knowledge on alternative treatments for pediatric eczema and provide a foundation for future research and clinical applications in this area.

Keywords: patchouli essential oil, eczema, infants, young children

1. INTRODUCTION

Eczema, a persistent inflammatory skin disorder, impacts over 200 million individuals globally, with children accounting for up to 20% and adults around 10% of the affected population (Ridd et al. 2022). While it primarily affects children and often persists into adulthood, approximately 25% of adults diagnosed with atopic dermatitis develop the condition later in life (Nutten, 2015).

Eczema is a prevalent and persistent skin condition that is not contagious. The primary symptom of this inflammatory disorder is an intensely itchy rash. It commonly affects children and often improves over time, with periods of remission or complete disappearance. However, acute flare-ups can significantly impact one's quality of life. The severe itching can make it challenging to concentrate and experience restful sleep. Some individuals feel self-conscious if the rash is visible to others. By practicing proper skincare, utilizing medication, and avoiding triggers and irritants, it is typically feasible to alleviate symptoms enough to lead a relatively normal life.

1.1 Definition of Eczema

Eczema is a skin condition characterized by dry and inflamed skin that causes itching (Ridd et al. 2022). It tends to recur over time, with periods of improvement and worsening. When eczema reaches a moderate to severe level, it significantly affects the well-being of those affected and their immediate family members. The constant itching, scratching, and lack of sleep have a profound impact on their quality of life (Kim & Seo, 2017). Approximately 40% of individuals with eczema continue to experience symptoms into adulthood, which can negatively influence their work productivity and social interactions (Silverberg & Hanifin, 2013).

Eczema can affect any part of the body, however in atopic infants or toddlers, even in clinically non-inflamed areas, the

skin as a complete organ has impaired barrier function and a propensity to inflammation. Skin dryness, which is partly caused by increased water loss, and susceptibility to viral and bacterial infections are additional signs of barrier dysfunction (Brown, 2016).

The epidermis and dermis, the two layers of the skin, are separated by a layer of subcutaneous fat that serves as an insulator and a defense mechanism for the underlaying components. The skin serves a variety of vital purposes, such as barrier against microorganisms, the insulation, UV light defense, vitamin D production, and controlling temperature. The outermost layer, called the stratum corneum, act as protective barrier, serving as a seal and waterproof layer. It provides defense against foreign particulates, helping to prevent their entry into the deeper layers of the skin. The health of the skin is jeopardized whenever this layer sustains damages, regardless the cause (Peate, 2011).

The stratum corneum is frequently damaged or disturbed in eczema patients, which results in a skin barrier that is ineffective. Due to this impaired barrier skin function, irritants, allergens, microorganisms could penetrate the skin more frequently, which causes allergy sensitization and conditions like eczema (Thomsen, 2014).

1.2 Types of Eczema

Eczema is divided into three categories; Endogenous, Exogenous, and Unclassified. Endogenous eczemas are determined constitutionally (internally), not by external circumstances. Exogeneous eczemas are connected to observable extrinsic causes. Differentiating between the various forms of eczema and determining their causes is not always possible. Any of the aforementioned kinds can be either acute or chronic. Thus, the distinction between exogenous and endogenous eczema is not absolute and inconsistent (Peate, 2011).

Eczema encompasses various types, each with distinct triggers that can impact the skin's barrier function. These types include Atopic dermatitis, Contact dermatitis, Dyshidrotic eczema, Neurodermatitis, Nummular eczema, and Seborrheic dermatitis. It is possible to experience multiple types of eczema simultaneously.

Atopic dermatitis is a persistent, inflammatory skin condition characterized by intense itching. It is a prevalent skin disorder among children and ranks as one of the most frequently encountered dermatological conditions (Eichenfield et al. 2014). The contact dermatitis is an eczematous reaction refers to an inflammatory intolerance response that manifests as a combination of redness, blisters, oozing, raised bumps, and skin peeling. This reaction pattern is primarily triggered by toxins that exert an external influence, rather than an infectious cause, and can result from immune, chemical, or physical factors (Warshaw et al. 2019).

