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Research Article

# Exploring the Therapeutic Potential of an Herbal-Based Topical Cream in Psoriasis Patients

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## ABSTRACT

This study investigates the therapeutic potential of an herbal-based topical cream for treating psoriasis, a chronic inflammatory skin condition that detrimentally affects patients' quality of life. The 8-week longitudinal cohort study evaluated the efficacy of a novel herbal topical cream, formulated with coconut oil, sesame oil, clove oil, mangosteen peel, turmeric rhizome, licorice root, and other plant extracts in 49 patients with psoriasis. Disease severity was quantified using the Psoriasis Area and Severity Index (PASI) at baseline, and at the 2nd, 4th, 6th, and 8th weeks. Additional assessments, including the Psoriasis Disability Index (PDI) and Dermatology Life Quality Index *0*DLQI) were performed before and after the treatment period. PASI scores were analyzed using the Friedman test for repeated measures and pairwise Wilcoxon signed-rank test at a significance level of 0.05. Results demonstrated significant psoriasis remission, with noticeable efficacy observed by week 4 and sustained improvements throughout the 8-week trial ($p<0.05$). Likewise, participants reported improved well-being, as indicated by reduced PDI and DLQI scores across all aspects. These findings suggest that the formulated herbal cream provides a novel topical therapeutic option for psoriasis, whether as an alternative or adjuvant treatment, enhancing both disease severity and patient quality of life. Therefore, this herbal topical cream represents a viable and safe option for psoriasis management, potentially providing an effective alternative or adjunct to conventional therapies such as steroid creams and coal tar ointments.

**Keywords:**
Cohort study; Herbal medicine; PASI score; Psoriasis; Therapeutic potential

## 1. INTRODUCTION

Psoriasis is a chronic inflammatory skin disease that affects millions of individuals worldwide, significantly impacting their quality of life and causing a high level of morbidity. Current topical therapies, such as corticosteroids, coal tar, calcineurin inhibitors, and vitamin D analogs, are often effective in managing psoriasis symptoms[1]. However, chronic use of these medications can raise safety concerns and lead to adverse effects[2]. Thus, the development of alternative treatments for psoriasis that are both safe and effective remains a key area of study.

For centuries, traditional medical systems such as Ayurveda, traditional Chinese medicine, and Thai traditional medicine have utilized herbal remedies to address a diverse array of health issues, including various skin disorders[3–5]. Several clinical studies support the traditional use of herbs in psoriasis treatment, demonstrating promising symptomatic improvements[6–8]. Herbal formulations are considered as a natural and low-risk alternatives to conventional psoriasis treatments, offering a multi-targeted approach to addressing the complicated causes of the disease. However, their use is not without challenges, including issues such as the lack of standardization, which can result in variations

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in quality and efficacy, as well as drug-herb interactions. Based on this foundation, the present study aims to evaluate the efficacy and safety of a new topical herbal cream, formulated with a variety of plant species, for treating psoriasis.

Several plant-based compounds in the topical cream exhibit anti-inflammatory, antioxidant, and immunomodulatory activities. These properties identify these plant chemicals as prospective therapeutic agents for psoriasis therapy. Numerous research findings endorse the therapeutic potential of curcumin, a key compound in turmeric, for treating psoriasis[9]. Evidence suggests that eugenol, a component of clove oil, is effective in reducing inflammation in mice[10]. Furthermore, it has been demonstrated in a human study that clove oil can alleviate chronic pruritus associated with specific diseases[11]. Glycyrrhizin, found in licorice, has anti-inflammatory and immunomodulatory effects on psoriasis patients[12]. The peel of mangosteen, rich in active compounds like tannin and xanthone, has been traditionally utilized to accelerate wound healing[13]. Additionally, the formulation incorporates a range of herbal ingredients, traditionally utilized in the treatment of diverse skin conditions.

Coconut oil and sesame oils are often used in traditional medicine to treat various skin conditions. Studies suggest that both oils may benefit psoriatic skin by improving skin hydration, reducing inflammation, and inhibiting bacterial growth[14]. In a study conducted by Agero and Verallo-Rowell *(*2004*)*, the therapeutic effects of coconut oil on patients with xerosis were investigated. The study found that virgin coconut oil outperformed mineral oil as a moisturizer, effectively improving skin hydration and reduced the clinical signs of xerosis[15]. Similarly, sesame oil has been demonstrated antioxidant and anti-inflammatory properties, effectively suppressing the production of pro-inflammatory cytokines[14,16]. These findings suggest that sesame oil may have potential as a therapeutic agent for treating psoriasis.

