



Hypothyroid Support



Clinical Applications

- Reduces symptoms of hypothyroidism
- Improves thyroid hormone production
- Lowers the risk of disease progression

Indications

- Patients on thyroid medication
- Patients not on thyroid medication
- Hypothyroid patients with or without thyroid antibodies
- Helpful for those who no longer have a thyroid

Hypothyroidism - Overview

Hypothyroidism is when the body has insufficient thyroid hormone for optimal function.

The term hypothyroidism can be used in several ways.

1. **Etymology** - lack of thyroid hormone.
2. **Symptom descriptor** - symptoms commonly associated with low thyroid function, such as weight gain, fatigue, or hair loss.
3. **Diagnostic category** - a markedly elevated TSH combined with a T4 or fT4 below the normal range.

Hypothyroidism/Hashimoto's

Hypothyroidism is the lack of thyroid hormones, and Hashimoto's is the autoimmune process that is the most common cause of hypothyroidism.

Hypothyroidism and Hashimoto's can independently cause symptoms. For more on the relevance of Hashimoto's, refer to the Antibody Support Monograph.

Diagnostic Categories

Like many conditions, hypothyroidism exists along a spectrum. In the later stages, the pituitary gland has maximally elevated its signal, Thyroid Stimulating Hormone (TSH, AKA Thyrotropin), which mandates the thyroid to produce hormones.

Despite this strong signal, the gland is unable to produce any hormone. At the earliest stages, the gland can produce hormones but requires a stronger signal than typical for it to do so. Symptoms and medical risks may emerge at any stage of this continuum, yet they are not consistently correlated with thyroid levels. Some patients have many pronounced symptoms at early levels of dysfunction, yet others have few, if any, symptoms at later stages.

For this discussion, T4 and T3 will be used interchangeably with total T4/T3 and free T4/T3.

Patients who undergo complete thyroidectomies or radioactive iodine ablation are considered to have procedural hypothyroidism and are treated as overt hypothyroidism.

Subclinical Hypothyroidism

At this stage, T4 is normal, but TSH is above range and generally below 20. Patients often have symptoms, but their presence or absence does not change the diagnosis.

Suboptimal Thyroid Function

This term is not strictly defined. It can encompass any other reason patients may have thyroid-related symptoms.

Thyroid treatment typically includes nutraceuticals, dietary changes, or thyroid medication.

Table 1: Types of Thyroid Dysfunction

↔ = normal, ↓ = below range, ↑ = above range

		TSH	T4/FT4	T3/FT3
Optimal Thyroid Function*		0.4 - 2.0	↔	↔
Suboptimal Thyroid Function*		2.1 - 4.5	↔ or ↓	↔, ↓, or ↑
Subclinical Hypothyroidism		4.5 - 10.0	↔	↔ or ↓
Overt Hypothyroidism	Stage 1	> 10	↓	↔ or ↓
	Stage 2	> 10	↓	↓

* Extenuating factors include age, pregnancy status, and cardiovascular health.

Overt Hypothyroidism

This category includes the most advanced stages of the disease. Here the thyroid cannot make adequate amounts of T4 even under a high pituitary signal. Overt hypothyroidism is a TSH elevated above range and a T4 below range. T3 may be low at stage 2, but not at stage 1. Symptoms are generally present, but their absence does not rule out the diagnosis.

Some practitioners initiate thyroid treatment for unresolved symptoms such as weight gain or fatigue. Some do because of normal thyroid levels but not considered optimal, such as a TSH above 2.0 or T3 on the low end of the normal range. Others initiate thyroid treatment due to factors such as low basal body temperature, the presence of thyroid antibodies, or delayed Achilles tendon reflexes.

To Medicate or Not

An emerging concept is that medications do not always reverse the symptoms of hypothyroidism, even when they restore blood levels to normal. The likelihood of their efficacy is not certain in any level of hypothyroidism but becomes less probable in milder states.

