

Are Your Adrenal Glands Affecting Your Thyroid?

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October 26, 2023

STORY AT-A-GLANCE

- › One of the primary functions of your thyroid is to produce hormones – thyroxine (T4) and triiodothyronine (T3) – that regulate your metabolic rate
- › Elevated reverse T3 (rT3) may be a sign of nutrient deficiency, because when there's a scarcity of nutrients, your body is forced to slow down metabolism
- › Your adrenals produce more than 50 hormones, including cortisol, aldosterone and adrenaline. Like thyroid hormones, these hormones play important roles in your metabolism
- › Weeklong fasting significantly deteriorates thyroid function, as do low-carb eating and time-restricted eating (TRE). All three of these strategies will activate your adrenals, trigger cortisol release and down-regulate your thyroid function and metabolism
- › Fatigue and low energy are commonly blamed on “adrenal fatigue,” but more often than not, cortisol production is normal. It's just that the cortisol is being degraded and/or too much is being converted into inactive cortisone, and instead of converting back to cortisol, the cortisone is metabolized into metabolites. Inflammation, obesity and other factors associated with poor health accelerate these conversions

In the video above, independent health researcher Jay Feldman, who specializes in the bioenergetic theory of health, reviews how to analyze and assess your thyroid function using a combination of blood work and symptoms such as body temperature and pulse rate. He also discusses the causes of Hashimoto's hypothyroidism, which is an autoimmune condition that causes impaired thyroid function.

Jay is my recommended teacher to learn more about Ray Peat's bioenergetic medicine and how it impacts every aspect of your health, from, thyroid health, energy levels, weight and blood sugar control, and virtually every chronic illness. I would strongly recommend visiting [his YouTube channel](#) and watching all of his podcasts, but start from the beginning, rather than watching the most recent first.

Below, another video by Dr. Peter Attia provides a comprehensive overview of your endocrine systems, which include your thyroid, adrenals and sex hormones. He reviews the basic biology and feedback cycles that regulate hormone production, as well as the possible treatments for deficiencies, such as hormone replacement therapy (HRT).

My summary of these two videos will focus primarily on the thyroid and adrenal systems. For additional details not covered here, I highly recommend viewing the videos.

Thyroid Basics

Your thyroid is a butterfly-shaped gland located at the front of your neck just below your larynx (Adam's apple). The two lobes are located on either side of your trachea (windpipe). One of the primary functions of your thyroid is to produce hormones – thyroxine (T4) and triiodothyronine (T3) – that regulate your metabolic rate.

Your thyroid is regulated by thyroid-stimulating hormone (TSH) produced in your pituitary gland, located at the bottom of your brain. TSH tells your thyroid how much hormone to secrete, in response to your body's needs. As circulating T4 drops, TSH rises and when T4 rises, TSH goes down. When everything is working as it should, this maintains a stable level of T4 in your body.

Your pituitary also responds to thyrotropin-releasing hormone (TRH) released from your hypothalamus, which is located just above the pituitary gland. This network is known as the hypothalamic-pituitary-thyroid axis (HPT), and it adapts to the ever-changing metabolic changes and needs of your body.

Thyroid Testing

While a complete discussion of thyroid testing is beyond the written part of this article, I strongly encourage you to review Jay's excellent comments on thyroid testing in his video above. Some of the highlights are that typically TSH is used to diagnose thyroid disease but it is frequently misused for the reasons Jay lists in his video.

TSH is only reliable to diagnose hypothyroidism and when your TSH is high, it means you very likely have hypothyroidism. However, when you lower your TSH this does not mean your thyroid dose is correct. It is a mistake to use TSH as an indicator of sufficiency of your thyroid hormone replacement. You need other lab tests and monitoring of clinical symptoms to make this assessment.

Treating Hypothyroidism

One of the ways you can differentiate a natural medical doctor from a conventional medical doctor is the type of thyroid replacement they use. Virtually all conventional physicians prescribe T4 which is thyroxine and the brand name is Synthroid. This does not have any T3. Most natural medical physicians will prescribe a combination of T4 and T3 or use a desiccated thyroid preparation.

However the next step up would be the approach of a bioenergetic clinician that would not use any thyroid hormone until they addressed the reason why the person was hypothyroid in the first place.

Let me give you an example. One of my best friends is clinically hypothyroid. She has an elevated cholesterol level which is a very common symptom and before thyroid testing evolved was used to diagnose hypothyroidism. She also had delayed deep tendon reflexes which is another common symptom.

One could easily justify putting her on thyroid replacement therapy but that would be a mistake. Why? Because she is underweight as her hypothyroidism is a result of not getting enough calories. When you fail to give your body the amount of calories it needs

it will slow down your metabolic rate. Giving her thyroid hormone will dramatically worsen her health as she will be overriding her body's protective reflex to keep her alive.