Herbal formulations can offer a cost-effective and accessible alternative to conventional treatments, particularly in developing countries where access to traditional psoriasis therapies is limited. Establishing guidelines and criteria for the use of herbal formulations in psoriasis treatment is crucial to ensure their safety and efficacy. The utilization of herbal formulations in psoriasis treatment, supported by adequate clinical evidence and standardization, can bridge the treatment access gap and improve the quality of life for patients with psoriasis. This study focuses on the implications of an herbal-based topical cream for the treatment of psoriasis.

## 2. MATERIALS AND METHODS

This section details the materials, herbal cream preparation, participants, clinical treatment protocol, and statistical data analysis involved in investigating the efficacy of an herbal-based topical cream in psoriasis patients.

### 2.1. Materials

The topical cream developed for this study was formulated to include a synergistic blend of plant-based ingredients and oils, complemented by a selection of chemical constituents.

#### *2.1.1 Herbal components*

The cream's composition featured 4.9% dried powders or extracts from plant materials. The botanical components were incorporated as dried powders or extracts, each selected based on traditional herbal medicine practices and their recognized dermatological benefits. The cream included dried powder from the peel of mangosteen (*Garcinia mangostana*), the rhizome of turmeric (*Curcuma longa*), and the root of licorice (*Glycyrrhiza glabra*). Additionally, ethanolic extracts from the bark of *Suregada multiflorum* were used, along with extracts from the leaves of *Eclipta prostrata*, *Acanthus ebracteatus*, and *Rhinacanthus nasutus*. The plant materials were sourced from local herbal markets, including reliable suppliers. Their identification and authentication were conducted in consultation with traditional herbalists to ensure the correct species and plant parts were used. The identification process involved morphological analysis and, when necessary, comparisons to herbarium specimens. These plant materials were intricately blended into the cream, forming the basis of its therapeutic efficacy.

#### *2.1.2 Oils component*

The oil component of the formulation comprised a carefully balanced mix of 20% coconut oil, 15% sesame oil, and 10% clove oil, totaling 45%. These oils were specifically chosen for their beneficial effects on skin health and their combined efficacy in treating psoriasis.

#### *2.1.3 Chemical composition*

The chemical composition of the cream, comprising 50.1% of the total formulation, included a blend of 10% Polysorbate 60, 10% lecithin, 5% camphor, 1% menthol, 14% glycerin, 2% keratin, 8% water, and 0.1% zinc. Each of these ingredients was carefully selected for their specific roles in improving the cream's texture, stability, and therapeutic properties. Polysorbate 60 and lecithin function as emulsifiers, camphor and menthol provide cooling and soothing effects, glycerin contributes moisture, keratin offers skin-strengthening

benefits, water serves as the base, and zinc contributes to wound healing and antimicrobial properties[17]. This formulation was designed to achieve a balance between efficacy and safety, ensuring a gentle yet effective treatment for psoriasis.

### 2.2. Herbal cream preparation

The preparation of the herbal cream involved a systematic process aimed at ensuring the effective integration of all ingredients.

#### *2.2.1 Preparation of herbal cream*

In brief, the dried plant powders and extracts were measured to constitute 4.9% of the total formulation. In a separate vessel, the oil components were combined in their respective proportions to constitute 45% of the cream's composition. The oil mixture, comprising coconut oil, sesame oil, and clove oil, was gently heated to 60°C. This temperature was chosen to ensure complete liquefied and homogenized of the oils without degrading the bioactive compounds present in them. Once the oil mixture reached 60°C, the plant mixture (consisting of dried powders and extracts) was slowly incorporated. This gradual addition was carried out while continuously stirring to ensure even distribution and prevent clumping of the plant powders. The chemical blend, comprising Polysorbate 60, water, camphor, menthol, and zinc carbonate, was not pre-heated before being mixed with the oil blend. Instead, it was added at room temperature. The key to achieving a uniform emulsion and ensuring product stability lies in the careful and controlled mixing process outlined in the following steps. The chemical blend was slowly added to the oil and plant mixture under continuous high shear mixing. This method effectively disperses both the water-soluble and oil-soluble components uniformly, resulting in a stable emulsion. The emulsifiers (Polysorbate 60 and lecithin) played a crucial role in stabilizing the emulsion by reducing the surface tension between the oil and water phases. After mixing, the emulsion was allowed to cool to room temperature while being stirred continuously to prevent phase separation. The cooling process was controlled to avoid rapid temperature changes, which could destabilize the emulsion. Subsequently, the final product was tested for consistency, pH balance, and stability over a period. Stability tests, included assessing the cream under various storage, were conducted to ensure it remained homogenous and effective.

