



# Prose from Tuberose

Newsletter

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## [ARCHIVES](#)

Volume-2 / Issue-1  
Inside this issue:

Leptin and Thyroid Function	1
Stress and Toxicity and the Thyroid Gland	3
Healthy Recipe	4

## Leptin and Thyroid Function

**Leptin is the king of hormones, the most powerful hormone in the human body.** Human leptin is a protein of 167 amino acids. It is manufactured in the adipocytes of white adipose tissue, and the level of circulating leptin is directly proportional to the total amount of fat in the body. It is the commander in chief for the use of energy.

Science shows that **leptin orders and synchronizes the behavior of all hormones.** It will even micromanage when it wants to. It will take input from other hormones to help the brain figure out how to spend energy, just as the CEO of a company will take input from department heads. **No other hormone orders leptin.**

Furthermore, while leptin is classified as a hormone, **it is structured as an immune system cytokine** (messenger). And **leptin is king of the immune system's function** as well. Leptin is the leader of the team, the conductor of the orchestra. It utilizes a team of hormones to carry on all energy regulation in the human body. These are powerful signals, all geared toward survival.

### Leptin and the Thyroid

Leptin is **a hormone that is secreted by fat cells in white adipose tissue.** Leptin was found to be a signal to the brain, having a primary influence on body weight. It was also discovered to be **involved with insulin, cardiovascular health, reproductive function, sex hormones, immune function, adrenal function, stress, thyroid function, bone health, cancer, and inflammation.**

It has a major determining role in many aspects of healthy function.

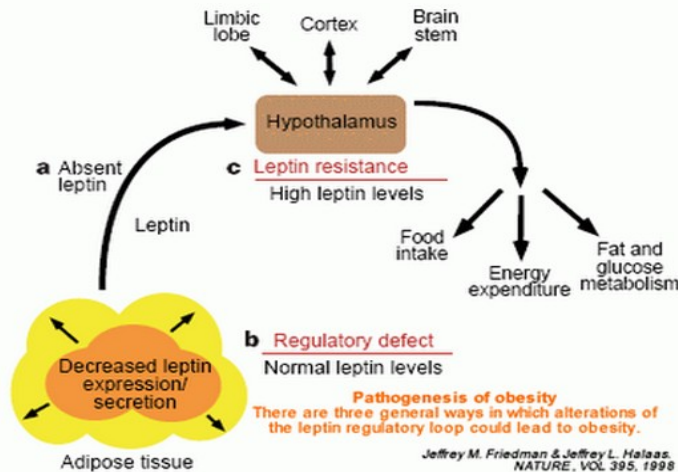
Even more important, when the hormone falls out of natural balance and loses its ability to communicate efficiently, health problems follow.

**The concept of fat as a storage place has been transformed to fat as a major endocrine organ,** such as the thyroid gland, adrenal glands, and sex glands.

On a subconscious survival level **the single most important issue for the brain is energy.**

**Leptin is a long-term regulator of body fat reserves,** acting to restore fat reserves in an effort to recover from starvation or calorie restriction. **When leptin is low, a person wants to eat; when leptin is high, a person does not want to eat,** assuming everything is working properly. This is a *longer-term* issue gauging fuel supply over a period of weeks or months.

Leptin is also under short-term control of the sympathetic nervous system.



Food to the body, like gas to a car, is the raw material that can potentially be burned to produce energy. The hard-wiring of the subconscious human brain (limbic brain) takes these survival questions very seriously.

**A primary purpose of the hormone leptin is to coordinate the metabolic, endocrine, and behavioral responses to starvation.** This hormone has a powerful influence on the subconscious mind that is programmed at a genetic survival level, completely taking over eating patterns if the circumstances from its point of view dictate that it should.

This is because the emergency need of the body takes priority over long-term storage goals.

Thus, **a quick burst of sympathetic nervous system activity depresses leptin production.** The sympathetic nervous system drives the metabolic rate of white adipose tissue. This is a direct line of communication from the nervous system to fat.

**This communication is directed by the hypothalamus gland,** the subconscious control center and the overall commander and chief of the body.

