SELF-EMULSIFYING

CBD SYNERGIES-PN

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CBD Synergies-PN Relief Formula is a comprehensive blend of full spectrum hemp extract, curcuminoids, Boswellia extract, and propolis designed to support healthy pain and inflammatory responses.*

Our full spectrum hemp extract contains an array of highly-bioavailable phytocannabinoids, including cannabidiol (CBD) and a Farm Bill-compliant level of THC.

Supplement Facts

Serving Size: 2 Capsules
Servings Per Container: 30

	Amount Per Serving	% Daily Value
Full Spectrum Hemp Extract (aerial parts)	30mg	**
Cannabidiol	20mg	**
Proprietary Curcuminoid Complex Turmeric Oleoresin and Turmeric Oil (from Curcuma longa) (rhizomes) - Containing 35mg of Curcuminoids	160mg	**
Proprietary Blend Boswellia extract (Boswellia Serrata), Propolis Extract, Spearmint Oil, Natural Citrus Oils, Cinnamon Bark Oil	260mg	**

****Daily Value not established**

Other Ingredients: Plant-derived cellulose capsule, polysorbate 80, medium chain triglycerides, phospholipids (from purified soybean lecithin), natural mixed tocopherols

EDUCATION

THE HIGH COST OF TEMPORARY RELIEF

Opioid painkillers and over-the-counter pain relievers, such as ibuprofen and naproxen, offer temporary pain and inflammation relief at a high cost. Opioids harbor a high risk of addiction and overdose, while frequent use of NSAIDS is linked to cardiovascular, gastrointestinal, hepatic, and neonatal health complications.[1,2,3,4,5] Neither class of medication resolves the underlying physiological dysfunction that causes chronic pain and inflammation. The problems associated with these medications have led to a surge in research in natural compounds that provide pain and inflammation relief. A handful of botanical compounds have been found to beneficially modulate pain and inflammation pathways, including CBD, curcumin, boswellia extract, and β-caryophyllene.

THE ENDOCANNABINOID SYSTEM MODULATES INFLAMMATORY RESPONSES

The endocannabinoid system (ECS) is a complex network of neuromodulatory lipid molecules and receptors that regulate many aspects of human physiology, including inflammation and pain responses.[6] The ECS consists of the endocannabinoids anandamide and 2-arachidonoylglycerol, their G-protein-coupled receptors, and enzymes that regulate endocannabinoid synthesis and degradation, including fatty acid amide hydrolase (FAAH). Phytocannabinoids also interact with the ECS, exerting powerful biochemical and physiological effects. Δ9-tetrahydrocannabinol (THC) is arguably the most well-known phytocannabinoid due to its psychoactive properties. However, THC is but one member of an astonishing array of phytochemicals found in the hemp plant, including the phytocannabinoid cannabidiol (CBD) and β-caryophyllene, a terpenoid.

Emerging research indicates that the ECS plays a critical role in pain perception and inflammatory balance.[7] Compounds that modulate the ECS, such as cannabinoids, thus offer promise in pain management. In clinical trials, cannabinoids have been found to alleviate chemotherapy-induced neuropathic pain and osteoarthritis and fibromyalgia pain.[8,9,10] CBD elicits analgesia and anti-inflammatory effects by acting as a direct agonist at 5-HT1A serotonin receptors, the adenosine A2A receptor, PPAR-α, and TRPA1 channels, all of which mediate pain and inflammation.[11] CBD may also desensitize joint afferent nerve fibers, thus dampening pain perception in osteoarthritis.[12] THC ameliorates pain by exerting agonistic activity

at CB1 receptors, which link the ECS to endogenous pain control systems.[13] CBD, THC, and other phytocannabinoids work synergistically to modulate the pain response, a phenomenon referred to as the "entourage effect." [14,15] Our full spectrum hemp extract contains an array of highly-bioavailable phytocannabinoids that support healthy pain and inflammatory responses, including cannabidiol (CBD) and a Farm Bill-compliant level of THC.[16]

CURCUMINOIDS: PURE GOLD FOR SUPPORTING A HEALTHY INFLAMMATORY RESPONSE

Turmeric, the brilliant yellow powdered rhizome of Curcuma longa, has been a cornerstone of traditional Indian Ayurvedic medicine for thousands of years, and is currently the "golden child" of the nutraceutical industry. It contains a unique class of phytochemicals called curcuminoids, the most well-recognized of which is curcumin. In 2014, consumers spent a whopping $20 million on curcumin supplements, while over $150 million was spent on curcumin research between 1995 and 2017.[17]

Curcuminoids demonstrate a wide range of pharmacological activities, including potent anti-inflammatory effects. Curcumin decreases cytokines that instigate and perpetuate the inflammatory response, including TNF-α, IL-1α, IL-6, and IL-17A.[18] Turmeric essential oils, such as turmerone, potentiate the anti-inflammatory effects of curcumin.[19,20] The potent inflammation-balancing activities of curcuminoids have instigated research on their clinical effects, with significant benefits observed in conditions ranging from osteoarthritis to inflammatory bowel disease.

Despite the multitude of health benefits attributed to curcuminoids, the results of clinical trials have been mixed, with some studies showing little benefit.[21] Emerging research indicates that the inconsistent efficacy of curcumin observed in trials is due to its limited bioavailability, rather than an inherent lack of health benefits. When curcumin is administered in a nanoparticle, lipid-based delivery system with turmeric essential oils, including turmerone and turmeric oleoresin, its bioavailability is vastly improved. Turmeric essential oils inhibit ATP-binding cassette transporters, preventing the efflux of curcumin out of intestinal epithelial cells and enhancing its bioavailability.[22,23,24]

A TIME-HONORED BOTANICAL FOR HEALTHY JOINTS

Boswellia serrata, also known as indian frankincense, has been a treasured herb for inflammatory conditions in indian ayurvedic medicine for millennia. In recent years, scientific research has validated the traditional uses of boswellia by elucidating its broad anti-inflammatory and analgesic effects.

Boswellic acids, the primary active ingredients in boswellia, inhibit enzymes, transcription factors, and cytokines involved in the inflammatory process, including 5-lipoxygenase, microsomal prostaglandin E-synthase, NF-κB, TNFα, IL-1α, and IL-6.[25] Clinical trials investigating the anti-inflammatory applications of boswellia have found it to be palliative for knee osteoarthritis and chronic colitis.[26,27,28] Interestingly, boswellia's anti-arthritic activity is enhanced when it is combined with curcumin.[29]

While the oral bioavailability of boswellia is relatively poor, its absorption is significantly enhanced when delivered in a solubilized phospholipid form.[30]

SEDS DELIVERY TECHNOLOGY

Self-emulsifying delivery systems (SEDS) represent a new frontier in nutraceutical delivery systems. SEDS are formulations of oils and surfactants that quickly dissolve in the stomach upon contact with gastric juices, creating emulsified nanoparticles that quickly diffuse across cellular membranes and enter the bloodstream.[30] SEDS improve the oral absorption of lipophilic ("fat-loving") compounds, including fat-soluble vitamins and phytonutrients, which are notorious for their poor bioavailability. SEDS delivery systems can help overcome significant bioavailability challenges, allowing powerful natural compounds to exert systemic benefits.*

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References available at quicksilverscientific.com/cbdsynergies-pnreferences

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