#### *2.2.2 Product registration and packaging*

Notably, the herbal cream, commercially branded as ThaiBio®, has been officially registered with the Thai FDA under registration number 10-1-6100052062. This registration underscores compliance with regulatory standards, affirming its credibility and safety for use. The cream was expertly formulated and packaged by Thailand's Otop - Mattay Company Ltd., a firm recognized for its adherence to Good Manufacturing Practices (GMP) in the pharmaceutical sector, ensuring high-quality production and packaging processes.

### 2.3. Participants

For the study, 120 participants diagnosed with plaque psoriasis underwent initially eligibility assessment. This research was conducted in accordance with the Helsinki Declaration and received approval from the ethics committee of Rangsit University in Thailand, under the EC certificate of approval (COA No. RSUERB2019-059). Before initiating the study, participants underwent a process of obtaining written informed consent.

*Inclusion criteria*: Male or female psoriasis patients aged 18 or older with a PASI score of 3 or more, indicating moderate or severe severity, were eligible for the study. As shown in Figure 1, 29 participants did not meet the inclusion criteria as their PASI scores were less than 3. During the 8-week treatment period, certain

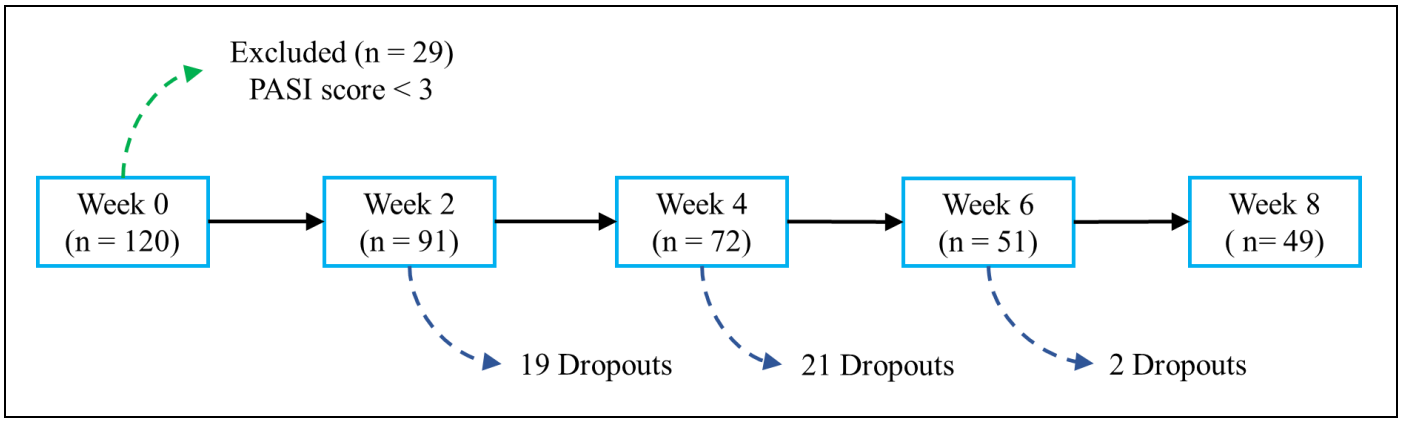


**Figure 1**. Flow diagram of trial procedure along 8 weeks of treatment

participants faced difficulties due to commuting distances to facilities, compounded by the COVID-19 pandemic and accessibility barriers resulting from public health restrictions. Ultimately, pandemic constraints on in-person participation led to dropouts among those geographically disadvantaged participants who were unable to overcome transport limitations. Therefore, the study remained only 49 participants throughout its duration. Based on Cohen 1988[18], the sample size of 49 is statistically sufficient for further analysis. To compare the decrease of PASI score every two weeks, the Wilcoxon sign rank test was employed for this non-parametric comparison. At $\alpha = 0.05$ and effect of size ($d$) = 0.5, the power of estimation (1- $\beta$) = 0.92 confirms that the sample size of 49 is adequate for the study.

*Exclusion criteria*: Participants were excluded from the study if they were receiving systemic or dependent systemic therapy, had skin lesions caused by photodamaged keratoses, did not adhere to the treatment regimen, took other medications concurrently, deviated from the baseline protocol, missed more than two appointments for medication and assessments, or requested withdrawal during the study.

