

### Key Features:

- High-Dose **Phosphatidylserine** (150 mg/capsule) from sunflower seeds - promotes recovery from physical & mental exertions by stabilizing cortisol levels\*
- Highly Concentrated **Magnolia (90% honokiol) & Phellodendron (85% berberine)** - powerful anxiolytic & cortisol-modulating actions\*
- **Ashwagandha + Wild Jujube Seed** (natural GABA agonist) + **L-Theanine** to optimize stress-scoping response and promote relaxation & sleep\*

### Indications:

- HPA Axis Dysregulation caused by chronic high stress
- Post-workout Recovery
- Promote relaxation & sleep

### Description:

Cortisol is one of the major tools the body uses to counteract adverse effects from stress; its levels are regulated predominantly by the Hypothalamas-Pituitary-Adrenal (HPA) axis.

Normally, our cortisol levels rise and fall throughout the day, following a circadian rhythm. The diurnal cortisol levels are relatively high to help maintain alertness and cognitive function while the nocturnal levels are low to promote relaxation and sleep.

However, when HPA axis fails to function properly, the it progresses through stages (1 to 4) of dysregulation resulting in symptoms, such as insomnia/restless sleep, general tiredness, or declined cognitive ability and lowered immune function.

**Cortilief** is specifically formulated to target Stages 1 & 2 of HPA axis dysregulation (Over-stimulation & Restlessness), as well as any other circumstances that require support in reducing high cortisol levels, such as systemic inflammation and post-intense workout.

### Phosphatidylserine (PS)

PS plays a key role in neuronal cell structure and functioning, and improvement in memory, learning, mood and stress-scoping mechanism.<sup>[1,2]</sup> It has been shown to **decrease ACTH and cortisol responses to acute physical and mental stress**.<sup>[3,4]</sup> PS has also demonstrated its benefits in bipolar and major depressive disorders, as well as reducing the risk of neurodegenerative conditions.

Daily 400 mg of PS has been shown in randomized controlled trials (RCTs) to significantly normalize the ACTH and cortisol (salivary and serum) levels, as well as positive effect on emotional wellbeing of the subjects, in response to an acute psychosocial stressor (i.e. Trier Social Stress Test (TSST)).<sup>[5]</sup>

### Quantity: 56 Vegetarian Capsules

#### Ingredients (per capsule):

Phosphatidylserine (from <i>Helianthus annuus</i> seed).....	150 mg
Ashwagandha Extract ( <i>Withania somnifera</i> ) (12:1).....	150 mg (5% withanolides) (root) (1,800 mg DHE*)
Wild Jujube Extract ( <i>Ziziphus spinosa</i> ) (18:1).....	75 mg (2% triterpene saponins) (seed) (1,350 mg DHE*)
Magnolia Extract ( <i>Magnolia officinalis</i> ) (72:1).....	10 mg (90% honokiol) (bark) (1,720 mg DHE*)
Phellodendron Extract ( <i>Phellodendron amurense</i> ).....	10 mg (85% berberine) (bark)
L-Theanine.....	50 mg

\*DHE - Dried Herb Equivalent

**Non-medicinal Ingredients:** L-leucine, silicon dioxide, hypromellose (capsule)

**Suggested Use:** Adults - Take 1 capsule at bedtime, or as directed by your health care practitioner. May increase to 2-3 capsules during times of acute stress.

The beneficial effect was more pronounced in people under chronic stress.<sup>[6]</sup>

PS (600-750 mg QD for 10 days) has been demonstrated in RCTs to significantly improve the exercise capacity; it is able to modulate cortisol spikes, negate exercise-induced stress, and prevent the physiological deterioration accompanied by over-exercising.<sup>[7,8]</sup>

### Magnolia (Honokiol) & Phellodendron (Berberine)

Both magnolia and phellodendron are commonly used in Traditional Herbal medicine for reducing stress and anxiety. Research has demonstrated the combination can reduce cortisol, promote emotional well-being, and curb stress-related eating.<sup>[9]</sup>

The most bioactive constituents in Magnolia and Phellodendron (M&P) responsible for their anti-stress, anxiolytic effects are honokiol and berberine, respectively. They work by modulating the activity of various neurotransmitters and biochemical reactions in the brain, such as neurotrophic factor, acetylcholine, and acetylcholinesterase.<sup>[10]</sup>

In an RCT involving 56 subjects screened for moderate stress levels, the participants were randomized to receive either 500 mg/day of



a standardized M&P combination (containing **11.7 mg of honokiol and 1.1 mg of berberine**) or placebo for 4 weeks.<sup>[10]</sup> After the intervention period, salivary cortisol levels were significantly lower by 18% ( $p<0.05$ ) in the M&P group compared to placebo. Mood state parameters\* were also significantly improved ( $p<0.05$ ).

\*Overall stress (-11%), Tension (-13%), Depression (-20%), Anger (-42%), Fatigue (-31%), Confusion (-27%), Global Mood State (+11%), and Vigor (+18%).

### Ashwagandha

Ashwagandha (*Withania somnifera*) may influence adrenal hormone activity by supporting normal hypothalamic-pituitary-adrenal (HPA) axis function and T4-T3 conversion. Ashwagandha also interacts with areas of the brain, spinal cord, and central nervous system as recent research suggests that ashwagandha enhances cholinergic activity in the brain, which helps to explain the reported memory and cognition enhancing effects of ashwagandha extract.<sup>[11]</sup>

In an RCT involving 64 subjects with a history of chronic stress, the participants were randomized to receive **300 mg** of Ashwagandha root extract (AE) or placebo for 60 days. The **serum cortisol levels were substantially reduced** ( $p=0.0006$ ) in the Ashwagandha group.<sup>[16]</sup>

In an RCT involving 60 subjects with a baseline perceived stress scale score  $>20$  were randomized to receive daily 250 mg of Ashwagandha root extract (AE), 600 mg of AE, or placebo for 8 weeks. **Serum cortisol levels were reduced** with both **250 mg AE/day** ( $p<0.05$ ) and **600 mg AE/day** ( $P<0.001$ ) at 8th week.<sup>[17]</sup>

### Wild Jujube (seed)

Wild Jujube seed (also known as Suan Zao Ren) has been widely used to help with anxiety and restlessness. Research findings have shown that its anxiolytic effect is attributed to one of its main alkaloid constituents -sanjoinine A - acting on the GABA-receptors.<sup>[12,13]</sup>

Traditional Chinese Medicine (TCM) regards jujube seed as a sedative herb for nourishing Liver blood and calming Heart shen (spirit).<sup>[14]</sup> When Liver blood is deficient, the deficiency-heat will ascend and affect the mind (ie. Liver Yang Rising). Such medicinal property makes wild jujube seed the chief herb (70%) in Suan Zao Ren Tang (Sour Jujube Decoction) - one of the most popular patent TCM formulas for insomnia, night sweat, palpitations, irritability and anxiety.

### L-Theanine

L-theanine is an amino acid found predominately in green tea and has a remarkable effect on relaxation.<sup>[15]</sup> It has been

shown to increase alpha brain wave activity, which is a measure of relaxation and decreased anxiety, coupled with increased focus and mental alertness. L-theanine also leads to increased creativity, improved performance under stress, improved learning, and improved concentration.

#### Reference:

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