

Hormones, Halides and Health:
Iodine Deficiency and the Endocrine System
by Artemis Celt, ND

I've heard it said that information is power. Recently, I made a startling discovery related to information and power in a most unlikely place. This occurred while reading a book called Iodine: Why You Need It, and Why You Can't Live Without It, by David Brownstein, MD. It appears that in the United States the humble mineral iodine has been nothing short of quagmired in widespread *mis*-information for a very long time. And this long-term quagmiring has actually become a significant contributor to our collective *dis*-empowerment in the realms of physical, mental and perhaps even spiritual health. Read on, dear reader, and begin informing yourself about iodine and its next of kin -- fluorine, bromine and chlorine -- in the 21st century human body. Read on, and bless the small element iodine for the well-being it can bring to our beleaguered endocrine glands in this “most interesting of times.”

Let's begin by laying some basic information groundwork:

- *Adequate amounts of iodine are essential for the health of most – if not all -- the glands in the human body (in addition to other tissues not covered in this article).*
- *Most adults and children in the United States are significantly iodine-deficient.*
- *Iodine, fluorine, bromine and chlorine are close chemical relatives in the halide family of minerals.*
- *Because of this chemical similarity, fluorine and bromine can attach to iodine receptor sites in the body. If this phenomenon occurs in great numbers, symptoms of iodine deficiency begin to manifest in iodine-dependent organs and tissues.*

I went to naturopathic medical school in the early 1980's. This was when the phenomenon of hypothyroidism was just starting to find its stride in the U.S., and we students were all over it: the thyroid gland and the crucial role iodine plays in the production of adequate amounts of thyroid hormones was definitely one of the hot new topics of the day. I graduated in 1985 naively thinking I knew most of what there was to know about iodine and health. Therefore, I was nothing short of astonished to read in Brownstein's book the following fascinating bit of history about the origins of iodized salt in the United States:

In the early 1900's Dr. David Marine conducted the first large-scale study on using iodine as a therapy to reduce goiter. He chose Akron, Ohio as the test area for iodine supplementation. Akron was chosen due to the high rate of goiter – 56% of school-aged girls had goiter in Akron. There was a 600% increase in goiter in adolescent girls versus boys. The reason for this increase was due to the increased iodine requirements in pubertal girls as compared to boys. The first hormonal tissue to grow at puberty is the breasts, which require significant amounts of iodine. (Brownstein, page 27)

The breasts require “significant” amounts of iodine?! Well, that was certainly news to me. But in fact, both the thyroid gland and the breasts have developed a specialized system to

concentrate iodine known as the sodium/iodide symporter. According to Brownstein, “the breasts need at least 5 mg of iodine” per day. (page 91) That's 5 *milligrams*, by the way. The RDA for iodine has been 150 *micrograms* since it was established eons ago. 1,000 micrograms = 1 milligram. You can do the math. And you will quickly realize, as I did, that the RDA for iodine is hopelessly inadequate to address the needs of the endocrine system. Given the current, prolonged epidemic of endocrine disorders in our country, we could safely say that the RDA for iodine is, in truth, *appallingly* inadequate. The thyroid gland alone requires approximately 6 *milligrams* of iodine per day in order to function adequately. (Brownstein, 91)

In order to make sense of this non-sense, it helps to understand that back in the 1920's the RDA was based solely on the amount of iodine needed by the human body in order to prevent goiter and cretinism (severe mental deficiency at birth caused by iodine deficiency in pregnancy). In other words, 150 mcg of iodine per day prevents extreme deficiency syndromes, but it doesn't even get to square one in meeting the real needs of our hormone-producing glands. “Animal studies have shown problems with the adrenal glands, the thymus gland, the ovaries, the hypothalamus and pituitary axis, as well as the entire endocrine system, when there is an iodine deficient state. In fact, the ovaries have the second highest concentration of iodine in the body next to the thyroid gland.” The importance of efficient estrogen metabolism in the body has become widely recognized by both the scientific community and the general public in recent years. Dr. Jonathan Wright at the Tahoma Clinic states that certain forms of iodine “ help your body to metabolize estrone (a slightly carcinogenic human estrogen) and 16-alpha-hydroxyestrone (a much more dangerous metabolite of human estrogen) into estriol, an "anti-carcinogenic" or at worst "neutral" form of human estrogen. I've reviewed literally hundreds of hormone tests in over 26 years which have proven this point.” (www.tahoma-clinic.com) Brownstein sums it up by stating: **“It is impossible to have a balanced hormonal system without ensuring adequate iodine intake.”** (91)

