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Research

6 BEST TERPENES FOR PAIN AND INFLAMMATION RELIEF



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It can be difficult to keep up with all things cannabis — like cannabinoids, terpenes, strains, etc. — unless you’re immersed in it daily. When I first visited a Denver dispensary, I asked the budtender about terpenes. The budtender didn’t have much information for me besides explaining that **concentrates** with higher terpene content were more expensive. While this is absolutely true, I was sure there was more to the story than just the price difference.

This guide will help you better understand certain terpene profiles to make more informed decisions when purchasing products from the dispensary. Specifically, we’ll explore what terpenes are, which ones are good for pain, and how certain terpenes can assist with pain management.

CAN TERPENES HELP WITH PAIN AND INFLAMMATION?

So, what exactly are **terpenes**? You might already be familiar with a few — if you’ve ever smelled oranges or pine needles, you’ve come into contact with some of the most common terpenes. Terpenes are naturally occurring chemical compounds that provide fragrance in almost all plants, such as thyme, cannabis, Spanish sage, and citrus fruits, to name a few.

Aside from aroma, terpenes also have therapeutic properties of their own. Additionally, terpenes have **synergistic properties** with cannabis through a variety of complementary mechanisms, including **increased brain absorption**, better drug delivery, and enhanced medical effects.

Some other products that contain terpenes include essential oils, topical products like lotions and creams, cleaning products, and food additives. According to cumulative research, terpenes in the cannabis plant are generally safe, well-tolerated, and have a **wide range of potential benefits and uses** including:

- Anti-inflammatory
- Antioxidant
- Analgesic
- Anticonvulsive
- Antidepressant
- Anxiolytic
- Anticancer
- Antitumor
- Neuroprotective
- Anti-mutagenic
- Anti-allergic
- Antibiotic and
- Anti-diabetic properties

Selecting a **cannabis strain** with a specific terpene profile may be advantageous to alleviate certain conditions. Factors such as dosage, terpene profile, and **CBD:THC** ratio are extremely important to consider when selecting strains to alleviate symptoms of specific conditions. Let’s explore some of the best terpenes that can be used for their pain-relieving (analgesic) properties.

6 BEST TERPENES FOR PAIN

Like cannabinoids, terpenes are thought to communicate with certain protein cell receptors in the body’s **endocannabinoid system (ECS)** in order to produce therapeutic effects. The ECS is a natural physiological system existing in both humans and animals and is responsible for maintaining balance in the body by regulating things such as mood, pain, appetite, sleep, stress, and more.

A **2008 study** found the terpene **caryophyllene** to be the first non-cannabinoid compound able to directly activate CB2 receptors in the body. Recent 2020 research **supports this finding** and in 2023 groundbreaking research finds that many **more** is needed, it’s likely that **more** receptors within and even

There is significant preclinical and small clinical evidence to support the claim that certain **terpenes can help alleviate pain**. x
The terpenes we will explore in more depth in this article include myrcene, pinene, linalool, limonene, caryophyllene, and humulene.

MYRCENE

Beta-myrcene, also known as simply myrcene, is by far the **most commonly found terpene** in the *Cannabis sativa* plant. This terpene is often described with adjectives such as spicy, peppery, musky, woody, or earthy. Although myrcene is the most commonly found terpene in cannabis, it can also be found in various other plants and fruits in nature, such as mangoes, lemongrass, eucalyptus, hops, and many more.

Strains that are high in myrcene are often — but not always — Indica-dominant strains. In fact, part of the reason we think of “Indica” chemovars the way we traditionally do is that they are relatively **higher in myrcene**, which activates relaxing, antianxiety receptors that also **cause sedation** in high amounts.

Some examples of strains that are **high in myrcene** include:

OG Kush

Blue Dream

Grape Ape

Granddaddy Purple

Harlequin

Pure Kush

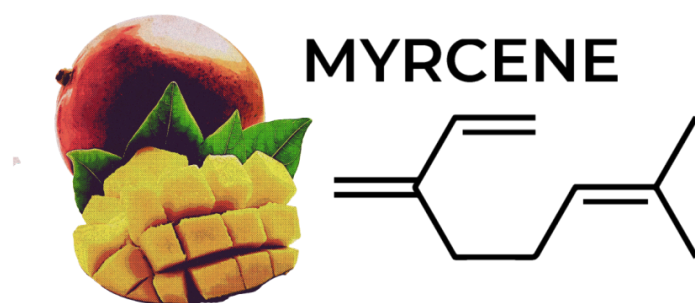
Ace of Spades

Super Bud

Jack Herer

According to a **2021 study**, myrcene is purportedly the dominant terpene in the majority of known cannabis strains. It shows potential as a muscle relaxant, and several studies using animal testing have also found that it may have both analgesic and **anxiolytic** (anxiety-reducing) properties.