**A primary purpose of the hormone leptin is to coordinate the metabolic, endocrine, and behavioral responses to starvation.**

More Information:

[The Thyroid Gland](#)

## Leptin and the Thyroid Gland—continued

**The primary hormone made by white fat cells is leptin. Leptin talks directly to the hypothalamus gland of the brain.**

When leptin levels are high in the properly functioning person, it tells the brain to **decrease food intake and increase sympathetic nerve activity**, thus **increasing metabolic rate** and direct stimulation to metabolism of white adipose tissue.

**As sympathetic nerve activity increases and metabolic rate increases, leptin is lowered** signaling the need to accumulate more stored energy. This completes a circle of communication between fat cells and the brain.

This is how metabolism works when a person's body is in a state of natural balance and an example of a homeostatic system in the human body relating to the natural balance of energy. It has its own built-in checks and balances. **The ebb and flow of these signals are fundamental to having an appropriate appetite.**

In humans the primary problem leading to obesity is a broken gas gauge. The gauge is stuck close to empty; thus, metabolism runs slowly even though there is an abundance of fat in storage.

Unfortunately, your subconscious brain does not know what you look like in the mirror each morning. **It bases your metabolic rate on its perception of leptin.** If leptin is not getting into the brain, your metabolism will run slowly, a false state of perceived starvation. **This problem is called leptin resistance.**

**Learning to master leptin is the most fundamental skill required for a healthy life.**

**When there is leptin resistance, the brain does not hear the call from fat cells** telling it there is enough fuel in storage. Consequently, **the fat cells keep accumulating weight** because neither the brain nor the fat-cells have a sense of what is actually happening.

**Metabolic rate is largely determined by the rate of activity of the liver.**

Thyroid hormone is like a *gas pedal* on metabolism. The liver is the *engine*. **Leptin is in charge of both of them** because the brain tells the liver and thyroid what metabolic rate to employ based on the brain's perception of leptin.

**Many individuals have symptoms of hypothyroid function yet the thyroid lab tests come back normal.**

When it is understood that **leptin is in control of the metabolic rate via the liver**, it is logical to assume that thyroid hormones play a secondary role in overall body metabolic rate. **If the body thinks it is starving**, whether this perception is correct or not, then **the metabolic rate slows down for the purpose of survival.**

Thyroid hormones are not in control of leptin levels. It is true that leptin levels are higher in obese, hypothyroid individuals, but **it was not the hypothyroid state that caused the levels to be higher.**

**Thyroid problems do not cause leptin problems.** Proper levels of leptin in the brain directly sends a message to other areas in the brain to stimulate the production of thyroid hormone. **Leptin controls thyroid.**

**The percentage of body fat determines the amount of leptin. The combination of insulin resistance and high body fat** is the main factor associated with high leptin. Leptin exists as a primary regulator of metabolic rate.

When leptin resistance occurs, **the body thinks it is starving even though there is plenty of fat on hand. The liver stops converting thyroid hormone (T<sub>4</sub>) into active thyroid hormone (T<sub>3</sub>)** because of leptin resistance, the true cause of the seeming thyroid problem.

**T<sub>3</sub> is active thyroid hormone.** T<sub>4</sub>, the hormone made by the thyroid gland, is converted to T<sub>3</sub>, the metabolically active form, mostly in the liver. **When the liver is told a starvation situation exists, it slows down metabolism by reducing the production of T<sub>3</sub>.** Research has shown an inverse relation between T<sub>3</sub> and leptin.

**The liver is in control of metabolic rate as a primary role.** The huge number of individuals suffering from hypothyroidism suffer from **leptin resistance and a sluggish liver**, following the instructions of the subconscious brain that perceives the situation incorrectly.

**T<sub>4</sub> to T<sub>3</sub> conversion works differently in the brain.** Whereas the liver handles the majority of T<sub>4</sub> to T<sub>3</sub> conversion for the body, the brain is under its own control. **Every cell in the brain can convert T<sub>4</sub> to T<sub>3</sub>.**

In a starvation situation, the liver metabolic rate slows down to save nutrition. However, if the brain slows down too much, the person cannot function. Thus, **the brain activates its own thyroid hormone, independent of the liver** so that the brain can keep a higher level of metabolic function during times of food deprivation. This explains a common, and serious problem with thyroid medication.