Here is a very useful statistic you can tote around and quote when RDA proponents scoff at your iodine idolatry. “It has been estimated that the mainland Japanese ingest approximately 13.8 mg” (yes, that's *milligrams*) of iodine per day. (Brownstein, 84) The primary dietary source of their iodine is seaweed. It might be helpful to point out that 13.8 mg per day is over 100 times the U.S. RDA for iodine. Another useful statistic is that Japanese people living in Japan have remarkably low rates of breast, endometrial and ovarian cancers, and a very low incidence of fibrocystic breast disease. And Japanese men have much lower rates of prostate cancer than American men. In other words, by our standards these folks are eating dangerous amounts of iodine every day and they are obviously faring much better health-wise than the average American. With this we might surmise the following: 1. Iodine isn't really all that scary. 2. Lack of information, however, can be downright frightening!

As you may have already surmised, the amount of iodine in iodized salt and in most supplements is grossly inadequate because it is based on our grossly mis-informed RDA for this element. In recent years iodine deficiency has been exacerbated by the plummeting use of salt as droves of Americans do all they can to normalize their blood pressure. Sea salt, by the way, contains negligible amounts of iodine. Iodine deficiency in the American public has also escalated because of a little-known alteration in the production of flours a few decades back. In the 1960's iodine was added to milled flours as an anti-caking agent. This was a good move on the part of the National Institute of Health! Ah, but the trend in recent times has been for good policies to be short-lived, and iodine-enriched flour was no exception. Concern was

raised that people might be getting too much iodine from baked goods: One slice of bread contained 150 mcg of iodine, so two pieces of toast for breakfast and iodized salt on your eggs – well, there you were, teetering precipitously close to an iodine over-dose before the kids had even finished their Cheerios! Therefore, in the 1980's iodine was booted out of flours and was replaced with....bromine. And who knew anything about bromine? Life went on, bread tasted the same, and if people started to feel a little more tired? Well, that was just a result of life in the fast lane, right?

This brings us round to the issue of iodine's next of kin – the halides bromine, fluorine and chlorine -- and the parts they play in exacerbating an already unhealthy health situation. Let's start with bromine. Bromine and bromide have no known therapeutic value. In fact, the term “bromism” has been around since the 1800's and refers to the symptoms of bromine poisoning. The first symptoms of low-level bromine/bromide poisoning are lethargy, irritability, fatigue and difficulty concentrating. Bromide-based medications in the mid-1900's were quite popular sleep aides. They were phased out when the more serious symptoms of bromism -- such as frank psychotic episodes landing people in the ER -- began occurring just a little too frequently. As it turns out, the low-level symptoms of bromide poisoning look quite a bit like some of the most commonly experienced symptoms of hypothyroidism. And come to find out, the ingestion of bromide can actually cause or contribute to hypothyroidism. Bromide does this by the mechanism listed at the beginning of this article: if ingested in sufficient quantities, bromide will begin attaching to iodine receptor sites in the cells of glandular tissues. In these situations (according to Brownstein), thyroid hormone will still be produced and be measurable in blood tests, but these will actually be unreliable measurements. This is because brominated thyroid hormones will not elicit the same biological activity that iodinated thyroid hormones will produce. Therefore, the bewildered bromide-ingester will experience the undesirable symptoms of hypothyroidism, but will be told over and over again by health care providers that he or she cannot possibly have an underactive thyroid gland.

