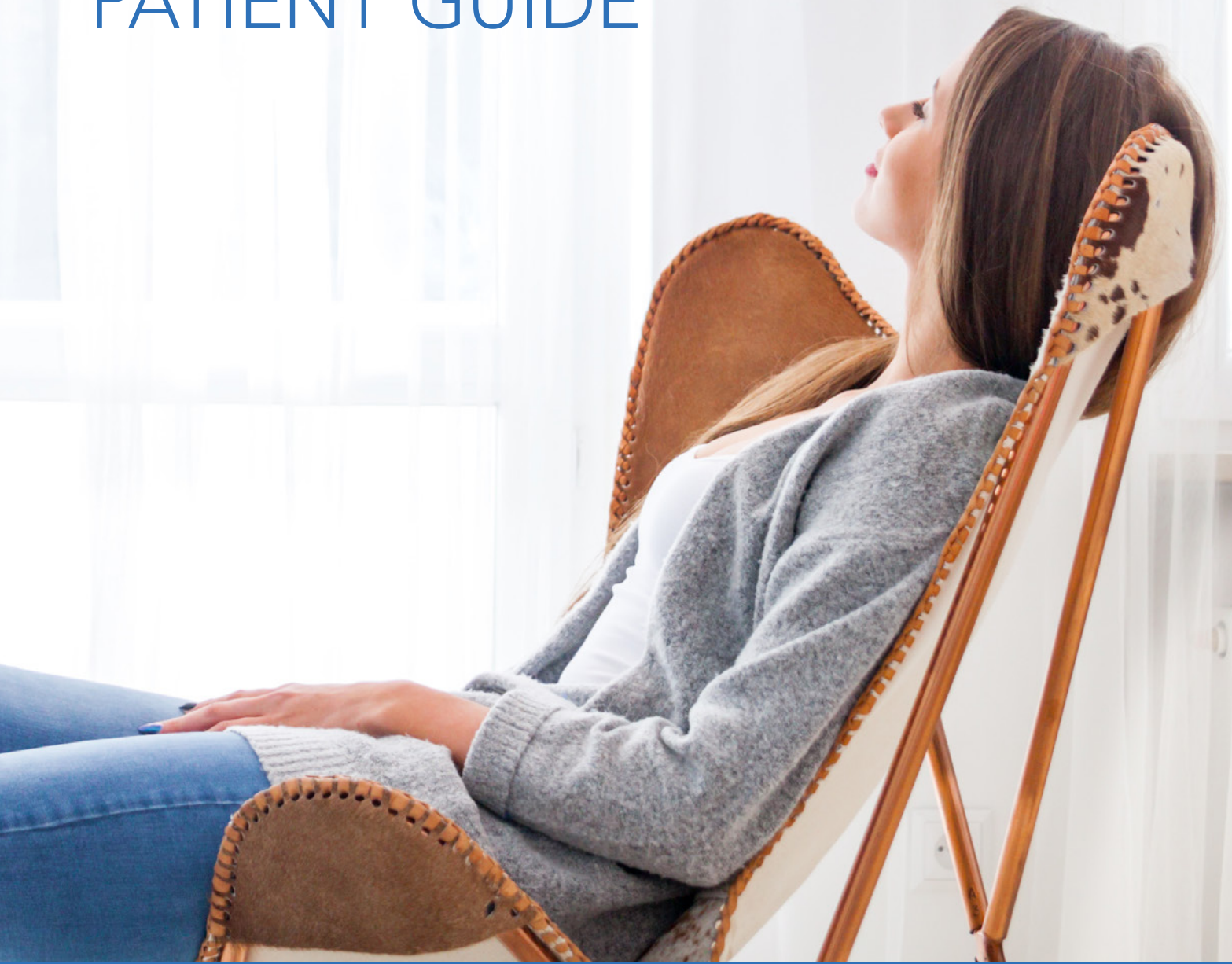




Innovative Nutrition

# NATURAL STRESS SUPPORT PATIENT GUIDE



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# Overview

Not only is stress tough to endure mentally, but it also has well-documented negative effects on our physical health. Chronic stress can lead to headaches<sup>1</sup>, gastrointestinal (GI) issues<sup>2</sup>, cardiovascular issues<sup>3</sup>, weakening of the immune system<sup>4</sup>, increased blood sugar<sup>5</sup>, sexual dysfunction<sup>6</sup>, and elevated blood pressure<sup>7</sup>, just to name a few. With busy lifestyles, overwhelming demands, and a culture that supports working to the point of burnout, it often feels like an end to the stress cycle will never come. However, research suggests that there are many natural options to help support healthier stress levels and a more balanced stress response. In this guide we will discuss some of our favorite practical approaches to stress, including lifestyle modifications, supportive nutrients, as well as supplement suggestions to help you relax and unwind.