**Blood levels of thyroid hormone are reflective of overall body metabolism and not brain metabolism.** Even a person with clinically definable low thyroid is likely suffering from primary leptin issues.

If a person takes too much replacement thyroid hormone in an effort to get "blood scores into better range," **adverse effects may occur in the brain long before blood scores begin to look normal.**

If a person takes more hormone than the brain needs, the head feels heavy and out of sync, literally **creating a worse hypothyroid problem in the brain.**

**The common behavior of endocrinologists is to continue raising the dose of thyroid hormone until the numbers look good on paper.**

They are not even looking at numbers that mean anything as far as how one's head feels or how one's actual liver-driven metabolism works. If leptin resistance can be corrected, thyroid problems will likely go away. **Leptin is the boss, and thyroid answers to it.**

When a person gets on leptin's bad side, problems abound: **fatigue, depression, irritability, inability to focus, poor metabolism, faulty immune function, problems extracting energy from food, high cholesterol, high blood pressure, diabetes, obesity, anorexia, reproductive-function problems**—the list goes on and on. Such problems set the stage for the progression into the diseases of aging.

**Learning to master leptin is the most fundamental skill required for a healthy life.** It is important not just for people who are struggling with weight; it is important for everyone.

Getting along with leptin helps a person to extract a maximum amount of energy from food. It is central to resolving the issue of fatigue as well as lowering all risk factors associated with heart disease. Indeed, problems which can be set in motion in teenage years or even before.

## Stress and Toxicity and the Thyroid Gland

### Stress and Thyroid

There are two other main variables that get in the way of metabolic rate, stress and toxic waste. **Stress causes internal friction and inflammation, causing body tissue to become "hot."** This is why ice is applied to an injury. However, in the case of stress wear and tear, **the heat is all around in the body** as multiple tissue areas have "micro injuries" that generate heat.

**This type of heat comes from inflammation,** not as a by-product of normal metabolic energy production. In the case of metabolic symptoms, **it is like having a sprained metabolism.**

If metabolism tries to keep up a normal pace, then further overheating and damage occurs, just like running on a badly sprained ankle. Instead of *leptin resistance* slowing down metabolism, this is a case of *stress-overload* slowing down metabolism.

**The conversion of T<sub>4</sub> to T<sub>3</sub> by the liver is slowed down by high stress.** This is a natural defense against burning-up.

Thyroid lab scores may or may not be low, but the typical symptoms of hypothyroid are present. **If a person takes thyroid medication to force their body to go faster, the result can be harmful to health.**

A recent study warns doctors not to give thyroid hormone to seriously ill patients, even if their thyroid lab scores are low, as significant problems can easily result.

Another major contributor to poor metabolism is the increase in environmental pollution. It is known that **environmental pollution aggravates thyroid problems.**

Troublesome levels of pollution exist across the United States in groundwater.

**Nitrates** can interfere with thyroid function. Thyroid function is dysregulated by **radiation exposure.** Infants can have impaired thyroid function from **second-hand cigarette smoke** from their parents.

A recent study in Canada, confirmed the serious thyroid problem from typical pollutants containing a variety of contaminants and heavy metals.

**Not only do these pollutants disrupt thyroid function, they have a major impact on disrupting brain function.**

This constant burden of excess chemical pollution poses **an ongoing metabolic challenge** for any person. If the body cannot keep up with elimination of the toxins, then they are sure to **overload metabolism and cause metabolism to slow down.**

It is like pouring sand into the gas tank of a car. It does not matter if the car is old or new, when the engine gets clogged, it will not run correctly. The liver must clear all such chemicals.

When the liver cannot keep up, there is **a backlog of toxins in the blood.** A person feels **poisoned, fatigued, irritable,** and has **dark circles under their eyes.** The lymph system gets backed up causing **stiff upper shoulders, head pressures, excess mucous,** and **numb arms,** especially when sleeping.

These are plumbing problems indicating **an overload of waste products.** Such individuals eventually become sensitive to environmental chemicals and/or have been diagnosed with *fibromyalgia*.

### Toxicity

**Individuals with the most severe collection of hypothyroid symptoms also have the most toxicity symptoms.**

This makes weight loss even more complex, as **the body tries to get extra toxins out of circulation by stuffing them into fat.**

Thus, a toxic person has great difficulty losing weight because **the body does not want to give up the toxins stored in fat** as doing so will re-expose the person to the chemicals.