Dyshidrotic eczema, also known as acute palmoplantar eczema, is a frequent cause of dermatitis on the hands and feet among adults. It is a recurring condition characterized by the development of small blisters on the soles, palms, or both areas. It is highly itchy and typically manifests suddenly. The blisters may resemble the appearance of "tapioca pudding" when observed during a physical examination (Sarmiento & Azanza, 2020).

Neurodermatitis is a prevalent, long-lasting inflammatory skin condition linked to neurological dysfunction, intermittent itching, and skin alterations resembling lichen. Scratching and friction play a significant role in the development of lichenoid changes in this condition. The occurrence rate of neurodermatitis is around 12%, and it is more commonly observed in women than men (Yang et al. 2022). Nummular eczema is a type of inflammatory skin condition with an unknown cause. It is characterized by the presence of multiple coin-shaped eczematous lesions, typically found on the limbs and trunk (Jiamton et al. 2013).

Seborrheic dermatitis is a prevalent, persistent inflammatory skin condition that primarily impacts young adults in regions with abundant sebaceous glands, such as the scalp, face, and trunk. In adolescents and adults, Seborrheic dermatitis can manifest as mild patches or widespread scaling on the scalp. In infants, it commonly appears as yellowish, scaly patches known as "cradle cap" primarily on the scalp (Dall'Oglio et al. 2023).

1.3 Irritants and triggers

Various triggers could bring on an attack of the condition or render it worse by irritating the skin or causing additional issues. The most frequent allergens causing sensitivity in children include milk products, egg, peanut, grass, pollen, and home-dust mites (Brown, 2016). There is some evidence that preventing dust-mite exposure or food induced-allergy improves eczema control. Other common irritants are soap, detergents, fragrance, and fabrics with rough fibers (Peate, 2011).

1.4 Epidemiology and Prevalence

In the last three decades, the global prevalence of eczema has risen significantly, making it one of the prevalent chronic diseases. It affects approximately 20% of the population in developed nations. The estimated prevalence in children ranges from 15% to 30%, while in adults, it varies between 0.3% and 14.3%, with a consensus among most authors that it falls between 1% and 3%. Although the prevalence is comparatively lower in the elderly population (over 65 years old), the proportion of cases in this age group is on the rise in industrialized countries (Silvestre et al. 2017).

Approximately 15% of children are affected by eczema, while the occurrence in adults is only about 2-4%. Adults who have eczema often experience a more severe form of the condition. Typically, eczema begins during the first two years of a child's life, usually between the third and sixth month. Although it is possible for some children to develop eczema later, it is uncommon for it to appear after the age of five. The presence of a rash on a baby's scalp, commonly referred to as "cradle cap," may serve as an early indicator, but it does not necessarily mean that the child will develop eczema (Victore et al. 2019).

1.5 Symptoms and Clinical Presentation

The initial indications of eczema include itching, dry skin, and the presence of a rash. These signs suggest that a

person has encountered a trigger in their environment that has led to the onset or worsening of their symptoms. By identifying and avoiding these environmental triggers, the risk of future eczema flare-ups can be reduced. Eczema presents with various symptoms, such as dry skin, red and inflamed areas in skin folds like wrists, elbows, and knees, as well as around the neck. Eczema can affect any part of the skin, and the inflamed skin is typically itchy. Scratching can lead to thickened patches of skin, and inflamed areas may develop blisters and exude fluids. Additionally, inflamed areas of skin are susceptible to infections (Peate, 2011).

Infants commonly experience eczema primarily on the face, scalp, and the outer parts of the arms and legs, although it can also spread to other areas. The affected skin shows signs of redness, raised papules, small fluid-filled vesicles, scratched areas, oozing, and the formation of crusts. As toddlers and older children grow, the eczema lesions tend to concentrate in the creases of the elbows and knees, as well as the wrists and ankles, although they can appear anywhere on the body. Generally, the eczema becomes drier and hardened, with scratched areas, raised papules, and nodules. In adult patients, the lesions often appear on the face and neck, and a significant number, around 30%, develop eczema on their hands, which can interfere with work-related activities (Thomsen, 2014).