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# The Link Between Stress and Sleep

One of the most important things we can do to improve our stress response is to make sure we are getting sufficient sleep.

Most of us know from experience that it is hard to sleep when we are under a lot of stress. This is because stress activates our hypothalamic-pituitary-adrenal (HPA) axis and our sympathetic nervous system, commonly referred to as our fight or flight state,<sup>8</sup> to stimulate the release of our stress hormones like cortisol and adrenaline. These hormones induce an arousing effect that keeps us alert, even if we would rather be snoozing.<sup>9</sup>

Alternatively, quality sleep has an anti-stress effect. Sleep has an inhibitory effect on our HPA axis, as well as our sympathetic nervous system. Research shows that restless sleep leads to increased levels of cortisol and norepinephrine (the precursor to adrenaline) the following day, perhaps to keep us alert.<sup>10</sup> This means that we are even more predisposed to a bigger stress response following a night of bad sleep. These results can be cumulative, meaning that creating habits of poor sleep over time can lead to even more hormonal dysfunction, predisposing us to an unhealthy stress response.<sup>11</sup> Fortunately, there are things we can do to combat poor sleep quality, even in times when our stress levels make this a difficult task.



# Tips for Getting Your Best Sleep



## Create a dark, quiet, comfortable sleeping environment

Nocturnal stimuli can impact our sleep quality, even when we don't realize it. Our circadian clock is very sensitive to external provocations, so it is important to minimize signals that induce symptoms of waking when it's time for sleep. The production of melatonin, our sleep hormone, is inhibited by light and stimulated by darkness.<sup>12</sup> Being in a dark environment and avoiding electronics that create light lets our hormones know that it's time to slow down and enter a restful state. Similarly, noise stimulates arousal and results in lighter sleep.<sup>13</sup> Both minimizing sound and masking sounds with a white noise machine or similar have been shown to improve sleep.<sup>14</sup>



## Create habits that improve sleep timing regularity

Our circadian system is incredibly sensitive to our daily rhythms. It creates a hormonal and physiological environment that encourages sleepiness and wakefulness at the same times each day. Studies have shown that sleep duration and quality are worsened when our bedtimes are shifted to a different time.<sup>15</sup> Irregular timing for both going to bed and waking has been shown to lead to increased inter-night variability and sleep-wake desynchrony.<sup>16</sup> Sticking to a consistent bedtime and wake-time supports feelings of sleepiness at bedtime and wakefulness in the morning. The best option is to get to sleep prior to 10:00pm, as later bedtimes have been shown to elevate cortisol levels.<sup>17</sup>



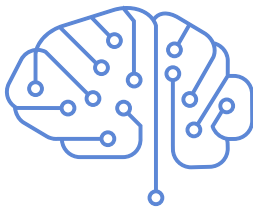
## Avoid caffeine after noon

Caffeine acts as a stimulant with a half-life of anywhere from 2-10 hours after consumption. This means for many of us, caffeine we consume mid-day will still be stimulating our body to be alert by the time we are trying to go to bed. Studies have shown that caffeine consumption, even several hours prior to bed, reduces both sleep efficiency and total sleep time.<sup>18</sup> Alternatively, there is some evidence that caffeine avoidance could support a shorter length of time to fall asleep and longer sleep duration.<sup>19, 20</sup>



## Avoid alcohol before bed

Alcohol use is associated with falling asleep more quickly than usual. However, later in the night when the alcohol is metabolized, subsequent sleep becomes lighter. Alcohol negatively impacts rapid eye movement (REM) sleep and causes more mid-night arousals, leading to lower quality sleep and a sensation of drowsiness the following day.<sup>22</sup>



