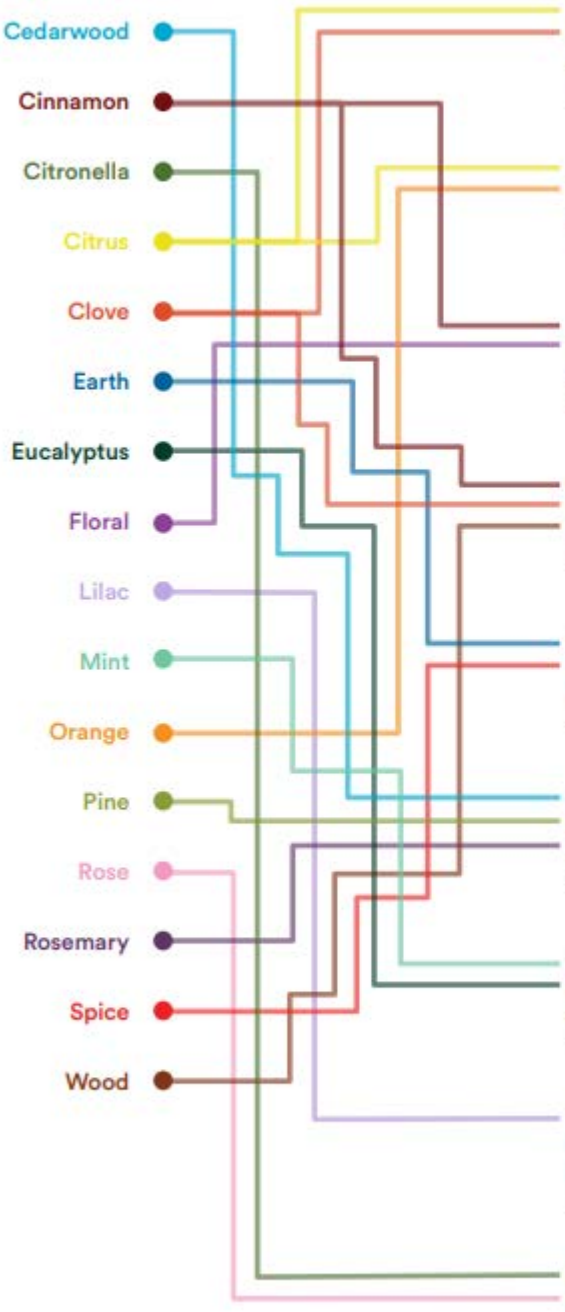
TERPENES

SMELLS

TASTES



Myrcene
May support sleep and muscle relaxation.
Found in: Basil, Fruit

Sweet Citrus

Limonene
May increase energy, focus, and reduce anxiety.
Found in: Lemons, Oranges

Lemon
Mint

Linalool
May have anesthetic and anticonvulsant properties.
Found in: Lavender, Mint, and Cinnamon

Coriander
Floral
Lavender
Lemon

Caryophyllene
May reduce inflammation and ease discomfort.
Found in: Basil, All-Spice, Fig, and Black Pepper

Hops
Spices

Humulene
May exhibit anti-inflammatory and anti-bacterial properties.
Found in: Coriander, Basil, and Clove

Hops
Pepper
Spices

Pinene
May improve airflow to lungs and memory retention.
Found in: Pine Needles

Rosemary
Cedarwood
Pine

Eucalyptol
May improve concentration and focus.
Found in: Rosemary

Spicy
Cooling

Terpineol
May have anti-oxidant and mildly sedative properties.
Found in: Lime Blossoms, Pine Trees, and Lilacs

Sweet Lime
Floral

Geraniol
May act as a natural antioxidant.
Found in: Geranium and Lemon

Passion Fruit
Lemon Peel
Peach

SURTERRAWELLNESS

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OUR UNIQUE TERPENE PROFILES

What are Terpenes?

Terpenes are naturally occuring compounds common to the plant kingdom. There have been roughly 200 identified within the cannabis plant. These molecules play a critical role in creating the unique therapeutic benefits of cannabis as well as it's aroma and taste. They can be found throughout the natural world in lemons, pine needles, lavender, basil, and black pepper just to name a few.

The "Entourage Effect"

When various cannabinoids and terpenes are combined into appropriate ratios, benefits magnify; making the impact of the combination greater than the sum of the individual compounds. There are thousands of combinations that encourage the Entourage Effect within the human body.