**The liver, lymphatic, and bowel elimination systems must be improved** so that toxins can be more efficiently eliminated, the constraint on metabolism can be removed, and weight loss can occur.

**High levels of leptin, as are present in the leptin-resistant situation, induce liver damage.** Even more alarming, these high-leptin situations **magnify the potential damage to the liver** done by toxins.

This is a significant reason why **a combination of extra fat and environmental pollution** is involved with the diseases associated with obesity.

While an individual can support detoxification and enhance thyroid function, the primary solution is to **master leptin and overcome leptin resistance.**

The enzyme *thyroid peroxidase*, converts T<sub>4</sub> to T<sub>3</sub> and is **blocked by mercury in the blood,** primarily from dental mercury amalgam fillings and *thimerosal*, a mercury preservative found in vaccinations and medicines.

**All fluoride compounds - inorganic and organic-affect thyroid hormone function.**

**The daily dose of fluoride which people are now receiving in fluoridated communities (1.6 to 6.6 mg/day) actually exceeds the dose of fluoride found to depress the thyroid gland (2.3 to 4.5 mg/day).**

**Genistein and daidzein from soy also inactivate the thyroid peroxidase enzyme.** In the case of T<sub>4</sub> and T<sub>3</sub>, more than 99% is normally protein-bound in the blood. **Less than 1% is free. Only the free hormone exerts biologic activity. The protein-bound hormone is inactive.**

**The saliva test is a more sensitive way to assess thyroid function** because new technology allows for direct measurement of the *free* thyroid hormones.

A even better way of assessing thyroid function is to measure its effects on the body. This is done by measuring a person's **resting metabolic rate**, which is controlled by the thyroid gland.

Dr. Broda Barnes found that measuring *basal body temperature* was a good way of assessing *basal metabolic rate* (BMR) and thus the body's response to thyroid hormones, regardless of their blood levels.

**The basal body temperature is the most sensitive functional test of thyroid function.** According to Barnes, **the normal basal body temperature is 97.6–98.2° F (axillary).**

Using blood levels of thyroid hormones as the criteria, it is estimated that between 1 and 4% of the adult population have moderate to severe hypothyroidism, and another 10-12% have mild hypothyroidism.

**The rate of hypothyroidism increases steadily with advancing age.** Using only blood tests, thyroid function is commonly low in older adults.

**When using medical history, physical examination, and basal body temperatures along with the blood thyroid levels as the diagnostic criteria, estimated rates of hypothyroidism approach 90% or more of the adult population.**

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**In the next issue:**

**—The Adrenal Glands**

## **Healthy Recipes**

The combination of sulfur proteins and essential fatty acids is long known for ensuring the healthy cellular membrane.

### **Bobby's Curd Museli Crunch**

1/2 to 1 C Cottage or Ricotta Cheese

1-2 T Flaxseed, Hempseed

1/4 -1/2 C Soaked Sunflower and Pumpkin Seeds

\* Optionals: Hempseeds sprinkled on top, cut veggies on top like tomato, cucumber or radish. Also serve in a bowl or plate of spinach, or other greens. A hard boiled egg cut on top...

Stir the oil into the cheese. Top with drained seeds, Add salt and pepper if desired, as well as optional for variety

### **Kerrie's Coconut Yogurt Museli**

1/2 t- 1 C Yogurt-Plain (Stoneyfield farms, or Alta Dena...one that isn't flavored or sweetened that is of good quality—organic preferably)

1/4-1/2 C Soaked Sunflower and Pumpkin Seeds

1-2 T Flaxseed, Hempseed Oil

1-3 T Coconut Milk (the cream that settles on top of the can of a good quality coconut milk from "Thai Kitchen, or Port Arther or 123 Organic... don't get the lite or sweetened kinds)

Stevia powder or xylitol

\*Optionals: Hempseeds sprinkled on top, other soaked nuts or seeds...

Sprinkles of stevia powder or 1 T of a no sugar, low glycemic fruit jam  
Pour the oil over the yogurt or mix in. The add the seeds, stevia if desired, followed by the coconut cream.