About 20% of affected people do not have the most typical laboratory characteristic, an increased total and/or allergen-specific serum IgE level. Although some distinguish between “extrinsic” and “intrinsic” categories of disease based on the presence or absence of IgE rise, it is debatable whether these are genuine varieties. Despite the fact that IgE level does tend to change with illness severity, it is not an adequate biomarker (Eichenfield, 2014).

1.6 Current Treatment Options

The goal of treatment is to manage and alleviate symptoms because no cure for eczema. Typically, the treatment approach involves three main components: first, avoiding irritants and triggers that can affect the skin; second, regularly using emollients to prevent inflammation; and third, employing topical steroids primarily during periods of increased inflammation (Peate, 2011).

Moisturizers, also known as emollients, are applied to the skin to make it softer. It helps restore the damaged barrier function of the outer layer of the skin, reduce the itchiness associated with dry skin, improve the effectiveness of topical corticosteroids, and can even reduce the need for steroid use. Emollients work by replenishing the natural oils that are often lacking in eczema-affected skin. Their primary function is to create a barrier on the skin's surface, locking in the skin's own oils and moisture (Peate, 2011). To promote the integrity of the skin barrier and minimize the risk of skin irritation and inflammation, it is important to apply emollients in an adequate amount (>250g/week) and frequency (at least once, preferably twice a day, and after cleansing the skin) (Hulspusch et al. 2021). Interestingly, a preliminary study demonstrated that a novel trilipid cream (ceramides, cholesterol, and free fatty acid in ratio 3:1:1) may be more effective in reducing trans epidermal water loss compared to a standard paraffin-based emollient (Sindher et al. 2020).

Topical corticosteroids work by modifying the immune system's response to alleviate skin inflammation. Patients diagnosed with eczema should be instructed to apply topical corticosteroids once per day. If there is an insufficient improvement in symptoms with the once-daily application after 3 to 7 days, the frequency and potency of the treatment should be reassessed (Peate, 2011). When using topical corticosteroids, they should be applied to the areas affected by active eczema with a potency that aims to achieve remission. Once remission is achieved, a lower potency or less frequent application of the steroid can be used to maintain the remission. It is important to note that topical steroids should not be applied simultaneously with emollients, and some experts suggest applying them after bathing to enhance penetration through the outermost layer of the skin (stratum corneum) (Brown, 2016). Topical corticosteroids are categorized into four groups based on their potency, which indicates their effectiveness in reducing inflammation: mild (hydrocortisone), moderate-potency (Clobetason-17-butyrate, Hydrocortison-17-butyrate), potent (Fluticasone propionate, Fluocinonide, Betamethasone, Betamethason-17-valerate), and very potent (Clobetasol propionate) (Thomsen, 2014).

There is other medicine to eczema treatment. Non-steroidal immunomodulating agents known as topical calcineurin inhibitors are approved for the treatment of atopic eczema. There are two types available: tacrolimus ointments at 0.03% and 0.1% (for moderate to severe eczema, with the 0.03% ointment suitable for children aged two years and older), and pimecrolimus cream at 1% (for mild to moderate eczema in patients aged two years and older). Topical tacrolimus can be considered as a short-term, intermittent treatment option for moderate to severe atopic eczema in patients aged two years and older when topical corticosteroids have not provided sufficient control or when there is a significant risk of adverse effects from continued use of topical corticosteroids, especially skin thinning (Peate, 2011). Both topical corticosteroids and calcineurin inhibitors have demonstrated safety and efficacy in reducing acute flare-ups and the risk of relapse when used at the proper intensity and dosage, particularly in a proactive approach (such as applying them twice weekly to areas prone to eczema) (Hulspusch et al. 2021).

2. METHODS

Data on eczema and essential oils or patchouli oil for skin disease were searched and collected for this literature review and perspective. We used key search engines, namely, Google Scholar, PubMed, Science Direct, and SciFinder. The search keywords used comprised eczema treatment, atopic dermatitis, patchouli oil, *Pogostemon cablin* for eczema, and eczema in young adults/ infants/ toddlers/ children. The authors appraised, evaluated, and interpreted the selected articles (47 sources). The current perspective reflects the opinion of the authors concerning the use of essential oils or patchouli oil as preventatives and corresponding therapies against eczema.