Overt

In overt hypothyroidism cases, medications reduce associated risks for morbidity and mortality and often reduce some degree of symptoms. Yet most of these patients find that medications do not completely resolve all hypothyroid symptoms.

Subclinical and Suboptimal

For patients with early hypothyroidism, medications have not been shown to lower symptoms, improve quality of life, or lower morbidity and mortality.¹ This is not to say that individual patients never perceive benefits. But when groups of such patients who are medicated are compared against matched groups who are not, no benefits are apparent.

Nutraceuticals can help

High-quality evidence has shown that select nutraceuticals can benefit patients in all stages of hypothyroidism. This can be true even when medications are not helpful. Nutraceutical therapy can be used in patients not taking thyroid medication or in those who are.

Documented benefits include:

- Weight loss
- Improved energy
- Lowered risk of disease progression
- Improved thyroid function
- Improved quality of life
- Prevention of associated co-morbidities

Nutraceuticals for Hypothyroidism

Comprehensive literature analysis has been done on the usage of nutraceuticals for hypothyroidism. Criteria employed include efficacy in human studies, safety, availability, and compatibility with thyroid medications when taken at least an hour apart.

Given those criteria, the following nutraceuticals are safe and beneficial for hypothyroidism.

Vitamin A

Mechanisms of Action

Vitamin A and its precursor beta carotene are essential in regulating thyroid hormone metabolism. Vitamin A supplementation in humans can downregulate excessive TSH- β gene expression leading to normalized TSH output. A lowered TSH output means the thyroid can secrete hormones more efficiently.

Clinical Trials

Researchers conducted a 4-month randomized, double-blind study with healthy adult women. The study aimed to see the effects of vitamin A supplementation on obesity and thyroid function.

Researchers gave participants a Vitamin A supplement or placebo and tracked body weight and thyroid function. Many participants had varying degrees of obesity and hypothyroidism.

Compared to those on the placebo, those taking Vitamin A saw significant reductions in hypothyroidism and decreased body weight. Specifically, TSH levels lowered, and T3 levels improved. No significant side effects were noted.²



Image 1: Decrease in Fat Mass³

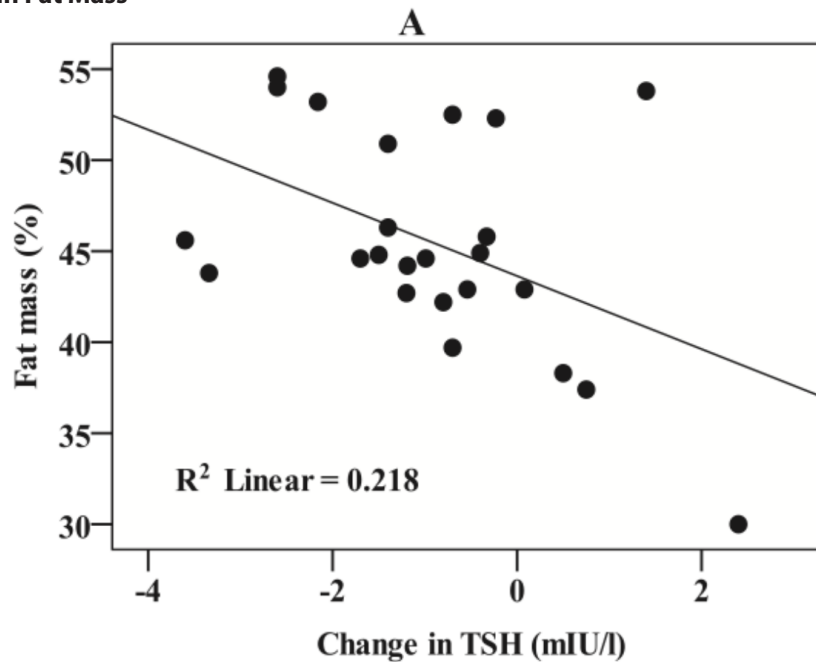


Table 2: Improvement in TSH and T3⁴

Parameter	OA Group (n = 27)	OP Group (n = 23)	N Group (n = 25)	p
TSH (mIU/l)	-0.90 ± 0.93	-0.4 ± 0.69	-1.11 ± 0.29	0.36
T3 (nmol/l)	0.77 ± 0.08	0.59 ± 0.07	1.14 ± 0.15	0.04 [†]
T4 (nmol/l)	-20.48 ± 5.69	-22.90 ± 5.54	-27.76 ± 5.75	0.25

Data are presented as mean ± SEM.

