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Exploring the Potential of Cannabidiol (CBD) Oil as an Adjunct Therapy for Psoriasis: Efficacy, Mechanisms, and Regulatory Challenges

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Abstract

Psoriasis, a chronic inflammatory skin condition, has traditionally been managed with topical and systemic therapies, but emerging interest in alternative treatments has highlighted the potential of Cannabidiol (CBD) oil. This comprehensive analysis explores the efficacy of CBD oil as an adjunct therapy for psoriasis, investigating its anti-inflammatory and immunomodulatory mechanisms. The novelty of this research lies in its multi-faceted approach, combining clinical trials, in vitro studies, and biochemical analyses to understand further how CBD oil interacts with psoriasis pathology, including its effects on keratinocyte proliferation and cytokine release. Findings indicate that CBD oil may offer significant benefits in reducing psoriatic lesions and improving patient-reported outcomes, potentially through modulation of the endocannabinoid system and suppressing pro-inflammatory pathways. However, regulatory challenges, including variability in product quality and legal restrictions, present hurdles for broader implementation. Future research should focus on standardizing CBD formulations, establishing optimal dosages, and addressing regulatory barriers to integrating CBD oil into mainstream psoriasis treatment protocols. CBD oil holds promise as a valuable adjunct therapy for psoriasis, offering a novel mechanism of action and the potential for enhanced management of this complex condition.

Introduction

Psoriasis is a chronic, immune-mediated skin disorder characterized by hyperproliferation of keratinocytes, abnormal differentiation, and a pronounced inflammatory response. Traditionally, the management of psoriasis has relied on a range of topical and systemic therapies aimed at alleviating symptoms and controlling disease progression. However, these conventional treatments often come with significant side effects and limitations. According to a longitudinal survey administered by the National Psoriasis Foundation, up to 52.3% of patients with psoriasis report being dissatisfied with current treatment. Many patients cite issues such as insufficient symptom relief, adverse side effects, and the high cost of biologic therapies as reasons for their dissatisfaction [1]. This general dissatisfaction with current treatment options leads to a growing interest in alternative therapeutic approaches. Among these, Cannabidiol (CBD) oil has emerged as a promising candidate due to its potential anti-inflammatory and immunomodulatory properties, in addition to its ability to modulate both the innate and adaptive immune responses, providing a unique advantage in addressing the complex immunopathogenesis of psoriasis.

CBD, a non-psychoactive compound derived from the Cannabis sativa plant, has gained attention for its therapeutic benefits in various inflammatory and autoimmune conditions. The compound interacts with cannabinoid receptors CB1 and CB2 present in the skin, and are involved in regulating inflammation, pain, and an immune response. Recent studies suggest that CBD oil may offer a novel adjunctive treatment option for psoriasis, with mechanisms that could address both the underlying inflammation and the aberrant immune responses characteristic of the disease [2]. Moreover, its non-psychoactive nature ensures that it is well-tolerated, with fewer side effects compared to conventional therapies.

Preliminary findings in the medical literature indicate that CBD oil may offer significant benefits in reducing psoriatic lesions and improving patient-reported outcomes. These benefits include reductions in the severity of scaling, erythema, and plaque thickness, which are key indicators of disease activity. These effects are thought to be mediated through the modulation of the endocannabinoid system and the suppression of pro-inflammatory pathways. Additionally, CBD has been shown to downregulate cytokines such as TNF-α and IL-6, which play a crucial role in driving psoriatic inflammation [3]. This review seeks to explore the efficacy of CBD oil in the context of psoriasis treatment, with a particular focus on its ability to modulate key pathological processes, such as keratinocyte proliferation and cytokine release.

Methods

This literature review critically evaluated 22 peer-reviewed studies to explore the therapeutic potential of cannabidiol (CBD) as an adjunctive treatment for psoriasis. A comprehensive search was conducted using databases such as PubMed, Google Scholar, and Scopus, focusing on publications from 2000 to

2024. The search terms included "Cannabidiol," "CBD oil," "psoriasis," "keratinocyte proliferation," "immune modulation," and "endocannabinoid system." Studies were selected based on their relevance to the review topic, specifically focusing on the mechanisms of action of CBD, such as its anti-inflammatory, immunomodulatory, and keratinocyte-regulating effects in psoriasis. Articles written in English and published in peer-reviewed journals were included.

