

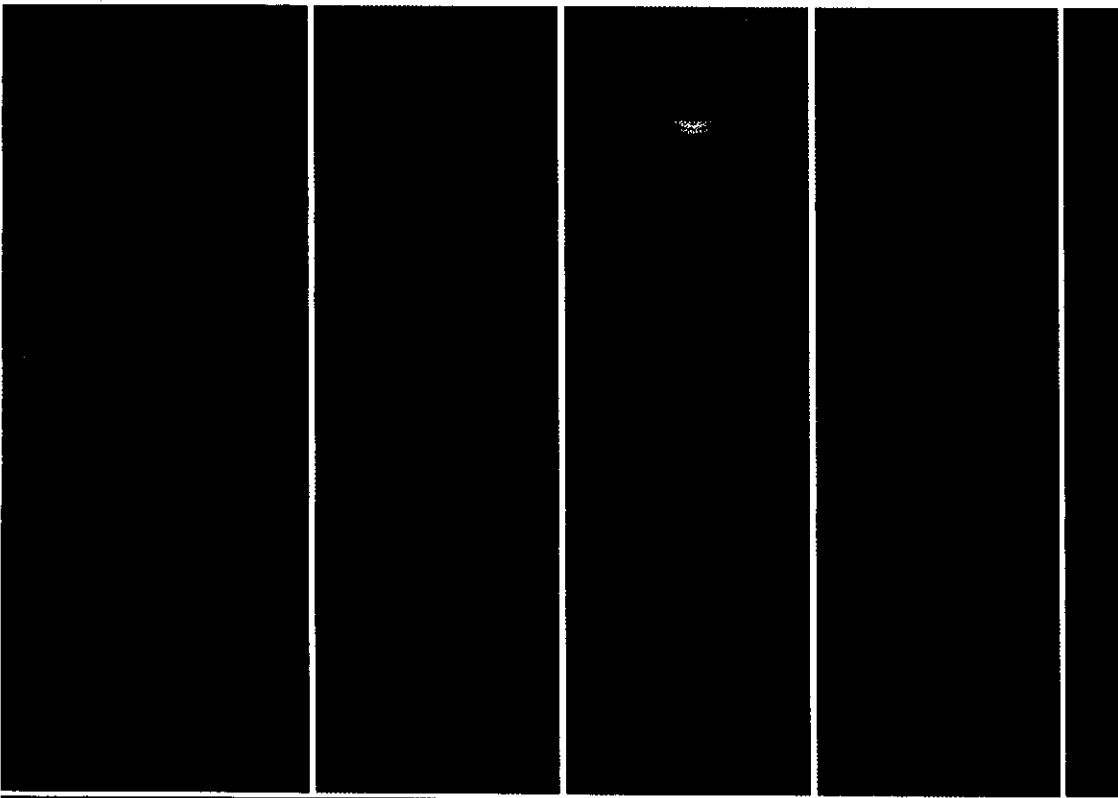
# IODINE

WHY YOU NEED IT

WHY YOU CAN'T LIVE WITHOUT IT

4th Edition

...AL BEST SELLER  
... 2 New Chapters



Autoimmune Disease | Cancer | Detoxification | Fatigue | Thyroid Disease

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## IODIDE AND IODINE

As mentioned above, it is very difficult to get iodine into a solution that uses water as a solvent. Therefore, as Dr. Lugol discovered, using the reduced form of iodine (iodide) increased the solubility of iodine. In order to do this, iodine must first be reduced to iodide. For the science majors, this means that the molecule of iodine has gained an electron, which allows it to form a salt with certain elements like potassium and sodium. In the case of Lugol's solution, it is in the form of potassium iodide (10% in Lugol's solution). When there is a full complement of electrons in the iodine molecule, it is referred to as iodide.

It was thought that the intestinal tract could easily convert iodine to iodide, but research has shown this is not true.<sup>1</sup> Different tissues of the body respond to the different forms of iodine. The thyroid gland primarily utilizes iodide. To decrease the incidence of goiter, potassium iodide was added to table salt.

