

## *Iodine, A Gift From The Sea*

It is very likely that iodine was the very first nutrient to be recognized as essential to human life. In 3000 B.C., the Chinese used seaweed and burnt sponge, rich with iodine from the sea, as a treatment for goiter, a condition where the thyroid gland becomes very enlarged in the neck. Besides having the neck of a bullfrog, symptoms that often accompanied goiter were obesity, hair-loss, tough skin, and high cholesterol.

It wasn't understood why these substances had a positive effect on the thyroid gland until 1914 when Edward Calvin Kendall, at the Mayo clinic in Minnesota isolated a crystalline compound from the thyroid gland that contained 65% iodine. He called this compound thyroxin.

Thyroxin is critical in regulating the rate of nearly every metabolic process in the body, as well as influencing physical growth and development. This is no small area of responsibility and therefore proper maintenance of the thyroid gland is essential for a healthy metabolism and for proper physical development. Since iodine is the major ingredient of this essential hormone, in order for the thyroid to function properly it needs a steady and abundant supply of iodine. A third of the iodine that is consumed by the body goes to the thyroid to meet its production demands. The rest is typically excreted.

Because of the commonality of goiter at the turn of the 20<sup>th</sup> century, after Kendall's discovery, it was not long before it was decided that the best way to ensure adequate supply of iodine in the American diet was to iodize salt. This solution was cheap and easily

available to the entire population. Much to its credit, since the introduction of iodized salt, the incidence of goiter in the United States has dropped significantly and hardly remains. But is this the end of the iodine story? Not in the least.

In Tasmania, a very small island off the southern coast of Australia, there are numerous cases of goiter despite great abundance of iodine in their diets and soil. In regions of Japan, where seafood is the dietary staple and nearly every bite of sushi has seaweed that is super abundant in iodine, there are also an unusually high number of goiter cases. How can this be?

The answer is simple. It really is true, you can have too much of a good thing. It is becoming more and more apparent that there is such a thing as too much iodine. In fact, in the modern diet of most developing countries, iodine is in everything. The udders of dairy cows are washed in iodine solution, which makes its way into the milk, cheese, and ice cream. To soften the dough in pastries, iodine compounds are added to the mix. Burning fossil fuels releases iodine compounds. Silver iodide is used to induce clouds to become rainfall. These, as well as the high amounts of iodized salt added to nearly every food with every meal is quite literally bombarding the body with iodine from all directions. What effect does this have on the thyroid?

Ingesting iodine stimulates the production of thyroxin. Over stimulation of the thyroid can, ironically, cause goiter, along with fatigue, hair loss, high blood pressure, heart palpitations, nervousness, and menstruation difficulties in women. In

rare cases, it can also cause breast development in men!

There are also a number of people who have an autoimmune condition known as Hashimoto's disease. Right about the same time that Kendall isolated thyroxin, a Japanese scientist named Dr. Hashimoto Hakaru discovered the very first autoimmune disease that gradually destroyed the thyroid gland, which caused hypothyroidism with intermittent periods of hyperthyroidism. It is not fully understood what causes Hashimoto's disease other than that it has a hereditary correlation. What is important to understand though is that even though these individuals will test positive for hypothyroidism, it will often be thought as an iodine deficiency and the patient will be prescribed iodine medication. This will actually exacerbate the condition because the iodine will stimulate the thyroid and increase the autoimmune reactions and do further damage to the thyroid.

Since iodine deficiency is a thing of the past in the United States, the new objective is to keep our iodine consumption down to safe levels. Obviously, it is better to have the problem of reducing your consumption of an essential nutrient that the other way around! One of the easiest methods of doing this is to remove iodized salt from your diet. In fact, removing all refined salt altogether is one of the best things you can do for your health overall. Refined salt, besides being commonly iodized, has been shown to increase the risk of cardiovascular disorders through increasing blood pressure. The body does however need adequate amounts of sodium that is normally lost through perspiration so the body still needs a source of

sodium that does not increase blood pressure, but is also not iodized. An excellent solution for this is raw mineral salt. This type of salt contains sodium as well as an abundance of essential trace minerals that are healthy for the body. This form of salt does not increase blood pressure and is safe to consume for individuals with healthy kidney function. A popular form of raw salt is the Himalayan pink salt that is available in most health food stores.

Removing sodium is a solid step to reducing over consumption of iodine. Interestingly, even though over consumption leads to over stimulation of the thyroid, it eventually leads to reduced thyroid activity. This is because, like most of us, the thyroid has a boss too. That boss is the pituitary gland. The pituitary gland is the one responsible for instructing the thyroid to either increase or decrease its thyroxin production activities. It does this by releasing various amounts of a particular hormone plainly called Thyroid Stimulating Hormone (TSH). By increasing or decreasing the release of this hormone, the pituitary gland regulates the thyroid's activity level. When abundant amounts of iodine continuously stimulate the thyroid as an external source, the pituitary gland stops releasing TSH. It can eventually cease releasing TSH altogether even when iodine stimulation decreases because it's as if someone else has been doing its job for a long enough time that it kind of gets too lazy to work.

This is one of the more important reasons why reducing iodine consumption down to reasonable levels should be done as quickly as possible to avoid deactivating the

pituitary gland. But this begs the question, "What if you already eat a balanced diet with adequate iodine, but you are experiencing hypothyroid symptoms?" The answer is that there is a good chance that this is caused by Hashimoto's disease. The best way to test for this is by taking a blood test that looks for certain thyroid specific antibodies that are produced in Hashimoto's disease.

Some of the common symptom's of hypothyroidism, and potentially Hashimoto's disease are:

- Difficulty losing weight/ obesity
- Fatigue
- Cold intolerance
- Depression
- Poor muscle tone
- Paleness
- Constipation
- Menstrual irregularity

Prolonged hypothyroidism can also cause a low basal body temperature, dry and puffy facial skin, slow and hoarse speech, and, of course, goiter. The easiest way to think of over active and under active thyroid conditions is to imagine your thyroid as the master controller of the speed of your metabolism. Hypothyroidism generally means that your body is processing very slowly and many tasks take much longer than they should. The converse occurs with an overactive thyroid, processes are performed much too quickly and mistakes are made and the system becomes stressed and over worked.

It may seem as if this article is advocating complete abstinence from iodine altogether. This is not the case. In fact, many people who live a healthier lifestyle with a diet that is not made up of salt, fast foods, refined

bread and pastries, and dairy can actually be under consuming iodine. In this case it is a good idea to incorporate some of the healthy natural sources of iodine. Dried kelp is, of course, the richest natural food source of iodine. Since the ocean is where the majority of the world's iodine exists, it makes sense that seafood, and crops grown in coastal regions would be the greatest source of iodine rich foods. Shellfish, due to ocean contamination, are also rich in arsenic and mercury. The same also goes for large ocean fish. Kelp is really the safest source of natural iodine.

Another food rich in iodine is actually black strap molasses believe it or not. So if kelp and seaweed don't satisfy your palette, perhaps molasses is a better option for you.

Iodine is a very important nutrient to maintain your body's metabolism. This in turn affects your weight, nervous system, energy level, and other critical areas of your physical well being. It is only when an improper diet overloads your body with too much of a good thing, then the opposite occurs. The moral of the story is to always maintain a healthy balance of the essential nutrients for your body.



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