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PATIENT GUIDE

Thyroid treatment *for an underactive thyroid*

Hypothyroidism is treated by replacing the hormone the thyroid no longer makes. We set out how the diagnosis is made, what the trials found, and how the available preparations differ.

HORMONES	CLASS	FORMS	STATUS	SOURCES
T4 and T3	Thyroid hormone	Tablet or capsule	Varies by product	29 · PMID linked

§ 01

Overview

The thyroid gland sits low in the front of the neck and makes two hormones, thyroxine (T4) and a smaller amount of triiodothyronine (T3). When it makes too little, people often notice tiredness, weight gain, constipation, feeling cold or low mood. The condition affects about 2 percent of adults in the United States, and about 22 million received a levothyroxine prescription in 2024.[21]

Treatment replaces the hormone the gland no longer makes. The American Thyroid Association task force on thyroid hormone replacement concluded that "levothyroxine should remain the standard of care for treating hypothyroidism" and that it "found no consistently strong evidence for the superiority of alternative preparations".[1] This guide covers levothyroxine, liothyronine as a tablet and as a compounded sustained release capsule, compounded capsules combining T3 with T4, and thyroid extract.

2%	**Of American adults have hypothyroidism.** The FDA also counts about 1.5 million patients a year who receive animal derived thyroid extract rather than a synthetic hormone.[21]
1.6	**Micrograms per kilogram a day.** The levothyroxine label gives this as the full replacement dose for an adult, adjusted in steps of 12.5 to 25 mcg every 4 to 6 weeks.[22]
14	**Trials of adding T3 to T4.** The joint statement of the American, British and European thyroid associations opens by noting that fourteen trials "have not shown a consistent benefit".[2]
4.2 to 1	**The T4 to T3 ratio in thyroid extract.** The ATA notes this "is significantly lower than the 14:1 ratio of secretion by the human thyroid gland", so blood T3 can run high.[1]

§ 02

What thyroid hormone is

Levothyroxine is synthetic T4, chemically identical to the thyroxine the human thyroid makes, supplied as tablets in twelve strengths from 25 to 300 mcg as well as capsules, an oral solution and an intravenous form.[22] [23] Liothyronine is synthetic T3, the form that does the work inside the cell. It comes as tablets of 5, 25 and 50 mcg, and microgram for microgram it is about four times as potent as T4. [24] [22]

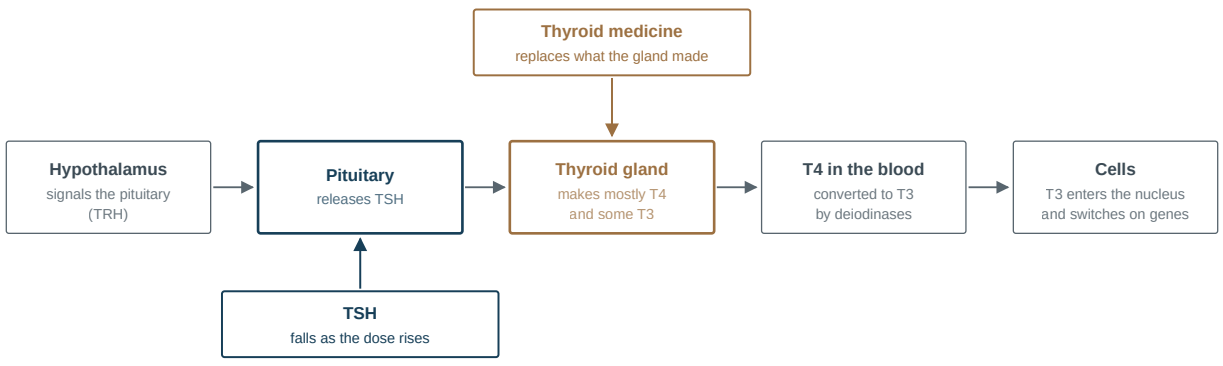
A compounding pharmacy can prepare liothyronine as a capsule that releases the hormone at once or slowly through the day, and can put T3 and T4 together in one capsule. These are made for a named patient on a prescription and are not FDA approved.[25] Thyroid extract is made from dried, ground pig thyroid glands, so alongside T4 and T3 it carries other material from the gland; each grain of Armour Thyroid provides 38 mcg of levothyroxine and 9 mcg of liothyronine. [21] [26]

