

BLUEBERRY

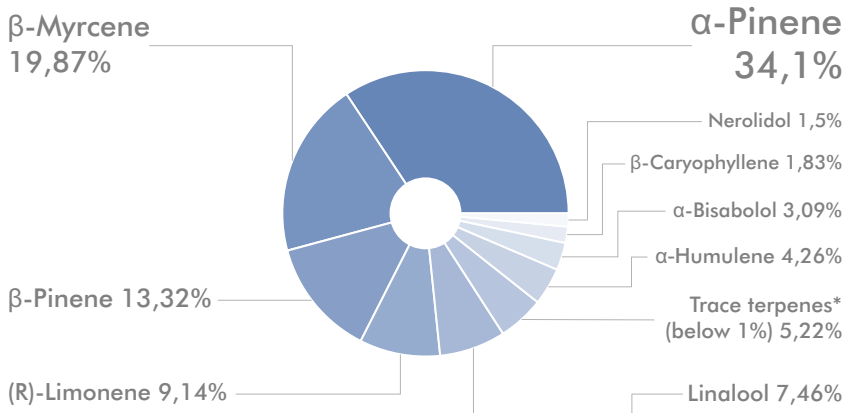
Proprietary Terpene Blend

Original strain: Blueberry

Description: Blueberry is an indica marijuana strain made by crossing Purple Thai with Thai. This strain has been traced back to the early 70's when the American breeder DJ Short started working with different landrace strains, ultimately resulting in this delicious variety.

Scent & Flavor: Bilberry, pine needles, wild forest tones, earth undertones.

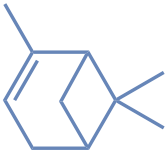
Terpene profile:



* include e.g. Caryophyllene oxide, camphene, isoborneol, cadinenes, caranenes and others.

DOMINANT TERPENES DESCRIPTION

(content above 5%):

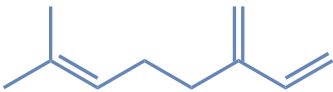


α -Pinene

α -Pinene is an organic compound of the terpene class, one of two isomers of pinene.

It is found in the oils of many species of many coniferous trees, notably the pine. It is also found in the essential oil of rosemary (*Rosmarinus officinalis*) and *Satureja myrtifolia*. Both enantiomers are known in nature; (–)- α -pinene is more common in European pines, whereas the (+)- α -isomer is more common in North America. The racemic mixture is present in some oils such as eucalyptus oil and orange peel oil.

α -Pinene is an anti-inflammatory and exhibits activity as an acetylcholinesterase inhibitor, aiding memory¹. Pinene is also likely antimicrobial².



β -Myrcene

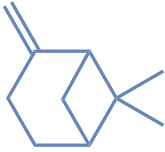
Myrcene, or β -myrcene, is an alkene natural hydrocarbon. It is more precisely classified as a monoterpene.

Monoterpenes are dimers of isoprenoid precursors, and myrcene is a significant component of the essential oil of several plants, including bay, cannabis, and hops.

It could in principle be extracted from any number of plants, for example, wild thyme, the leaves of which contain up to 40% by weight of myrcene. Many other plants contain myrcene, sometimes in substantial amounts. Some of these include cannabis, hops, Houttuynia, lemon grass, mango, Myrcia, Verbena, West Indian bay tree, and cardamon.

Myrcene, better known as the active sedating principle of hops and lemongrass, is also found in basil, mangos, and its namesa-

ke, *Myrcia sphaerocarpa*, a medicinal shrub from Brazil traditionally used to treat diabetes, diarrhea, dysentery, and hypertension³.



β-Pinene

β-pinene is a monoterpene, an organic compound found in plants. It is one of the two isomers of pinene, the other being α-pinene. It has a woody-green pine-like smell. It is one of the most abundant compounds released by forest trees and is produced in significant quantities by basil, cedar, pine, and conifer trees, dill, eucalyptus, oranges, parsley, rosemary, and hundreds of other plants, including cannabis.

α- and β- pinene are supposed to have antimicrobial, anticancer, anti-inflammatory, and antiallergic properties⁴.