3. PHARMACOLOGICAL PROPERTIES OF PATCHOULI OIL

3.1 Anti-Depressant Activity

The essential oil obtained from *P. cablin* by a local farmer in Tapak Tuan (Aceh, Indonesia), referred to as iPO (initial patchouli oil), exhibited a notable antidepressant-like effect based on the immobility time observed during the TST (Tail Suspension Test). Through distillation of the essential oil within a temperature range of 125 to 160 °C, referred to as POF-3 (patchouli oil fraction-3), the antidepressant-like activity was further improved. Patchouli alcohol was identified as the primary contributor to the antidepressant-like effect of the essential oil. Both iPO and POF-3 demonstrated a significant increase in dopamine levels in the brain tissues of rats experiencing acute depression. When pure patchouli alcohol was administered, it did not significantly elevate dopamine levels or decrease cortisol levels. Consequently, it is plausible that other molecules present in either iPO or POF-3 are responsible for their antidepressant-like activities, possibly through their correlation with dopamine induction (Astuti et al. 2022).

3.2 Anti-inflammatory activity

The application of varying concentrations (10, 20, or 40 μM) of PA (patchouli alcohol) exhibited a dose-dependent reduction in the production of inflammatory factors, including tumor necrosis factor (TNF)-α, interleukin (IL)-1β, IL-6, nitric oxide (NO), and prostaglandin E2, in RAW264.7 cells stimulated with LPS (lipopolysaccharide). Moreover, PA treatment reversed the elevated mRNA expression levels of TNF-α, IL-1β, IL-6, inducible nitric oxide synthase (iNOS), and cyclooxygenase (COX)-2 induced by LPS in RAW264.7 cells. These findings suggest that PA, as a crucial anti-inflammatory component of Pogostemonis Herba, exerts its anti-inflammatory effects, partly by suppressing the mRNA expression of various inflammatory mediators such as TNF-α, IL-1β, IL-6, iNOS, and COX-2 (Xian et al. 2011).

3.3 Anti-microbial activity

In one of a study (in vitro - antimicrobial), six commonly encountered pathogenic bacteria (Escherichia coli, Pseudomonas aeruginosa, Bacillus proteus, Shigella dysenteriae, Typhoid bacillus, Staphylococcus aureus) were carefully selected. Patchouli oil, along with its two major compounds, (-)-patchouli alcohol and pogostone, which accounted for more than 60% (g/g) of the composition in patchouli oil samples, were chosen as potential antibacterial agents. The results from the minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) tests demonstrated that patchouli oil, (-)-patchouli alcohol, and pogostone exhibited favorable antibacterial activities. This finding supports the validity and reliability of the molecular docking method used. Additionally, the study revealed that most of the compounds present in patchouli oil exerted a multi-target effect. Due to the presence of 26 compounds in patchouli oil, each with its own multi-target effect, patchouli oil displayed potent antimicrobial properties. This phenomenon can be likened to the concept of a "canister shot" in which multiple targets are engaged simultaneously, resembling a model of multi-target effects. This may serve as a fundamental principle of Traditional Chinese Medicine (TCM) therapy. Furthermore, the MIC and MBC results confirmed the notable antibacterial activities of patchouli oil, (-)-patchouli alcohol, and pogostone (Yang et al. 2013).

3.4 Immunomodulatory activity

The immune system plays a significant role in the development and pathophysiological processes of different diseases. Its importance in understanding disease prevention and treatment mechanisms has grown over time. A particular study revealed that administering PA orally could enhance the phagocytic capability and improve the function of immune organs such as the thymus and spleen. Additionally, it increased the levels of circulating serum IgM and IgG. Furthermore, when administered at a dosage of 20mg/Kg, PA significantly inhibited the delayed type hypersensitivity reaction induced by 2,4-dinitrochlorobenzene in Kunming mice (Liao et al. 2013). To put it differently, PA demonstrated notable immunomodulatory effects by activating the mononuclear phagocytic system, enhancing humoral immune responses, and suppressing cellular immune responses. This indicates that PA holds great potential as an immunomodulatory agent with broader prospects for clinical applications (Hu et al. 2017).