THYROID HORMONE AT A GLANCE	
Hormones	Thyroxine (T4) and triiodothyronine (T3)[22]
Also called	Levothyroxine for T4, liothyronine for T3; extract is sold as thyroid tablets USP[26]
Origin	Synthetic and identical to the human hormones, or dried pig thyroid gland[22] [21]
Class	Thyroid hormone replacement; not a controlled substance[22]
How it is given	By mouth, once daily in most cases, as a tablet or a compounded capsule[22] [24]
Approval	Levothyroxine and liothyronine tablets are FDA approved; compounded capsules and thyroid extract are not[23] [25] [21]

§ 03

How thyroid hormone works

Thyroid hormone production runs on a feedback loop. The hypothalamus signals the pituitary gland, the pituitary releases thyroid stimulating hormone (TSH), and TSH drives the thyroid to release its hormones. Because the pituitary senses how much hormone is circulating, TSH falls as a replacement dose rises, so TSH rather than how a person feels on a given day is used to judge the dose. In the less common secondary and tertiary forms of hypothyroidism, where the pituitary or hypothalamus has failed, TSH is not reliable and the free T4 level is used instead, aiming for the upper half of the range.[22]



Thyroid medicine takes the place of the gland's output, and the pituitary responds by releasing less TSH. About 80 percent of the T3 in the blood is made from T4 by removing one iodine atom in the tissues, so a dose of T4 keeps a reservoir the body draws on.[22] Both hormones work inside the cell, where they bind receptor proteins attached to DNA and start the making of messenger RNA. [22]

Most of what the gland secretes is T4, which acts as a reservoir: enzymes called deiodinases remove one iodine atom in the tissues to make T3, and about 80 percent of the T3 in the blood arrives this way. T3 and T4 then diffuse into the cell nucleus and bind receptor proteins attached to DNA, which starts the making of messenger RNA and the proteins that carry the hormone's effects.[22]

KEY POINT

T4 leaves the body slowly, with a half life of 6 to 7 days, so one tablet a day produces a level that barely moves. T3 is almost completely absorbed, 95 percent of it within four hours, and its half life is about two and a half days, so it rises and falls within the day.[22] [24] A preparation that released T3 slowly would smooth that out, and the ATA listed its development among the field's research needs.[1] No such product has been approved in the United States.[23]

§ 04

What the research shows

What the evidence supports

Levothyroxine alone relieves hypothyroidism. The ATA recommends it "as the preparation of choice for the treatment of hypothyroidism", a strong recommendation on moderate quality evidence, citing its efficacy in resolving symptoms, long experience of its benefits, good intestinal absorption, long half life and low cost. The FDA states that society guidelines recommend it as the preferred treatment.[1] [21]

Treating mild hypothyroidism rarely changes how people feel. In the TRUST trial, 737 adults aged 65 or older with a TSH of 4.60 to 19.99 mIU/L and a normal free thyroxine took levothyroxine or placebo for a year. TSH fell from a mean of 6.40 to 3.63 mIU/L on treatment, yet the change in the hypothyroid symptoms score was 0.2 in both groups and no secondary measure improved.[3] A guideline panel that reviewed 21 trials in 2,192 participants issued a strong recommendation against thyroid hormones for adults with this pattern, setting aside women trying to conceive, a TSH above 20 mIU/L, severe symptoms and adults aged 30 or under.[4] The AACE and the ATA conclude that the decision to treat below a TSH of 10 mIU/L "should be tailored to the individual patient".[5]

Adding T3 has not improved outcomes across the trials as a group. A meta analysis of 11 randomized trials in 1,216 patients found no difference between combination therapy and levothyroxine alone in bodily pain, depression, anxiety, fatigue, quality of life, body weight or any lipid measure, and concluded that "T4 monotherapy should remain the treatment of choice".[6] Two further randomized trials agreed: in 46 patients over four months, and in 141 thyroidectomized patients over six months, adding liothyronine left quality of life, cognitive testing and tissue markers unchanged.[7] [8]

Some patients do prefer a regimen containing T3. Among 141 patients randomized to levothyroxine alone or to combinations in ratios of 10 to 1 and 5 to 1, the study medicine was preferred by 29.2, 41.3 and 52.2 percent of the three groups, with no questionnaire or cognitive test explaining it, and 44 percent of those preferring the combination had a TSH below 0.11 mU/L.[9] In a crossover trial of 75 patients the three regimens matched overall, yet the third who were most symptomatic on levothyroxine preferred those containing T3 and scored better on symptom, mood and visual memory measures.[10]

