Adrenal Health

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 adrenocorticotropic 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 a.m.-1 a.m. and highest at 6 a.m.-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. For example, it is important to rule out depression, low thyroid, sleep disorders (including sleep apnea), anemia, and other possibilities. 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: 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 that are helpful in the treatment adrenal fatigue include the following.

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.

- **Dose**: licorice powdered root 1-4 gm daily, three times a day.[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.

- **Dose**: powdered herb 3 gm 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.

- **Dose:** 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.

- **Dose***:* dried root powder 200-600 mg 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.

- **Dose:** 100-300 mg 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

More and more evidence exists for the use of mind-body techniques in the treatment of adrenal fatigue. Studies have shown that Mindfulness-Based Stress Reduction (MSBR) programs can lower cortisol levels in the blood.[5] A 2015 review of 25 randomized controlled trials concluded that yoga practice leads to better regulation of the sympathetic nervous system and the HPA axis, while also decreasing depression and anxiety.[6] This assessment was further supported by a 2017 meta-analysis. [7] A 2018 systematic review showed an association of decreased levels of cortisol, epinephrine and norepinephrine with interventions including yoga, meditation, tai chi, acupuncture, mindful awareness, religious/spiritual practices, Cognitive Behavioral Therapy (CBT), coping, and physical exercises.[8] It stands to reason, then, that other modalities that mediate the physiologic effects of stress on the body—e.g., biofeedback, yoga, and massage—would all have the beneficial effect of lowering sympathetic tone and symptoms of adrenal fatigue in the body.

Resource Links

- *Passport to Whole Health*: https://www.va.gov/WHOLEHEALTHLIBRARY/docs/Passport_to_WholeHealth_FY2020_508.pdf

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