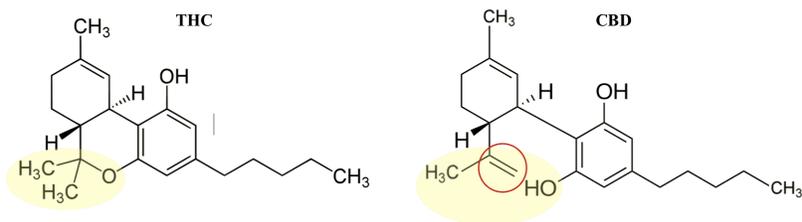


CBD Verses THC



Delta-9-Tetrahydrocannabinol (THC) and cannabidiol (CBD) are cannabinoids that are major constituents of cannabis that are nearly identical chemically, with the only difference being the substitution of a cyclic ring for a hydroxyl group. However, this subtle difference determines the effect of the ligands on CB-1 and CB-2 receptors in the endocannabinoid system. Whereas THC binds with CB-1 and CB-2 receptors, CBD has no affinity for either receptor at physiological concentrations. Despite not binding directly to the receptors, CBD modulates the response of THC receptor activation. CBD is an antagonist of the alternative putative cannabinoid receptors G coupled protein receptor ¹⁵⁵ (GPR55). CBD also acts as an agonist at the 5 HT1A.² CBD has no demonstrable psychoactive activity and is devoid of any significant “high” or euphoria. CBD is used for its anti-inflammatory properties. Treatment with CBD in experimental models of oxidative stress in the colon show decreased inflammatory markers after increases in anandamide in the colon.³ CBD is beneficial in the treatment of certain childhood seizures. One

¹ Pertwee, RG (2014). The diverse CB1 and CB2 receptor pharmacology of three plant cannabinoids: delta9-tetrahydrocannabinol, cannabidiol and delta9-tetrahydrocannabivarin. *British Journal of Pharmacology*. 153 (2): 199-215.

² Cascio, M. G., Gauson, L. A., Stevenson, L. A., Ross, R. A. and others. (2010). Evidence that the plant cannabinoid cannabigerol is a highly potent alpha2-adrenoceptor agonist and moderately potent 5HT1A receptor antagonist. *Br.J.Pharmacol.* 159: 129-141.

³ Borrelli, F., Aviello, G., Romano, B., Orlando, P. and others. (2009). Cannabidiol, a safe and non-psychoactive ingredient of the marijuana plant *Cannabis sativa*, is protective in a murine model of colitis. *J.Mol.Med.(Berl)*. 87: 1111-1121.

of the best-known uses of CBD has been with “Charlotte’s Web” as advocated by Dr. Sonjay Gupta.⁴

THC and THCV are primarily responsible for the psychoactive effects or the “high” associated with cannabis consumption. The psychoactive response is due in part because the CB-1 receptors are concentrated in the central nervous system. The interaction between CBD and THC is complex. Studies have proposed potentiating effects as well as opposing effects. Pre-administration of CBD may potentiate THC effects while simultaneous administration may attenuate THC effects.⁵ These variations and different interactions may be based upon ratios of THC to CBD, as well as the chronicity of use.⁶ The variability is based upon routes of administration and doses.⁷

⁴ Osborne, Hannah (June 20, 2014) Charlotte Figi: The Girl Who is Changing Medical Marijuana Laws Across America, International Business Times.

⁵ Zuardi, A. W., Finkelfarb, E., Bueno, O. F., Musty, R. E. and others. (1981). Characteristics of the stimulus produced by the mixture of cannabidiol with delta 9-tetrahydrocannabinol. *Arch.Int.Pharmacodyn.Ther.* 249: 137-146.

⁶ Varvel, S. A., Wiley, J. L., Yang, R., Bridgen, D. T. and others. (2006). Interactions between THC and cannabidiol in mouse models of cannabinoid activity. *Psychopharmacology (Berl)*. 186: 226-234.

⁷ Jones, G. and Pertwee, R. G. (1972). A metabolic interaction in vivo between cannabidiol and 1 - tetrahydrocannabinol. *Br.J.Pharmacol.* 45: 375-377.