Thyroid extract performed much like levothyroxine in the two randomized trials of it. Seventy patients took extract or levothyroxine for 16 weeks each in random order, with no differences in symptoms or neurocognitive measurements. They weighed 3 lb less on extract (172.9 against 175.7 lb), and 34 patients (48.6 percent) preferred extract against 13 (18.6 percent) who preferred levothyroxine.[11] A systematic review to January 2024 found only those two trials alongside nine weaker studies, which favored extract; extract was also linked to a higher heart rate and lower HDL cholesterol, with conflicting results.[12]

Taking too much carries measurable risk. Cohorts covering 2,007 older people, 17,684 patients on thyroxine and 70,298 participants from 13 studies all link a suppressed TSH to atrial fibrillation and to fractures. The figures are in §07.[13] [14] [15]

What is not yet known

No trial of combination therapy or of thyroid extract has been long enough or large enough to measure effects on the heart, the bones or survival, which is part of the ATA's reason for recommending against routine use of both; the review of extract concluded that "data on long term effects and side effects are lacking".[1] [12] Why a minority of patients remain symptomatic on a normal TSH is unsettled, and variants in the DIO2 gene, which affects the enzyme that converts T4 to T3, did not predict who responded in either the crossover trial or the thyroidectomy trial. [10] [8] The joint ATA, British and European statement found equipoise for a new, properly powered trial. [2]

Compounded thyroid hormones have never been compared with FDA approved preparations in a published study, and the FDA states that extract tablets made from the same batch of animal material may not always provide the same hormone levels.[1] [21]

THE MAIN HUMAN TRIALS All randomized.

STUDY	N	WHO AND HOW	MAIN FINDING
Grozinsky Glasberg 2006[6]	1,216	Meta analysis of 11 trials, T4 plus T3 against T4	No difference in pain, mood, anxiety, fatigue, quality of life, weight or lipids
Clyde 2003[7]	46	T4 cut 50 mcg, T3 7.5 mcg twice daily, 4 months	No benefit in quality of life, weight, lipids or 12 of 13 cognitive tests
Appelhof 2005[9]	141	T4 alone or 10 to 1 and 5 to 1 combinations, 15 weeks	Preference 29.2 against 41.3 and 52.2 percent; no change in tests
Hoang 2013[11]	70	Crossover, thyroid extract against T4, 16 weeks each	No difference in symptoms or cognition; 48.6 percent preferred extract
Shakir 2021[10]	75	Crossover, T4 against T4 plus T3 against extract, 22 weeks	No differences except a minor heart rate rise on extract
TRUST 2017[3]	737	Age 65 and over, TSH 4.60 to 19.99, 1 year	No change in symptom or tiredness scores against placebo

SUMMARY

Levothyroxine alone is the treatment the evidence supports, and every alternative has been tested against it without showing a consistent advantage. A minority of patients prefer a regimen containing T3, and that preference is real even though the questionnaires and cognitive tests did not explain it. Mild hypothyroidism usually does not need treating. The clearest harm in the whole literature comes from too much hormone rather than too little, so the dose is set against blood tests.

§ 05

How thyroid treatment is given

All four preparations are swallowed, once a day in most cases. The doses below for levothyroxine and liothyronine come from their FDA labels; the compounded capsules and thyroid extract have no approved label dose, so for those the physician sets the dose against your blood tests.[22]

Taking it so that it is absorbed

Absorption of swallowed T4 ranges from 40 to 80 percent, and is about 70 to 80 percent when fasting. The label asks for a single daily dose "on an empty stomach, one half to one hour before breakfast", at least 4 hours away from medicines known to interfere; the ATA puts it as 60 minutes before breakfast or at bedtime, 3 or more hours after the evening meal, the same way every day.[22] [1] Calcium, iron and bile acid binders bind levothyroxine and belong 4 hours apart from it; antacids, sucralfate and proton pump inhibitors reduce the stomach acidity absorption depends on, and soy flour, walnuts, fiber and grapefruit juice all interfere. [22] Coffee swallowed with two 100 mcg tablets lowered the average rise in serum T4 by 36 and 29 percent in two groups and delayed the peak by about 40 minutes, while coffee an hour later made no difference. [16]