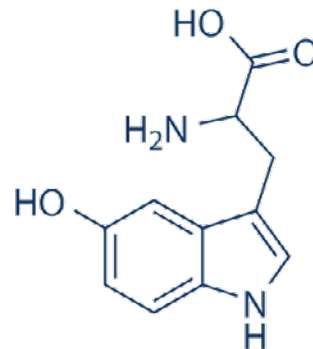
## Gamma-Aminobutyric acid (GABA)

GABA is our major inhibitory neurotransmitter, creating a calm, relaxed sensation. Studies suggest that those who suffer from stress-induced sleep issues and/or poor sleep quality may benefit from GABA supplementation.<sup>21</sup>



## L-Theanine

L-Theanine is an amino acid derivative naturally found in green tea. It induces alpha brain wave activity, which can foster a state of calm relaxation. It is a precursor to GABA, our main inhibitory neurotransmitter.<sup>23</sup> L-theanine may support falling and staying asleep by decreasing the stress response.



## 5-HTP

L-5-Hydroxytryptophan, or 5-HTP, is a precursor to both serotonin and melatonin. It helps to promote a relaxed state. When taken as a supplement, it can support the body's natural production of both serotonin and melatonin to support better sleep quality.<sup>24</sup>

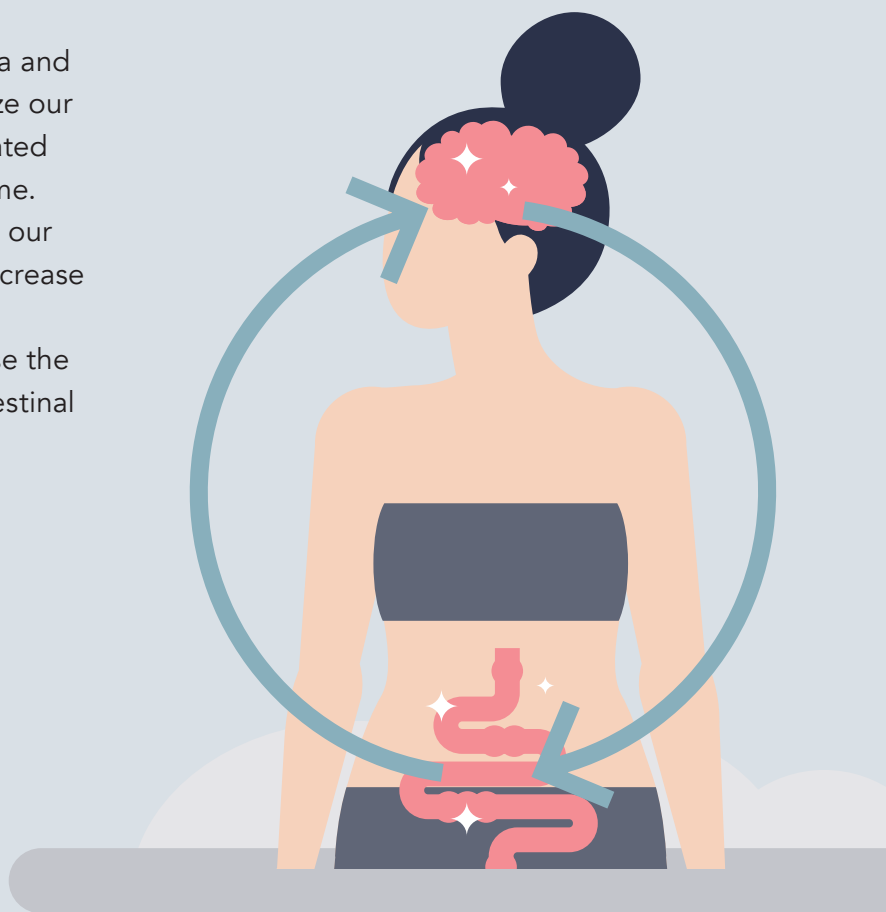
# Gut Health and Stress is a Two-Way Street

There is a strong connection between our digestive health and our brain health. We call this the 'gut-brain axis'.

Not only can stress have a negative impact on our gut, but poor gut health can also exacerbate our stress levels. Unfortunately, when the mind perceives stress, it can directly impact our gut health. Stress suppresses the release of gastric acid<sup>25</sup> and prevents the release of bile from the gallbladder,<sup>26</sup> each of which are important digestive processes to help us breakdown and absorb our food as nutrients as well as to help eliminate any unwanted microbes that may enter with our food.

