

The adrenal glands produce a number of essential and nonessential hormones and neurotransmitters that are vital to good health. These important glands control our sleep/wake cycle, suppress inflammation, generate energy from non-carbohydrate foods, regulate our blood pressure and blood sugar levels, and help us handle stress.

Some of the important compounds made in our adrenal glands include:

- Cortisol
- Aldosterone
- DHEA
- Pregnenolone
- Neurotransmitters such as epinephrine (adrenaline), norepinephrine and dopamine, which control our primitive stress response.

Cortisol

Cortisol is one of the most important hormones made in the body. Not only does it help us handle stress, but it also helps regulate our metabolism and how the body converts fats, proteins and carbohydrate to energy. Cortisol regulates blood pressure, helps us fight infection, and is important for cardiovascular function.

Cortisol levels are highest in the morning and lowest in the evening, and can be elevated due to stress and severe illness. After chronic, prolonged stress, the adrenals may become weakened, resulting in abnormally low cortisol levels, causing fatigue, infections and other symptoms.

Symptoms of Low Cortisol: Difficulty Handling Everyday Stress

Cortisol levels are high in the morning to wake us up, but lower at night so that we can sleep. When your cortisol and other adrenal hormones levels are low, you may have the following symptoms:

- Fatigue
- Trouble waking up in the morning
- Chronic infections (colds, sore throats, coughs)
- Hypoglycemia (low blood sugar)
- Light-headedness
- Poor response to stress
- Poor recovery after workouts

Symptoms of High Cortisol

Too much cortisol can cause you to feel agitated and anxious, and can bring on panic attacks. When your cortisol is too high, you may experience these symptoms:

- Anxiety/panic attacks
- Feeling wired and tired
- Weight gain
- Insomnia

Aldosterone

Aldosterone is a mineralocorticoid that helps us retain salt (sodium) and regulates our body's fluid and mineral levels. It is critically involved in maintaining the right balance of water and salt in our body and helping to control blood pressure.

When aldosterone is too high, patients can experience high blood pressure and low potassium.

When aldosterone is too low, the kidneys may lose excessive amounts of salt and water, which can lead to dehydration. Patients with low aldosterone can experience heart palpitations along with low blood pressure and high pulse, especially when they stand up.

Signs of low aldosterone can include fatigue, brain fog, salt cravings, excessive thirst, frequent urination, and dizziness upon standing.

DHEA

DHEA (dehydroepiandrosterone) is a powerful precursor to all of the major sex hormones. DHEA is circulated through the body and used to make estrogen, progesterone and testosterone. It helps build the immune system, reverses the effects of stress, regulates hormone balance, enhances the circulatory system, and increases levels of IGF-1, a marker of human growth hormone. DHEA also helps skin hydration and collagen thickness, and helps maintain energy, strength and libido.

DHEA production typically reaches its peak between the age of 20 and 30, after which it rapidly declines. Low levels of DHEA can cause a general sense of malaise and fatigue, along with other hormonal imbalances.

Pregnenolone

Pregnenolone is a precursor to nearly all other steroid hormones, including DHEA, progesterone, testosterone, estrogens and cortisol. It functions as a memory enhancer and is important for cellular repair, especially in the brain and nerve tissue. It helps maintain levels of key hormones and also helps promote mood enhancement, improved energy levels and enzyme activity.

Pregnenolone has many beneficial effects, including improving memory and reducing stress-induced fatigue. Patients with adrenal fatigue often have reduced levels of pregnenolone.

Symptoms of Low DHEA & Pregnenolone

- Fatigue
- Memory loss
- Inability to focus
- Cognitive decline
- Weight gain
- Trouble sleeping

- Weakness
- Skin laxity
- Low libido

The right treatment plan, including changes in diet and behavior, along with supplements and any necessary prescription medications, can help you restore optimal levels of these important adrenal hormones. Your doctor can work with you to develop a customized plan, based on your lab test results and symptoms.