When it comes to the pain-relieving effects of myrcene, **research has found** that using this terpene in combination with THC produces the best results. This speaks to what is called the “**entourage effect**,” which is the theory that instead of isolating certain cannabinoids, terpenes, or other compounds for their therapeutic effects, using them together in their natural state can provide more benefits.



PINENE

X

Alpha-pinene is the most commonly found terpene in the natural world. It’s found in a variety of plants, including pine needles, rosemary, mint, saffron, and orange peels. Its pain-relieving effects are independent of cannabinoid receptors; instead, it inhibits pain by reducing inflammation and potentially working at opioid and GABA receptors. 2021 research suggests that pinene-containing strains may be effective for migraines, inflammation, and neuropathic pain.

Cannabis strains that are high in pinene include:

- Big Smooth
- Blue Dream
- Grape Ape
- Harlequin
- Cannatonic
- AC/DC
- Chemdawg
- Trainwreck
- Sour Diesel
- Super Lemon Haze

It’s important to note that, unlike myrcene, pinene is rarely the most abundant terpene in a strain, but it is commonly the second most abundant terpene in a strain’s makeup. The one exception to this rule is Big Smooth, which has a pinene-dominant terpene profile.

According to a 2019 review of current research, alpha-pinene has been reported to have many therapeutic effects, such as:

- Antitumor
- Antimicrobial
- Antimalarial
- Antioxidant
- Anti-inflammatory
- Anti-*Leishmania* (i.e. antiparasitic)
- and Analgesic effects

LINALOOL

Linalool is a floral terpene often described as having a light, citrusy, or woody scent. It can be naturally found in mint, citrus fruits, rosewood, fungi, and lavender. Some common cannabis strains that have this terpene include:

- Amnesia Haze
- Special Kush
- Lavender
- LA Confidential
- OG Shark
- Fire OG
- Diamond Girl
- Trainwreck

Linalool is used in essential oils and can be found in a wide variety of products, including cosmetics, perfumes, household cleaners, and food additives. It has been touted for its anti-anxiety and antidepressant properties. It is also recognized as a potent anti-inflammatory and antioxidant.

According to a 2021 study exploring recent updates on the bioactive properties of linalool, researchers state, “Linalool can induce apoptosis (i.e. cell death) of cancer cells via oxidative stress, and at the same time protects normal cells. Linalool exerts antimicrobial effects through the disruption of cell membranes. The protective effects of linalool on the liver, kidney, and lung are owing to its anti-inflammatory activity. On account of its protective effects and low toxicity, linalool can be used as an adjuvant of anticancer drugs or antibiotics.”

Another 2021 research review shows that linalool blocks pain through both central and peripheral mechanisms. It may have synergy with opioids by acting at those receptors, too. A 2007 clinical study was done on patients who just had surgery and were given linalool aromatherapy. The researchers found that those patients needed fewer opioids in the immediate postoperative period.

LIMONENE

Limonene is a bitter and citrusy terpene, commonly found in the peels of citrus fruits like oranges and lemons. Except for alpha-pinene, limonene is the most frequently occurring terpene in the natural world. This terpene is believed to stimulate the immune system while also fighting against inflammation, depression, stress, and anxiety.

When it comes to cannabis strains high in limonene, look for strains that have words like “sour” or “lemon” in their name. These strains tend to be rich in limonene. Some examples include:

- Super Lemon Haze
- Sour Diesel
- Berry White
- Banana OG
- Do-Si-Dos
- Bruce Banner
- Marionberry
- OG Glue
- Animal Cookies

According to this 2018 review of current research, “It can be affirmed that limonene presents anti-inflammatory, antidiabetic, antioxidant, anticancer, antiallergic, antinociceptive, and anti-stress activities, besides positive effects in the treatment of gastric ulcer, colitis, asthma and airway inflammation, among other activities. The high availability of limonene in nature, its safety profile and its wide mechanism of action make this monoterpene a promising alternative to conventional therapeutic drugs.”

In a 2016 study that explored the pain-relieving potential of limonene in mice, promising results suggested limonene may perform pain-relieving action by modulating TRP channel activity. Although this terpene is not specifically known for pain relief, it offers a wide range of other positive effects that could impact the source of pain depending on the condition. In addition, limonene may be useful in the management of pain management.

