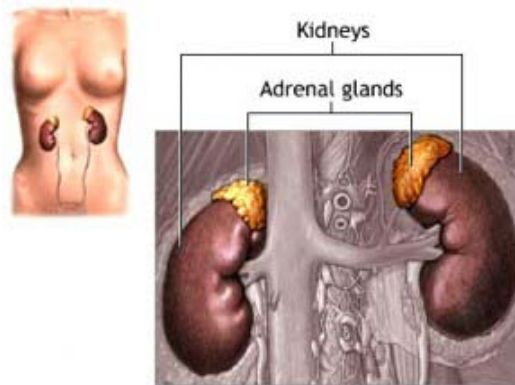


# The Adrenal Glands



## What Are They?

The adrenal glands are small, triangular shaped glands that sit atop your kidneys. The adrenal glands regulate our body's response to stress in several ways.

There are two main sections of the adrenal glands: the **outer adrenal cortex** and the **inner adrenal medulla**.

The **outer adrenal cortex** is further divided into three layers.

- Zona glomerulosa – the site of mineralcorticoid production (i.e. aldosterone), which helps to regulate sodium/potassium balance in the body
- Zona fasciculata – the site of glucocorticoid production (i.e. cortisol), which helps regulate blood sugar balance
- Zona reticularis – the site of sex hormone production (i.e. DHEA, androstenedione)

The **inner adrenal medulla**, has a direct connection to the brain. In virtually all of the other hormone producing glands in the body, the message to secrete a hormone is transmitted via a chemical messenger traveling through the blood stream. For example, TSH, a hormone, tells the thyroid to produce thyroid hormone. ACTH, a hormone, tells the **adrenal cortex** to secrete cortisol. Not so with the **adrenal medulla**. There is a nerve that goes directly from the brain to the adrenal glands. When you are in an acute stress situation, you want your body to respond quickly- the fight or flight response.

## Dysfunctional Adrenal Glands

Adrenal function can be broken down into two categories:

1. Overactive
2. Underactive

Overactive adrenal glands usually produce too much cortisol and possibly other adrenal hormones (i.e. epinephrine, aldosterone). Since cortisol plays a role in elevating blood sugar, this is often accompanied by an increased blood sugar level. Over time, this might end up leading to conditions like insulin resistance and metabolic syndrome.

Underactive adrenal glands, on the other hand, produce inadequate amounts of hormones, especially cortisol, to maintain homeostasis in the body. A common clinical problem with underactive adrenal glands is hypoglycemic symptoms due to fluctuations in blood sugar. Normal, healthy bodies release cortisol to help liberate glucose to maintain the functions of our brain, organs and cells when blood sugar levels decline between meals, or overnight during sleep. When cortisol is unavailable, glucose levels get too low. The adrenal glands release epinephrine (aka adrenaline) as their back-up plan.

This causes the lightheadedness, shakiness and irritability that people with low blood sugar experience, and is why people with low blood sugar commonly wake up during the night.

What can cause dysfunctional adrenal glands? Unfortunately, a lot of things: mental/emotional stress, food sensitivities, blood sugar imbalances, infections (i.e. parasitic, bacterial), excessive exercise... basically anything that is a perceived stress on the body.

## Laboratory Testing

There are a few ways of assessing adrenal gland function using laboratory testing. By far the most popular is the **adrenal salivary test**. It takes four salivary samples throughout the day and uses them to assess levels of salivary cortisol and DHEA. Along with patient history, and clinical observation, the adrenal salivary test is one of the most effective ways of assessing adrenal gland function and determining a course of treatment.

## Managing the adrenal glands

If you're concerned about your adrenal glands, the first thing you must do is remove or address the source of stress. This may mean removing food sensitivities, addressing an infection, resolving mental/emotional stress, or whatever it may be that is negatively impacting adrenal gland physiology.

Ask Dr. Bloom for more information on how you can assess your adrenal gland function. Once you address the source of stress, these are some therapeutic options depending on the findings of the adrenal salivary test. **Yet, please consult a licensed healthcare provider before taking any therapeutic supplements.**

- **Adaptogenic herbs** – There are a number of botanicals called “adaptogens” because of their amazing ability to help the body respond to stress. They can help dampen the stress response in overactive adrenal glands, and increase the response in underactive adrenal glands.
- **Licorice root** – This herb is used primarily in the case of underactive adrenal glands and can help with increasing circulating cortisol levels until the adrenal glands restore function. Due to its effects on aldosterone, it is not recommended for people with high blood pressure, though it can safely be used when monitored by a qualified medical professional.
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- **Phosphatidylserine** – This compound is best known for its ability to lower cortisol. But its effects are understated. PS should be used in both overactive adrenal glands and underactive adrenal glands because of its profound effects on the hypothalamus, which is a key regulator in the feedback loop between the pituitary and adrenal glands.