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## Cannabidiol: A Review of The Therapeutic Benefits and Extraction Methods

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### Abstract

In recent years, the use of cannabidiol (CBD) for medicinal purposes has gained increasing attention due to its potential health benefits. Even so, the long-term effects are not fully understood, therefore, it is important to continue studying the risks, the potential benefits and also the optimal way to apply it in the medicinal area. In this review, the potential therapeutic uses and the extraction methods of CBD will be discussed.

## Introduction

CBD is an active ingredient found in the *Cannabis sativa* plant. This compound has shown some beneficial chemical properties for human health, and unlike Delta-9-tetrahydrocannabinol (THC), which is also a cannabinoid, does not present psychoactive effects. CBD can be consumed orally or administered topically and comes in many forms, including oils, creams, tinctures and capsules. Some of the potential therapeutic benefits that CBD shows are anti-inflammatory, antioxidant, analgesic,<sup>1</sup> and antipsychotic<sup>2</sup>, among others. This review will discuss some of the therapeutic effects and the most used extraction methods of CBD.

## Therapeutic benefits of CBD

The therapeutic benefits of CBD, are believed to be related to the endocannabinoid system. This system contains receptors and molecules that play important roles in regulating various functions, such as mood, memory, pain and appetite. CBD interacts with the endocannabinoid system by binding to the cannabinoid receptors. The anti-inflammatory effect happens when the CBD interacts with the cannabinoid receptors and reduces the levels of pro-inflammatory molecules, such as cytokines and eicosanoids. In addition, it showed to have antioxidant properties, which also help to the anti-inflammatory effects by reducing free radicals.<sup>1</sup> As the endocannabinoid system also plays a role in regulating pain, it is believed that CBD has also analgesic effects. Regarding the antipsychotic effects, CBD behaves as an inverse agonist of CB1 and CB2 receptors, which could explain its ability to prevent psychosis induced by THC. Furthermore, it is believed that inflammation and oxidative stress are connected to the emergence of psychosis, therefore, the anti-inflammatory and antioxidant effects may help to improve the symptoms.<sup>3</sup>

Even though it showed to have potential therapeutic effects, CBD may cause some side effects such as dry mouth and dizziness. Also, the use of CBD together with other medications could affect the effectiveness or increase the risk of those side effects. In addition, the lack of regulation of CBD is also something important to consider since it can affect the quality and purity of the product, which could be harmful to consumers' health. Hence, the use of appropriate extracting methods is needed to obtain a high-quality product.

## Extracting methods of CBD

There are various methods for extracting CBD from the cannabis plant, such as solid-liquid extraction (SLE) and supercritical CO<sub>2</sub> extraction. On the one hand, the most employed extraction method is SLE. This method involves the use of a solvent, such as ethanol or hexane, to extract CBD from the plant material.<sup>4</sup> The advantage of using SLE is that with the use of the optimal solvent the extraction can be fast and efficient. However, the solvent may leave residual impurities in the final extract. Furthermore, it is important to correctly dispose of the residual solvent to avoid environmental contamination. On the other hand, the supercritical CO<sub>2</sub> extraction method uses pressurized CO<sub>2</sub> to extract CBD from the cannabis plant, obtaining a pure and highly concentrated extract. The main advantages of the method are that it is safe, environmentally friendly, and it obtains a high-quality final extract.<sup>5</sup>

In conclusion, although CBD has several health benefits, further research is needed to fully understand its effects to ensure its safe and effective use.

### References

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