*Donald, 49 years old, had Hashimoto's disease for ten years. Donald was found to be hypothyroid and to have many nutritional deficiencies. He was treated with Armour thyroid, vitamins and minerals, and diet changes (eliminating refined carbohydrates and trans-fatty acids). "I am definitely feeling much better with the thyroid hormone. I felt like I was dying before. But, I still don't feel like myself. I still have brain fog and some muscle aches," he stated. Iodine testing showed that*

*Donald had iodine deficiency. He excreted only 35% of a challenge test of iodine (normal levels should be over 90%). Donald was initially treated with a form of iodide known as SSKI. He claimed, "I did not feel worse with the SSKI, I just did not feel better. I still had the brain fog while on it." Donald was switched to a mixture of iodine and iodide (Iodoral®) and he noticed a definite change. Iodoral® is a tablet form of Lugol's solution. "Within one week of starting the Iodoral®, my brain fog began to clear. I began sleeping better, my energy improved, and even my libido picked up. I feel almost totally back to normal. Two months after taking 25mg of Iodoral® per day, his iodine test improved dramatically (94.4% secretion). Update on Donald: After 3 years of taking Iodoral®, he reports to feeling "wonderful". "I will never stop taking it as it has changed my life for the better," he said.*

The breasts, on the other hand, primarily utilize iodine. Studies have shown that iodine deficiency can alter the structure and function of breast tissue.<sup>2</sup> This can include dysplasia and atypia that is the forerunner for breast cancer. Animal studies have shown that iodide (the form of iodine that is present in iodized salt) is ineffective at reversing the pre-cancerous lesions of animal breast tissue, whereas iodine is much more effective.<sup>3</sup> Research has also shown that iodine, not iodide, will decrease lipoperoxidation of breast tissue.<sup>4</sup>

Lipoperoxidation is a chemical reaction that can cause damage to the lipids of the cell membrane and mitochondria. This can lead to many serious illnesses such as cancer and autoimmune disorders. Lipoperoxidation has been found to be elevated in breast tumors and animal breast tissue exposed to agents that promote cancer. Iodine decreases lipoperoxidation in the body. This will be more fully explored in Chapter 4.

Because different tissues concentrate different forms of iodine, using a supplement that contains both iodide and iodine is preferable to using a supplement that contains only one form. As mentioned above, the breasts concentrate iodine. The prostate gland concentrates iodine. The thyroid gland and the skin primarily concentrate iodide. Other tissues, including the kidneys, spleen, liver, blood, salivary glands, and intestines can concentrate either form. With different tissues responding to different forms of iodine, it would make common sense that a greater therapeutic benefit from iodine will be achieved by using a combination of iodine and iodide. My clinical experience has proven, beyond a doubt, that a combination of iodine/iodide (e.g., Lugol's or Iodoral®) is much more effective than an iodide only supplement (e.g., SSKI and most other liquid iodide formulations).

*Leslie, a 43-year-old nurse, suffers with fibrocystic breast disease. "My breasts always hurt and before my period, I can't even stand to have a shirt on. The rubbing of clothing is*

*excruciating," she said. Leslie had been to many doctors and was told to change her diet. She said, "Eliminating caffeine and chocolate did help somewhat, but I am still miserable." When I saw Leslie, she not only had a severe case of fibrocystic breast disease, she also had cysts on her ovaries. Leslie commented, "I kept thinking that there must be something wrong with me. Why would I be getting all of these cysts in my body?" On examination, Leslie had an enlarged thyroid gland and many signs of an underactive thyroid condition, including being very fatigued. Laboratory testing showed severe iodine deficiency with a 12% excretion on an iodine-challenge test (normal levels should be above 90%). Upon taking iodine (in the form of an iodine/iodide mixture—Iodoral®), Leslie noticed a dramatic improvement in her condition. "Within two weeks of taking iodine, I had more energy and within one month, my breast cysts began to fade. After taking the iodine for two months, my breasts were soft and the lumpiness was gone. It no longer hurts to wear clothing. It feels like a miracle," she said. The ovarian cysts Leslie had struggled with also resolved. Repeat testing of iodine levels showed a normal excretion rate on a challenge test (94% excretion). Leslie's holistic treatment plan includes the use of vitamins, minerals, herbs, and natural hormones.*

*Update on Leslie's condition: Leslie has been on iodine for over three years now. "I am 100% better. There is no sign of*

... by giving iodine. In addition to goiter formation, iodine deficiency may also lead to hypothyroidism and autoimmune thyroid diseases including Graves' and Hashimoto's disease. Studies have shown that iodine-deficient individuals have an increased incidence of anti-thyroid antibodies.<sup>1,2</sup>

Iodine is found in minute quantities in the body, with approximately 15-20mg in the thyroid of the average adult, when iodine levels are sufficient.<sup>3,4</sup> Due to its dependence on iodine to make thyroid hormone, the thyroid gland has developed a specialized system to concentrate iodine. This system is able to concentrate a large amount of iodine as compared to its size. This system is known as the sodium/iodide symporter. The breasts also use this same mechanism to concentrate iodine.