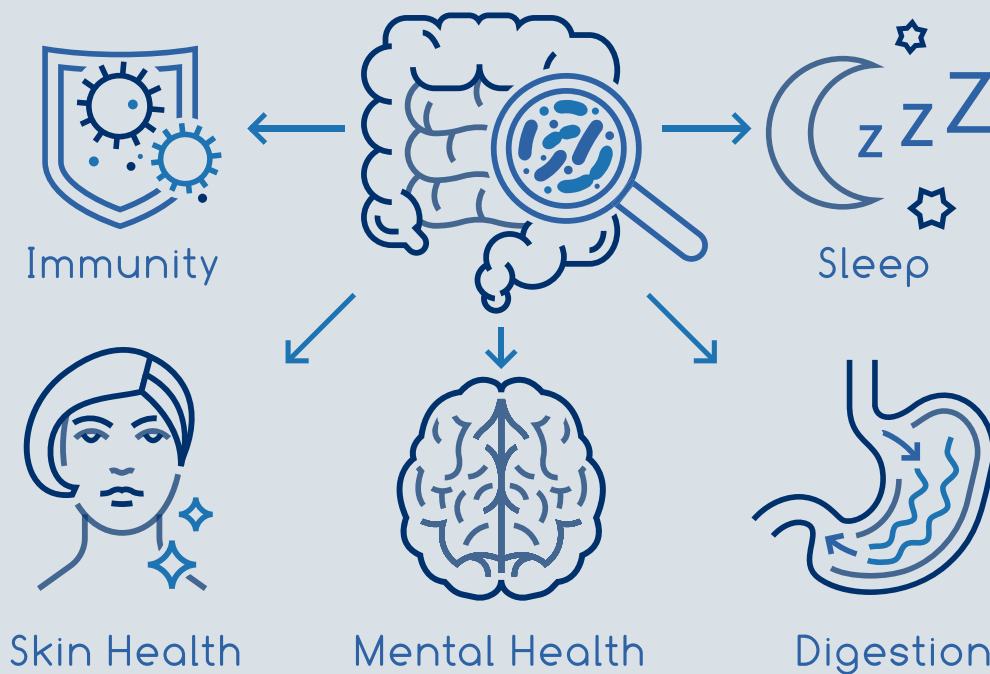
Stress also alters our transit time by decreasing motility in the small intestine, while increasing it in the colon, predisposing us to states of bowel irregularity..<sup>27</sup> These mechanisms are biological, as our body feels that it should prioritize escaping stress rather than digesting food. However, when stress is chronic rather than situational, we can face long-term digestive issues.

Additionally, stress can negatively impact our microbiome, the collection of beneficial bacteria and yeasts that live in our gut and help us metabolize our food. Elevated cortisol levels have been associated with alterations in the diversity of the microbiome.<sup>28</sup> Increases in norepinephrine and epinephrine, our fight or flight hormones, have been shown to increase the growth of pathogenic bacteria in the gut.<sup>29</sup> Norepinephrine has also been shown to increase the ability of harmful microbes to adhere to the intestinal wall.<sup>30</sup>



# Why Gut Health Matters

A healthy microbiome supports the body in producing healthy levels of neurotransmitters, hormones, vitamins and gut-protective nutrients. It also helps to “train” and regulate our immune system all of which impact our ability to respond to stressful situations in a healthy way. Our gut bacteria can produce neurochemicals that are identical to ours. They help us handle stress by regulating the gut microbiota in regulating many of our key neurotransmitters.<sup>31</sup> For instance, *Enterococcus*, a common strain in the human microbiome, can help produce serotonin.<sup>32</sup> Supporting a healthy microbiome is key to a healthy gut as well as a healthy response to stress.



# How to Keep the Gut Microbiome Healthy

## Include fermented foods in the diet

Fermented foods are a natural source of pre and probiotics and can benefit the gut microbiome.<sup>33</sup> Some examples of fermented foods include pickled vegetables, sauerkraut, kimchi, unsweetened yogurt, kefir, and kombucha.

## Eat foods high in prebiotic dietary fiber

These foods contain carbohydrates that we cannot fully breakdown; however, these carbohydrates are the perfect food for the beneficial bacteria in our gut which is why we call them “pre-biotics”.<sup>34</sup> Some examples include chicory root, dandelion greens, garlic, onions, and asparagus.

