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Report

Do You Suffer From Suboptimal Thyroid Function?

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Do you regularly experience any of the following symptoms?

- Unexplained fatigue
- Depression or anxiety
- Dry skin
- Feeling cold
- Brain fog
- Unexplained weight gain
- Low libido

These vague but troubling symptoms are often difficult to diagnose and are usually dismissed by physicians as “just getting older.” While this collection of symptoms affects women more than men, plenty of men experience this same feeling of being “run down” and “not themselves.”

These symptoms may be the warning signs of suboptimal thyroid function, a condition sometimes referred to as **subclinical hypothyroidism**.^{1,2}

Your doctor may have checked your thyroid using standard blood tests and declared you in the “normal” range. As you’ll learn in this article, too many people with suboptimal thyroid function are overlooked, and live with uncomfortable symptoms along with increased risks of common disorders.

Magnitude of Thyroid Deficit

More than 27 million Americans suffer from some form of thyroid condition, and nearly half of these, or about 13 million, remain undiagnosed.³

As a result, they agonize in silence with no apparent treatment for their underlying disorder. With age, the risk of having low thyroid function increases, especially in the elderly.^{3,4}

Mainstream medicine has largely been at a loss to recognize suboptimal thyroid function. Fortunately, several bioactive nutrients have been identified that address the main causes of suboptimal thyroid function.

Why Is the Thyroid Important?

The **thyroid gland** is part of the endocrine system that secretes hormones to regulate bodily functions such as burning fat for energy and maintaining proper blood lipid levels.

Daily stress, age, and poor diet can interfere with normal endocrine functioning. The thyroid hormones **T3** and **T4** play a

major role in metabolism and energy regulation. Like all aspects of biology, balance of **T3** and **T4** hormones is essential.



When the thyroid is sluggish, production of thyroid hormones slows down, resulting in diminished metabolic activity. Classic symptoms of **suboptimal thyroid function** include unexplained fatigue, depression, weight gain, and feeling cold at room temperature.

Suboptimal thyroid function is often overlooked by mainstream physicians. This is because the “normal” range for levels of **thyroid stimulating hormone** (TSH) is very broad. As a result, it is easy to overlook a thyroid gland problem. If someone falls into this “normal” range, doctors are hesitant to consider a thyroid deficit despite the outward symptoms.

When doctors test **thyroid stimulating hormone** levels, a score above or towards the high end of “normal” indicates a deficit of thyroid hormone levels.

The reason that a high **TSH** blood level indicates low thyroid status is that when your pituitary gland senses a thyroid hormone deficiency, it secretes lots of TSH (thyroid stimulating hormone) in attempt to restore normal thyroid hormone balance. Your thyroid gland, however, may not be responding to the TSH.

Thus, someone whose TSH levels are at the higher end of the normal range and with T4 and T3 levels in the low-normal range would be told by most doctors they do not have a thyroid problem, when in fact they may be suffering *suboptimal thyroid dysfunction*.

WHAT YOU NEED TO KNOW

Battle Suboptimal Thyroid Function

- Aging adults often suffer from a variety of vague complaints, such as fatigue, inexplicable weight gain, feeling cold, depression, and dry skin.
- A common explanation for such complaints is suboptimal thyroid function.
- Suboptimal thyroid function has three major causes: insufficient production of the important thyroid hormones T3 and T4, inadequate conversion of T4 into T3, and overproduction of reverse T3 (rT3), which blocks thyroid hormone receptors and degrades the natural effects of T3.
- All of these deficits can be addressed using natural approaches.
- Ashwagandha extract has been shown to enhance production of T3 and T4 in the thyroid.
- Guggul helps augment T4 to T3 conversion, boosting levels of the more active T3 hormone.
- Fermented Korean ginseng helps reduce concentrations of inactive, inhibitory rT3.
- These triple-acting ingredients are further supported by the addition of iodine and tyrosine, both essential parts of the final thyroid hormone molecule.



The Dangers of Suboptimal Thyroid Function

Most of the signs and symptoms of suboptimal thyroid function are so common and often so vague that mainstream physicians are likely to write them off as simply “normal aging,” or mild anxiety and depression.⁵

That’s a potentially deadly mistake. Studies show that suboptimal thyroid function can be an early stage of progression towards full-blown hypothyroidism.¹ Research indicates measurements of **TSH** above **2.0 μ IU/mL** increase the probability

of developing hypothyroidism.⁶ And both hypothyroidism and suboptimal thyroid function are linked to many preventable age-related health problems.