3.5 Overview of Patchouli and Its Essential Oil

Patchouli, scientifically referred to as *Pogostemon cablin Benth*., is a plant belonging to the Lamiaceae family and is renowned for its medicinal and aromatic properties. It is widely believed that patchouli is native to the Philippines and grows in the wild across various South Asian countries. Currently, it is cultivated on a large scale for commercial purposes in India, Indonesia, Malaysia, China, Singapore, West Africa, and Vietnam. The term 'cablin' originates from the local name 'cabalam' used for the patchouli plant in the Philippines, and these names are interchangeable (Swammy & Sinniah, 2015).

Essential oils typically consist of intricate combinations of terpenes and their oxygenated derivatives. They are typically insoluble in water, lighter than water, and possess distinct aromas. Essential oils are concentrated, volatile, hydrophobic blends of chemicals derived from plants. The most common method for extracting essential oils is steam distillation, although organic solvent extraction is occasionally employed (Isnaini et al. 2022). Essential oils exhibit unique flavor and fragrance characteristics and often exhibit other biological activities as well. Consequently, essential oils find applications in numerous industries (Ramya et al. 2013).

Patchouli oil is derived from the distillation of patchouli leaves and is considered a valuable biological resource for obtaining patchouli oil. The main compound found in patchouli oil is patchouli alcohol. In addition to patchouli alcohol, the oil contains eugenol, cinamaldehyde, benzaldehyde, and cadinene (Febriyenti, 2019). Patchouli oil It is more volatile compared to other essential oils, possesses

a bitter taste, is soluble in organic solvents like alcohol, and can be effectively blended with various other essential oils (Rifai & Soekamto, 2019).

The cultivation of Patchouli primarily revolves around the extraction of its essential oil. The essential oil is predominantly obtained through the process of steam distillation of the leaves, which are first dried in shaded areas. Its distinct and enduring fragrance is highly regarded, characterized by a pleasant combination of woody, earthy, and camphoraceous notes (Ramya et al. 2013). With its distinct and pleasant woody and camphoraceous aroma, patchouli oil is highly valued and well-suited for various applications in decorative cosmetics, perfumes, shampoos, toilet soaps, and other personal care products (Isnaini et al. 2022). Furthermore, it finds utility in non-cosmetic items like household cleaners and detergents (Hu et al. 2017).

3.6 Traditional Uses of Patchouli Oil

In traditional medicine, patchouli is employed for various purposes including the treatment of colds, headaches, fever, nausea, vomiting, diarrhea, abdominal pain, as well as insect and snake bites. In the field of aromatherapy, patchouli oil is utilized to alleviate symptoms of depression and stress, promote relaxation, soothe nerves, regulate appetite, and enhance sexual interest (Swamy & Sinniah, 2015). In Chinese medicine, a combination of the leaves' decoction and other medicinal substances is utilized to address symptoms of nausea, vomiting, diarrhea, colds, and headaches. In Japan and Malaysia, patchouli is employed as an antidote for venomous snakebites and to healing of burns.

To promote healing of burn wounds, patchouli oil or pounded leaves have been topically applied by rubbing them onto the affected skin. The application of this essential oil to the injured area helps expedite the healing process (Febriyenti et al. 2019). Patchouli has a long history of medicinal use and is particularly renowned for its antiseptic properties. It is commonly employed to treat various skin and scalp conditions such as athlete's foot, dandruff, acne, dermatitis, as well as aiding in the healing process of wounds and scars. Additionally, patchouli essential oil is topically applied to address skin problems including acne, eczema, inflammation, cracked and chapped skin, as well as irritation (Ramya et al. 2013).