The thyroid gland is regulated by the pituitary gland. The pituitary gland releases a hormone, thyroid stimulating hormone (TSH). TSH stimulates the thyroid gland to release thyroxine (T4). Triiodothyronine (T3) is converted from T4 in the periphery of the body. T3 is believed to be the active form of thyroid hormone that drives the metabolic functions of thyroid hormone. The Figure below illustrates this process.



T4 and T3 are the thyroid hormones. The '4' in T4 and the '3' in T3 refer to the number of iodine molecules present. As previously stated, T4 has four iodine molecules present, while T3 has three iodine molecules present. Without adequate iodine levels, the thyroid gland is unable to produce adequate thyroid hormone. The end result of an iodine deficiency can be a poorly functioning thyroid gland, goiter, increased autoimmune thyroid problems, and an increased risk of thyroid cancer.

Thyroid hormone is essential for normal brain development of the newborn. Since iodine is necessary for the production of thyroid hormone, an iodine-deficient state may predispose the newborn to abnormal brain development. In children, iodine deficiency can result in mental retardation as well as goiter. Research has found almost a 50% increase in perinatal mortality due to iodine deficiency.<sup>5</sup>

Many studies have shown that children who live in iodine-deficient areas have lower IQ's as compared to children living in iodine sufficient areas. A large analysis comparing children in iodine deficient and iodine sufficient areas showed a 13.5 point difference in IQ score.<sup>6</sup>

Iodine is also necessary for the proper function of the adult thyroid gland. It is impossible for the thyroid gland to function optimally in an iodine-deficient state.

illness is not the cause of autoimmune thyroid disorders; it is a consequence of the illness.

Radioactive iodine has never been considered a treatment which addresses the underlying cause of the illness. Radioactive iodine is solely a palliative treatment for the hyperthyroid symptoms of autoimmune thyroid problems. I believe there are more effective ways to treat autoimmune thyroid illnesses using natural items, which will be covered below.

## IS RADIOACTIVE IODINE SAFE?

Not only will radioactive iodine bind to the thyroid gland destroying thyroid cells, it will also bind to other sites in the body besides the thyroid gland. It was established in Chapter 1 that iodine is present in all of the cells of the body. Radioactive iodine will be concentrated where iodine accumulates in the body, including the breasts in women. With breast cancer at epidemic rates (1/7 women), I don't believe a therapy should be used that may potentially increase this rate.

Researchers have reported a 400% increased incidence of death from thyroid cancer due to radioactive iodine.<sup>14</sup>

Furthermore, a nine year study of 2,793 patients who received radioactive iodine found:<sup>15</sup>

1. 56% increase in mortality for radioactive iodine treated hyperthyroid patients

2. 40% increased risk of stroke

3. 29% increased risk in mortality from cancer

To be fair, there are other articles pointing out no increase risk of illness after radioactive iodine therapy. However, common sense would dictate extreme caution with using radioactive iodine. I feel radioactive iodine therapy should be the last choice in any treatment program.

## RADIOACTIVE IODINE: IS IT INEXPENSIVE?

The cost of radioactive iodine is approximately \$3,000. Radioactive iodine is an expensive procedure that does not address the underlying cause of the illness. There are much better alternatives than radioactive iodine.

## SEARCHING FOR AN UNDERLYING CAUSE OF AUTOIMMUNE THYROID PROBLEMS

In order to formulate an effective, safe, and inexpensive treatment for autoimmune thyroid problems, one must first search for an underlying cause of the illness. As I discussed in my book, *Overcoming Thyroid Disorders 2<sup>nd</sup> Edition*, the underlying cause(s) of autoimmune thyroid disorders can be varied. This can include infections, toxicities, food allergies (e.g., gluten intolerance), and nutritional imbalances. I believe that iodine

If the oxidation process occurs correctly, the next step in the utilization of iodine is called organification.

## ORGANIFICATION OF IODIDE

Don't be put off by the fancy name organification. Organification simply means 'covalently attached' or 'bound' to an organic molecule. The real benefit of iodine occurs when it is bound to various proteins and lipids. Figure 2 shows how the organification process occurs in the thyroid gland.

## AT THE RDA FOR IODINE: PRODUCTION OF THYROID HORMONE

When iodine is taken in amounts consistent with the RDA--approximately 150ug/day--iodine can be bound to thyroxine molecules and become thyroid hormone. If there is insufficient iodine to accomplish this, it can lead to an inadequate production of thyroid hormone and a hypothyroid state. The different thyroid hormones are shown in Figure 2.