### 2.4. Assessment tool: PASI, PDI and DLQI

Grading of patients' PASI scores by physicians involved scoring four main parts separately: head and neck (h), upper limbs (u), trunk (t) and lower limbs (l). Each part was evaluated based on three parameters erythema (E), induration (I) and scaling (D)[19-21.] Each parameter was graded into 5 levels: absent (0), mild (1), moderate (2), severe (3) and very severe (4). The percentage of skin lesion was also determined as follows: less than 0-9% (1), 10-29% (2), 30-49% (3), 50-69% (4), 70 – 89% (5) and 90-100% (6). Therefore, the final formula for PASI score was defined as followed:

$$PASI = 0.1(Eh+Ih+Dh)Ah + 0.2(Eu+Iu+Du)Au + 0.3(Et+It+Dt)At + 0.4(El+Il+Dl)Al$$

The Psoriasis Disability Index (PDI) was used to assess the disability caused by psoriasis. The PDI comprises 15 questions covering five areas: daily activities, employment, personal relationships, leisure, and treatment. Each question is scored from 0 (not at all) to 3 (very much), yielding a total score that can range from 0 to 45. The PDI provides valuable insights into how psoriasis affects patients' functional capabilities and social interactions[22, 23].

The Dermatology Life Quality Index (DLQI) was used to measure the impact of skin diseases on patients' quality of life. It consists of 10 questions that cover six domains: symptoms and feelings, daily activities, leisure, work and school, personal relationships, and treatment. Each question is scored from 0 (not affected) to 3 (very much affected), providing a total score range from 0 to 30, where higher scores indicate a greater impact on quality of life[24].

### 2.5. Trial design

Administer treatment to 49 psoriasis patients and clinically evaluate PASI scores for the single cohort at week 0, 2, 4, 6, and 8 to assess reduction in severity over the 8-week treatment period, indicating efficacy. The cream was applied twice daily after morning and evening baths, with the amount adjusted based on the size of the psoriasis plaque measured using a finger-tip unit (FTU). The PASI score was utilized to assess the cream's efficacy, while the DLQI and PDI questionnaires were employed to evaluate the patients' quality of life. The safety of the cream was determined by reviewing patient report forms, interviews, and physical examinations conducted at each visit.

### 2.6. Statistical data analysis

Both descriptive and inferential statistics were employed as analysis tools for the repeated measures of PASI scores at weeks 0, 2, 4, 6, and 8 alongside DLQI and PDI scores at weeks 0 and 8. After conducting a Shapiro-Wilk test with a significance level set at 0.05, it was ascertained that the distribution of PASI scores across each week did not meet assumption of normality. Therefore, non-parametric statistical methods are deemed appropriate for the subsequent statistical data analysis. Specifically, the Friedman rank sum test was used to compare the one-way repeated measures of PASI scores, assessing whether there was a significant decrease over the weeks, thereby reflecting the efficacy of the developed herbal cream at weeks 0, 2, 4, 6, and 8. Subsequently, the paired Wilcoxon signed-rank test was employed as a nonparametric comparison method. Analysis of frequency distribution deviations between severity and treatment duration, the Chi-square test was employed to assess their independence and association. The default significance level throughout the statistical data analysis in this study was set at $\alpha = 0.05$.

## 3. RESULTS

The participants' ages ranged from 24 to 63 years. During the trial, an outbreak of COVID-19 resulted in a reduction in the number of participants available for follow-up, decreasing from 120 initially to a final count of 49 over the 8-week study period. Among these participants, there were 27 males and 22 females.

This section demonstrates clinical outcomes that validate the efficacy and safety of the cream, covering psoriasis severity, participants' quality of life and safety. Initially, descriptive statistics were calculated for the