3.7 Chemical Composition of Patchouli Oil

The chemical composition of patchouli oil was determined to include nine specific compounds: β-patchoulene, Seychellene, α-patchoulene, α-bulnensene, Patchoulene,2,3,3-Trimethyl-2-(3-methyl-buta-1,3-dienyl)-cyclohexanone, Globulol, Epiglobulol, β-selinene, and Patchouli alcohol. In this scenario, patchouli oil contains a mixture of components with varying boiling points, with patchouli alcohol being one of the constituents with the highest boiling point. In the distillation process, compounds with lower boiling points evaporate first, and followed by patchouli alcohol, which has a relatively high normal boiling point of 287-289 °C. To purify patchouli alcohol from patchouli oil, a vacuum fractionation distillation method is employed. This method significantly enhances the purity of patchouli oil, increasing it from 25.30% in fraction 1 to 70.34% in fraction 4. Compared to previous techniques, this method proves more effective in separating and purifying patchouli alcohol (Rifai & Soekamto, 2019).

Patchouli oil contains a significant amount of sesquiterpenes, primarily the tricyclic sesquiterpene known as patchouli alcohol (patchoulol). Patchouli alcohol is extensively utilized in the production of perfumes, soaps, and various cosmetic goods. In addition to patchouli alcohol, other sesquiterpene hydrocarbons like patchoulenes, guaiene, and seychellene contribute to the distinctive aroma of patchouli oil (Swammy & Sinniah, 2015).

4. PREVIOUS STUDIES ON THE USE OF PATCHOULI OIL IN ECZEMA TREATMENT

Despite significant advancements in synthetic drug research; plants and their derivatives continue to be the primary sources of medicinal substances and are extensively utilized in the pharmaceutical industry. Modern technologies applied to traditional practices have enabled the extraction of plant-based products, which serve as the foundation for the development of most contemporary medicines (Swammy & Sinniah, 2015).

Eczema is a prevalent and long-lasting inflammatory skin condition characterized by persistent itching. Its clinical manifestation involves eczema-like rashes, such as redness, raised bumps, and oozing lesions that occur in specific areas, depending on the patient's age and the level of skin dryness. The skin becomes thickened and lichenified due to chronic or recurring inflammation and scratching (Mesjasz et al. 2023). Patchouli oil, when applied topically, can serve as a beneficial ingredient that aids in the stimulation of new skin cell growth. It contributes to expedited wound healing and provides a soothing effect on wounds and scarred skin, thereby accelerating the overall healing process (Muhammad et al. 2022). The essential oils derived from *P. cablin* have been found to suppress a wide array of plant pathogens, numerous skin germs, and gut bacteria. However, no research has yet explored the potential of *P. cablin* in controlling house dust mites. Consequently, this investigation was conducted to identify acaricidal components within the aerial portion of *P. cablin*, specifically targeting adult *D. farina* (Fu et al. 2021).

The anti-inflammatory properties of patchouli essential oil have gained considerable recognition. Numerous studies have demonstrated its efficacy in combating inflammation, particularly in addressing swelling, a common symptom associated with inflammation. Research has highlighted the ability of a specific component within patchouli oil to effectively reduce chemically-induced swelling in the paws and ears of mice. Patchouli essential oil aids in enhancing the generation of new cells and diminishing the visibility of fine lines and wrinkles (Rahmi et al. 2021). Moreover, it possesses antibacterial, antifungal, and antiseptic properties, making it effective in addressing various skin conditions such as eczema, dermatitis, psoriasis and acne. Additionally, it can be used to alleviate dry and cracked skin, eliminate scars, spots, and other blemishes (Ramya et al. 2013).

5. SUMMARY OF THE FINDINGS AND LIMITATIONS OF THESE STUDIES

Limited research has been conducted on the epidemiology of traditional or integrative medicine (IM) use specifically for skin conditions. Most existing epidemiological studies focus on the utilization of complementary and alternative medicine (CAM) in general. A systematic review examining CAM utilization surveys among dermatologic patients in industrialized countries identified seven studies that met the inclusion criteria. The lifetime prevalence of CAM utilization varied, ranging from 35% to 69%.