Please understand that normal **TSH** blood levels are considered to be around **0.45-4.5 µIU/mL**, which is a very wide (**10-fold**) range. Studies show that people with elevated TSH levels (higher than **4.0 µIU/mL**) are at a higher risk of **coronary heart disease** than age-matched controls.⁷ Such patients also display other risk factors that include higher levels of triglycerides, “bad” LDL and VLDL cholesterol, and lower levels and protective function of HDL (“good”) cholesterol.^{1,8-10}

Those with suboptimal thyroid function would likely go unnoticed by conventional physicians unless their TSH reading was over **4.5**. Life Extension[®] recommends optimal TSH levels should be between **1.0-2.0 µIU/mL**. There is substantial evidence of a connection between suboptimal thyroid function and metabolic syndrome, insulin resistance, and chronic kidney disease.¹¹

The connection between thyroid function and these conditions is logical: The thyroid gland governs metabolic rate and these conditions reflect reduced metabolism. This leads directly to obesity, as shown by studies linking increased body mass index (BMI) and waist circumference with elevated thyroid stimulating hormone (TSH).¹²

Once body fat begins to increase, metabolic syndrome is not far behind. In fact, four of the five metabolic syndrome components (increased waist circumference, elevated triglycerides, low HDL, and elevated glucose) have been associated with low-normal thyroid function, especially free T4 levels.¹³ Insulin resistance is a reflection of decreased transport of blood sugar into cells under the influence of insulin. Studies show that suboptimal thyroid function reduces cell membrane levels of the specific molecular glucose transporter that cells use to move that glucose inside.¹⁴

Chronic kidney disease arises when flow of blood through the kidneys becomes reduced enough to lower the amount of waste being filtered out and it is known to be associated with thyroid function.^{15,16} In a large population-based study of people in Norway with “normal” TSH levels, the higher the TSH (indicating lower thyroid function), the lower the kidney’s normal filtration rate.¹⁶ Those with TSH levels in the highest one-third of values were at a **31%** higher risk for advanced chronic kidney disease, compared with those in the lowest one-third.¹⁶

Major depression and bipolar disorder are other debilitating conditions that may be worsened by the presence of suboptimal thyroid function.¹⁷⁻¹⁹ One recent study found that women with the highest TSH levels (a sign that the thyroid is not keeping up) had an almost **124%** increased risk for major depression compared with those having the lowest levels.¹⁸

Making matters worse, studies have shown that people with major depression who *also* have suboptimal thyroid function are less likely to respond positively to antidepressant medications and are more likely to have anxiety in addition to depression.^{2,17} In a recent meta-analysis (a large study of data from numerous smaller studies), roughly **50%** of patients with difficult-to-treat depression had evidence of suboptimal thyroid function, while among patients who responded well to treatment, the prevalence was only **8% to 17%**.²

Women are not only more likely to have suboptimal thyroid function,²⁰ but also take the brunt of some of its other health threats, including amenorrhea (loss of menstrual periods)²¹ and bone fractures.²²

THYROID HORMONE DRUGS

Those with persistently low levels of **T3** and **T4** can ask their doctor for a prescription thyroid hormone drug such as **Armour[®] Thyroid**, **Nature-thyroid[®]**, or **Westhroid[™]**. These prescription medications contain desiccated porcine thyroid gland.

Natural thyroid extracts have been used since 1892 and were approved by the Food and Drug Administration in 1939. They have the advantage of containing both T4 and T3 compared to the commonly used **Synthroid**[®] medication which is T4 only. Those with problems converting T4 to more metabolically active T3 are less likely to benefit from a T4-only drug like Synthroid.



A starting dose is often **30 mg Armour**[®] **Thyroid** (about a half grain), with increments of **15 mg** every two to three weeks. However, it is important to dose it according to both lab work and symptoms discussed with your doctor. Thyroid hormone should never be dosed purely on lab numbers.

Naturally Boost Thyroid Production

There are three main underlying causes of suboptimal thyroid function:

- Insufficient production of the thyroid hormone T4
- Decreased conversion of T4 to T3 (T3 is the most active form)
- Increased production of inhibitory rT3 (reverse T3) that blocks normal thyroid function

A multifaceted problem requires treatment or prevention with multitargeted therapies.

Scientists have found that a combination of nutrients can address the three main contributors to suboptimal thyroid function with a **triple-action** approach. Preclinical and clinical research indicates:

1. **Ashwagandha** increases levels of the thyroid hormones **T3** and **T4**.²³⁻²⁶
2. **Guggul**, an extract of *Commiphora mukul*, enhances conversion of **T4** to **T3**.^{27,28}
3. An extract of **Korean ginseng** reduces concentrations of inactive, thyroid hormone-inhibiting rT3.²⁹

THYROID HORMONE BLOOD TESTING

Life Extension[®] offers a new **Thyroid Panel** that includes TSH, total T4, free T3, free T4, and reverse T3.