It is a curious thing that the United States – meaning the FDA – still allows bromated flours to be used in commercial baked goods. Great Britain and Canada banned these flours in their countries back in the 1990's. I checked with some of the popular baked good retailers in town – The Courtyard Cafe, Lehani's, Pan D'Amore, Sweet Laurette's, The Village Baker and Uptown Custom Catering – and they do not use bromated flours in their products. It is an FDA requirement that packaging labels include potassium bromate or bromated flours in their lists of ingredients, so check the products you buy at the grocery store and make sure they do not contain brominated flours. “In 1992 and again in 1998 the FDA found baked goods that had bromate at levels the agency considers unsafe,” said CSPI (Center for Science in the Public Interest) attorney Darren Mitchell. “But instead of banning the additive, as the UK and Canada have done, the FDA has tried – with only partial success – to get bakers to voluntarily stop using it.”

Bromines are ubiquitous in our environment these days. They are often found in flame retardants, upholstery, fabrics, hot tub sanitizers, pesticides, fertilizers, and in certain prescription medications. Dr. Brownstein states that he has done lab work on approximately 100 people in his practice for bromide levels and all have tested in a high range. If taken in sufficient amounts, iodine can help detoxify bromides out of the body. Table salt has been long known to have this ability as well.

Fluorine/fluoride is another close cousin of iodine. It, too, has been shown to inhibit thyroid gland function by attaching to iodine receptor sites. And, as with bromide, there is a remarkable similarity between the symptoms listed for hypothyroidism and those reported for fluoride poisoning. In fact, European studies from decades ago reveal fluoride's pharmacological effectiveness in the treatment of hyperthyroidism!

But in my research on the biological effects of the halides, I was surprised to find that fluoride has a special affinity for one gland in particular: the pineal. This very surprising fact was discovered quite recently, in 1994. The pineal gland is located in the middle of the brain. It secretes the hormone melatonin. As you may know, each gland in the body is associated in location and function with a specific chakra. The pineal gland is paired with the seventh chakra. It is the gateway by which we can experience ourselves as the spiritual beings we really are. As David Icke writes in his essay on fluoride: the pineal gland "is our umbilical cord to the higher world." (www.davidicke.com) If fluoride is ingested, it will tend to concentrate in high amounts in the pineal gland, and will contribute to the ossification (mineralization/hardening) of this gland of higher consciousness. On the scale of most desirable health-related phenomena to least desirable health-related phenomena, I'd say this one rates way down there as one of the least desirable of the least desirables. The only person who is really jonesing for an ossified pineal gland is a neuroscientist in a research lab, and it had better not be your pineal gland that he's after – or mine either, for that matter!

Given this information about fluoride and the pineal gland, we must ask ourselves some serious questions about our country's water fluoridation program. According to CDC water fluoridation statistics for 2006, approximately 62% of the U.S. population is receiving fluoridated water (this translates out to roughly 185 million people). Port Townsend's water is not fluoridated. Fluoride exposure also comes from fluoridated toothpastes, other oral hygiene products and from dental fluoride treatments. Fluoride is readily absorbed into the bloodstream by the skin and by the mucous membranes of the mouth. Studies on routes of absorption for fluoride reveal a disturbing fact: in households where fluoridated water is used for drinking, cooking, showering and bathing, more of this element is absorbed from showering and bathing (ie, via the skin) than from cooking and drinking! Children also often ingest hazardous amounts of fluoride by swallowing fluoridated toothpastes.

It is beyond the scope of this article to cover the controversy surrounding the purported health benefits of drinking fluoridated water. Suffice it to say there is ample published scientific research that strongly suggests fluoride has toxic effects on many systems of the body. Also, I could not, in good conscience, omit this one particularly sobering quote by Dr. Dean Burk, PhD (34 years at the National Cancer Institute): ***"I know of absolutely no, and I mean absolutely no means of prevention that would save so many lives as simply to stop fluoridation, or don't start it where it is otherwise going to be started. There you might save 30,000 or 40,000 or 50,000 lives a year, cancer lives. That is an awful lot of lives a year."*** I might add that each molecule of the antidepressant Prozac contains 3 atoms of fluorine (= 3.3 mg of fluorine for a typical daily dose of 20 mg of Prozac). In August of 2004 the BBC News reported that Great Britain's drinking water was found to contain traces of Prozac. "An Environment Agency report suggests so many people are taking the drug nowadays it is building up in rivers and groundwater via treated sewage water," said the BBC.