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Serene
5 CBD : 1 THC

Focus your energy.
Elevate your mindset.

Eucalyptol
Linalool
a-Pinene
b-Caryophyllene
d-Limonene
b-Myrcene

Zen
1 CBD : 4 THC

Release the tension.
Enhance your state of mind.

Linalool
Geraniol
Humulene
a-Pinene
b-Caryophyllene
b-Myrcene
d-Limonene

Tranquil
19 CBD : 1 THC

Quiet the distractions.
Find physical and mental peace.

b-Myrcene
b-Pinene
a-Pinene
Linalool
b-Caryophyllene
Geraniol
d-Limonene

Soothe
1 CBD : 1 THC

Align your reality.
Find the balance you need.

Terpineol
Linalool
b-Myrcene
a-Pinene
d-Limonene
b-Caryophyllene

Relief
1 CBD : 9 THC

Discover inner peace.
Comfort your body and mind.

Linalool
Humulene
a-Pinene
b-Caryophyllene
d-Limonene
b-Myrcene

Calm
12.5 CBD : 1 THC

Soften the edges.
Ease physical and mental tension.

Linalool
a-Pinene
d-Limonene
b-Caryophyllene
b-Myrcene

Revive
1 CBD : 1 THC

Revitalize your day.
Uplift and inspire your mood.

Linalool
Terpineol
b-Myrcene
b-Caryophyllene
d-Limonene
a-Pinene

Dream
1 CBD : 9 THC

Unwind into a peaceful dream. Rest and restore your body.

Linalool
Humulene
a-Pinene
b-Caryophyllene
d-Limonene
b-Myrcene

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BENEFITS OF TERPENES

Learn more at surterrawellness.com

What are Terpenes?

Terpenes are organic compounds common to the plant kingdom and some species of insects—200 of which have been identified in the cannabis plant. These molecules are responsible for strong aromas, have been used in medicine since ancient China, and play a critical role in creating the unique therapeutic effects attributed to cannabis. Some of the more prominent terpenes found in cannabis are Linalool, Caryophyllene, Myrcene, Limonene, Humulene, Alpha-Pinene and Beta-Pinene.

In cannabis, terpenes are concentrated in the sticky glandular trichomes where THC and other cannabinoids are also produced. The production of terpenes in cannabis varies widely, depending on the strain genetics, as well as growth conditions, maturity of the plant, and post-harvest processing and storage.

Benefits & Effects

Terpenes are highly bioactive, and demonstrate a wide variety of therapeutic effects, ranging from relaxation, to stimulation, to pain relief (Russo 2011). Terpenes also demonstrate nootropic benefits for cognition, helping to improve memory and focus. Inhalation of terpenes in lemon oil has been shown to increase dopamine and serotoxnin, leading to antidepressant and anti-anxiety effects (Fischedick 2013). Many terpenes are also antibacterial, antifungal, and antiviral. Fortunately, most terpenes are also generally recognized as safe, since they occur naturally in foods and tend to be non-sensitizing to the skin (Russo 2011).

b-Myrcene

Medical Benefits: Antiseptic, Antibacterial, Antifungal, Anti-Inflammatory

Effects: Sedating, Relaxing, Enhances THC's Psychoactivity

Also Found In: Mango, Thyme, Hops, Lemongrass, Basil

Another terpenoid found in cannabis with noteworthy effects is myrcene, which exhibits both anti-inflammatory and opioid-type analgesic effects (Russo 2013). In contrast to the stimulating properties of α-Pinene, the terpene β-Myrcene has relaxing and sedative effects. β-Myrcene has a musky, fruity, clove-like scent and it occurs in cannabis, as well as in hops, eucalyptus, lemongrass, basil, thyme, and mango. β-Myrcene has been shown to enhance permeability of the blood-brain barrier, and to increase the maximum saturation level of CB1 receptors (Steep Hill Labs 2017). This property helps to synergistically enhance the effects of cannabinoids and other compounds that are taken along with myrcene. According to anecdotal evidence, consumption of mango prior to cannabis use can accelerate the onset and intensify the effects of cannabis, possibly because of the synergistic effects of myrcene.