Levothyroxine

The label gives a full replacement dose of 1.6 mcg per kilogram a day for an adult, adjusted in steps of 12.5 to 25 mcg every 4 to 6 weeks until thyroid function is normal; adults at risk of atrial fibrillation or with heart disease, and older patients, start lower. Doses above 200 mcg a day are seldom required, and the peak effect may take 4 to 6 weeks to appear, so TSH is measured 6 to 8 weeks after any change and every 6 to 12 months once the dose is stable.[22]

Levothyroxine has a narrow therapeutic index, and different products of the same strength can give slightly different blood levels. The ATA advises staying on brand name levothyroxine or on the same identifiable generic rather than moving between products, and checking TSH again once a new formulation has reached steady state, so tell us if your pharmacy substitutes one manufacturer for another.[1]

Liothyronine tablets

The label gives a starting dose of 25 mcg once daily, increased by 25 mcg every one or two weeks if needed, with a usual maintenance dose of 25 to 75 mcg once daily; older patients and those with heart disease start at 5 mcg. Because liothyronine acts quickly while the effect of a previous preparation lingers for several weeks, the label asks that levothyroxine be stopped and liothyronine begun at a low dose when a patient is switched.[24]

Compounded capsules, and thyroid extract

No regulator has set a dose for a compounded capsule, so the figures that exist come from trials: 50 mcg less T4 with 7.5 mcg of T3 twice daily, and ratios of 10 to 1 and 5 to 1 by weight.[7] [9] A review by the authors of several of those studies suggests reducing levothyroxine by 25 mcg a day and adding 2.5 to 7.5 mcg of liothyronine once or twice daily as a starting point. [17] No sustained release liothyronine product has been approved or tested in a published trial, so a compounded sustained release capsule carries neither an approved dose nor trial evidence of its own. [23] [2]

Extract is prescribed in grains, each grain of Armour Thyroid providing 38 mcg of T4 and 9 mcg of T3, and the product labeling asks that treatment begin at 15 to 30 mg in older patients and in anyone with angina.[26] The dose is titrated against TSH; in the review cited above, the mean daily dose needed to bring TSH into range contained about 11 mcg of T3. [17]

COMPARING THE OPTIONS

	LEVOTHYROXINE	LIOTHYRONINE TABLET	COMPOUNDED CAPSULE	THYROID EXTRACT
Hormone	T4[22]	T3[24]	T3, or T3 with T4	T4 and T3 at 4.2 to 1[1]
Label dose	1.6 mcg/kg/day[22]	25 to 75 mcg daily[24]	None	None
Guideline view	Preparation of choice[1]	Not advised routinely with T4[1]	Against routine use[1]	Against, in favor of T4[1]
FDA approved	YES	YES	NO	NO

§ 06

What to expect

The first two months. The full effect of a dose may take 4 to 6 weeks to appear, so the first blood test comes 6 to 8 weeks after starting or after any change.[22] Most people find that tiredness, cold intolerance and constipation ease as the TSH comes down. In the trials of mild hypothyroidism symptom scores did not move, so the benefit tracks how far the thyroid has actually fallen short.[3] [4]

Once the dose is settled. Thyroid function is reviewed every 6 to 12 months, and sooner if anything changes clinically.[22] Weight changes are small: in the extract trial patients weighed 3 lb less on extract than on levothyroxine.[11] If you are switched to liothyronine, it acts within hours while the previous preparation is still wearing off, so the first weeks can feel like more hormone than intended.[24]

DURING TREATMENT

- Report chest pain, a faster pulse, palpitations, heavy sweating, heat intolerance or nervousness, as the product labeling asks.[26] [22]
- Tremor, unexplained weight loss, loose stools, difficulty sleeping or a racing heart usually mean the dose is too high rather than too low.[22]
- Stop biotin and any supplement containing it at least 2 days before a thyroid blood test, because it distorts the assay.[22]
- Tell us if you become pregnant, if your weight changes a good deal, or if another doctor starts a new medicine.[22] [1]

§ 07

Safety

Thyroid hormone is the same substance the body makes, so the side effects of treatment are mostly the effects of having too much of it. The levothyroxine label puts it plainly: adverse reactions "are primarily those of hyperthyroidism due to therapeutic overdosage". It also states that levothyroxine "has a narrow therapeutic index", and that too much or too little can affect cardiovascular function, bone metabolism, reproductive function, cognitive function, growth and the handling of glucose and fats.[22] Both labels carry a boxed warning against using thyroid hormones for obesity or weight loss, and both products are contraindicated in uncorrected adrenal insufficiency.[22] [24]