## Avoid dietary sugars

Consumption of white sugar and flour can contribute to an imbalance of microbes in the gut. Sugar can feed yeast which can crowd out the beneficial bacteria, leading to increased digestive upset.<sup>35</sup>

## Avoid smoking

Smoking has been shown to alter the intestinal flora by decreasing levels of beneficial gut bacteria and increasing levels of harmful bacteria.<sup>36</sup>





## Consider probiotics

Probiotic supplementation has been shown to support a healthy microbiome, as well as provide beneficial effects on the psychological and/or physical response to daily stress.<sup>37</sup> Certain probiotic strains have been associated with elevations in particular neurotransmitters, lower serum cortisol levels, and improved serotonin ratios.<sup>38,39</sup>

## Consider taking butyrate, a postbiotic

Butyrate is the primary fuel source for the cells in the colon. It is considered a postbiotic, a nutrient produced by the gut bacteria that supports the healthy functioning of the GI tract. It also supports a healthy microbiome by increasing levels of Bifidobacterium, a type of beneficial bacteria.<sup>41</sup>

## Supplement with L-glutamine

L-glutamine is an amino acid that supports the healthy functioning as well as repair of the intestinal wall. It has been shown to support healthy intestinal immune function and to improve gut barrier function.<sup>40</sup>



# Evidence-Based Lifestyle Approaches to Stress Management

## Move the Body, Calm the Mind

A regular exercise routine has been shown to decrease stress and its physical effect on the body.<sup>42,43</sup> There are several proposed mechanisms by which physical movement can aid in stress management. Physically fit individuals have been shown to have a healthier response to stress when exposed to a stressor.<sup>44</sup> Studies show that regular exercise also reduces circulating cortisol levels in the body.<sup>45</sup>

Physical activity has been shown to boost endorphins, our feel-good neuropeptides.<sup>46</sup> An increase in endorphins can directly improve mood, but they can also have effects on our other stress hormones. Higher levels of circulating endorphins have been shown to suppress levels of stress hormones, including cortisol.<sup>47</sup> Many forms of exercise show benefit, from yoga<sup>48</sup> to weightlifting<sup>49</sup>, so choose an activity that's enjoyable to you and incorporate it into your daily routine.

## Inhale Zen, Exhale Stress

Deep breathing has been shown to be beneficial to the nervous system and shift the body from a sympathetic (fight or flight) state into a parasympathetic (relaxed) state.<sup>50</sup> Breathing techniques can be a valuable tool to reduce stress. Studies have shown that deep breathing techniques can reduce one's perception of stress, as well as encourage a healthy heart rate and healthy levels of cortisol.<sup>51</sup> Diaphragmatic breathing is an easy place to start:



**1.** Sit down or lie on your back comfortably with knees bent to support the spine.

**2.** Place one hand on the belly and one on the chest.

**3.** Take a deep breath in through the nose and feel your belly expand slowly.



**4.** Exhale through the mouth as you feel your belly contract and your belly button retreat toward the spine.

**5.** Repeat for 10 rounds.

## Tap Into Mindfulness

Mindful meditation has been shown to offer mild to moderate improvement in stress levels.<sup>52</sup> One study found that a 3-month mindfulness practice improved stress levels as well as their supported healthy cortisol levels on waking.<sup>53</sup> For those that struggle to start a meditation practice, meditation apps have shown to be an effective tool to achieve the beneficial effects of meditation or mindfulness.<sup>54</sup> If you're unsure of where to start, try this simple method:

- 1.** Find a comfortable, quiet place to sit.
- 2.** Set a time limit that seems doable to you. Just 5 minutes can be an effective, attainable time for beginners.
- 3.** Focus on the sensations of breathing in and next sensations of breathing out. Repeat. Hold this focus for as long as you can.
- 4.** Be kind to yourself if your focus wanders. Simply return your attention to your breath when you notice other thoughts creeping in.
- 5.** Gently open your eyes and focus on your surroundings when your time is up.