TSH = thyroid-stimulating hormone, T3= triiodothyronine, T4=thyroxine.

[†] Nonobese group has significantly higher levels than obese groups (multiple comparison using Tukey’s post hoc test).

Riboflavin

Mechanisms of Action

Low riboflavin levels can cause diseases such as anemia, cataracts, migraines, and thyroid dysfunction. Riboflavin, also known as Vitamin B2, plays an essential role in the production of glutathione peroxidase. People with thyroid disease have greater demands on glutathione peroxidase production, and they may be less able to convert riboflavin to active forms such as riboflavin 5 phosphatase.⁵

Riboflavin supplementation can reduce the proinflammatory cytokines and oxidative stress that correlate with the progression of hypothyroidism.

Clinical Trials

A group of 387 adults, primarily women, underwent laboratory testing for thyroid health and micronutrient status. They were divided by thyroid function and micronutrient status.

Of the measured micronutrients, riboflavin had a clear association with healthy T4 status and lower rates of severe hypothyroidism.⁶



Folate (L-5-Methyltetrahydrofolate Calcium)

Mechanisms of Action

Patients with thyroid disease commonly lack Folate.⁷ The connection occurs because the genetics of thyroid disease correlates with gene variations of folate metabolism.⁸

Clinical Trials

Hypothyroid patients treated with thyroid medication have higher risks for premature coronary artery disease than untreated peers. This risk correlates with hyperhomocysteinemia. In a study of hypothyroid women, folic acid supplementation helped lower these risks to baseline levels.⁹

A recent screening study showed that adults lacking in folate are more likely to have higher TSH levels in a dose-related association.¹⁰

Copper

Mechanisms of Action

Copper is the third most abundant mineral in the human body. It plays a critical role in many facets of thyroid function, including hormone production, cellular utilization, and the protection of thyrocytes.

Copper is involved with thyroxine formation from the thyroid and the uptake of thyroid hormones in peripheral metabolism. It also is an essential component of the thyroid's endogenous antioxidant superoxide dismutase.¹¹

Clinical Trials

In a group of adults, copper levels were measured along with thyroid function status. Mild copper deficiencies were associated with all types of thyroid dysfunction, including elevated TSH, low T4, and low T3. Low copper was also highly associated with thyroid nodules.¹²

In a group of hypothyroid adults, a 64% increase in copper correlated with a decrease in TSH scores from 42 to 3 and normalization in both T3 and T4.

Table 3: Copper and Thyroid Levels

Variable	Control Subjects	Hypothyroid Subjects
Serum Copper (µg/dL)	114.97	73.86
TSH (µIU/mL)	3.86	42.07
T4 (µg/dL)	7.10	3.43
T3 (ng/mL)	1.15	0.44

Methylsulfonylmethane (MSM)

Mechanisms of Action

T3 and T4 are converted into sulfated forms in the liver and the intestinal tract. As much as 20% of the thyroid hormone in the body resides in sulfated storage.¹³ These sulfated forms are temporarily inactive but can be drawn on to offset hypothyroidism.¹⁴

The ability to sulfate thyroid hormones is conditional upon bioavailable sulfur compounds. Methylsulfonylmethane (MSM) is an ideal source of sulfur due to its excellent safety and absorption. In addition to the sulfation of thyroid hormones, MSM has been clinically proven to benefit complications associated with hypothyroidism, including chronic pain, inflammation, and oxidative stress.¹⁵

L-Valine

Valine is an essential amino acid and one of the branched-chain amino acids. It is considered the single most rate-limiting amino acid for the retention of lean body mass and muscle protein synthesis.¹⁶

Clinical Trials

A group of patients undergoing thyroidectomy was monitored for the effects of hypothyroidism on health and amino acid status.