SIGNS OF TOO MUCH THYROID HORMONE Listed in the levothyroxine label as the adverse reactions of therapeutic overdosage.[22]

WHERE	WHAT YOU MIGHT NOTICE
General	Tiredness, more appetite, weight loss, heat intolerance, fever, heavy sweating
Nervous system	Headache, restlessness, nervousness, anxiety, irritability, changeable mood, insomnia
Heart	Palpitations, fast pulse, irregular rhythm, raised pulse and blood pressure, angina
Muscles, gut and skin	Tremor, muscle weakness and spasm, diarrhea, vomiting, abdominal cramps, hair loss, rash
Hormonal	Reduced bone mineral density, irregular periods, reduced fertility

Heart rhythm and bone

Over treatment can raise the heart rate, thicken the heart wall and increase the force of contraction, and may bring on angina or an abnormal rhythm, particularly in older people and in those with heart disease. Atrial fibrillation is the arrhythmia seen most often, and both labels ask that treatment start below the full replacement dose in this group.[22] [24] Over ten years, atrial fibrillation appeared in 28 percent of people aged 60 or over whose TSH was 0.1 mU/L or below against 11 percent with a normal TSH, a relative risk of 3.1 after adjustment. [13]

Too much thyroid hormone also increases bone resorption and lowers bone mineral density, particularly in women after the menopause, which is why the label asks for the smallest dose that achieves the result.[22] In pooled data from 13 cohorts and 70,298 people, a TSH below 0.10 mIU/L carried hazard ratios of 1.61 for hip fracture and 3.57 for spine fracture, with no link between mild hypothyroidism and fracture. [15] Among 17,684 patients on thyroxine in one Scottish region, a suppressed TSH carried hazard ratios of 1.37 for cardiovascular disease, 1.6 for heart rhythm disorders and 2.02 for fractures, while a low but unsuppressed TSH carried no increased risk. [14]

Pregnancy and other medicines

Untreated hypothyroidism in pregnancy raises the rate of miscarriage, gestational hypertension, pre eclampsia, stillbirth and premature delivery, and may affect the baby's neurological development, so levothyroxine is not stopped and hypothyroidism found in pregnancy is treated promptly.[22] Requirements usually rise: the label asks for TSH and free T4 as soon as pregnancy is confirmed and at least once each trimester, for the dose to go up by 12.5 to 25 mcg a day when TSH is above the trimester specific range, for TSH every 4 weeks until it is stable, and for a return to the pre pregnancy dose after delivery. [22] [1] The ATA published updated pregnancy guidelines in 2026. [18]

Levothyroxine increases the effect of warfarin and similar anticoagulants, so clotting tests are watched closely when treatment starts or changes. It may worsen blood sugar control in diabetes, can reduce the effect of digoxin, and with tricyclic or tetracyclic antidepressants may increase the effects of both. Phenobarbital, rifampin, phenytoin and carbamazepine change how the hormone is handled, and estrogens, androgens and furosemide alter the proteins that carry it.[22]

TELL YOUR PHYSICIAN BEFORE STARTING IF ANY OF THESE APPLY

- You have heart disease, angina, a history of atrial fibrillation or another abnormal rhythm, or you are over 65.[22] [24]
- You have thin bones or osteoporosis, or you have been through the menopause.[22] [15]
- You have adrenal insufficiency, treated or suspected, which has to be corrected first, or diabetes, because the dose of insulin or tablets may need to change.[22] [24]
- You take a blood thinner, digoxin, an antidepressant, an anticonvulsant, estrogen, a proton pump inhibitor, calcium, iron or a biotin supplement.[22]
- You are pregnant, think you might be, or are planning a pregnancy.[22]
- You have had trouble absorbing medicines, stomach surgery, celiac disease or chronic gastritis.[1]

Long term safety data are uneven across the four preparations. Levothyroxine has decades of use and large cohorts behind it.[21] [14] The trials of combination therapy and of thyroid extract ran from 15 weeks to 6 months, so none measured fractures, atrial fibrillation or survival, and for compounded preparations there is no published comparison with approved products. [1] [12]