Myrcene is anti-inflammatory and analgesic, helping to relieve pain and muscle tension, and its sedative effects help with insomnia (Guimarães 2013; Russo 2011). Myrcene may mediate the body's natural, endogenous opioid system to help relieve pain (Guimarães 2013; Fine 2014). A study that compared myrcene to morphine for pain relief showed that in contrast to morphine, myrcene did not show any tolerance after 5 days of consecutive treatment (Guimarães 2013). Myrcene also acts as a muscle relaxant and can be used in the treatment of muscle spasms (Russo 2011.

Indica strains of cannabis, known for the relaxing "couch-lock" effect often have greater than 0.5% β-Myrcene, while Sativa strains normally contain less than 0.5% β-Myrcene and tend to be less sedating (Steep Hill Labs 2017).

Limonene

Medical Benefits: Antidepressent, Anti-Anxiety,Anti-Reflux, Antifungal

Effects: Elevated Mood, Stress Relief

Also Found In: Orange, Juniper, Peppermint

Limonene is one of the main terpenes formed from α-Pinene, and it has a distinct citrus odor. In addition to cannabis, limonene is also found in peppermint, orange, rosemary, and juniper. Limonene is a potent anti-oxidant and anti-inflammatory, and it's shown promise as a pain-reliever (Guaimaraes 2013). Limonene is readily bioavailable, with rates of absorption up to 70% via inhalation, and it also aids in the uptake of other compounds applied topically or absorbed via mucus membranes or the digestive tract (Russo 2011; Steep Hill Labs 2017). Limonene may help alleviate gastrointestinal complaints such as reflux or heartburn, and it is antidepressive and anxiolytic, helping to elevate mood and alleviate stress and anxiety. Limonene, like many terpenes, is also antibacterial and antifungal.

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Linalool

Medical Benefits: Antidepressent, Anti-Anxiety, Anti-Reflux, Antifungal

Effects: Elevated Mood, Stress Relief

Also Found In: Citrus, Coriander, Birch, Rosewood

Linalool is a terpene distinguishable by its floral aroma, and in addition to cannabis, it occurs in lavender, citrus, coriander, black pepper, birch, and rosewood (Steep Hill Labs 2017; Costa 2016). It is helpful for reducing stress and anxiety, and improving sleep. Research has shown it can help reduce pain and inflammation, and it also can act as a local anesthetic (Guimarães 2013; Russo 2013). Linalool is sometimes used as an anticonvulsant or anti-epileptic, as well as an antidepressant.

b-Caryophyllene

Medical Benefits: Antioxidant, Anti-Inflammatory, Antispasmodic, Pain Relief, Improved Sleep

Effects: No Known Physical Effects

Also Found In: Black Pepper, Cloves Hops, Basil, Oregano

β-caryophyllene acts at CB2 receptors, with demonstrated anti-inflammatory effects, as well as efficacy in treatment of neuropathic pain. The terpene β–Caryophyllene has a spicy, woodsy aroma and occurs in plants such as black pepper, Thai basil, cinnamon, and cloves. β–Caryophyllene is often the predominant terpene found in cannabis extracts, or cannabis products that have been heat processed. Drying, storage, and heat decarboxylation causes other compounds in cannabis to convert to β–Caryophyllene (Russo 2011). β–Caryophyllene is anti-inflammatory, anti-bacterial, and antifungal (Steep Hill Labs 2017). Its action at CB2 receptors mimics the effects of cannabinoids (Russo 2013), and when combined with CBD, β–Caryophyllene has a synergistic entourage effect to help relieve inflammation and neuropathic pain (Fine 2014). A clinical trial that evaluated the analgesic effects of inhalation of black pepper oil (known to contain both β–Caryophyllene and linalool) showed that black pepper essential oil resulted in a significant reduction in pain intensity compared to placebo (Costa 2016). Black pepper essential oil has also been shown to reduce nicotine cravings, and may be helpful in treating addictions (Russo 2011). β–Caryophyllene may also be helpful for gastrointestinal complaints such as ulcers. It's FDA-recognized as a food additive, and is generally recognized as safe.

Humulene

Medical Benefits: Anti-Infammatory, Antibacterial, Pain Relief

Effects: Supresses Appetite

Also Found In: Hops, Coriander, Basil, Clove

Humulene is very closely related to β–Caryophyllene, with the same chemical formula and a slightly different structure. Humulene is found most notably in hops and cannabis, but also in basil, coriander, and clove. It has a spicy, woodsy or earthy smell, also associated with the "hoppy" aroma of beers. In contrast to the common reputation cannabis has for increasing appetite, humulene on its own seems to suppress appetite. Humulene is also anti-inflammatory and antibacterial (Steep Hill Labs 2017).