# Important Nutrients for Stress Support

## B vitamins

Sufficient levels of B vitamins are crucial for healthy neurotransmitter production. In addition, supplementation with B vitamins has been shown to have beneficial effects on stress levels as well as mood.<sup>55</sup> Some great dietary sources of B vitamins include:

- Leafy greens
- Salmon
- Eggs
- Organ meats
- Legumes
- Nutritional Yeast

## L-theanine

A calming amino acid that has been shown to promote the reduction of stress and induce relaxation. Clinical studies suggest that L-theanine may increase alpha-wave activity (a relaxed, yet alert state) in the brain.<sup>56</sup> Studies also suggest that L-theanine could increase serotonin and dopamine levels.<sup>57,58</sup> L-theanine is commonly found in green tea, but can also be taken as a supplement (which can be especially helpful for those sensitive to the caffeine in green tea).

## GABA

A calming neurotransmitter, GABA is similar to L-theanine in that it has also been shown to increase alpha-wave patterns in the brain supporting a calm and relaxed state.

## Tryptophan

Our body uses tryptophan to make 5-HTP, the precursor to serotonin and melatonin. Serotonin helps us feel balanced, focused, calm and upbeat and melatonin is the hormone responsible for restful sleep. Foods rich in tryptophan include turkey, chicken, potatoes, pumpkin, and turnips.



# Herbal Approaches to Stress

For thousands of years certain herbs have been used for their ability to support a healthy response to stress. In modern times, we have labeled this class of herbs “adaptogens” as they help us to adapt to environmental stressors in a healthy way. During times of chronic stress, adaptogens may support healthy energy production while simultaneously encouraging a tranquil and calm state of being.<sup>59</sup> In fact, a number of studies suggest that adaptogens have a positive effect on cortisol and other mediators of the stress response.<sup>60</sup> Some examples of popular adaptogens include:

## Ashwagandha

A well-known calming adaptogen that supports a positive response to stress and a serene and peaceful state. It has been shown to support healthy cortisol levels during periods of stress.<sup>61</sup>

## Rhodiola

An energizing adaptogen that has been shown to reduce the perception of stress, as well as improve energy levels.<sup>62,63</sup> It has also been shown to enhance cognition and memory.<sup>64</sup>

## Holy basil

An Ayurvedic herb with a long history of supporting a balanced mood in times of stress. It has been shown to support healthy levels of cortisol and neurotransmitters in stressful conditions.<sup>65</sup>



# Our Favorite Supplements for Stress Support\*



## 200 mg of Zen

A blend of GABA and L-theanine to support healthy moods and a feeling of relaxation without sedation.\* GABA and L-theanine have been shown to increase alpha wave activity in the brain, fostering a state of calm relaxation.\*

[LEARN MORE](#)

**Suntheanine**® We use only Suntheanine®, pure L-theanine from Taiyo International, Inc.

## Supplement Facts

Serving Size 2 Capsules  
Servings Per Container 60

Amount Per Serving	% Daily Value
GABA (Gamma-Aminobutyric Acid)	550 mg †
L-Theanine	200 mg †

† Daily Value not established.

Other ingredients: Hydroxypropyl methylcellulose, microcrystalline cellulose, Nu-MAG® (rice extract, rice hulls, gum arabic, sunflower oil).



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

# Our Favorite Supplements for Stress Support\*



## Liposomal Zen

Our 200 mg of Zen formula in an advanced liposomal delivery system for increased direct absorption.\*

[LEARN MORE](#)

Supplement Facts	
Serving Size	4 Pumps (2 mL)
Servings Per Container	25
Amount Per Serving	% Daily Value
GABA (Gamma-Aminobutyric acid)	150 mg †
L-Theanine	100 mg †
Phospholipids (from Sunflower Seed Lecithin)	135 mg †
† Daily value not established.	

Other Ingredients: Water, glycerin, ethanol, d-alpha tocopheryl polyethylene glycol 1000 succinate.



## Zen Sleep

Our original Zen formula, enhanced with vitamin B6 as P5P and with 5-HTP. This combination helps promote a relaxed state and provides the necessary factors for the body to produce melatonin.\*

[LEARN MORE](#)

Supplement Facts	
Serving Size	2 Capsules
Servings Per Container	30
Amount Per Serving	% Daily Value*
Vitamin B6 (as Pyridoxal-5-Phosphate)	10 mg 588%*
GABA (Gamma-Aminobutyric Acid)	550 mg †
L-Theanine	200 mg †
L-5-Hydroxytryptophan	100 mg †
† Daily value not established.	
*Percent Daily Value are based on a 2,000 calorie diet.	