§ 08

Is this right for you

Treatment suits people whose blood tests show a real shortfall, and TSH is the single best screening test in almost every outpatient situation.[5] In the pooled analysis of 13 cohorts, normal thyroid function was taken as a TSH of 0.45 to 4.49 mIU/L; overt hypothyroidism means a raised TSH with a low free thyroxine, and the mild or subclinical form means a TSH of 4.50 to 19.99 mIU/L with a free thyroxine still inside the range.[15] A single abnormal result is repeated first, because TSH moves with illness, time of day and medicines, and the ATA notes that normal TSH is higher in people over 65.[1]

Before we begin

- [ ] A review of your symptoms, medical history and every medicine or supplement you take
- [ ] Pulse, blood pressure, weight and an examination of the neck, for a clear starting point
- [ ] Baseline bloodwork of the kind the guidelines describe: TSH with free thyroxine, repeated to confirm, and thyroid antibodies where the cause is in question[5]
- [ ] A written note of your goals, so we can judge progress together

Finding the cause comes first, and so does asking whether the thyroid explains the symptoms at all. Tiredness, weight gain and low mood have many causes, and the trials in mild hypothyroidism show that correcting a slightly raised TSH often leaves them untouched.[3][4] Where levothyroxine requirements are far higher than expected, the ATA advises looking for celiac disease or gastritis caused by Helicobacter pylori.[1]

Reviewing your progress

TSH is checked 6 to 8 weeks after starting and after any change in dose or in product, then every 6 to 12 months once things are steady.[22][1] If the TSH is in range and symptoms have not improved, the answer is usually not a larger dose; it is worth looking again at absorption, at other medicines and at other explanations, and a trial of a regimen containing T3 is something to discuss rather than assume.[1][17] The ATA found insufficient evidence for aiming at a low normal TSH or a high normal T3 in patients who are overweight or who have depression or raised cholesterol.[1]

> **QUESTIONS TO ASK YOUR PHYSICIAN**
>
> What is my TSH and free T4, and what is causing my hypothyroidism? Is my result in the mild range, and would watching it be reasonable? Which preparation do you suggest, and is it FDA approved? When will we retest, and what will make you change the dose? What would make you advise against adding T3 or using thyroid extract? We are glad to answer all of these.

§ 09

Regulatory status

Levothyroxine and liothyronine tablets are FDA approved. Levothyroxine is approved in adults and children, including newborns, as replacement therapy in primary (thyroidal), secondary (pituitary) and tertiary (hypothalamic) congenital or acquired hypothyroidism, and as an adjunct to surgery and radioiodine in thyrotropin dependent well differentiated thyroid cancer; it is not indicated for suppressing benign thyroid nodules or nontoxic goiter where iodine intake is adequate.[22] Liothyronine carries the same indications and is also approved as a diagnostic agent in thyroid suppression tests; it has been approved since 1956 and generic versions exist.[24][23] Both labels carry a boxed warning against use for obesity or weight loss.[22][24]

Compounded capsules are not FDA approved. A compounded medicine is prepared by a licensed pharmacy for a named patient on a prescription, and the FDA does not verify its safety, effectiveness or quality before it is sold.[25] That applies to compounded liothyronine capsules, immediate release or sustained release, and to capsules combining T3 with T4. For sustained release there is no approved product of the kind at all: every FDA approved oral liothyronine product is an immediate release tablet, and the one approved fixed combination tablet of T4 with T3, Thyrolar, is listed in Drugs@FDA as discontinued in all strengths. [23] The ATA recommends against the routine use of compounded thyroid hormones, citing concerns about safety and potency and the absence of data showing an advantage, while allowing that they may be reasonable where a patient reacts to an ingredient of every available product. [1] Compounding errors have caused clinically significant overactive and underactive thyroid states, reported by FDA staff from the agency's adverse event database. [19]

Desiccated thyroid extract is marketed without FDA approval. The FDA states that "animal derived thyroid medications are not FDA approved" and names Armour Thyroid, NP Thyroid, Nature Thyroid and Natural Thyroid among them; the labeling of Armour Thyroid records its marketing category as an unapproved drug.[21] [26] The agency is applying a risk based enforcement approach while manufacturers work toward approval, and notes that these products are not eligible for compounding because they are regulated as biological products under the Public Health Service Act. [21] The ATA recommends levothyroxine as routine care in preference to thyroid extracts. [1] A physician may still prescribe a medicine outside its labeling, or an unapproved marketed product, when it suits the patient.