Alpha/Beta-Pinene

Medical Benefits: Anti-Inflammatory, Anti Asthmatic

Effects: Memory Retention, Alertness

Also Found In: Pine Needles, Conifers, Citrus

α-Pinene, detectable by its characteristic pine smell, is the most commonly occurring terpene in nature, found in plants such as citrus, conifers, and cannabis, as well as culinary herbs including basil, rosemary, and dill. α-Pinene has stimulating nootropic effects that can enhance memory and alertness (by inhibiting acetylcholinesterase), potentially counteracting unwanted cognitive effects of THC (Russo 2011). α-Pinene is also anti-inflammatory, and has broad-spec-trum antibiotic properties. α-Pinene has historically been used in the treatment of asthma because it acts as a bronchodilator, improving respiratory function (Russo 2011).

Eucalyptol

Medical Benefits: Pain Relief, Antibacterial, Antifungal, Anti-Inflammatory, Anti-Proliferative, Antioxidant

Effects: Stress Relief, Alertness

Also Found In: Eucalyptus, Bay Leaves, Tea Trees, Mugwort

Eucalyptol (also known as cineole or cajeputol) is a stimulating terpene found in eucalyptus. Eucalyptol is licensed as a medicinal product in Germany for treating rheumatism. When applied topically, eucalyptol causes a cooling sensation and localized anesthesia to help relieve pain. Eucalyptol dose-dependently blocks nerve hypersensitivity, and it's anti-inflammatory, by way of COX inhibition and several other physiological mechanisms (Guimarães 2013). In animal studies, low doses of eucalyptol provided pain relief that was nearly equivalent to morphine (Guimarães 2013). Eucalyptol also acts as a percutaneous enhancer, improving transdermal delivery, by helping promote absorption of topical products applied to the skin (Guimarães 2013).

Terpineol

Medical Benefits: Antioxidant, Anti-Inlflammatory, Anti-Proliferative

Effects: Sedating, Calming

Also Found In: Lilac, Pine Trees, Lime Blossoms

Terpineol has been shown to induce relaxation and pain relief in animal studies. It has also been shown to attenuate withdrawal effects of morphine dependency, and to reduce development of tolerance to the analgesic effects of morphine (Russo 2017). Terpineole may offer synergistic therapeutic effects with CBD and β-caryophyllene in treating addiction (Russo 2017).

Costa, R., Machado, J. and Abreu, C., 2016. Evaluation of Analgesic Properties of Piper Nigrum Essential Oil: a Randomized, Double-blind, Placebo-controlled Study. World Journal of Traditional Chinese Medicine, 2(2), pp.60-64.

Fine, P.G. and Rosenfeld, M.J., 2014. Cannabinoids for neuropathic pain. Current pain and headache reports, 18(10), pp.1-9.

Guimarães, A.G., Quintans, J.S. and Quintans-Júnior, L.J., 2013. Monoterpenes with analgesic activity—a systematic review. Phytotherapy Research, 27(1), pp.1-15.

Russo, E.B. and Hohmann, A.G., 2013. Role of cannabinoids in pain management. In Treatment of Chronic Pain by Medical Approaches (pp. 179-190). Springer New York.

Russo, E. B., 2013. Cannabis Strains: Do cannabis strains differ? [online] Available at: http://www.cannabis-med.org/index.php?tpl=faq&red=faqlist&id=276&lng=en.

Russo, E.B., 2016. Clinical endocannabinoid deficiency reconsidered: current research supports the theory in migraine, fibromyalgia, irritable bowel, and other treatment-resistant syndromes. Cannabis and Cannabinoid Research, 1(1), pp.154-165.

Russo, E.B., 2011. Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects. British journal of pharmacology, 163(7), pp.1344-1364.

Skrabek, R.Q., Galimova, L., Ethans, K. and Perry, D., 2008. Nabilone for the treatment of pain in fibromyalgia. The Journal of Pain, 9(2), pp.164-173.

Steep Hill Labs. 2017. Terpenes. [online] Available at: http://steephill.com/science/terpenes [Accessed 17 May 2017].