

# ADRENALS

## THE NATURAL STRESS RESPONSE

The human body is well-equipped to handle stress. A wide array of hormones and neurotransmitters exist to maintain homeostasis in response to physical and psychogenic stressors. The adrenal glands are located at the center of the body's stress response system. When the sympathetic (fight or flight) nervous system is activated, the adrenals respond by releasing epinephrine, norepinephrine and cortisol. These chemicals increase heart rate and blood pressure, diverting blood to the brain, heart and skeletal muscle. The adrenals are also responsible for producing aldosterone and sex hormones.[1]

Adrenal insufficiency is a well-documented condition in which the adrenals cannot keep up with the stress response of the body. This can happen if there is destruction of the adrenal cortex (primary insufficiency) or if factors outside of the adrenal glands stimulate them to produce less cortisol (secondary insufficiency). Although not widely accepted by conventional medicine, many complementary medicine practitioners believe that a subclinical adrenal fatigue, or burnout, can develop when the adrenals have been working hard to keep up with high stress demands over time. Sustained levels of high cortisol may lead to decreased responsiveness in the pituitary and adrenal cortex. This decreases adrenocorticotrophic hormone (ACTH) and cortisol, respectively.[1,2]

## THE EFFECTS OF STRESS ON THE BODY

### Symptoms of adrenal **insufficiency**

- Fatigue
- Body aches
- Weight/muscle loss
- Low blood pressure
- Lightheadedness
- Loss of hair

### Symptoms of adrenal **fatigue**

- Fatigue
- Difficulty with morning waking
- Prone to infection and difficulty bouncing back after being sick
- Craving sweet or salty snacks
- Difficulty concentrating or finishing tasks

## DIAGNOSING ADRENAL FATIGUE

With normal diurnal variations in cortisol, glucocorticoids are lowest from 12-1 a.m. and highest at 6-8 a.m. In conventional medicine, cortisol adequacy is usually tested for with an 8 a.m. fasting serum test. Some controversy exists on which is the best measurement of cortisol, and many people feel strongly that salivary, not serum levels, more accurately reflect adrenal function. In most cases, a diagnosis and treatment of adrenal fatigue is based on clinical history and the exclusion of other conditions based on basic lab work. Adrenal fatigue and chronic fatigue syndrome (CFS) overlap a good deal, and some people view adrenal fatigue as a subset of CFS.

## ADRENAL FATIGUE TREATMENT

**Note:** Please refer to the [Passport to Whole Health](#), Chapter 15 on Dietary Supplements for more information about how to determine whether or not a specific supplement is appropriate for a given individual. Supplements are not regulated with the same degree of oversight as medications, and it is important that clinicians keep this in mind. Products vary greatly in terms of accuracy of labeling, presence of adulterants, and the legitimacy of claims made by the manufacturer.

## HERBALS

Adaptogens are phytochemicals which are believed to stabilize physiologic processes and encourage homeostasis in the body. Adaptogens which are helpful in the treatment adrenal fatigue include:

### LICORICE

Licorice (*Glycyrrhiza glabra*) appears to have modest glucocorticoid activity and might act synergistically with cortisol. Components of licorice (primarily glycyrrhizin) which are structurally similar to corticoids can bind to glucocorticoid and mineralocorticoid receptors, weakly mimicking the role of endogenous steroid hormones. **Dosing:** licorice powdered root 1-4 grams daily three times daily.[1,3]

### ASHWAGANDA

Ashwaganda (*Withania somnifera*) is considered to be the pre-eminent adaptogen in the Ayurvedic medical system. When administered to animals, it counteracts many of the biological changes that accompany severe stress, including changes in blood sugar and cortisol levels. **Dosing:** powdered herb 3 grams twice daily.[1,3]

### SIBERIAN GINSENG

Most data on Siberian ginseng (*Eleutherococcus senticosus*) has been completed by Russian scientists and is not available in English. However, one review indicates Siberian ginseng

increases the ability to accommodate adverse physical conditions and improves mental performance. **Dosing:** Variable based on preparation.[3,4]

### **PANAX GINSENG**

While the anti-stress mechanisms of Chinese (Panax) ginseng are not completely understood, research suggests a variety of actions on both the adrenal glands and the hypothalamic-pituitary-adrenal (HPA) axis. At the level of the brain, ginseng appears to stimulate ACTH and subsequent cortisol production and may also increase binding of corticosteroids to certain regions of the brain. **Dosing:** dried root powder 200-600 milligrams daily.[3]

### **RHODIOLA ROSEA**

The adaptogenic properties and central nervous system activities of rhodiola have been attributed primarily to its abilities to influence the levels of the neurotransmitters serotonin, dopamine, and norepinephrine by inhibiting the enzyme responsible for their degradation. **Dosing:** 100-300 milligrams three times daily.[3,4]

## **OTHER SUPPLEMENTS**

### **VITAMIN B COMPLEX**

Studies have shown the B vitamins are a protective nutrient for the adrenals, decreasing the stress-induced cortisol response. The B vitamins support sleep quality and are also important co-factors in the production of neurotransmitters.[1,3]

### **DHEA**

Commonly used for adrenal fatigue, minimal evidence to support use.

### **ADRENAL GLANDULAR**

Safety and effectiveness, unknown. In general adrenal glandular supplements (made of desiccated farm animal glands) are not recommended, as they may further suppress the hypothalamic-pituitary-adrenal axis.

## **MIND-BODY APPROACHES**

Very little evidence exists for the use of mind-body techniques in the treatment of adrenal fatigue. Studies have shown that mindfulness-based stress reduction programs can lower cortisol levels in the blood.[5] It stands to reason, then, that other modalities which mediate the physiologic effects of stress on the body such as biofeedback, yoga, and massage would all have the beneficial effect of lowering sympathetic tone and symptoms of adrenal fatigue in the body.

## AUTHOR(S)

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