These tests can identify the most common reasons for thyroid insufficiency. There are other thyroid tests available, but for most people, the new **Thyroid Panel with Reverse T3** will detect the underlying causes of thyroid deficiency.

The retail price of this new **Thyroid Panel with Reverse T3** is **\$160**. Until February 1, 2016, the price has been reduced to **\$94**.

Those with outward symptoms of a thyroid deficiency might consider initiating a nutrient-based approach first, then having their blood drawn for this new thyroid panel within 45 days. This would enable the individual and their physician to ascertain if additional thyroid support measures are needed.

While you might wait until **January 2016** to have your blood drawn for this **Thyroid Panel with Reverse T3** panel, it is good to have the requisition and list of local blood draw stations on hand so you can have this test done at your convenience. To order this test today at more than **40% off** normal pricing, call **1-800-208-3444**.



Ashwagandha Boosts T3 and T4



Ashwagandha, a shrub grown in India, has a long medicinal history as an “adaptogenic” herb. Adaptogens have been utilized by traditional medicine to restore balance to the body.³⁰

Modern scientific techniques are revealing some of ashwagandha’s benefits that specifically apply to improving thyroid function. Ashwagandha supports thyroid function, in part, because it contains *glyco-withanolide* bioactive compounds that reduce stress and cortisol levels. Along with reducing stress hormones, the root extract of ashwagandha has been shown in preclinical studies to *increase* serum concentrations of **T3** and **T4**.^{25,26}

In an early animal study, mice were given ashwagandha root extract orally and their thyroid hormone levels were monitored. This treatment increased T3 by **18%** and T4 by **111%**, after just 20 days.³¹

Human studies are supporting this finding. In one study, a subset of patients (10 of the 60 subjects) showed evidence of suboptimal **thyroid function** along with bipolar disorder at the baseline start of the study.³² The patients were treated with **500 mg** daily of **ashwagandha**. At the end of the two-month treatment period, all of the patients receiving ashwagandha saw an improvement of TSH. Their T4 levels also increased from baseline by up to **24%**.³²

In the placebo subjects not supplemented with ashwagandha, T4 levels dropped from baseline by as much as **23%**, showing a significant decline in thyroid function. One unsupplemented patient’s TSH rose into the *abnormal* range, suggesting a worsening of thyroid function.

This study indicated that ashwagandha therapy can be a factor in improving the thyroid hormone T4 along with adjusting TSH levels.³²

Another mechanism by which ashwagandha supports and restores healthy thyroid function may be through its reduction of the stress hormone **cortisol**. People with thyroid diseases in general have elevated rates of depression and anxiety and other stress-related disorders. Elevations of cortisol and stress increase **reverse T3** (rT3), which interferes with T3’s beneficial activities.³³

As an *adaptogen*, ashwagandha is particularly effective at combatting stress because of its ability to restore balance in metabolism and body functions.³⁴ A human study of people with known chronic stress demonstrated that daily supplementation with **300 mg** of ashwagandha (high-concentration, full-spectrum root extract), significantly lowered both scores on a stress assessment scale and serum cortisol levels. As the study’s authors concluded, “*The findings of this study suggest that a high-concentration full-spectrum ashwagandha root extract safely and effectively improves an individual’s resistance towards stress and thereby improves self-assessed quality of life*.”³⁴

Guggul Extract Increases T3 Hormone

Guggul (*Commiphora mukul*) is a natural extract of the sap from the Indian myrrh tree.

Scientists are discovering that guggul helps fight against suboptimal thyroid function by enhancing the *conversion* of **T4** to **T3**, which is the more potent form of the thyroid hormone.^{27,28}

Traditionally, guggul has been used for treating low metabolism, which is frequently seen in suboptimal thyroid function.³⁵

Guggul contains *ketosteroid* molecules, which have shown strong thyroid-stimulating properties.



One study found that when rats were administered **guggul**, it increased iodine uptake by the thyroid gland and increased activity of vital thyroid enzymes. This resulted in increased oxygen consumption, demonstrating a true thyroid-enhancing metabolic effect.³⁶

A preclinical study helped explain how guggul enhances thyroid function. In the study published in *Life Sciences*, researchers found that guggul supplementation increased the blood concentration of the potent **T3** thyroid hormone. This was accomplished by improving the conversion of lower-potency **T4** to the more active **T3** hormone.²⁸

In yet a third study, guggul was found to increase the activity of the specific enzyme (*5'-deiodinase*) that converts T4 to T3.^{27,37}

Every cell in the body depends upon thyroid hormones for regulation of their metabolism. The normal thyroid gland produces about **80%** T4 and about **20%** T3. Most T3 is formed in the peripheral tissues by the conversion of T4 to T3 by the *5'-deiodinase* enzyme. T3 possesses about **four times** the hormone “strength” as T4.^{38,39}

Korean Ginseng Reduces rT3 Production

Korean ginseng, also an *adaptogen* like **ashwagandha**, contains properties known as **ginsenosides** that have been shown to support thyroid function through a unique pathway.