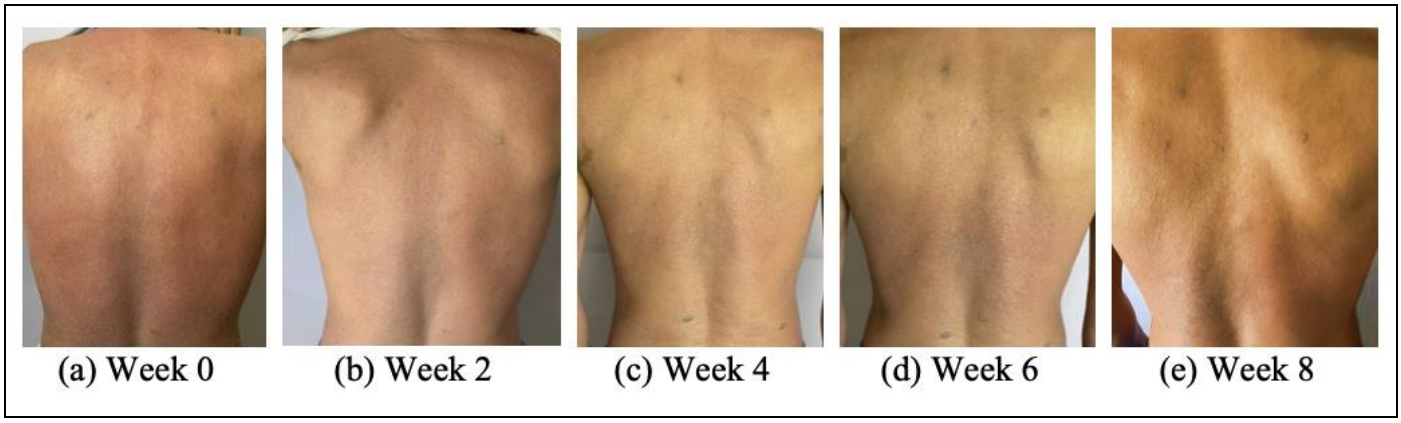


**Figure 2** The skin lesions of psoriasis during 8 weeks of medication

longitudinal PASI scores recorded at weeks 0, 2, 4, 6, and 8, alongside assessments of the Dermatology Life Quality Index (DLQI) and Psoriasis Disability Index (PDI) at the baseline (week 0) and the conclusion of the study (week 8).

### 3.1 Impact on the severity of psoriasis

The severity of psoriasis was assessed in response to the cream application. Figure 2 illustrates the progression of psoriasis lesions in a patient from the experimental group, with images captured before and after treatment at weeks 0, 2, 4, 6, and 8, demonstrating noticeable improvements in the lesions over the treatment period.

Psoriasis Area and Severity Index scores (PASI) were evaluated following the previous publication[19-23]. As depicted in Table 1, key statistical measures, including the mean, standard deviation, and the minimum and maximum values, were computed for each time point. This provided an in-depth view of the PASI score distribution and variability over the course of treatment. Utilizing the Friedman rank sum test with a significance level of $\alpha = 0.05$, a noticeable decrease in both mean and median PASI scores was observed, ranging from the initial measurement at week 0 to the final evaluation at week 8. This trend suggests the therapeutic efficacy of the herbal cream in managing psoriasis.

To evaluate the efficacy of the herbal cream, PASI scores were monitored over the 8-week psoriasis treatment period and are presented in Figure 3. The application of the Wilcoxon signed-rank test confirmed a significant alleviation of symptoms, beginning as early as the fourth week of consistent cream use, with a marked difference observed at the significance level of $\alpha = 0.05$. The PASI scores showed a gradual decrease over each two-week interval, particularly notable between weeks 2 to 4 and weeks 6 to 8, highlighting progressive improvement in psoriasis symptoms.

Table 2 categorizes PASI scores from the 49 psoriatic patients into three levels: mild (PASI < 10), moderate (PASI < 15), and severe (PASI > 15), displaying the evolving severity distribution over the 8-week treatment period. Initially, a substantial proportion of participants, 28 (57.15%), were classified in the severe group. This number markedly decreased to 10 (20.41%) by the end of the treatment, signaling a significant improvement. Conversely, the mild category saw a notable increase, from 16 (32.65%) at the outset to 34 (69.39%) by week 8. Assessing whether the observed distribution of frequencies significantly deviates between severity and treatment duration, the Pearson Chi-square test for independency indicated a significant association between variables ($\chi 2=29.113$, df = 8, $p < 0.001$). The statistical significance underscores the cream's efficacy, as the treatment duration correlated with a considerable shift in the severity classification of the patients.

**Table 1** Descriptive statistics for PASI scores across different weeks of medication

| | N | Min | Max | Med | Mean | SD. | Sig. |
|---|---|---|---|---|---|---|---|
| Age | 49 | 24.00 | 63.00 | 41.00 | 41.69 | 8.73 | |
| *PASI Score* | | | | | | | |
| Week 0 | 49 | 2.40 | 63.00 | 20.90 | 20.52 | 14.21 | |
| Week 2 | 49 | 0.00 | 67.80 | 18.70 | 18.56 | 14.57 | |
| Week 4 | 49 | 0.40 | 57.00 | 12.40 | 14.22 | 12.69 | |
| Week 6 | 49 | 0.10 | 48.00 | 8.30 | 10.57 | 9.52 | |
| Week 8 | 49 | 0.00 | 37.80 | 5.70 | 8.70 | 8.77 | 0.000[a] |

