

# After a decade of R&D, a major breakthrough in topical pain relief is now a reality.

CBD CLINIC Professional Series over-the-counter, non-prescription ointments and creams are available to patients exclusively via health & wellness professionals. All products are FDA-registered, made in an FDA-audited facility, and have provided remarkable relief to NFL players and other professional athletes since its introduction earlier this year.

Each formula has three (3) foundational components for delivering rapid and lasting relief from joint and muscle pain, associated with daily living, sports injuries, arthritis, sprains, bruises and related types of inflammation:

- 1) Natural Emollients
- 2) Powerful Terpenes
- 3) Aromatic Cannabidiol

## 1. Natural Emollients

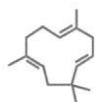
The base formulations of our ointments and creams are made with all-natural emollients that are readily absorbed by human skin. CBD CLINIC emollients include organic beeswax, jojoba seed oil, cottonseed oil, and shea butter. These were selected and combined via a proprietary method to help quickly deliver pain-relieving ingredients into the skin.

Comparatively, many other topical analgesic products use cheap, synthetic ingredients for their base, including benzyl alcohol, cetyl alcohol, diglycol stearate, glyceryl monostearate, petrolatum, etc.

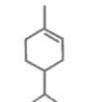
## 2. Powerful Terpenes

Terpenes (C<sub>10</sub>H<sub>16</sub> molecules) produce analgesic action in acute and neuropathic pain by decreasing neuronal excitability through peripheral mechanisms<sup>1</sup>. Menthol and Camphor are the two most widely used terpenes in topical pain management today. In addition to these ingredients, CBD CLINIC ointments and creams are formulated with several other terpenes.

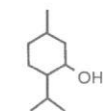
Terpenes are aromatic organic hydrocarbons found in the essential oils of plants. They produce the distinct aroma associated with each plant. The therapeutic effects of terpenes are widely recognized<sup>2</sup>. Other terpenes (essential oils) in our products, including Eucalyptus, Clove and Peppermint, are combined with Menthol and/or Camphor to reach the deepest pain.



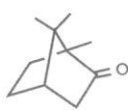
Humulene



Limonene  
(citrus)



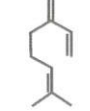
Menthol  
(mint)



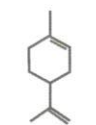
Camphor  
(camphor)



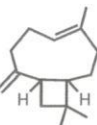
1,8-Cineole  
(eucalyptus)



Myrcene



D-Limonene

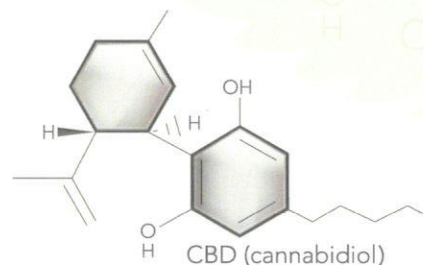


Caryophyllene

## 3. Aromatic Cannabidiol

In the mid-1990s, discovery of endocannabinoids enabled a major breakthrough in new therapies for reducing pain, inflammation and other ailments. The endocannabinoid system is a group of endogenous cannabinoid receptors located in the mammalian brain and throughout the central and peripheral nervous systems, consisting of neuromodulatory lipids and their receptors.

The endocannabinoid receptor system plays a significant role in regulating neurotransmitter function<sup>3</sup>. One receptor that is being actively studied is called CB<sup>1</sup>. It is found in spinal and peripheral nervous tissue (including areas important for pain perception)<sup>4</sup>. Although research into modulation of the endocannabinoid system is still in its early phases, studies published in the British Journal of Pharmacology and elsewhere have reported that Cannabidiol (CBD) has been identified as an allosteric modulator capable of slowing down neurotransmitter signaling<sup>5</sup>. These findings help us understand the therapeutic relevance and benefits that CBD has with pain perception and how CBD can support the therapeutic effects of Active Ingredients in reducing pain.



CBD CLINIC products are all formulated with Charlotte's Web cannabidiol (CBD+CW)<sup>TM</sup>, a whole-plant extract from a patented cannabis plant that is nearly devoid of THC. It is therefore not psychoactive and THC is not detectable in blood or urine tests. CBD oil from the plant is categorized as an industrial hemp oil extract that is legal in all 50 states.

While most CBD on the market is low in terpenes, CBD+CW is rich in organic terpenes that are secreted in the flower's resin gland where the CBD and terpenes are naturally formed together. The terpenes commonly found in CBD+CW include humulene, myrcene, limonene, pinene, caryophyllene and linalool, resulting in Aromatic Cannabidiol. Independently, these terpenes are well-recognized for their benefits in reducing inflammation, muscle pain, nerve pain, stress, and overall pain management<sup>6</sup>. Naturally occurring within CBD+CW, these terpenes are considered to add an 'entourage effect,' supporting CBD as a neuromodulator of the endocannabinoid system.

CBD+CW is a patented strain produced by Charlotte's Web Botanicals (CWB) (Boulder, CO) and is grown under the guidelines established by state and federal law and with strict quality control measures to assure repetitive production of the same strain. A critical component of CWB's quality control system is growing their hemp plants in clean soil, free of concentrated heavy metals which plague other forms of CBD sold in the market today.

## Summary:

By formulating non-prescription analgesic creams and ointments with fast absorption properties, powerful deep pain relieving terpenes, and endocannabinoid modulators (CBD<sup>+CW</sup>), revolutionary pain management is now a reality.

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2. F. A. Santos and V. S. N. Rao. "Anti-inflammatory and Antinociceptive Effects of 1,8-Cineole a Terpenoid Oxide Present in many Plant Essential Oils". *Phytotherapy Research* 14, 240-244 (2000).
3. Pál Pacher, Sándor Bátkai, and George Kunos. "The Endocannabinoid System as an Emerging Target of Pharmacotherapy". *Pharmacological Reviews*. September 2006 vol. 58 no.
4. J Manzanares, MD Julian, and A Carrascosa. "Role of the Cannabinoid System in Pain Control and Therapeutic Implications for the Management of Acute and Chronic Pain Episodes". *Current Neuropharmacology*. 2006 Jul; 4(3): 239-257.
5. Laprairie RB, et al. "Cannabidiol is a negative allosteric modulator of the type 1 cannabinoid receptor." *British Journal of Pharmacology*. 2015 Jul 27.
6. Damião Pergentino De Sousa. "Analgesic-like Activity of Essential Oils Constituents". *Molecules* 2011, 16(3), 2233-2252.

**FOR ADDITIONAL INFORMATION,  
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**CBD CLINIC™**  
Revolutionary Pain Relief



The Natural Science  
Behind Our  
Pain Relief Revolution