According to some sources, sodium fluoride has been used as an agent for behavior control of

populations of people. *“At the end of the Second World War the United States government sent Charles Elliott Perkins, a research worker in chemistry, biochemistry, physiology and pathology to take charge of the vast Farven chemical plants in Germany. While there, he was told by German chemists of a scheme which had been worked out by them during the war and adopted by the German General Staff. This scheme was to control the population in any given area through mass medication of drinking water. In this scheme, sodium fluoride will in time reduce an individual's power to resist domination by slowly poisoning and narcotizing a certain area of the brain, and will thus make him submissive to the will of those who wish to govern him. Both the Germans and the Russians added fluoride to the drinking water of prisoners of war to make them stupid and docile....According to Chemical Engineering News in 1988, each year in the United States, 80,000 tons of hydrofluosilicic acid, 60,000 tons of sodium silicofluoride, and 3,000 tons of sodium fluorides are put into public water supplies. (Chemical Engineering News, vol. 66, August 1, 1988, p. 39).”* (<http://www.newmediaexplorer.org/chris/index.htm>, and many other websites)

I am not sure if this quoted information is information or *mis*-information. I include it here because over the past 60 years Americans have been gradually exposed to more and more fluorides, bromides and chlorines, while at the same time overall tissue iodine levels in the U.S. have dropped by approximately 50% from 1971 to 2000 (Brownstein, 40). If indeed the italicized statement above is true, I can't help but wonder about the identity of the “certain slowly poisoned area of the brain.” As of 1994, we now know that ingested fluoride will preferentially deposit in the pineal gland, as well as the bones and teeth. Perhaps this “slowly poisoned area of the brain” is the pineal gland? In truth, we still know very little about the pineal gland. In light of this relatively new information about the pineal's gradual ossification with fluoride, perhaps as a nation we need to discontinue pouring this mineral into our drinking water until we have a much better idea of how it affects one of our most precious commodities: self-sovereignty.

Studies have also shown that chlorine dioxide in drinking water decreases serum thyroxine levels in mammals over time. Port Townsend's water is chlorinated. If you have a water filter, you can go to the consumer website WaterFilterRankings.com in order to find out how effective your filter is at removing chlorine-related toxins from your drinking water. If you don't have a water filter, you can fill a container with water and let it sit uncovered for 24 hours. Any chlorine and chlorine-related compounds will vaporize out of the water within a day's time.

So, how do you rid your body of the toxic halides? Iodine itself, in sufficient amounts, has the ability to detoxify the body of bromides and fluorides. And of course, you will want to do a little research and eliminate any significant sources of these elements in your home or at work. In addition to being an impressive detoxifier, iodine is also a very potent antioxidant when it is taken in the correct amount. This is one of the reasons why it is thought to have a significant protective effect against certain cancers, most notably breast, prostate, ovarian and thyroid cancers.

In closing, I would like to say that although most people are significantly iodine-deficient, it is possible to take too much iodine in the form of supplements and cause unintended hyperthyroidism which can potentially be dangerous. There are test kits available for checking iodine levels, and bromide levels. It is advisable to work with a knowledgeable

practitioner if you are considering iodine supplementation beyond several milligrams a day. This is especially true if you are taking any kind of thyroid medication (Synthroid, Cytomel, Armor thyroid, etc.). A very small percentage of the population is allergic to iodine. If you are allergic to seafood, or if you suspect you might have an iodine allergy, it is highly advisable to work with a doctor if you are thinking of trying iodine supplementation. If you have or have had any of the following conditions, you might do well to investigate the possibility of iodine deficiency: fibrocystic breast disease, breast cancer, prostate cancer, polycystic ovarian syndrome, parotid duct stones, adrenal fatigue, chronic fatigue, hypothyroidism, hyperthyroidism, Graves disease, Hashimoto's thyroiditis, chronic insomnia. There are other conditions as well that often respond well to appropriate iodine supplementation, including ADD and ADHD in children.

I encourage you to read Dr. Brownstein's book if you would like to further your knowledge base on this topic.

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