[a.] Friedman Rank Sum Test at $\alpha = 0.005$

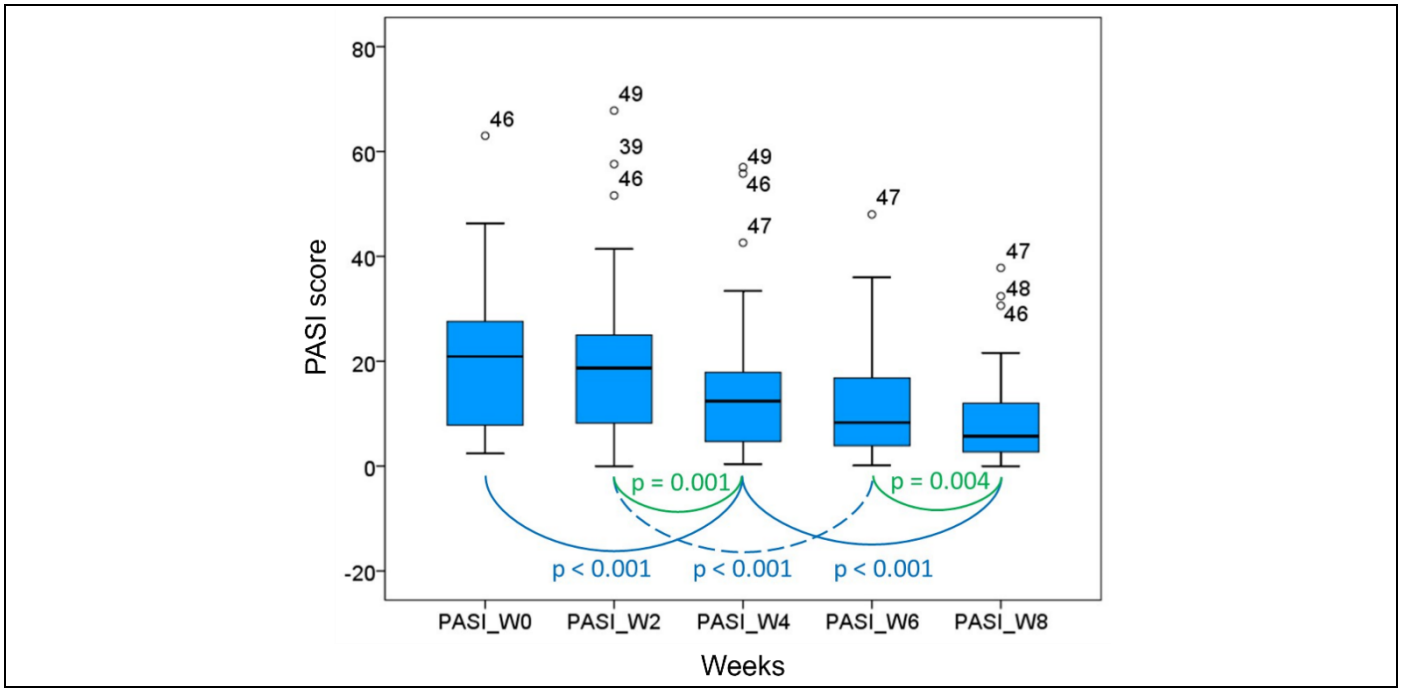


**Figure 3** The reduction of PASI score during 8 weeks of psoriasis treatment

*3.2 Impact on patients' quality of life*

Table 3 provides a comprehensive view of the changes in life quality for patients before and after the medication period, as measured by the Dermatology Life Quality Index (DLQI) and the Psoriasis Disability Index (PDI). The DLQI and PDI scores, assessed at weeks 0 and 8, were summarized using descriptive statistics to evaluate the impact of the herbal cream on the participants' dermatological health and overall quality of life. Applying the Wilcoxon signed-rank test for nonparametric comparison at the same significance level ($\alpha = 0.05$), significant reductions were observed in both DLQI and PDI scores, indicating a substantial improvement in quality of life for psoriasis patients.

Before Treatment (Week 0), the DLQI scores ranged from 0.00 to 29.00, with a median of 15.00 and a mean of 15.06 (SD = 8.01). This indicates a moderate to high impact of psoriasis on patients' quality of life before treatment. Post-treatment (Week 8), the DLQI scores showed a significant reduction, ranging from 0.00 to 29.00, with a lowered median of 5.00 and a mean of 8.49 (SD = 8.67). The PDI scores before treatment (Week 0) ranged from 0.00 to 37.00, with a median of 17.00 and a mean of 17.80 (SD = 10.56), suggesting significant disability due to psoriasis. After Treatment (Week 8), the PDI scores ranged from 0.00 to 39.00, with the median drop to 7.00 and a mean decrease to 11.35 (SD = 11.21). These findings provide substantial evidence that patients' quality of life improved, as indicated by lower DLQI and PDI scores after the 8-week medication period.