(R)-Limonene

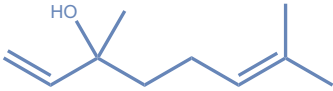
Limonene is a colorless liquid aliphatic hydrocarbon classified as a cyclic monoterpene, and is the major component in the oil of citrus fruit peels. The (*R*)-isomer, occurring more commonly in nature as the fragrance of oranges, is a flavoring agent in food manufacturing.

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Limonene is a major component of the aromatic scents and resins characteristic of numerous coniferous and broadleaved trees: red and silver maple (*Acer rubrum*, *Acer saccharinum*), cottonwoods (*Populus angustifolia*), aspens (*Populus grandidentata*, *Populus tremuloides*) sumac (*Rhus glabra*), spruce (*Picea* spp.), various pines (e.g., *Pinus echinata*, *Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), larches (*Larix* spp.), true firs (*Abies* spp.), hemlocks (*Tsuga* spp.), cannabis (*Cannabis sativa* spp.), cedars (*Cedrus* spp.), various Cupressaceae, and juniper bush (*Juniperus* spp.)

Limonene doesn't have much of a scientific background regar-

ding medicinal activity. However, it is generally recognized as safe for a flavoring agent and can be highlighted for adding the sensory experience. Some studies suggest anti-bacterial and anti-inflammatory activity of orange oil⁵.



Linalool

Linalool is a monoterpene found in over two hundred plants apart from Cannabis, including scented herbs, spices, flowers, citrus, mints, rosewood, and birch tree.

Linalool is identified for its floral aroma of lavender scent with a spiciness trace. Calming effect of lavender smell is often attributed to linalool.

Research suggest linalool's anti-inflammatory effects beneficial to repair the lung damage caused by tobacco via its anti-inflammatory properties⁶. Linalool also seems to possess local anesthetic activity⁷.

Disclaimer

The information contained in this brochure is for informational purposes only and should inspire you to do your own research. It does not replace the rigorous findings of Western medicine and do not attribute medicinal effects to any product.

REFERENCES

General information about terpenes was extracted from common online sources (Wikipedia etc.). Scientific information is supported by following articles:

- (1) Russo, E. B. Taming THC: Potential Cannabis Synergy and Phytocannabinoid-Terpenoid Entourage Effects. *Br. J. Pharmacol.* **2011**, 163 (7), 1344–1364.
<https://doi.org/10.1111/bph.2011.163>.
- (2) Nissen, L.; Zatta, A.; Stefanini, I.; Grandi, S.; Sgorbati, B.; Biavati, B.; Monti, A. Characterization and Antimicrobial Activity of Essential Oils of Industrial Hemp Varieties (*Cannabis Sativa* L.). *Fitoterapia* **2010**, 81 (5), 413–419.
<https://doi.org/10.1016/j.fitote.2009.11.010>.
- (3) Ulbricht, C. Focus: Diabetes. *J. Diet. Suppl.* **2011**, 8 (3), 239–256.
<https://doi.org/10.3109/19390211.2011.597975>.
- (4) Salehi, B.; Upadhyay, S.; Orhan, I. E.; Jugran, A. K.; Jayaweera, S. L. D.; Dias, D. A.; Sharopov, F.; Taheri, Y.; Martins, N.; Baghalpour, N.; Cho, W. C.; Sharifi-Rad, J. Therapeutic Potential of α - and β -Pinene: A Miracle Gift of Nature. *Biomolecules* **2019**, 9 (11), 1–34.
<https://doi.org/10.3390/biom9110738>.
- (5) Mizrahi, B.; Shapira, L.; Domb, A. J.; Houry-Haddad, Y. Citrus Oil and MgCl₂ as Antibacterial and Anti-Inflammatory Agents. *J. Periodontol.* **2006**, 77 (6), 963–968. <https://doi.org/10.1902/jop.2006.050278>.
- (6) Ma, J.; Xu, H.; Wu, J.; Qu, C.; Sun, F.; Xu, S. Linalool Inhibits Cigarette Smoke-Induced Lung Inflammation by Inhibiting NF- κ B Activation. *Int. Immunopharmacol.* **2015**, 29 (2), 708–713.
<https://doi.org/10.1016/j.intimp.2015.09.005>.

- (7) Lim, T. K. *Lavandula Angustifolia*. *Edible Med. Non Med. Plants* **2014**, No. 18, 156–185.
https://doi.org/10.1007/978-94-017-8748-2_8.