CARYOPHYLLENE

Beta-caryophyllene, often called simply caryophyllene, is a terpene that has a spicy, peppery scent with hints of cinnamon. In nature, it is commonly found in rosemary, cloves, hops, black pepper, and other herbs.

As previously mentioned, terpenes work by activating cell receptors within and outside the ECS. Caryophyllene is unique in that it is the sole dietary compound research has found to directly activate CB2 receptors, which are primarily located in the central nervous system (CNS) and the peripheral immune system. This finding opened the door to theories that other terpenes may work similarly to impact mood, pain, and stress. Caryophyllene is well-known for its **pain-relieving and anti-inflammatory properties**.

Generally, if you're looking for strains rich in caryophyllene, any strain in the "cookies" family is a safe bet. Some common cannabis strains in which beta-caryophyllene is the dominant terpene include:

Sour Diesel

Bubba Kush

Girl Scout Cookies (GSC)

Gelato

Candyland

A **2013 study** found that the administration of caryophyllene reduced pain in mice. Additionally, researchers found that caryophyllene enhanced the pain-reducing abilities of low-strength morphine. In addition to CB2, researchers also found that the **TRPV1 ion channel and PPAR α** receptor are involved, suggesting that consuming this terpene in conjunction with other pain relievers can have a positive impact on pain management.

According to a **2016 review** of the available research regarding caryophyllene, "Various pharmacological activities such as cardioprotective, hepatoprotective, gastroprotective, neuroprotective, nephroprotective, antioxidant, anti-inflammatory, antimicrobial and immune-modulator have been reported in experimental studies. It has shown potent therapeutic promise in neuropathic pain, neurodegenerative and metabolic diseases."

HUMULENE

Alpha-caryophyllene is actually called **humulene**, named after hops. Similar to its beta form, caryophyllene, it's another terpene that is characterized by a pungent, earthy, and spicy scent. In nature, it can be found in herbs such as basil, black pepper, cloves, sage, and hops. Some cannabis strains that contain humulene are:

Candyland

GSC

White Widow

Original Glue

Headband

Cannabis strains high in humulene may help reduce inflammation and pain through the humulene's potent anti-inflammatory and analgesic properties. The **exact mechanisms** are not yet fully known but are believed to be at least partially related to a reduction in the PGE2 pathway via COX inhibition. This is similar to how over-the-counter NSAIDs work.

There has been extensive research into humulene and its potential benefits. In a **2009 study**, researchers found that humulene, "given either orally or by aerosol, exhibited marked anti-inflammatory properties." Rogerio et al. go on to say that humulene is "an effective analgesic when taken topically, orally, or by aerosol."

In a more recent study, **published in 2019**, researchers confirmed alpha-humulene's ability to induce apoptosis (i.e., cell death), thus representing a novel and promising chemotherapy drug. **Another study** confirmed that alpha-humulene is an effective antibacterial agent against certain bacteria.

FINAL THOUGHTS

You don't need to be a cannabis expert to understand the basics of terpenes and their benefits. When you visit your local dispensary, know that a rich terpene profile could be worth the extra cost in order to receive more potent therapeutic benefits.

If so, then you'd be looking for "live" products, such as live resin or solventless hash rosin, that use techniques that preserve terpenes. Cannabis products like "terpene sauce" can also be used to re-introduce terpenes to distilled concentrates or add a delightful, flavorful, and medical bonus to a joint or a bowl.

If you're hoping to treat chronic pain, inflammation, or another medical condition or symptom with cannabis, consult with a licensed medical cannabis physician who can help you select products for your specific needs. Our cannabis coaches are also available to meet with you to provide helpful, customized information.

FREQUENTLY ASKED QUESTIONS

WHAT TERPENE REDUCES INFLAMMATION?

Beta-caryophyllene is one of the best terpenes for reducing inflammation. It directly activates CB2 receptors in the endocannabinoid system (ECS), which can help alleviate pain and inflammation.

ARE TERPENES GOOD FOR PAIN AND SLEEP?

Yes, terpenes such as myrcene and linalool have analgesic (pain-relieving) and sedative effects, making them ideal for pain management, anxiety, and improved sleep quality.

WHICH TERPENE IS THE MOST SEDATING?

Myrcene is considered one of the most sedating terpenes, often found in Indica strains, and can help relax muscles and promote sleep when taken in higher concentrations.

This article was originally published in 2022 and last updated in December 2024.

Note: The content on this page is for informational purposes only and is not intended to be professional medical advice. Do not attempt to self-diagnose or prescribe treatment based on the information provided. Always consult a physician before

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