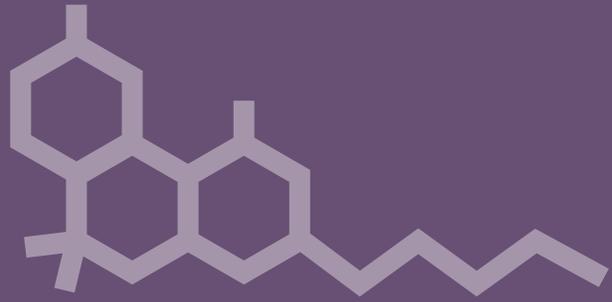


# Cannabis Chemistry



## Male and Female Plants

There are both male cannabis plants and female cannabis plants. Because an unpollinated female plant produces far greater concentrations of drug substances than a male plant, these unpollinated females are cultivated for medicinal use. The cannabis plant concentrates its medicine within the female flower clusters. Each flower consists of a curled single leaf known as a calyx. Each calyx is covered with vast numbers of tiny hair-like gland cells called trichomes.

Under magnification, a trichome resembles a golfball sitting atop a tee. The ball is the trichome's resin head, a waxy pillow of oils filled from secretory cells in the trichome's tip. When these delicate resin heads rupture, they release the intense aromatic chemicals called terpenes that are associated with the distinctive smell of cannabis, while cannabinoids such as THC are odorless. The resin heads contain the most medically interesting chemicals produced by the cannabis plant, including cannabinoids and terpenes. Both cannabinoids and terpenes are pharmacologically active.

## Cannabinoids

Since Dr. Raphael Mechoulam first discovered THC in the early 1960', eighty-five other cannabinoids have been identified in the cannabis plant. There are six primary cannabinoids found among different cannabis strains: THC, CBD, CBN, THCV, CBG and CBC. On fresh, undisturbed cannabis, these cannabinoids exist as acids. When heated, acidic THC is converted to its neutral form, and becomes psychoactive. THC, CBD and THCV cannabinoids are of significant medicinal interest, though all of the minor cannabinoids are being studied for potential medical applications. Each cannabis strain may contain one or several cannabinoids, and the ratios of cannabinoids varies widely amongst the different strains.

## Terpenes

The various effects (stimulating, sedative, etc.) attributed to different cannabis strains are likely due to the interaction of cannabinoids and the aromatic terpenes. Even though terpenes are found in very small amounts in cannabis flowers, cannabinoids appear to increase the brain's ability to absorb these terpenes, which increases their pharmacological impact. This combination of cannabinoid and terpenoid interaction is called an "entourage effect".