Pregnenolone CRT™

Controlled-release Technology

designs for health®

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Pregnenolone is a precursor to the hormones necessary for the maintenance of homeostasis and other critical functions in the human body. Based on the body's demands, pregnenolone can be converted into many hormones, including dehydroepiandrosterone (DHEA), progesterone, estrogens, testosterone, cortisol, and aldosterone. Pregnenolone CRT™ contains a patented controlled-release technology designed to deliver pregnenolone continuously over the course of 10 to 12 hours, avoiding spikes and surges found in other pregnenolone delivery systems. This delivery system also closely mimics the way pregnenolone is normally released within the body.

The first step in steroidogenesis is an enzymatic conversion from cholesterol to pregnenolone, catalyzed by cytochrome P450 side-chain cleavage, also known as CYP11A1.[1,2] This occurs in many locations in the body including the adrenal glands, brain, skin, liver, and testes or ovaries.[3] Pregnenolone is then metabolized into mineralocorticoids, glucocorticoids, androgens, and estrogens. Some individuals require additional supplementation due to aging, cholesterol-lowering therapies, and lifestyle factors such as malnutrition, malabsorption, excessive exercise, vegetarian diets, stress, and sleep deprivation. The hormones made from pregnenolone may support healthy sexual hormone balance, a healthy stress response, healthy cognition and memory, healthy electrolyte balance, and balanced moods.*

Benefits*

- Supports healthy hormone balance
- Supports healthy adrenal function
- Supports healthy cognitive function and memory
- May support a healthy stress response
- Supports a healthy inflammatory response
- May support a balanced mood
- Supports neuronal health

Formula Highlights

- Controlled-release technology delivers pregnenolone steadily for 10 to 12 hours
- Convenient once-daily serving
- Gluten-free and dairy-free
- Suitable for vegetarians

Supplement Facts

Serving Size 1 tablet

Amount Per Serving		% Daily Value
Lecithin (from soy)	100 mg	*
Pregnenolone	30 mg	*

*Daily Value not established.

Other Ingredients: Microcrystalline cellulose, hydroxypropyl methylcellulose, pectin, sodium carbonate, silicon dioxide, stearates (vegetable source), hydroxypropyl cellulose, calcium silicate.

Contains soy.

Role in Immune Function

Pregnenolone and its metabolites, particularly glucocorticoids, play important roles in the immune system. Both thymic epithelial cells and peripheral T cells produce steroids, including pregnenolone. The expression of CYP11A1, the enzyme that converts cholesterol to progesterone, has also been observed in CD4 and CD8 T-lymphocytes, B cells, and monocytes. Glucocorticoids modulate pro-inflammatory cytokines and their synthesis by decreasing the stability of messenger RNA for interleukin (IL)-1, IL-2, IL-6, IL-8, and tumor necrosis factor (TNF)-alpha. They can also block the binding and function of other pro-inflammatory transcription factors such as nuclear factor-kappa B.[2]

In the skin, CYP11A1 is expressed in keratinocytes and sebaceous glands. The skin produces certain corticosteroids, which have been shown to contribute to locally modulating the inflammatory response. A reduction in the presence of steroidogenic enzymes, such as CYP11A1, has been observed in autoimmune skin conditions, such as psoriasis. Deficiencies in glucocorticoids in psoriatic skin have been linked to an increase in inflammation.[2]

Steroidogenesis also influences other autoimmune conditions, such as multiple sclerosis (MS), rheumatoid arthritis (RA), and systemic lupus erythematosus (SLE). Lower DHEA levels in oligodendrocytes of individuals with MS have been observed, and local steroidogenesis has been postulated to be contributory to the prevention of MS. For individuals with RA, differences in more than 30 steroid-like metabolites, including DHEA, androstenediol, and cortisol have been observed in addition to elevated levels of certain pro-inflammatory cytokines, including IL-6 and TNF-α. Steroidogenic dysregulation is believed to be a contributing factor to the pathogenesis of SLE.[2]

Neurosteroid Actions

The terms, *neuroactive steroid,* include neurosteroids produced by the nervous system, synthetic steroids that modify the nervous system, and hormonal steroids produced in peripheral glands that influence the nervous system. Pregnenolone is considered a neuroactive steroid in the body due to the conversion from cholesterol to pregnenolone in locations of the brain, such as oligodendrocytes, in addition to its influences on many processes within the central nervous system (CNS).[1,4] It is also lipophilic and can cross the blood-brain barrier.[5]

Pregnenolone influences cognitive function in a variety of ways.[1,4] Changes in pregnenolone levels after traumatic brain injury have been observed in animal studies. Metabolites of pregnenolone have been shown to have neuroprotective qualities in both the CNS and the peripheral nervous system in the presence of a variety of disorders, including epilepsy, demyelinating diseases, and neurodegenerative diseases, such as Alzheimer's disease and Parkinson's disease.[4] Pregnenolone is also further metabolized in the endoplasmic reticulum into the neuroactive steroids of testosterone, estradiol, and progesterone. A metabolite of pregnenolone, pregnenolone sulfate (PregS), positively affected memory. PregS has also been shown to modulate synaptic plasticity in laboratory studies.[1] PregS acts on N-methyl-D-aspartate (NMDA) receptors as an inhibitor that provides neuroprotection. PregS binds to $GABA_AR$ receptors, and along with allopregnanolone (another metabolite of pregnenolone), it can act as a GABA modulator.[6] PregS has been shown in animal studies to increase the release of acetylcholine in several brain regions.[5] Pregnenolone has also been shown to positively influence neuronal myelination.[5]

A systematic review and meta-analysis aggregated data from studies that utilized anti-inflammatory agents in the presence of schizophrenia due to the neuroinflammatory component of the pathophysiology of schizophrenia. Inflammation occurring in the CNS results in neuronal emission of inflammatory mediators causing cell death, thus contributing to neurodegeneration and abnormal brain morphology. Statistically significant positive changes in visual learning and memory, attention, and executive function were observed in the presence of pregnenolone.[7]

A randomized, double-blind placebo-controlled clinical trial assessed the efficacy of pregnenolone supplementation in the presence of chronic low back pain in US military veterans. The study hypothesized that the metabolites of pregnenolone, such as allopregnanolone, would exhibit analgesic, anti-inflammatory, and neuroprotective properties due to their $GABA_A$ receptor-modulating actions. After 4 weeks of pregnenolone administration, participants experienced a reduction in overall pain scores and significant reductions in ratings of pain recall. More than 50% of individuals taking pregnenolone reported a 20% reduction of pain. The study results also indicate that the treatment was safe and well-tolerated.[8]

Additional Information
Pregnenolone levels have been shown to significantly decrease with age. Pregnenolone levels have been shown to decrease by as much as 60% with aging.[5]

Recommended Use: Take 1 tablet per day with a meal or as directed by your health-care practitioner.

Warning: Pregnenolone is not recommended for individuals who are pregnant, lactating, or have hormone-sensitive cancers. It is not recommended for individuals with epilepsy or a history of seizures. Pregnenolone reduces the effectiveness of any drug that stimulates GABA receptors. Supplementation with pregnenolone should be monitored by a health-care practitioner.

For a list of references cited in this document, please visit:
https://www.designsforhealth.com/api/library-assets/literature-reference---pregnenolone-crt-tech-sheet-references

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.

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