From the initial pool of over 100 articles, 22 studies were included based on specific inclusion and exclusion criteria. The inclusion criteria required that each study (1) provide original empirical data on CBD's effect on immune and inflammatory pathways relevant to psoriasis; (2) explore CBD's interaction with key anti-inflammatory pathways or investigate its role in keratinocyte hyperproliferation and modulation of the endocannabinoid system (ECS); and (3) involve human subjects, in vitro models, or animal models relevant to dermatology and psoriasis. Studies were excluded if they focused exclusively on the psychoactive properties of cannabinoids (e.g., THC), lacked empirical data (such as review articles or commentaries), or did not pertain specifically to psoriasis or other immune-mediated skin conditions.

The 22 studies selected for this review represented a range of study designs, including randomized controlled trials (RCTs), case reports, in vitro studies, and in vivo research. Each study was analyzed for its contributions to understanding the potential of CBD in treating psoriasis. Key information extracted included study design, sample size, type of CBD application, dosage, treatment duration, and primary outcomes related to symptom improvement, biochemical markers, and other relevant endpoints.

Study Design and Key Findings

The studies examined were diverse in their focus and methodologies. Some explored the clinical outcomes of CBD application, particularly its effects on psoriasis symptoms, while others concentrated on the biochemical mechanisms by which CBD exerts its effects. Many studies reported CBD's potential to suppress key pro-inflammatory cytokines, such as TNF-α, IL-6, and IL-17, which are known to drive the inflammation characteristic of psoriasis. Others demonstrated that CBD could modulate keratinocyte hyperproliferation, a key pathological feature of psoriasis, via interactions with the endocannabinoid system, suggesting a multi-faceted mechanism of action.

Several clinical studies highlighted the effectiveness of topical CBD in reducing the severity of psoriasis symptoms. For example, studies noted significant reductions in erythema, plaque scaling, and patient-reported itching after CBD treatment. These findings were supported by mechanistic studies that explored how CBD interacts with the ECS and specific skin receptors, potentially reducing keratinocyte proliferation and suppressing the overactive immune responses seen in psoriasis.

Barriers and Opportunities

While the studies provided valuable insights, several barriers to the clinical application of CBD in psoriasis treatment were identified. One of the most commonly reported issues was the lack of standardized CBD formulations, leading to variability in product quality and dosage across studies. This variability, combined with inconsistent regulatory frameworks for CBD products, was noted as a significant challenge in translating research findings into clinical practice. Additionally, many studies had small sample sizes or short follow-up durations, limiting the ability to draw long-term conclusions about the safety and efficacy of CBD for psoriasis treatment.

Opportunities for future research were also identified. Standardization of CBD products, longer-term studies, and larger clinical trials are necessary to confirm the preliminary positive findings and better understand the long-term effects of CBD treatment. Some studies highlighted the potential for CBD to be combined with existing psoriasis therapies to enhance efficacy and reduce side effects, offering another promising avenue for research.

Study Quality and Limitations

The quality of each study was assessed based on its methodological rigor, clarity of outcome measures, and applicability to clinical practice in dermatology. Studies that demonstrated strong experimental design and clear, replicable results were prioritized. However, the review also identified some limitations, including small sample sizes, heterogeneity in study design, and variability in CBD product formulations. These limitations underscore the need for future studies to adopt more standardized methodologies and larger, more diverse patient populations to strengthen the evidence base for CBD as a treatment for psoriasis.

Results

CBD's Impact on Keratinocyte Proliferation and Inflammation

Cannabidiol (CBD) can potentially manage psoriasis by impacting keratinocyte function and reducing inflammation. One study suggests that CBD interacts with the body's endocannabinoid system, lowering the release of inflammatory cytokines and slowing the excessive proliferation of keratinocytes [4]. Furthermore, CBD has been shown to modulate the formation of neutrophil extracellular traps (NETs), contributing to psoriatic inflammation [5]. While CBD's anti-inflammatory effects are well-documented, such as its ability to regulate oil-producing sebocytes [6], its broader role in managing skin conditions like psoriasis is promising. One study emphasized CBD's capacity to modulate TH1 and TH2 cytokine profiles, which are central in psoriasis pathology [2]. This modulation may help balance the immune response and control the overproduction of keratinocytes and inflammation. Although more research is needed to understand CBD's specific effects on keratinocytes fully, current evidence supports its potential to address both inflammation and hyperproliferation in psoriasis.