Understanding the Function of Thyroid Hormones

T4 is an inactive prohormone and T3 is the active hormone. The "3" and "4" refers to the number of iodine molecules each has. T4 makes up most of the hormones produced by your thyroid. Enzymes called deiodinases in your liver and kidneys then convert the T4 into active T3.

As the name implies, deiodinases remove iodine molecules, so they convert the T4 to T3 by removing an iodine molecule. There are three deiodinases, named D1, D2 and D3. D1 and D2 convert T4 to T3; they just do it in different areas of the cell. D3, however, converts T4 into reverse T3 (rT3).

“ Reverse T3 will occupy the same receptors but won't activate them. As a result, rT3 blocks the beneficial effects of T3. Typically, having elevated levels of rT3 is a sign of chronic inflammation and other disease processes.”

As explained by Attia, rT3 is very similar to regular T3. The difference is, it does not activate the receptors that T3 activates. So, rT3 will occupy the same receptors but won't activate them. As a result, rT3 blocks the beneficial effects of T3. Typically, having elevated levels of rT3 is a sign of chronic inflammation and other disease processes.

According to Attia, high rT3 may also be a sign of nutrient deficiency, because when there's a scarcity of nutrients, your body is forced to slow down metabolism. By blocking active T3, metabolism slows and growth processes are inhibited, because those processes require a lot of energy and there's not enough energy available.

The Importance of Measuring rT3

Attia also points out that assessing your thyroid function based on TSH alone can be misleading. If T4 is being shunted into rT3 rather than T3, you'll end up with symptoms that are near-indistinguishable from hypothyroidism, or low thyroid function, but the underlying mechanism is different and hence the treatment can backfire.

The problem is that hypothyroidism is typically treated with synthetic T4 supplementation, with the assumption that most people will convert that T4 into T3, via the D1 and D2 enzymes. As T3 increases, it will provide all the associated health benefits, while also suppressing TSH and TRH, thereby bringing everything back into homeostasis.

However, in some cases this doesn't work. The patient takes T4 hormone, yet feels worse, even if TSH improves. In this case, the T4 may simply be converted into rT3 by way of D3 enzyme, which is the exact opposite of what you want. As rT3 rises, the beneficial effects of T3 are blocked, growth and development is inhibited and metabolism slows to a crawl. Hence, the reason you're feeling so lousy.

Inflammation and insulin resistance are two factors that tend to drive this state. In cases like this, it may be far better to take T3, as that will bypass the erroneous conversion from T4 to rT3. T3 is available either as a compounded slow-release T3 formula, or as desiccated thyroid, which contains both T3 and T4.

Adrenal Gland Basics

Your adrenals are two triangular-shaped glands situated on top of each kidney. They produce more than 50 hormones, including cortisol, aldosterone and adrenaline. Like thyroid hormones, these hormones play important roles in your metabolism.

The primary differences between the two are that adrenal hormones regulate your physical and mental responses to stress, and affect your mood, immune function and

blood pressure, while thyroid hormones regulate your body temperature, energy and tissue growth.

While many bodily systems can be assessed using blood tests, there are no blood tests that can give you an accurate picture of your adrenal function. While cortisol is frequently tested using blood, what's being measured is your total cortisol, which includes both free and bound cortisol.

Most of the cortisol in your body is bound to various proteins and does not exert biological activity, so "high cortisol" on a blood test doesn't tell you much. What matters is the free cortisol because that's what has biological activity. One of the best tests for this is a urine test (DUTCH test), taken several times over 24 hours.

The DUTCH test will measure the amount of free cortisol, cortisone and their metabolites, alpha-tetrahydrocortisol (a-THF), beta-tetrahydrocortisol (b-THS) and tetrahydrocortisone (THE). These metabolites are important because that's how you can assess your adrenal output.

Adrenal Fatigue Is Rare

Fatigue and low energy are commonly blamed on "adrenal fatigue," the idea being that your adrenal output of cortisol can become insufficient from long-term stress.

According to Attia, this is rarely the case, even if free cortisol is low, and you can tell that by the metabolite levels.

Cortisol production is often normal, but the cortisol is either a) being degraded, b) too much of it is being converted into inactive cortisone, or c) instead of converting back to cortisol, the cortisone is metabolized into THE.

Enzymes called reductases regulate the conversion of cortisol and cortisone into their respective metabolites. Inflammation, obesity and other factors associated with poor health accelerate these conversions.

So, if you are feeling lousy and have no energy but your cortisol and cortisone metabolites indicate that production of these hormones is normal, then you need to address the underlying factors, i.e., the obesity, insulin and leptin resistance, and inflammation.

