



Comment and Controversy
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The growing trend of cannabidiol in skincare products

Nikita Jhavar, BS^a, Elizabeth Schoenberg, BA^b, Jordan V. Wang, MD, MBE, MBA^{b,*},
Nazanin Saedi, MD^b

^aDrexel University College of Medicine, Philadelphia, Pennsylvania, USA

^bDepartment of Dermatology and Cutaneous Biology, Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, Pennsylvania, USA



Abstract Recently, cannabidiol has garnered considerable attention in the public and media as a trendy and popular ingredient in skincare products. Cannabidiol is a cannabinoid that lacks psychoactive properties. It has been marketed to consumers as being antiinflammatory, analgesic, hydrating, moisturizing, and wrinkle-reducing. Others claim it to be a cure for skin aging, acne, eczema, psoriasis, and pruritus. However, current data is limited regarding its safety and efficacy. Clinicians should be aware of current regulatory concerns and the limited available evidence.

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Introduction

Cannabinoids represent a diverse group of pharmacologic compounds that can be split into three classes: (1) endogenous cannabinoids that are naturally occurring and produced in humans, (2) phytocannabinoids that are exclusively found in the Cannabis plant, and (3) synthetic cannabinoids that are produced in laboratories. They are known for sharing structural and biologic features with the primary psychoactive component of the Cannabis sativa plant.¹

One of the cannabinoids of the Cannabis plant is cannabidiol (CBD), which is a compound known to regulate physiologic processes, including cutaneous growth and differentiation.^{2,3} Unlike tetrahydrocannabinol, CBD has no psychoactive effects. It has been evaluated for the treatment of such varied medical conditions as seizures and psychiatric disorders.⁴

Recently, cannabinoids have gained traction in the mainstream media for their use in skincare. CBD has become a

trendy ingredient that has led many brands to incorporate it into their products, which are often marketed for purported benefits of being antiinflammatory, analgesic, hydrating, moisturizing, and wrinkle-reducing. Some even claim to offer antiaging benefits, whereas others offer a cure for acne, eczema, psoriasis, and pruritus. Paired with celebrity endorsements, these products have made waves in the global skincare market, which is estimated to be worth between \$135 to \$155 billion by 2021.

Unfortunately, the claims for CBD-containing skincare products may have outpaced our current scientific understanding, especially regarding safety and efficacy.⁵ Due to the popularity of incorporating CBD into skincare, we review the current regulatory concerns and the limited evidence in the medical literature to better inform clinicians.

Regulatory concerns

Many products containing CBD are readily available at dispensaries and via the Internet for patients and consumers to purchase; nonetheless, their regulation and legality largely

* Corresponding author. Tel.: +1 215 955 6680.

E-mail address: jordan.wang@jefferson.edu (J.V. Wang).

remain controversial. At the state level, they are considered to be legal if either in states that allow for medical and recreational marijuana or in all states if extracted from hemp, which is a different strain of the Cannabis plant that lacks large volumes of tetrahydrocannabinol. As of 2017, the District of Columbia, Guam, Puerto Rico, and 29 states permit comprehensive public medical Cannabis programs.¹

At the federal level, it is much more complex. The Drug Enforcement Administration (DEA) and the Controlled Substances Act regulate psychoactive substances with abuse potential. Marijuana and its cannabinoid components have traditionally been considered as schedule I substances, which have no currently accepted medical treatment use and also have a high potential for abuse. These are tightly regulated; however, the DEA has recently offered clarification that the presence of CBD in products does not in and of itself make them illegal under the Controlled Substances Act. This update shows that the DEA has been relaxing their position on classifying CBD as equivalent to marijuana. In addition, the Department of Agriculture and the Farm Bill state that CBD extracted from hemp is, in their view, considered to be legal. This has led many proponents to argue that CBD, especially from hemp, is legal and should be widely available.

The conflict between state and federal regulations has created confusion for patients, consumers, and clinicians alike. The widespread availability of CBD-containing products paired with its complicated regulatory status has only added to the controversy. Skincare companies have taken advantage of this by continuing to offer products to consumers until the situation can be clarified. Legislation at both levels will be ongoing; however, these products have not been tested for safety or efficacy by the Food and Drug Administration and therefore lack regulatory approval.⁶ Products may differ in terms of purity, strength, and source of the CBD, and consumers should be aware of the various formulations between manufacturers and possibly even between batches.

Review

Although limited, current medical literature has begun to demonstrate a role for CBD in the management of acne. A recent study examined the effects of CBD on human sebocytes and skin cultures and found that it suppressed sebocyte proliferation and lipogenesis.² In addition to its lipostatic and antiproliferative effects, CBD also exerted an antiinflammatory action. The authors ultimately hypothesized that CBD could represent a potential therapy for acne. Another small study looked at the use of 3% Cannabis seeds extract cream applied to the cheeks of men with acne.⁷ Compared with placebo, twice daily application for 12 weeks led to decreased sebum content and erythema. It was also well-

tolerated. The authors suggested that it may have utility in the treatment of acne or seborrhea; however, Cannabis seeds extract contains more active molecules than just CBD alone, which limits its general use. No large-scale human trials have looked into the role of CBD for the management of acne.

There have also been claims that CBD may be promising for treating pruritus.⁸ Prior studies have shown that cannabinoid-1 receptor and cannabinoid-2 receptor agonists can suppress itching by acting on cutaneous nerve fibers, mast cells, and keratinocytes.¹ In one study,⁹ patients with uremic pruritus were given topical endogenous cannabinoids twice daily for 3 weeks. With this regimen, 38% experienced complete elimination of pruritus, and 81% had complete reduction of xerosis. The authors postulated that this was partially due to the effects of endocannabinoids on decreasing mast cell degranulation and histamine-related itch, in addition to having an inhibitory effect on specific cytokines. No robust studies have selectively assessed the role of CBD alone.

Products containing cannabinoids, including CBD, may have utility in treating allergic contact dermatitis, atopic dermatitis, and psoriasis.⁸ Outside of cannabinoid-1 receptor and cannabinoid-2 receptor, antiinflammatory properties may be due to decreases in interferon gamma and keratinocyte-produced cytokines, which could offer improvement in various inflammatory skin diseases. CBD may also inhibit keratinocyte proliferation in certain cell populations, which could prove beneficial in psoriasis; however, one group has cautioned against widespread adoption, because available studies have looked at a wide range of cannabinoids, which are each inherently different.¹⁰ The cannabinoid family is diverse and complex, and molecules have different influences that are currently poorly understood and underresearched.

Conclusions

Although studies have begun to show that CBD may have potential in treating various skin conditions, clinicians should exercise caution. Much of the available data are preclinical and lack the support of robust, randomized, placebo-controlled, double-blind studies. Despite its exciting potential, there remain a number of unknowns about CBD administration. Although skincare products that include CBD are being marketed to consumers for several purported benefits, there are minimal data to support these claims. As with many cases in the world of esthetics, the marketing has outpaced our current understanding.

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