With age, we accumulate an unhealthy amount of a deleterious hormone known as **reverse T3** (rT3).

Reverse T3 is the *inactive* form of thyroid hormone or the reverse of the healthy T3 hormone. The problem with excess **reverse T3** is that it will bind to normally functioning T3 receptors and inhibit active T3, thereby reducing vital metabolic activity.^{40,41}

Traditional Asian practitioners discovered that Korean ginseng is an effective way to stop this action of **reverse T3** from destroying the body’s healthy **T3** activity.

This finding led to the development of a novel fermented ginseng preparation that provides not only higher amounts of *ginsenoside* compounds but also enhanced absorption. Studies in humans reveal that, compared with standard ginseng extracts, a specialized form of fermented ginseng extract (called GS15-4) is absorbed **15.5 times** as much in 24 hours, achieves a **27-fold** higher peak concentration in blood, and reaches that peak in roughly a quarter of the time (3.29 hours versus 12.04 hours).⁴²

A human study of 54 adults with congestive heart failure demonstrated just how much of an impact ginsenosides from ginseng had on thyroid hormone levels.²⁹ At the outset of the study, all of the subjects with heart failure had *reduced* levels of **T3** and **T4** along with higher levels of inhibitory rT3. Treatment with the ginseng extract (by injection) resulted in improved clinical outcomes in all patients. What the researchers found was a healthy *increase* of **T3** and **T4** levels, and a significant *reduction* in the inhibitory **rT3** levels.²⁹

Another study looking at the application of Korean ginseng was evaluated to assess its effects on a classic symptom of **suboptimal thyroid function**, cold hands and feet. This symptom is more prevalent amongst women than men and is often a result of an imbalance of the thyroid hormones. Eighty female patients were given **500 mg** of Korean ginseng powder in capsule form for eight weeks. Using various forms of measurement, the researchers noted that those women who ingested the Korean ginseng during the study all had “**significantly higher skin temperature of the hands and feet.**”⁴³

Korean ginseng has also been found in randomized controlled trials to improve a lack of sexual arousal in women and reduce fatigue—both of which are common symptoms of low thyroid function.⁴⁴⁻⁴⁶

Additional Thyroid Support

Along with the traditional herbs of ashwagandha, guggul, and Korean ginseng, four compounds have been found to further strengthen thyroid function, including the two building blocks of T4 and T3.

These four thyroid-supporting nutrients are:

- **Iodine** , an absolute requirement for normal thyroid hormone function (each molecule of T3 has three iodine atoms attached, while each T4 has four)
- **Tyrosine** , the amino acid from which T3 and T4 are derived by the enzymatic addition of iodine atoms^{47,48}
- **Vitamin B12** , which is often deficient in patients with thyroid disease^{49,50}
- **Vitamin A** , which has been shown to improve serum TSH levels, in part by raising serum T3 levels, helping to reverse the state of suboptimal thyroid function.⁵¹ Low thyroid function can impair the conversion of beta carotene into vitamin A.⁵²

Summary

Suboptimal thyroid function is a major hidden threat, particularly among women and older Americans. It may explain many of the vague and difficult-to-pin-down symptoms that plague us all as we grow older.

Ignoring or waving away symptoms of suboptimal thyroid function is a dangerous approach because the condition is strongly associated with many chronic disorders of aging, especially cardiovascular disease and metabolic syndrome.

It can be difficult to recognize **suboptimal** thyroid function, particularly when those who have the condition may have laboratory results that fall within the conventional “normal” range. It is not difficult, however, to take steps aimed at resolving it.

If you have symptoms that might be attributable to suboptimal thyroid function, such as fatigue, dry skin, feeling cold, unexplained weight gain, or depression, consider supplementing with fermented Korean ginseng extract, ashwagandha, and guggul, along with vitamins and nutrients that support thyroid function.

Korean ginseng extract , **ashwagandha**, and **guggul** target three important mechanisms that contribute to suboptimal thyroid function: They raise circulating levels of the thyroid hormones T4 and T3, boost activity of the enzyme responsible for converting T4 to active T3, and reduce thyroid-hormone-blocking reverse T3 (rT3).

If you suffer from any of the many complaints that can arise from suboptimal thyroid function, you may find surprising relief from using nutrients that boost thyroid function by directly reversing the three major processes that degrade thyroid function and leave you vulnerable.

If you have any questions on the scientific content of this article, please call a Life Extension[®] Health Advisor at 1-866-864-3027.

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