Modulation of Cytokine Release and Immune Response

The immune response in psoriasis is characterized by a shift toward TH1 and TH17 pathways, with pro-inflammatory cytokines such as tumor necrosis factor-alpha (TNF-α), interleukin-17 (IL-17), and interleukin-23 (IL-23) playing a central role. CBD has been shown to reduce the release of these cytokines in peripheral blood mononuclear cells (PBMCs) from psoriasis patients [7]. This reduction suggests that CBD has an immunomodulatory effect on critical drivers of psoriatic inflammation. Moreover, another study reported that CBD can also modulate TH2-related cytokines, such as interleukin-4 (IL-4) and interleukin-10 (IL-10), potentially restoring immune imbalances seen in psoriasis [2]. Given the success of biologics in targeting these same cytokines to manage psoriasis, CBD could serve as an adjunct therapy by influencing both TH1/TH17 and TH2 pathways.

Endocannabinoid System and Immune Regulation

The endocannabinoid system (ECS) plays a significant role in balancing immune responses, and its interaction with CBD may help mitigate psoriasis symptoms. ECS modulation can potentially reduce inflammatory pathways and restrain keratinocyte overproliferation, crucial factors in psoriasis [4]. CBD's interaction with ECS receptors could enhance skin barrier function and decrease inflammation, making it a potential therapeutic option. However, clinical evidence directly linking ECS modulation by CBD to psoriasis outcomes remains limited [8]. Although cannabinoids have shown anti-inflammatory effects in other skin conditions, psoriasis-specific trials are necessary to validate CBD's therapeutic role.

Apoptotic and Anti-Apoptotic Effects on Psoriatic Keratinocytes

In vitro studies have explored CBD's effects on keratinocytes under various conditions. For example, research has demonstrated that CBD exhibits anti-apoptotic properties in UV-irradiated keratinocytes, suggesting protective effects against cellular damage [9]. This is particularly pertinent as keratinocyte apoptosis is essential for maintaining skin barrier integrity in psoriasis. However, it is crucial to consider that the inflammatory environment in psoriasis differs significantly from UV-induced damage. While these findings indicate that CBD may have a protective role in stressed keratinocytes, further research is required to determine whether these anti-apoptotic effects extend to the inflammatory microenvironment present in psoriasis.

Treatment Application in Animal Models

Animal studies have investigated the effects of topical CBD on psoriasis in mouse models. One study found that cannabinoid receptor 1 (CB1) knockout mice were protected from bleomycin-induced fibrosis (Mounessa et al, 2017). This highlights the potential of CBD as an anti-inflammatory therapeutic for psoriasis through the mechanism of CB1 antagonism. Another study reported that treatment with lipid-stabilized CBD modestly improved psoriasis in mouse models, showing a reduction in inflammatory marker IL-17A [10]. What this further emphasizes are the multiple inhibitory pathways in which CBD can produce anti-inflammatory effects in treating psoriasis. Further animal studies are needed to form a greater understanding of CBD treatment mechanisms and inflammatory targets in order to assist with planning for larger human trials.

Clinical Efficacy and Patient Outcomes

Clinical studies regarding the use of psoriasis are limited. Nevertheless, the current literature has shown promising results. CBD's anti-inflammatory effects have improved various inflammation-related markers across several skin conditions [11], though psoriasis-specific outcomes were not measured. Another study reported improvements in lesion severity and overall patient quality of life, likely due to CBD's immunomodulatory effects [10]. However, the interpretation of these findings is convoluted by the variability in product quality and dosing, underscoring the need for standardized formulations and dosages. This critical challenge must be addressed to ensure consistent patient outcomes in further psoriasis-specific clinical trials.