More recent research includes a 2009 study based on a national survey in the United States, which reported that among individuals with skin disease, 49.4% had used CAM, with 6% specifically using it for skin conditions. Moreover, those who reported having skin problems were more likely to use CAM compared to those without any skin conditions. Another survey conducted in a dermatology department in a tertiary care center in the United States showed that 82% of respondents used CAM.

Baron et al. (2005) conducted a survey in the United Kingdom to investigate the use of CAM for dermatologic conditions in Yorkshire and South Wales. The study found that over a third of participants (n = 1037) were using CAM, and more than 45% of them were using it for their dermatologic condition. A survey conducted in 2014 in eastern Turkey revealed that 43.7% of participants used at least one CAM method for their dermatologic condition, and 20.8% used two or more.

A secondary analysis of data from the Oxford Healthy Lifestyle Survey indicated that approximately 9.8% of respondents with a chronic skin condition had visited a complementary practitioner within three months of the survey. In a study conducted in Korea, high utilization rates of CAM were observed, with 67.2% of respondents using CAM for androgenetic alopecia, 68.9% for atopic dermatitis, and 46.6% for psoriasis. There are also epidemiological studies specifically focusing on CAM use for specific skin disorders such as atopic dermatitis, psoriasis, and eczema.

6. COMPARATIVE EFFECTIVENESS OF EMOLLIENTS IN ALLEVIATING ECZEMA SYMPTOMS

Previous findings belief that ointments are more effective, require less frequent application, and have fewer adverse effects compared to other types of emollients, especially for more severe cases of eczema. A similar study conducted by Hlela et al. (2015) involved 80 children aged 1-12 years with mild-to-moderate eczema who were randomly assigned to different emollients, including emulsifying ointment, cetomacrogol cream, white petroleum jelly, or glycerine or petroleum. However, the study did not specify a primary outcome, and the authors reported no significant difference in parent-reported symptoms, objective signs, or quality of life.

Patchouli oil has been shown to be an effective emollient for the relief of eczema symptoms. When applied topically, it exhibits therapeutic properties that can provide relief to people with eczema. Patchouli oil has anti-inflammatory, antimicrobial and tissue regenerating properties, which helps to relieve itching, reduce inflammation and promote healing of damaged skin.

7. RECOMMENDATION FOR FUTURE RESEARCH

For future research, it is recommended to carry out comprehensive investigations focusing on the underlying causes and preventive strategies. Within this journal, we specifically delve into the advantages associated with Patchouli oil, aiming to pave the way for further studies. Eczema, despite being a prevalent condition in society, is frequently disregarded. Therefore, by pursuing ongoing research, it is possible to alleviate symptoms and decrease the occurrence of this disease.

The development of a formulation containing patchouli oil for eczema relief and as an emollient is of great urgency. Eczema is a common skin condition that affects people of all ages, causing discomfort, inflammation and itching. Current treatment options, such as topical corticosteroids, are often associated with limitations and potential side effects. Patchouli oil, with its anti-inflammatory, antimicrobial, and tissue regenerating properties, has shown promising potential for relieving eczema symptoms and promoting skin healing. Formulating a product that combines the soothing properties of patchouli oil with emollient effects would provide a doubly effective approach to combating the inflammation and dryness associated with eczema. This formulation would provide a natural and potentially safer alternative for people with eczema, improving their quality of life and reducing dependence on conventional treatments. The urgency to develop such a formulation stem from the need to provide effective and well-tolerated solutions for eczema patients, particularly those seeking gentler options that prioritize skin health and long-term management of their condition.

8. CONCLUSIONS

In conclusions, patchouli oil shows promising potential as an effective emollient in the treatment of eczema. Its therapeutic properties, including anti-inflammatory, antimicrobial, and tissue regenerating effects, contribute to its ability to relieve eczema symptoms and promote skin healing. Using patchouli oil as a natural alternative to relieve itching, reduce inflammation and help repair damaged skin is a promising avenue for babies and children with eczema. However, more research is needed to investigate the optimal formulation, dosage and long-term safety profile of patchouli oil-based products. With its multiple benefits and potential to improve the quality of life of people with eczema, patchouli oil represents a valuable option in the field of natural-based treatments for this common skin condition.

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