## AT 100X THE RDA FOR IODINE: PROTECTION FROM CANCER

When iodine is taken in amounts at least 100x the RDA (>15mg/day), iodine can now also bind to other molecules including lipids (i.e., fats) and proteins. The binding of iodine to the fat molecule lactone results in a fat-like substance known as  $\delta$ -iodolactone.  $\delta$ -iodolactone is a key regulator of apoptosis and cellular proliferation of the thyroid gland.<sup>3 4</sup> In other words,  $\delta$ -iodolactone is an anti-cancer substance. Apoptosis refers to the programmed cell death that all of our normal cells have.

## IODINE AND APOPTOSIS: PROTECTION FROM CANCER

Apoptosis is a very important concept. All cells, like all living things, have a life cycle. All cell life cycles have a growth

phase, a division phase and a death phase. After a cell dies, it is replaced by a new cell. We want our cells to undergo apoptosis or programmed death. Without apoptosis, cells will continue to divide until they overwhelm the body. Cancer cells are examples of cells that do not undergo apoptosis. One of the mysteries of cancer is why these cells do not undergo apoptosis. A potent anticancer item would be one that would promote apoptosis, without toxicity to other cells.

Iodine is one of these nutrients. We know that iodinated lipids such as  $\delta$ -iodolactone have been shown to regulate and promote apoptosis. Common sense would lead one to conclude that it is important to ensure adequate iodine intake in order to promote the production of iodinated lipids such as  $\delta$ -iodolactone. These iodinated proteins are not detected in human tissue when iodine deficiency is present. However, they are detectable when iodine is taken well in excess of the RDA for iodine.

It is important to emphasize that the apoptotic (i.e., anti-cancer) effect of iodine only occurs when iodine is ingested with doses in excess of the RDA for iodine. Similar effects have also been shown to occur in animals (dogs) as well.<sup>5</sup> I believe one of the major reasons we are seeing a significant increase in cancer of the iodine dependant tissues (including the thyroid, breasts, ovaries, and prostate) is due to a deficiency of iodine resulting in

non-apoptotic cells as well as a suboptimal environment for oxidation and organification.

## **PUTTING IT ALL TOGETHER: WHAT DOSE OF IODINE IS THE BEST FOR PROTECTING AGAINST CANCER?**

If we want to achieve the proper oxidation and organification of iodine, it becomes clear that the RDA for iodine is woefully inadequate to provide the apoptotic (i.e., anti-cancer) effect. In fact, I believe the RDA for iodine is not only inadequate for providing the apoptotic effect of cells throughout the body; it is also inadequate to provide for the total needs of even the thyroid gland. As mentioned previously in this book, the exposure to toxic halides--bromine, fluoride, and the chlorine derivatives--have been increasing over time. These items not only cause iodine deficiency, they can poison the enzymes responsible for organifying iodine.

## **FINAL THOUGHTS**

My research and my clinical experience have been clear: the RDA dose for iodine is inadequate to prevent cancer. In fact, I believe that lowered iodine levels will provide fertile ground for

... has occurred including the declining use of iodized salt. Other reasons for the lowered iodine levels are covered in Chapter 2.

If a lowered iodine intake was the only problem, it would be simple to rectify iodine deficiency with iodine supplementation. However, there is more to the story.

Currently, our exposure to toxic halides, fluoride, bromide and perchlorate are occurring at levels that humans have never been exposed to. The consequence of this is a worsening of the already present iodine deficiency problem.

We discussed the toxic halides in Chapter 5. I have found 100% of my patients that I have laboratory tested for bromine to test in the high or toxic range. Fluoride in our water supply also adds to this problem. Only through iodine supplementation and detoxification can you reverse this problem. Detoxification will be covered at the end of this chapter.

## **WHY DO WE NEED MORE IODINE NOW THAN PEOPLE DID 100 YEARS AGO?**

Invariably, I am asked, "Why do we need more iodine than our predecessors took?" There are a number of factors that has led to the 'perfect storm' of iodine deficiency including:

1. Our food supply is remarkably deficient in iodine, due in part to low salt intake.
2. The ingestion of brominated (instead of iodinated) bakery products leads to toxic levels of bromine in the vast majority of our population. Furthermore, it worsens an iodine-deficient condition.
3. Our continued exposure to brominated flame retardants in computers, furniture, clothing, bedding, and other common materials.
4. Fluoridation of our water supply. Fluoridation is bound to worsen an iodine deficient problem by supplying a toxic halide in continual amounts.
5. The use of pesticides and insecticides for lawn care which contain toxic halides such as bromine and chlorine derivatives.

When you take into account these five items, it is no wonder that we need larger iodine doses than past generations of Americans. Unless our exposure to toxic halogens is decreased, we will continue to need and require larger amounts of iodine as compared to our predecessors. We need the larger iodine doses to help the body detoxify from the toxic halogens.