Application of Treatment in Dermatological Settings

Although more robust studies and clinical trials are needed to assess the full impact of topical CBD on psoriasis, many promising short-term studies report topical CBD as an efficacious psoriasis treatment. One study reported reduction in plaque capillary inflammation and scaling as well as reduced itching scores as early as 2 weeks after treatment in six psoriasis patients treated with topical CBD [12]. This emphasizes that CBD may have rapid therapeutic effects in reducing appearance and pruritus in psoriasis patients. These findings are similar to another study that showed that treatment with broad-spectrum CBD shampoo for 14 days halted sebum activity in mild to moderate scalp psoriasis patients [13]. What this implicates is that a halt in sebum production in scalp psoriasis patients using CBD may reduce plaque activity. Similarly, a case study regarding a 33-year-old man using 5mg/mL of THC soap and hair oil reported improvement in psoriasis as soon as 2 days with clearing of plaques and inflammation almost completely by 2 weeks [14]. This further highlights the rapid action of cannabinoids in plaque reduction, although it is worth noting that THC has a slightly different chemical structure to CBD and thus may have different results. While these studies show treatment potential, they primarily center around small focus groups and short-term outcomes. Long-term outcome measurements, larger patient populations, and less vague treatment variables are crucial for future investigations.

Evidence of Treatment Efficacy in Clinical Trials

Patient clinical trials regarding topical CBD as a treatment option are still new and few in number, yet they display optimistic results regarding treatment efficacy. A clinical trial that investigated the potential of CBD to treat basal thumb joint arthritis pain found that topical CBD treatment resulted in improvements from baseline among patient reported outcomes, and additionally showed that there were no side effects, changes in vital signs, or lab abnormalities from baseline after 1 week of topical CBD application, permitting progression of the trial to phase 2 [15]. With psoriasis being a similar autoimmune condition, this implies that CBD for psoriasis may have similar pain reductions and safety profiles**.** A separate study displayed similar results in a randomized placebo-controlled trial for patients with osteoarthritis receiving transdermal CBD gel for 12 weeks, in which they showed qualitative reduction in knee pain scores and greater pain reduction than the placebo group [16]. This provides further comprehensive evidence on the therapeutic potential of CBD, supporting its use in inflammatory and autoimmune skin conditions like psoriasis. Another double-blind trial evaluated plaque grade over the course of 12 weeks in 108 patients treated with placebo or CBD ointment, where the study showed that CBD patients demonstrated an inhibitory effect on keratinocyte proliferation and minimization of plaque scaling compared to placebo patients [17]. While these trials highlight the efficacy of topical CBD as a treatment for pain and inflammation often associated with autoimmune disease, they are limited by factors such as cohort size, outcome measurement bias, and limited duration of study. This exemplifies the need for larger and more robust clinical trials, particularly in dermatological settings and with focus on long-term outcomes.

Discussion

Barriers

One of the most significant challenges to the use of cannabidiol (CBD) in clinical practice is the legal and regulatory issues faced by those attempting to implement CBD in clinical practice. In the United States, cannabis is still considered a Schedule 1 substance, although many states have legalized its use for medical purposes. However, none of the CBD based medicines that are available on the market are used for dermatological

conditions. There continues to be growing interest in CBD for skin conditions, but there is still progress to be made in the regulatory framework before this topic can be fully researched [4]. These issues also affect patients and their willingness to inquire about CBD from their healthcare provider. Many patients who are cannabis users feel hesitant to ask about CBD, despite being interested in obtaining more information [18]. This could be due to the current lack of research and understanding about CBD effects amongst users. Many CBD producers have made claims about health benefits that are not supported by research, and patients may use these products in a way that has not been shown to be effective or safe for their condition [16]. Altogether, these regulatory challenges have generated a cycle of problems that have led to limited research ability, patient hesitancy to ask healthcare professionals about CBD, and potentially misleading information being spread. There is much legal and regulatory progress to be made to allow more diverse and effective clinical trials to be performed, which would allow patients to have access to current safety and efficacy data to help them make decisions.

Another significant limitation to the use of CBD in dermatological conditions is the lack of research in long-term efficacy and side effects. Nearly all clinical research available currently is short term studies. While this research has been promising for positive short term effects, little research exists to allay concerns that patients and providers may have about long-term adverse effects. When CBD is used as a long term immunomodulator, the safety and limitations must be further explored before they are incorporated into standard dermatologic clinical practices [11]. Further investigation will allow for a more clear safety framework to incorporate CBD therapy in clinical settings. Despite the growing knowledge base on CBD and its application in dermatology and other fields, many more robust studies must occur to explore the issues of therapeutic mechanisms, minimum effective and safe doses, clinical studies, and regulation [13]. Case reports also make up a significant portion of research on this subject, which are not generalizable to larger populations, again highlighting the need for more robust research in larger populations.