*3.3 Safety*

At each visit, participants underwent evaluation through interviews, complaint reviews, and physical observations, focusing on parameters such as itching, erythema, induration, and scaling. After using the cream, the only adverse reactions observed were a slight exacerbation of pre-existing redness and rash at the lesion site and a slight itchy sensation. However, these symptoms resolved within the first few days despite continued use of the cream. There was no evidence of any serious adverse reaction.

## 4. DISCUSSION

The efficacy of the herbal cream was observed thoroughly over the 8-week treatment course using PASI scores. Remarkably, symptom relief, demonstrated by the Wilcoxon signed-rank test, was not

**Table 2** Distribution of severity across week

| | Mild (%) | | Moderate (%) | | Severe (%) | |
|---|---|---|---|---|---|---|
| Week 0 | 16 | (32.65%) | 5 | (10.20%) | 28 | (57.14%) |
| Week 2 | 17 | (34.69%) | 4 | (8.16%) | 28 | (57.14%) |
| Week 4 | 20 | (40.82%) | 11 | (22.45%) | 18 | (36.73%) |
| Week 6 | 29 | (59.18%) | 5 | (10.20%) | 15 | (30.61%) |
| Week 8 | 34 | (69.39%) | 5 | (10.20%) | 10 | (20.41%) |

**Table 3** Descriptive patients life quality before (Week 0) and after (Week 8) of medication

| Life Quality | N | Min | Max | Med | Mean | SD. | Sig. |
|---|---|---|---|---|---|---|---|
| DLQI Before | 49 | 0.00 | 29.00 | 15.00 | 15.06 | 8.01 | |
| DLQI After | 49 | 0.00 | 29.00 | 5.00 | 8.49 | 8.67 | 0.000[b] |
| PDI Before | 49 | 0.00 | 37.00 | 17.00 | 17.80 | 10.56 | |
| PDI After | 49 | 0.00 | 39.00 | 7.00 | 11.35 | 11.21 | 0.001[b] |

b. Wilcoxon Signed-Rank Test at $\alpha = 0.005$

only significant ($\alpha = 0.05$ level) but also commenced as early as the fourth week of continuous application. The analysis of the PASI scores over time provides valuable insights into the dynamics of psoriasis management with the herbal cream. The sustained decrease in scores reinforces the herbal cream's potential as a long-term management strategy for psoriasis, highlighting its role not only in reducing the severity of symptoms but also in maintaining therapeutic gains over time. Furthermore, the Pearson Chi-square test, a robust method for assessing the independence between categorical variables, indicated the herbal cream's potential not only in alleviating psoriasis symptoms but also in altering the disease course. The transition of a majority of patients from higher severity levels to milder conditions is a testament to the therapeutic impact of the cream. Concurrently, improvements in patients' quality of life were evidenced through the Dermatology Life Quality Index (DLQI) and Psoriasis Disability Index (PDI) questionnaires. The use of the Wilcoxon Signed-Rank Test, with a significance level of $\alpha = 0.005$, confirms that the observed reductions in both DLQI and PDI scores are statistically significant. This suggests that the treatment with the herbal cream not only improved the skin condition of the patients but also had a profound positive effect on their overall quality of life, in terms of both dermatological health and disability due to the condition. These findings emphasize the therapeutic benefit of the herbal cream in enhancing the day-to-day lives of individuals suffering from psoriasis.

This efficacy of the herbal cream could be attributed to the unique blend of herbal ingredients known for their anti-inflammatory and skin-healing properties. The precise mechanism remains uncertain due to the presence of various herbs, botanicals, and zinc in the formulation. Many studies indicate that natural plant oils, such as coconut oil[15], clove oil[10,11], and sesame oil[14,16], possess unique properties including anti-inflammatory, antioxidant, anti-itch, and antibacterial effects. *Eclipta prostrata* has been reported to provide anti-inflammatory effects on the skin in cases of dermatitis. Supposedly, *E. prostrata* alleviates the symptoms of atopic dermatitis by reducing epidermis/dermis thickness, decreasing immune cell infiltration, and restoring skin barrier function[25]. *Acanthus ebracteatus* is used in Thai traditional medicine for treating dermatitis[21]. It has been found that it moderately suppresses neutrophil migration and chronic inflammatory cytokines[26]. The *Rhinacanthus nasutus* root is used in traditional medicine to treat skin disorders, including psoriasis. It is speculated that the anti-inflammatory benefits of the plant result from its ability to suppress pro-inflammatory mediators such as nitric oxide (NO), prostaglandin $E_2$ (PGE2), and tumor necrosis factor (TNF)[27]. According to a study, *Glycyrrhiza glabra*, or licorice, is frequently used in traditional Chinese medicine to treat psoriasis. In addition to possessing anti-inflammatory properties, *G. glabra* demonstrates a variety of biological activities. In a macrophage model research involving lipopolysaccharide stimulation, glycyrrhizic acid and 18-glycyrrhetinic acid were found to inhibit the generation of nitric oxide, prostaglandin E2, and reactive oxygen species[28]. Curcumin in turmeric possesses notable anti-inflammatory propertie[9,29,30]. The peel of mangosteen is traditionally utilized for its wound-healing capabilities[13], and topical application of zinc is known to yield therapeutic benefits[17].

