

**Synergistic “Entourage Effect”
Why Cannabis Works Better as a
Full Plant or Full Spectrum Extract
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It is well established in the scientific literature that cannabis is synergistic. Researchers such as Ethan Russo, David Watson, and Raphael Mechoulam have demonstrated the synergistic or “entourage effect” of cannabis since the 1960s. Mechoulam was one of the first to isolate THC and CBD, which illustrated the cannabis plants synergistic effects. Specifically, Mechoulam elucidated how CBD and THC work better together to modulate the effects of cannabinoids. Meaning, “the cannabis plant produces an entourage of cannabinoids and terpenes that clearly modulate the effects of one another and often reduce the side effects of one constituent while enhancing the effects of another” (Backes, 24, 312). Furthermore, “[e]ven when there are similar effects, such as the anti-inflammatory properties of both THC and CBD, each accomplishes them in a different way, resulting in a more varied and robust response as a result of the two working together” (Leinow, 25). Thus, what the research and literature indicate is that the cannabis plant and its phytocannabinoids work best in combination (full plant/spectrum), not in isolation (isolates).

Interestingly, cannabis’s entourage effect implicates not only cannabinoids but also terpenes, flavonoids, and our own individual endocannabinoid system. As Dr. Russo reiterates, “[i]t has been shown that endogenous cannabinoids and their inactive metabolites combine to enhance biochemical activities’ responses” (Russo, 220).

However, Russo pushes us a step further in

“[c]onsidering the possible contributions of other cannabis components, such as flavonoids and essential oils, to therapeutic effects on mood, one must readily assent to the following observation: This type of synergism may play a role in the

widely held (but not experimentally based) view that in some cases plants are better drugs than the natural products isolated from them” (Russo, 220-1).

Russo, like Mechoulam and Ben-Shabat, furthers the discussion on the synergistic effects of cannabis by calling into question synthesized or isolated cannabinoids and their effectiveness. Might the cannabis plant in its more whole or full spectrum extracts be more therapeutic?

Leonard Leinow and Juliana Birnbaum’s research also indicates that the cannabis plant works best as a whole plant extract because of its synergistic nature. “Like all botanical medicines, cannabis is made up of many active compounds. It is theorized that there is a synergistic effect between these chemicals that ultimately is greater than the sum of its parts” (Leinow, 188). Thus, it is the entourage or synergy of the cannabis plant that implicates “one of many reasons utilizing a whole plant as medicine is often better than attempting to isolate a single compound for pharmaceutical use” (Leinow, 188).

Additionally, the synergy of the cannabis plant is also indicated in the synergy of our own individual endocannabinoid system. Indicating that the endocannabinoid system appears to work best with a full plant cannabis medicine. As Leinow and Birnbaum have indicated “[t]he phytocannabinoid and endocannabinoid systems both exhibit the entourage effect of synergism among various components” (Leinow, 27). Importantly, used in a full plant or full spectrum cannabis extract “phytocannabinoids have no lethal dose in standardized testing” (Leinow, 27). Further “[CBD] has no significant psychotropic effects and works best in concert with other phytocannabinoids” (Leinow, 27).

The last issue to consider with medicinal cannabis is the variety being utilized. As Dr. Bonni Goldstein explains there are two basic types of cannabis plants, hemp

plants that are low in resin and high in fiber and seed oil, and cannabis medicine plants that are high in resin, phytocannabinoids, terpenoids, and flavonoids (Goldstein, 20-1). Hemp, which is high in fiber, is best for industrial use not medicine. The cannabis medicine plant, which is high in resin and, thus, the active medicinal components that synergistically combine with each other to regulate and modulate the endocannabinoid system, is the best choice for medicines.

Accordingly, what the research and literature implicate is that a full plant or full spectrum cannabis extract made from *cannabis sativa*, *variety indica* is going to produce the best cannabis medicine with the most robust benefits and the least complications. Now, the task is to understand cannabinoid and terpene combinations to identify the possible medicinal outcomes and which symptoms and conditions they may treat. The cannabinoid and terpene combinations also need to be considered in the context of each individual's endocannabinoid system and its interactions with these combinations. In practice, each individual's endocannabinoid system synergizes with the chemical compounds in cannabis uniquely with their own system. Thus, as with any medication, cannabis may work well for some while on others have little impact. However, with knowledge, diligence, and patience many have found combinations that have significantly reduced symptoms and improved their lives. Cannabis is worth the effort and so is improved health.