



Advanced Nutritional Solutions
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The Amazing Thyroid

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How the Thyroid Functions

The thyroid is an essential butterfly-shaped gland located at the base of the neck, in front of the vertebrae. You could liken the thyroid gland to behaving like a thermostat in your house. When your body's thermostat is turned down to an "energy-saving" mode, the body stops burning fat and slows down other expenditures of energy.

When the pituitary gland tells your thyroid gland to "turn up the heat," if the thyroid is unable to respond to that command, it can create chronic fatigue, reduce brain function, and retard tissue repair resulting in sore muscles, poor skin, hair loss of hair and poor nail growth. It may also contribute to an impaired immune system and put a strain on other glands in the body.

The thyroid gland engages in biofeedback with other glands and organs, meaning there is back-and-forth communication with the hypothalamus, pituitary, adrenal glands, and reproductive organs. The pituitary gland communicates to the thyroid by producing TSH, or Thyroid Stimulating Hormone, telling the thyroid gland to increase or decrease the production of Thyroxin, or T4 for short. The 4 in T4 stands for the four molecules of iodine. Iodine is a critical part of a properly functioning thyroid. So when you see numbers like T3 and T4, this relates to these four molecules of iodine.

T4 is extremely important to the body because basically any cell in the body can "grab" T4 and convert it to produce energy for that cell. So T4 can be seen as a universal hormone that all cells need to thrive. The cell takes this T4 and converts it to another hormone called Triiodothyronine or T3 for short, which can then be used as fuel for the cell.

If the thyroid becomes fatigued, it will not be able to respond to the pituitary gland's command to increase T4. Then every cell in the body suffers! When the thyroid is not able to produce enough T4, this is often referred to as a "low thyroid" or "hypoactive thyroid." It becomes enlarged and is commonly known as a goiter.

The Importance of Iodine

A healthy-functioning thyroid is reliant on the mineral iodine. Iodine is found in the soil, in the ocean air, and in ocean plants. Since the advent of commercial farming, soils have become depleted of this vital nutrient and it's not being replenished. All produce—including organic produce—lack sufficient iodine for human requirements. Because iodine is present in higher concentrations in ocean atmospheres, thyroid issues are not quite as prevalent in coastal regions. This is why the Midwest US has been referred to as the "goiter belt" where *hypothyroidism* (low) or *hyperthyroidism* (high) is more common. (An easy way to remember this is to think of a "hyper" kid!)



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Since many professionals have been recommending low-salt diets as a way to combat high blood pressure, the consumption of iodized salts has naturally declined, contributing to low iodine levels in the body. Another source of iodine was removed from our diet when the baking industry replaced the use of iodine with bromine in breads. Plus, bromine actually inhibits iodine utilization in the thyroid. According to Dr. David Brownstein, MD, in his book *Iodine: Why You Need It and Why You Can't Live Without It*, the medical consequences of diets deficient in iodine may include increased thyroid disorders---including autoimmune thyroid disorders---plus thyroid cancer and a rise in breast and prostate cancer.

Other Possible Causes of Hypo- and Hyperthyroidism:

Certain foods, toxins, viruses, and hormones may also inhibit normal thyroid function. Here is a listing of some of the better-known contributors...

Foods: SOY products, broccoli and cabbage family foods, and dairy products.

Chemicals: fluoride, chlorine, and chemicals such as pesticides that mimic estrogen

Viruses: EBV/mono, cytomegalovirus and HPV (HPV may be the cause of thyroid cancer!)

Hormones: High estrogen levels, endometriosis, fertility problems (staying pregnant), cysts and fibroids and breast cancer

Symptoms of a low thyroid

- Morning headaches that go away as the day goes on
- Increased weight
- Sensitivity to cold (Reynaud’s Syndrome, anemia and/or arteriosclerosis)
- Dry brittle hair (hair falling out) or dry itching skin
- Poor memory, reduced initiative, depression and mental confusion
- Low auxiliary (armpit) temperature below 97.4 and 98.2
- Muscle cramps while you’re resting
- Reduced immune function
- Edema (puffiness) of the face and eyes
- Constipation
- Loss of the outside part of the eyebrow
- Breast, ovarian or uterine cysts or fibroids
- Increased serum Lipids (Cholesterol, triglycerides, LDL, HDL)



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- Increased or decreased blood pressure
- Your doctor put you on Synthroid and your symptoms have not changed

Measuring Thyroid Hormones

When measuring the functioning of the thyroid, the three primary markers to include in lab tests are TSH, free T4, and free T3.

When measuring TSH, laboratory test facilities vary in their procedures, so make sure you're obtaining results that are sensitive enough. For instance, older laboratory ranges that suggested healthy functioning of the thyroid have been found to be much too wide, with a range from 0.5 to 5.5. Newer markers suggesting normal thyroid function are now tightened up to the range of 0.5 to 2.0. This allows a much earlier detection of hypo- or hyperthyroidism.

When measuring T4 and T3, there are two kinds of lab measurements to consider: "bound" which means it's already captured for use by the body and not available for use by the cell to be converted to T3, and "unbound" which means it's free or available for use by the cell to convert to T3. (*Important: be sure that your lab test includes the **free** versions of T4 and T3.*) Healthy markers for T3 and T4 should be in the upper 75th percentile of the lab ranges.

Another part of the T3 blood panel is T3 uptake. This laboratory test tells the practitioner if the body is using the T3 for energy. Another test that can be run is "reverse T3" which is a blood test to see if you are converting the T3 into a negative adrenal hormone, cortisol, which may turn into belly fat or inflammation in the body.

Thyroid Medications and Supplements

- Synthroid or Levothyroxine - Sold in MCG-It is synthetic T4 only- Brings the down the TSH into normal lab ranges and your body has to convert the T4 into T3
- Armour Thyroid - Sold in MG- Natural porcine thyroid containing T4 and T3- because of the T3 it has a more immediate effect on the body's energy production
- Cytomel - T3 only for people who can't take Armour thyroid or need just T3 support