For athletes. Thyroid hormone is not a prohibited substance. Levothyroxine, liothyronine and thyroid extract appear nowhere on the World Anti Doping Agency 2026 Prohibited List, in force from 1 January 2026, nor on the 2026 Monitoring Program, so no therapeutic use exemption is needed.[27] Declare every medicine you take on a doping control form all the same.

If you would like details about the preparation used in your treatment, please ask.

§ 10

Common questions

Is thyroid treatment FDA approved?

Levothyroxine tablets and liothyronine tablets are FDA approved as replacement therapy for hypothyroidism.[22] [24] Compounded capsules of liothyronine, including sustained release ones, and capsules combining T3 with T4 are not, and desiccated thyroid extract is marketed without FDA approval. [25] [23] [21] If you would like details about the preparation used in your treatment, please ask.

My TSH is a little high but I feel fine. Do I need treatment?

Often not. In 737 adults aged 65 and over with a TSH between 4.60 and 19.99 mIU/L, a year of levothyroxine lowered the TSH but changed neither symptom nor tiredness scores against placebo.[3] A guideline panel working from 21 trials recommended against treating adults with this pattern, setting aside women trying to conceive, a TSH above 20 mIU/L, severe symptoms and adults aged 30 or under. [4] Below a TSH of 10 mIU/L the AACE and the ATA advise tailoring the decision to the individual. [5]

I still feel tired although my TSH is normal. Would adding T3 help?

It might, and the evidence is mixed. Fourteen trials have not shown a consistent benefit from adding liothyronine, and a meta analysis of 11 trials in 1,216 patients found no difference in fatigue, mood, quality of life, weight or lipids.[2] [6] Yet the third of 75 patients who were most symptomatic on levothyroxine preferred the regimens containing T3. [10] A trial of combination treatment is usually reserved for people who have clearly not benefited from levothyroxine alone. [1] [17]

Is desiccated thyroid extract more natural, and does it work better?

It comes from pig thyroid glands, so it carries other material from the gland as well as the two hormones, and its T4 to T3 ratio of 4.2 to 1 sits well below the 14 to 1 the human thyroid secretes, which pushes blood T3 above the usual range.[1] [26] In the two randomized trials, of 70 and 75 patients, extract matched levothyroxine on symptoms and cognitive testing. [11] [10] It is not FDA approved, batch to batch hormone content can vary, and no long term outcome data exist. [21] [12]

Will thyroid hormone help me lose weight?

Not if your thyroid is working normally. Both labels carry a boxed warning that thyroid hormones must not be used for obesity or weight loss, and that in people with normal thyroid function doses within the range of daily requirements do not reduce weight while larger doses can cause serious or life threatening toxicity.[22] [24] The ATA recommends against treating obesity with levothyroxine or liothyronine when thyroid function is normal, and a systematic review found that consistent effects on weight loss could not be established. [1] [20]

Will I need this for life, and what happens if I stop?

Replacement is usually lifelong, because the gland does not recover in the common causes.[26] If you stop, the hormone washes out over weeks rather than days, since T4 has a half life of 6 to 7 days, and the symptoms return as it goes. [22] Do not stop during pregnancy, when untreated hypothyroidism raises the risk of miscarriage, pre eclampsia and premature delivery. [22]

Where does my prescription come from, and how do I know it is made properly?

A compounded medicine is prepared by a licensed pharmacy, and federal law sets out two kinds. A pharmacy compounding under section 503A prepares a medicine for one named patient on a prescription, and its state board of pharmacy has day to day responsibility for overseeing it, with the FDA able to inspect as well.[28] An outsourcing facility compounding under section 503B registers with the FDA, follows federal manufacturing quality standards, reports side effects to the FDA, and is inspected by the FDA on a schedule set by risk. [29] We work with pharmacies of both kinds, and which one fills your prescription depends on the product.

Is a compounded medicine the same as something sold online?

No. Compounded medicines are not FDA approved, and the FDA does not review their safety, effectiveness or quality before they are sold, which is why your physician weighs them case by case.[25] What a licensed pharmacy gives you is a preparation made for you on a prescription, by a business a regulator licenses and inspects, with records of the ingredients and testing behind it. Material sold online as a research chemical has none of that. It is labelled as not for human use, its identity, strength, purity and sterility have not been established for a person, and no pharmacist or physician is answerable for what is in the vial.

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