Other ingredients: Hydroxypropyl methylcellulose, microcrystalline cellulose, Nu-MAG® (rice extract, rice hulls, gum arabic, sunflower oil).



## Zen Adapt

Our original Zen formula with the addition of Sensoril®, a pure water extract of ashwagandha.

[LEARN MORE](#)

Supplement Facts	
Serving Size	2 Capsules
Servings Per Container	30
Amount Per Serving	% Daily Value
GABA (Gamma-Aminobutyric Acid)	550 mg †
L-Theanine	200 mg †
Sensoril® Ashwagandha ( <i>Withania somnifera</i> ) Root and Leaf Extract	125 mg †
† Daily value not established.	

Other ingredients: Hydroxypropyl methylcellulose, microcrystalline cellulose, rice hull concentrate, gum arabic, sunflower oil.

SENSORIL® is protected under U.S. Patent No. 7,318,938 and CA Patent No. 2,508,478, and is a registered trademark of Natreon, Inc..

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



# Our Favorite Supplements for Stress Support\*



## Adrenal Glandular

Provides tissue from the entire adrenal gland, both medulla and cortex portions. Our natural glandular material is derived from government-inspected, range-fed animals, raised in New Zealand and Australia, whose animal husbandry regulations are among the strictest in the world. Formulated by Dr. Nicholas Gonzalez M.D.

[LEARN MORE](#)



## Herbal Adapt

A balanced blend of the adaptogens ashwagandha, holy basil, rhodiola, and licorice, with ginger as a synergist. Herbal adapt supports a healthy response to stress, physical function, and a balanced mood.\*

[LEARN MORE](#)



## Super Vitamin B

B vitamins are important cofactors necessary to make our neurotransmitters and support almost all our metabolic processes. B vitamins have been shown to benefit parameters of stress and mood.\*<sup>66</sup>

[LEARN MORE](#)

### Supplement Facts

Serving Size 1 Capsule  
Servings Per Container 150

#### Amount Per Serving % Daily Value

Adrenal Tissue (Bovine, Lyophilized) 100 mg †

† Daily Value not established.

Other ingredients: Hydroxypropyl methylcellulose, microcrystalline cellulose, silicon dioxide, L-leucine.

Variations in product color may occur. Keep in a cool, dry place, tightly capped.

### Supplement Facts

Serving Size 1 Capsule  
Servings Per Container 60

#### Amount Per Serving % Daily Value

Ashwagandha Root Extract (standardized to 5% Withanolides) 200 mg †

Holy Basil Leaf Extract (standardized to 2.5% Ursolic Acid) 150 mg †

Rhodiola Root Extract (standardized to 3% Rosavins and 1% Salidroside) 100 mg †

Licorice Root Extract (standardized to 20% Glycyrrhizic Acid) 50 mg †

Ginger Rhizome Extract (standardized to 5% Gingerols) 25 mg †

† Daily value not established.

Other ingredients: Hydroxypropyl methylcellulose, microcrystalline cellulose, Nu-MAG® (rice extract, rice hulls, gum arabic, sunflower oil).

### Supplement Facts

Serving Size 2 Capsules  
Servings Per Container 60

#### Amount Per Serving % Daily Value\*

Thiamine (as Thiamine Hydrochloride) 50 mg 4167 %

Riboflavin (as Riboflavin 5-Phosphate) 50 mg 3846 %

Niacin (as Niacinamide) 150 mgNE 938 %

Vitamin B6 (97% as Pyridoxine Hydrochloride and 3% as Pyridoxal-5-Phosphate) 103 mg 6059 %

Folic (as 400 µg of Folic Acid) 240 µgDFE 60 %

Vitamin B12 (as Cyanocobalamin) 200 µg 8333 %

Biotin 200 µg 667 %

Pantothenic Acid (as Calcium Pantothenate) 250 mg 5000 %

Choline Bitartrate 250 mg †

Inositol 100 mg †

PABA (Para-Aminobenzoic Acid) 100 mg †

† Daily Value not established \* Percent Daily Value are based on a 2,000 calorie diet

Other ingredients: Hydroxypropyl methylcellulose, magnesium stearate, silicon dioxide.

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

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