Low-Carb and Fasting Are Ill-Advised

As noted by Attia, weeklong fasting significantly deteriorates thyroid function, and that can be explained by the lack of nutrients during a fast. While he does not address this, the same applies to low-carb eating and time-restricted eating (TRE). All three of these strategies will activate your adrenals, trigger cortisol release and down-regulate your thyroid function and metabolism.

So, while low-carb and various fasting regimens can be helpful in the short term to address extreme obesity, I now believe there are safer, albeit slower, ways to address that.

As explained in "[Important Information About Low Carb, Cortisol and Glucose](#)," elevated cortisol is highly problematic, as it breaks down your lean muscle, bones and brain to make amino acids that your liver then converts to glucose. It also promotes inflammation and is a primary driver of aging.

If cortisol is chronically elevated, you will likely die prematurely, as it is highly catabolic, meaning it will break down your body tissues. Cortisol is released when your body doesn't have enough glucose available, so it's important to eat enough healthy carbs and not deprive your body of glucose for extended periods.

Are Your Adrenals Affecting Your Thyroid?

Your thyroid and adrenals work in tandem, so dysfunction in one can affect the other. For example, if you have low thyroid function and your adrenals aren't producing enough cortisol, it can worsen your symptoms. Since both are involved in metabolism,

dysfunction in either your thyroid or adrenals can also produce very similar symptoms, such as fatigue, memory impairment and low mood.

In the video above, Dr. Jinaan Jawad, a specialist in chiropractic and functional medicine, reviews how adrenal dysfunction can affect your thyroid function. Jawad likes to think of your adrenals as the "battery backup" for your thyroid. If your adrenals are overtaxed, your thyroid function will suffer.

If you're hypothyroid and on hormone replacement therapy, yet still experience symptoms of low thyroid function, you could be shutting down too much cortisol. To address this, Jawad recommends avoiding adrenal stimulators, such as:

Coffee, soda, energy drinks and other caffeinated and/or stimulating beverages

Refined sugars, high fructose corn syrup and artificial sweeteners. Jawad also recommends avoiding fruit, which I do not, for reasons I'll review later

Nicotine

Alcohol

Any food you have an allergy or sensitivity to (example: dairy, wheat, corn, gluten or shellfish), as these foods will cause a release of histamine and inflammatory chemicals that activate your fight-or-flight response

Seed oils (partially hydrogenated fats high in omega-6 linoleic acid) and any food made with them, which includes most processed and fast food. Examples include cottonseed oil, corn oil and canola oil. All of these oils inhibit adrenal hormone synthesis

Excessive exercise, as this keeps your body locked in fight-or-flight response

Adaptogens for Adrenal Support

If you're struggling with persistent stress, certain adaptogenic herbs can be useful. Adaptogens are unique in that they help your body adapt to stress, in part by regulating hormones and improving your immune function. Five of the most well-recognized **adaptogens for adrenal support** are:

- **Ashwagandha**, which helps your body adapt to stress by balancing your immune system, metabolism and hormonal systems. The root contains the highest concentration of active ingredients that modulate hormones, including thyroid hormone, estrogen, progesterone and testosterone.
- **Rhodiola**, which has been shown to be particularly beneficial for your nervous system. It has antidepressant and anti-anxiety benefits, and has been shown to reduce symptoms of burnout associated with work stress. Its energy and vitality-boosting effects can have clear benefits for those struggling with chronic fatigue. As an added boon, it tends to be fast-acting.
- **Asian (Panax) ginseng** — Like ashwagandha, Asian ginseng impacts thyroid hormones. More specifically, it contains properties that block production of excessive amounts of rT3. A study looking at the impact of ginseng injections found it produced healthy increases of T3 and T4 and a reduction in rT3.¹
- **Siberian ginseng (Eleutherococcus senticosus)** — Its active components are called eleutherosides, which are thought to stimulate your immune system. Like Asian ginseng, Siberian ginseng is an adaptogen that's traditionally been used to increase energy, stimulate the immune system and increase longevity.

It also has mild antidepressive effects, and is useful for insomnia, behavioral and memory problems, and has been shown to improve exercise endurance by improving oxygen utilization in your body.

- **Tulsi** — Highly revered in India for over 5,000 years, tulsi, also known as holy basil, has been valued for its many health-promoting properties. This herb is said to purify the mind, body and spirit, and has been cherished for its protective and uplifting nature.

Tulsi tea is an antioxidant-rich beverage with a complex and unique chemistry. It contains hundreds of beneficial phytochemicals – non-nutritive plant compounds with protective and health promoting properties. Working together, these compounds have adaptogenic and immune-enhancing properties that combat stress, bolster your immune system and promote healthy metabolism, including helping your body maintain an optimal level of blood sugar.

Sources and References

- ¹ [Chinese Journal of Integrated Traditional and Western Medicine January 2000; 6: 29-31](#)