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Cannab-FS™ is a suite of products providing both full and broad spectrum cannabinoids derived from hemp, infused in a base of organic cold-pressed hemp seed oil, and offered in a variety of doses. All Cannab-FS™ products contain natural terpenes, aromatic compounds from the hemp plant that work synergistically with phytocannabinoids, complementing their health-promoting properties.\* All Cannab-FS™ products contain less than 0.3% THC.

**Cannab-FS™ 300/600** are liquid forms offered in doses of 300 mg and 600 mg of full spectrum phytocannabinoids per bottle, each containing 30 servings that yield 10 mg and 20 mg of active phytocannabinoids per serving, respectively.

**Cannab-FS™ 450/900** are easy to swallow softgels offered in doses of 450 mg and 900 mg per bottle, containing 30 servings of softgels that yield 15 mg of active phytocannabinoids each.

**Cannab 600™ THC Free** is similar to Cannab-FS™ 600, with THC Free defined as non-detectable by laboratory.

## What Are Phytocannabinoids?

Phytocannabinoids are plant-derived compounds capable of directly interacting with cannabinoid receptors throughout the body and producing biological actions similar to those of endogenously produced endocannabinoids. Over 100 phytocannabinoids exist in various species of the cannabis plant, making it highly utilized for health-supportive purposes. Clinical research has focused primarily on the psychotropic cannabinoid, tetrahydrocannabinol (THC), and its non-psychotropic antagonist, cannabidiol (CBD); however, more recent research has identified a variety of phytocannabinoids with wellness-promoting benefits.<sup>1</sup>

CBD is harvested from the flowers, seeds, and/or stalk fibers of *Cannabis sativa L.*, otherwise known as hemp when containing less than 0.3% THC. However, extensive and highly controlled interbreeding between Cannabis strains has allowed cultivators to control the THC/CBD ratio of each strains, as well as the quantity of additional phytocannabinoids.<sup>1</sup> Historically, under the Controlled Substances Act, all cannabis cultivation was prohibited due to its THC content which classified cannabis as a Schedule 1 drug according to the Drug Enforcement Administration (DEA). However, legislation in the 2018 Farm Bill descheduled some cannabis preparations that fell under defined limitations. Hemp, specifically, was descheduled and defined by federal law as "the plant *Cannabis sativa L.* and any part of that plant, including the seeds thereof and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3% on a dry weight basis."<sup>2</sup> Following this legal action, research, manufacturing, and marketing of CBD has been soaring.

## The Endocannabinoid System

CBD, THC, and other phytocannabinoids act upon the endocannabinoid system of the human body, which is a signaling system interwoven throughout the central nervous system and distributed among peripheral tissues including the immune and reproductive systems, gastrointestinal tract, sympathetic ganglia, endocrine glands, arteries, lungs and heart.<sup>3</sup> Phytocannabinoids function in the same capacity as the body's endogenously produced endocannabinoids, arachidonoyl ethanolamide (anandamide) and 2-arachidonoyl glycerol (2-AG), and modulate the system's two G-protein coupled cannabinoid receptors, CB1 and CB2.<sup>4</sup>

CBD, specifically, is an agonist for the CB2 receptors which are distributed throughout the brain, immune system, spleen, and leukocytes.<sup>5</sup> The CB2 receptors are intricately involved in various functions of these organ systems but are distinct from CB1 receptors in that activation does not generate any psychotropic effects.<sup>6</sup>

## What is "Full Spectrum" vs. "Broad Spectrum"?

The efficacy of cannabis is enhanced by the presence of all the natural terpenes (such as limonene, myrcene,  $\alpha$ -pinene, linalool,  $\beta$ -caryophyllene, caryophyllene oxide, nerolidol and phytol) and phytocannabinoids (such as THC, CBC, CBN, CBG, THCA, THCV, CBGA, CBDV) found throughout the entire plant, including the flowers, seeds, and stalk fibers.<sup>7,8</sup> These biologically active compounds function synergistically to enhance the effects of the phytocannabinoids, but the content varies widely between each cannabis strain as well as the method of extraction employed.<sup>7</sup> The full spectrum of phytocannabinoids are found primary in the aerial parts of the plant, but traces are also found in the leaves, stalk fibers, and seeds.<sup>7,8</sup> The lot number of each Cannab-FS™ product includes a certificate of analysis (COA) that indicates the specific quantity of each phytocannabinoid and terpene, ensuring its true "full spectrum" efficacy.

Broad-spectrum CBD extracts have specific phytocannabinoids and terpenes removed. In the case of Cannab 600™ THC Free, the THC has been completely removed for individuals who want to experience the full benefits of hemp, but who prefer to avoid any consumption of THC for various reasons.

Apart from THC and CBD, phytocannabinoids have not been widely studied, but past research has shown health-promoting, supportive applications for the following most common phytocannabinoids present in full spectrum formulations:<sup>9</sup>

- Cannabichromene (CBC)
- Cannabigerol (CBG)
- Tetrahydrocannabivarin (THCV)
- Cannabidivarin (CBDV)
- Cannabidiolic acid (CBDA)
- Cannabigerivarin (CBGV)
- Cannabichromivarin (CBCV)

### The “Entourage Effect”

Early cannabis research discovered that the numerous “inactive” compounds in cannabis worked together to enhance the activity of endogenous cannabinoids, anandamide and 2-AG. This synergistic effect was coined the “entourage effect” and distinguished powerful cannabinoid products. Today, the “entourage effect” more specifically refers to the synergistic interactions between phytocannabinoids and terpenes, and is an indicator of a product’s supportive potential.<sup>9</sup> The entourage effect is vital to ensure the beneficial value of cannabinoids.<sup>9</sup> For example, animal studies using pure CBD for analgesia noted a biphasic, dose-response curve in which the therapeutic effect had dose limits; however, a full spectrum CBD therapy showed analgesic effects with no identified ceiling effect owing to the entourage effect.<sup>9</sup>

### Sourcing & Purification

As vigilant bioaccumulators, cannabis plants from wild sources are often contaminated with various substances including chemicals such as pesticides, heavy metals, molds and bacteria. A controlled growing environment is vital for quality and purification. Cannab-FS™ and Cannab 600™ THC Free formulations contain 100% non-GMO hemp flowers sourced from American farms, grown under the 2018 Farm Bill, and compliant with the strict hemp regulations in various states. Designs for Health offers a complete COA showing proof of sourcing, purity, and a breakdown of phytocannabinoid content for each product lot number at dfhhemp.com.

#### Recommended Use :

- **Cannab-FS™ 300/600:** Take 1 mL (1 dropperful) and hold in mouth for 30 seconds before swallowing, or as directed by your health care practitioner.
- **Cannab-FS™ 450/900:** Take one softgel per day with a meal, or as directed by your health care practitioner.
- **Cannab 600™ THC Free:** Take 1 mL (1 dropperful) and hold in mouth for 30 seconds before swallowing, or as directed by your health care practitioner.

**Warning:** Consult your health care practitioner prior to use if you are pregnant or breastfeeding.

For a list of references cited in this document, please visit:

[http://catalog.designsforhealth.com/assets/itemresources/Cannab\\_FS\\_References.pdf](http://catalog.designsforhealth.com/assets/itemresources/Cannab_FS_References.pdf)

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Healthcare practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage. Any product containing botanical substances has the potential for causing individual sensitivities. Individual monitoring, including liver function tests, may be appropriate.

**\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.**

**To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at [www.designsforhealth.com](http://www.designsforhealth.com).**