Lack of Generalizability

Another challenge that arises when putting CBD to use in clinical practice is that much of the current data is based on small study population sizes and therefore may not be generalizable to the population. A dual-center randomized placebo-controlled trial showed promising results for topical CBD oil in the treatment of psoriasis [17]. However, the study only included 51 patients, 6 of which were later terminated from the study due to bilateral skin irritation. This small cohort of participants is most likely not representative of the relatively large population of people with plaque psoriasis and indicates a need for much larger studies. Basic science research on this topic is often based on relatively small research populations. A study utilizing cell culture to investigate the effects of CBD on keratinocyte oxidative stress had a study population of only 30 psoriatic patients and a control population of 15 [19]. In addition to the small study size, the fact that the control sample size is half that of the psoriasis sample raises issues. It is possible that the control sample is not truly representative of a disease-free state, leading to erroneous data and statistical analysis.

Barriers to Translation to Clinical Practice

The translation of CBD research into clinical practice also comes with challenges. Numerous studies attempt to isolate the effects of CBD on psoriasis by selecting participants with no other major comorbidities. For example, in a study evaluating the effects of CBD on neutrophil extracellular trap formation in psoriatic vs 'healthy' neutrophils, only individuals without significant comorbidities, including cardiovascular disease and diabetes, were included [9]. This limits the applicability of the results to clinical practice, where nearly 12% of the U.S. population has diabetes and over one-third are classified as obese. Another challenge to translation to clinical practice is the application of in vitro results to real patients. An in vitro study utilizing mouse macrophages found that the anti-inflammatory effects of CBD can be strengthened by incorporating terpenes [20]. These results, while promising, do not account for the various pro- and anti-inflammatory molecules and cells present in vivo.

Therapeutic Challenges

Several therapeutic challenges are also present. Ideal formulation of topical CBD has yet to be established and several studies have investigated formulations on skin penetration. A study utilizing a mouse model demonstrated that the skin penetration of CBD-loaded nanoparticles differed between types of gelling agent used (silica vs MAS gel vs poloxamer termogel) [10]. These results demonstrate that formulation of the topical CBD treatment could greatly affect outcomes on psoriatic patients and that more research needs to be done on formulation types and their effects. Another therapeutic challenge is the unknown effects of topical CBD on the balance of the endocannabinoid system (ECS). The ECS has roles in the regulation of pain, sensation, mood and appetite and the downstream effects of activation of receptors in the ECS pathways are not entirely clear [2]. This incomplete understanding of the ECS could lead to unexpected outcomes and side effects during the therapeutic use of topical CBD for psoriatic patients.

Opportunities

Biological Benefits

Cannabidiol (CBD) exhibits many biological benefits for the skin at the molecular level by modulating immune responses, inflammation, and cellular mechanisms. The endocannabinoid system (ECS) plays a role in maintaining skin homeostasis by regulating cell proliferation, differentiation, and immune responses. It consists of endocannabinoids and their receptors, primarily CBD1 and CBD2. These receptors have been found in the skin and their dysfunction plays a role in the pathogenesis of psoriasis. CBD interacts with the ECS by modulating the activity of cannabinoid receptors in skin cells such as keratinocytes and sebocytes. It works by enhancing the activity of anandamide, an endocannabinoid which then directly binds to CB1 and CB2 receptors [2]. The binding of these receptors can go on to suppress inflammatory pathways. For instance, when these receptors are activated, they go on to suppress pro-inflammatory cytokines such as IL-2, inhibit keratinocyte differentiation, and encourage the proliferation of ceramides and fatty acids for skin barrier maintenance [12]. This modulation controls the pathological inflammation and hyperproliferation characteristic to psoriasis and other skin diseases.

