

TERPENES

Terpenes are a large and diverse group of organic compounds produced by a number of plants, particularly conifers¹. Plants with terpenes often have a strong odor, thought to be used as a deterrent against being eaten by herbivores².



TERPENE FAST FACTS

- Terpenes are present in a wide variety of plants: eucalyptus, citruses, common grapes, papayas and chickpeas, to name a few, all contain terpenes³.
- Scientific evidence indicates that being exposed to forests can improve human health. Based on studies on the beneficial effects of plant terpenes on the human body, exposure to terpenes, such as walking in a pine forest, have the potential to lower stress and blood pressure⁴.

The terpenoids constitute the largest class of natural products, and many are extensively applied in the industrial sector as flavors, essential oils, spices, perfumery, and cosmetics; many terpenoids have biological activities and are also used for medical purposes⁵.

For many people, terpenes are prominently coupled to the cannabis industry. Increasingly, more research and interest is in cannabis-based terpenes because these phytochemicals display unique therapeutic effects that may contribute to the effects of cannabis-based medicinal extracts⁶.



TERPENE MVP'S

- **α -Pinene:** an essential oil from pine and coniferous trees, α -pinene has been known to have a broad spectrum of biological activities, including anti-inflammatory, antibacterial, and antioxidant properties⁷.
- **β -Caryophyllene:** a compound found in clove and cinnamon, β -caryophyllene, also known as BCP, has been reported to have inhibitory activity to human breast, cervical and melanoma tumor growth⁸.

ChromaDex provides a number of chemical reference standards within the terpene family, including pinenes, limonene, nerol, and others. All members of the terpene family can be searched on ChromaDex's online catalog at chromadex.com/chromadex-catalog/

References

1. Breitmaier, E., Terpenes: Flavors, Fragrances, Pharmaca, Pheromones. 2006: Wiley-VCH Verlag GmbH & Co KGaA.
2. Martin, D.M., J. Gershenzon, and J. Bohlmann, Induction of volatile terpene biosynthesis and diurnal emission by methyl jasmonate in foliage of Norway spruce. *Plant Physiol*, 2003. 132(3): p. 1586-99.
3. Kumari, S., et al., *EssOilDB: a database of essential oils reflecting terpene composition and variability in the plant kingdom*. Database (Oxford), 2014. 2014: p. bau120.
4. Lee, J., Cho, K.S., Jeon, Y., Kim, J.B., Lim, Y., Lee, K., Lee, I., Characteristics and distribution of terpenes in South Korean forests. *Journal of Ecology and Environment*, 2017. 41(19).
5. Singh, B. and R.A. Sharma, Plant terpenes: defense responses, phylogenetic analysis, regulation and clinical applications. *3 Biotech*, 2015. 5(2): p. 129-151.
6. Russo, E.B., Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects. *Br J Pharmacol*, 2011. 163(7): p. 1344-64.
7. Aydin, E., Turkez, H., Geyikoglu, F., Antioxidative, anticancer and genotoxic properties of alpha-pinene on N2a neuroblastoma cells. *Biologia*, 2013. 68(5): p. 1004-1009.
8. Jung, J.I., et al., beta-Caryophyllene potently inhibits solid tumor growth and lymph node metastasis of B16F10 melanoma cells in high-fat diet-induced obese C57BL/6N mice. *Carcinogenesis*, 2015. 36(9): p. 1028-39.