Even though current research suggests that the topical herbal cream may be effective in the treatment of psoriasis, additional research is required to determine the cream's long-term safety and efficacy. Due to the small number of participants and the short treatment period, it was challenging to ascertain the cream's long-term efficacy. In addition, the absence of a positive control group using a conventional treatment in the study design precludes a clear comparison to differentiate between the benefits of the herbal cream and those of other treatment options. In addition, the trial lacked standardization of active compounds in herbal products and did not include biochemical testing to support the clinically observed changes. Despite its limitations, the findings of this study are consistent with those of a recent parallel group-randomized trial[8]. This latter study revealed that incorporating this herbal formula can improve the therapeutic effectiveness of a cannabis-based cream in psoriasis treatment. This consistency in findings across different studies underscores the promising role of herbal components in psoriasis management. The results of these findings emphasize the growing interest in and validation of plant-based alternatives in dermatology. The findings of this study are consistent with several other studies that have investigated the use of herbal formulations for the treatment of psoriasis. For instance, a study by Di Nardo

*et al*. (2018) demonstrated the effectiveness of curcumin, a key compound in turmeric, in reducing psoriasis symptoms[9]. Similarly, Sugihartini *et al*. (2019) documented the anti-inflammatory and skin-healing properties of clove oil, demonstrating that it significantly reduces inflammation in murine models[10]. In addition to these individual components, complex herbal formulations have also shown promise in managing psoriasis. For example, a meta-analysis by Jo *et al*. (2023) demonstrated that combining East Asian herbal medicine with conventional treatments effectively reduces inflammatory skin lesions in psoriasis patients[7]. This study supports the concept that a multi-targeted approach, utilizing a blend of various herbal ingredients, can improve therapeutic outcomes. Furthermore, a recent parallel group-randomized trial conducted by Charoenying *et al*. (2024) investigated the therapeutic potential of topical cannabis formulations for psoriasis[8]. The incorporation of herbal components, similar to those used in our cream, enhanced the efficacy of the cannabis-based treatment, implying a synergistic effect among different plant-based compounds.

The current study investigated the efficacy and safety of a psoriasis-treating topical herbal cream, formulated with a combination of various plants. The results demonstrated that the cream effectively improved the patients' quality of life and reduced the severity of their psoriasis-related symptoms. Although the results of the present study are promising, further research is necessary to ascertain the long-term safety and effectiveness of the cream. Subsequent studies could also investigate the specific mechanisms by which these herbal ingredients exert their effects, thereby laying the groundwork for more targeted and efficient treatment approaches not only for psoriasis but also for other dermatological conditions.

Overall, the investigation of natural ingredients for treating psoriasis remains an ongoing research topic, necessitating additional studies to substantiate their safety and efficacy. The potential of natural products to provide psoriasis patients safe and effective treatment options justifies further exploration.

## 5. CONCLUSION

This study assessed an herbal formulation comprising herbs, botanicals, and zinc, renowned for their hydrating, anti-inflammatory, antioxidant, antipruritic, and antibacterial properties. In a cohort of 49 psoriasis patients, this botanical treatment significantly decreased PASI scores within four weeks and enhanced scores on DLQI and PDI questionnaires, indicating improved quality of life. This study provides initial evidence suggesting that the botanical compound is a promising alternative treatment for psoriasis, offering a potential substitute for conventional medications that are known for their side effects or inefficacy. Future studies should investigate the long-term efficacy and underlying mechanisms of this herbal cream as a standard treatment regimen to optimize outcomes in psoriasis management.

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### Author contribution

Wantika Kruanamkam, Pataweekorn Ketkomol, and Thanvisith Charoenying designed and conducted the experiments, and wrote the manuscript. Darunee Sertphon, and Pichit Boonkrong performed the statistical analysis, data visualization, and assisted in writing the manuscript. All authors have read and approved of the final manuscript.

### Conflict of interest

The authors declare that they hold no competing interests.

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