Adverse changes in branched-chain amino acids correlated strongly with hypothyroidism and the associated weight gain.¹⁷

In a separate trial, adults with varying thyroid function levels were evaluated for micronutrient status. Higher Valine status was associated with improved levels of T4 and free T4.¹⁸

Withania Somnifera (Ashwagandha)

Ashwagandha has been clinically proven to improve hypothyroid symptoms such as low energy output and impaired basal metabolic rate.¹⁹ Studies have shown that it can be instrumental in normalizing one of the causal factors of thyroid disease, impaired pituitary hypothalamic axis (HPA).^{20,21}

Clinical Trials

In a clinical trial, ninety adults with subclinical hypothyroidism were identified by researchers and treated with Ashwagandha. Compared to the placebo group, those taking Ashwagandha showed significant improvements in all markers of hypothyroidism, including TSH, T4, and T3.²²

Table 4: Changes in Thyroid Levels from Ashwagandha

	TSH (μIU/mL)	T4 (nmol/L)	T3 (nmol/L)
Baseline	6.51	95	1.18
8 Weeks	5.28	115	1.73
% Change	-18.9	+21.1	+46.6

Supportive Strategies for Hypothyroidism

Hypothyroid Support is best used as part of a comprehensive protocol aimed at improving thyroid hormone production and utilization.

Helpful additional measures include:

- Thyroid Specific Multivitamin - Thyroid Daily
- Management of thyroid antibodies - Antibody Support
- Iodine regulation per The Thyroid Reset Diet
- Correction of abnormalities of cortisol slope

Hypothyroid Support Dosage

1 capsule once daily with food or as recommended by your health care professional.

Does Not Contain

Hypothyroid Support does not contain iodine, gluten, corn, yeast, soy, GMOs, dairy products, artificial colors, artificial flavors, or preservatives.

Supplement Facts

Serving Size 1 Capsule
Servings Per Container 60

Amount Per Serving		%DV
Vitamin A (as Beta Carotene)	500mcg	56%
Riboflavin (as Riboflavin-5-Phosphate Sodium)	1mg	77%
Folate (as L-5-Methyltetrahydrofolate Calcium)	100mcg DFE (60mcg Folic Acid)	25%
Copper (as Copper Citrate)	0.5mg	56%
Methylsulfonylmethane (MSM)	100mg	†
L-Valine	100mg	†
Ashwagandha	50mg	†

† Daily Value not established.
†† Daily Values based on a 2,000 calorie diet.

Other Ingredients: Hypromellose (Capsule), Rice Flour, L-Leucine.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Side Effects

The ingredients in Hypothyroid Support are categorized as Generally Recognized as Safe (GRAS) by the FDA.

Common side effects to GRAS ingredients are similar to the rates of side effects to placebo and can include nausea, headache, and fatigue. Inform your doctor or pharmacist about any possible side effects of supplements or medications.

Cautions

Timing

- Hypothyroid Support must be taken at least an hour after thyroid replacement medication.

Medication Compatibility

- Those on prescription medications are advised to consult their doctor or pharmacist about any known interactions between their medications and the ingredients found in Hypothyroid Support.

Dosage Modification

- Those taking Hypothyroid Support while on thyroid replacement medication (hypothyroidism, Hashimoto's) or thyroid suppression therapy (Graves' Disease) are advised to monitor thyroid levels closely. When thyroid antibodies reduce, some need decreases or other adjustments to their medication.

Allergy Warning

- This product is contraindicated in an individual with a history of hypersensitivity to any of its ingredients.

Pregnancy Warning

- If pregnant, nursing, do not use unless on the advice of and under the direct supervision of a health professional.

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