Immunomodulation

Cannabidiol (CBD) modifies immune function by acting on various immune cells, such as T cells, neutrophils, and macrophages. One study found that CBD suppresses the proliferation of T cells and inhibits the release of pro-inflammatory mediators, including interferon-gamma (IFN-γ) and interleukin-17 (IL-17), which are involved in the pathogenesis of psoriasis [9]. Additionally, CBD has been shown to alter neutrophil activity, particularly by reducing neutrophil extracellular trap (NET) formation. In psoriasis, NETs, which are typically involved in trapping pathogens, become overactivated by IL-17 and contribute to local tissue damage [5]. By inhibiting NET formation, CBD helps to mitigate this harmful immune response, significantly curbing inflammation in psoriatic skin. CBD's immunomodulation also extends to its direct anti-inflammatory properties. It reduces pro-inflammatory cytokines like TNF-α and IL-6 by inhibiting NF-κB, a transcription factor that drives inflammation [20]. This dual action of immune modulation and inflammation reduction suggests CBD could be a valuable therapeutic option for autoimmune diseases like psoriasis, where immune cell hyperactivation and chronic inflammation play a central role.

Keratinocyte Regulation

Keratinocytes are the predominant cells in the epidermis and are responsible for maintaining the skin's barrier function. In conditions like psoriasis, keratinocyte proliferation is dysregulated, leading to the formation of thick, scaly plaques. Cannabidiol (CBD) can inhibit keratinocyte proliferation by downregulating the expression of key proliferative signaling pathways, such as mitogen-activated protein kinase (MAPK) [9,20]. This downregulation prevents excessive keratinocyte growth and reduces the severity of psoriatic lesions. Additionally, CBD exerts a protective effect on keratinocytes by modulating apoptosis [9]. While CBD protects keratinocytes from UV-induced apoptosis, it also promotes apoptosis in hyperproliferative cells, providing a dual therapeutic benefit in both preserving healthy keratinocytes and reducing pathological proliferation.

Skin Barrier

The skin's barrier function relies heavily on the regulation of lipid metabolism, which maintains hydration and prevents transepidermal water loss. Cannabidiol (CBD) impacts lipid synthesis in keratinocytes and sebocytes by restoring lipid balance in the skin. One study found that CBD enhances the production of essential lipids, such as ceramides, which are critical for maintaining the integrity of the skin barrier. Additionally, CBD increases aquaporin-3 (AQP3) expression in the epidermis, which functions to raise glycerol levels and prevent moisture loss [13]. This restoration of water and lipid homeostasis is especially important in conditions like atopic dermatitis and psoriasis, where the skin barrier is compromised and can cause increased transepidermal water loss and dryness.

Therapeutic Benefits

Psoriasis

Cannabidiol (CBD) has shown significant promise in the treatment of various dermatological conditions due to its anti-inflammatory, immunomodulatory, and skin barrier-supporting properties. One of the key disorders where CBD has demonstrated therapeutic potential is psoriasis vulgaris. In one study, CBD was shown to interfere with peripheral blood mononuclear cell function, specifically by inhibiting monocyte migration and differentiation into dendritic cells in response to inflammation [7]. This finding highlights CBD's potential to regulate immune responses central to the pathogenesis of psoriasis. Additionally, a case report suggests that CBD may reduce psoriatic lesions, itching, and scaling, particularly on the scalp [14]. The exploration of cannabinoids for treating dermatologic conditions also highlights the growing interest in their safety and efficacy. Research suggests that cannabinoid-based transdermal patches can provide targeted relief for skin symptoms with minimal systemic absorption, reducing the risk of adverse effects and potentially offering a novel and convenient mode of delivery for patients dealing with psoriasis [21]. In conclusion, CBD's ability to reduce inflammation makes it a promising treatment for psoriasis and other skin conditions. As research continues, innovative options like transdermal patches could make CBD even more accessible, offering effective relief with fewer side effects and opening up new possibilities for skincare.

Other Skin Conditions

The therapeutic effects of cannabidiol (CBD) extend beyond psoriasis, showing promise in a wide range of inflammatory skin conditions. Research has demonstrated that CBD regulates sebocyte lipogenesis and proliferation without inducing apoptosis, offering a potential therapeutic option with fewer side effects compared to traditional treatments like corticosteroids [4]. This makes CBD particularly beneficial for conditions such as asteatotic eczema and pruritus, where regulating epidermal water loss through sufficient lipogenesis is crucial. CBD also reduces the expression of inflammatory cytokines and enzymes like iNOS and COX-2 [4]. These properties could make CBD beneficial for treating conditions like acne and seborrhea where sebum production and inflammation are dysregulated.

Additionally, CBD's unique ability to modulate the immune system has been explored for its potential to alleviate the hyperactive immune responses seen in many skin disorders [11]. Furthermore, CBD helps reduce the inflammatory cytokines implicated in the pathogenesis of both allergic contact dermatitis and atopic dermatitis [4]. Lastly, the activation of CB2 receptors is effective in managing diffuse scleroderma and dermatomyositis. Dronabinol has also shown positive results in treating trichotillomania, while sublingual cannabidiol successfully reduces pain associated with epidermolysis bullosa [12]. Overall, CBD's regulation of inflammation and lipogenesis make it a versatile and potentially safer option for treating a variety of inflammatory skin diseases.

The efficacy of cannabidiol (CBD) use for osteoarthritis has been investigated through a randomized controlled trial for treating thumb basal joint arthritis. Researchers found that twice-daily CBD oil application on the affected joint resulted in a significant difference in patient-reported pain parameters, such as disability, function, and well-being, compared to placebo. This may be due to CBD's effects on the endocannabinoid system to reduce neuropathic pain and antagonize a number of CBD receptors that are prevalent in osteoarthritic joint chondrocytes. Additionally, topical CBD treatment did not result in any adverse effects or impact physical parameters like grip strength and passive range of motion [15]. These findings highlight the safety and efficacy of CBD compared to traditional pain control methods like opioids.

CBD as an Adjunct Therapy for Psoriasis

Studies are progressively showing the potential for CBD to be utilized as an adjunct therapy for psoriasis, offering an alternative approach to combat inflammation and immune dysfunction that fuel the condition. CBD derived from *Cannabis sativa* interacts with the body's endocannabinoid system, helping to regulate skin inflammation and immune responses, making it an attractive option for patients who may not be fully satisfied with traditional treatments [18]. This interaction suggests that CBD could provide additional therapeutic effects by targeting the pathways involved in psoriatic inflammation. Moreover, patients who experience side effects or inadequate relief from conventional therapies may find CBD a beneficial supplement, offering a more comprehensive treatment approach and enhancing quality of life.

Anti-inflammatory and Protective Effects of CBD

CBD's anti-inflammatory and protective properties, similar to other phytocannabinoids, suggest it may soothe psoriasis symptoms and support overall skin health [22]. Moreover, its demonstrated efficacy in reducing inflammation and pain in arthritis offers additional insight into its potential for treating psoriasis, as both conditions share common inflammatory pathways [15]. This connection between conditions indicates that CBD’s immunomodulatory effects could have a broad application, extending beyond localized skin inflammation to potentially improving systemic inflammation, which is often a concern in psoriatic patients.

Adjunct Treatments and Potential Challenges

While biological therapies remain a crucial part of psoriasis management, there's growing interest in adjunct treatments that work through different mechanisms [23]. Traditional therapies are not without side effects; CBD may be considered as a means of reducing doses or acting synergistically to relieve psoriatic symptoms. However, issues regarding product quality, determining optimal dosages, and navigating the regulatory landscape must be addressed before CBD can fully be integrated into clinical practice [16]. This connection between conditions indicates that CBD’s immunomodulatory effects could have a broad application, extending beyond localized skin inflammation to potentially improving systemic inflammation, which is often a concern in psoriatic patients.

Conclusions

In summary, our comprehensive analysis examined the promising potential for Cannabidiol (CBD) oil as an adjunct therapy for the treatment of psoriasis. Despite limited clinical studies, CBD oil shows anti-inflammatory, anti-apoptotic, and immunomodulatory effects in autoimmune diseases. The endocannabinoid system and neutrophil extracellular trap (NET) formation have been implicated as targets for its effects. Current studies suggest the use of topical CBD to reduce plaque appearance and inflammation in psoriasis patients. CBD has the potential to work adjunctively with biologic agents to decrease psoriasis burden. However, the need for standardized formulations and addressing legal challenges still exists. The inflammation and immune dysfunction seen in psoriasis makes it essential for dermatologists and other healthcare providers to consider topical CBD as an alternative to conventional therapies. Undoubtedly, further research is needed to elucidate specific mechanisms, targets, and establish ideal formulations to better understand CBD’s impact on psoriasis symptoms.

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