Micronutrients: Iodine

Transcript

Hello and welcome to our Micronutrients Module. Today's talk is about iodine. Iodine is a super important and essential mineral that's used in a lot of functions throughout the body. The purpose of today's presentation is to tell you all about iodine, how it's used, how deficiencies show up, where you get it from, and then also to tickle your fancy with some of the controversy about iodine when it comes to thyroid conditions, in particular, Hashimoto's, or autoimmune thyroid conditions.

Before we begin, I want to make sure that you're aware that my presentation is never intended to replace a one-on-one relationship with a qualified healthcare professional. It's certainly not medical advice. When you're sharing this information with your clients, I want you to make sure that you're letting them know that you're educating them as oppose to giving them medical advice.

If you're listening in for yourself in addition to being a practitioner, again, if you're under the care of the doctor, make sure that you check that these things are consistent with what they know about your particular health condition.

What is iodine? Iodine is a mineral. It's actually a non-metallic trace element. A lot of the elements, a lot of the minerals are actually metallic, but iodine is a non-metallic. It is definitely essential to life. If you don't include it in your diet, your body can't make it. Bottom line is, if you don't include it in your diet, you won't be getting it. You're going to see today a lot of the problems that ensue with not having iodine in the body.

Iodine is also a part of a group on the periodic table called the Halides. Why this is important is that iodine is related to other Halides like bromine, fluorine, and chlorine, which are, actually act, as iodine antagonists. They actually combine to iodine receptors in the body and trick the body into thinking that there's iodine there and indeed they cause toxicity. We're going to show you how to help your clients to overcome that toxicity today.

Here's the picture of the periodic table. We all studied this in high school chemistry. I know it well, because my kiddos went through high school chemistry and did not like it the way I liked it. The Halides are that group over on the right hand side, second to the end. They're blue. We have fluorine, chlorine, bromine, iodine. Those are the four that we are going to be concerned about and the others below we're not going to be concerned about.

Iodine. It’s a common deficiency, extremely common deficiency. Why? Why is it a deficiency? Why do we become deficient in iodine? Toxins in the environment compete with iodine receptors, especially the Halides that we just mentioned: the bromine, chlorine, and fluoride. Those are ubiquitous in our environment, right? We put chlorine and fluorine in our water, our municipal water supplies, chlorine for disinfection, and fluorine for supposedly protecting our teeth. Not exactly what I think is the real reason behind it, but we won't go into that right now.

The soil’s depleted. Except for soils right near the ocean where they get a constant renewal of their iodine, the soils inland are depleted especially in what they call the Goiter belt, which is up in the Midwest. The other reason we become iodine deficient is radioactivity exposure. Number one is in the air from a variety of different nuclear fall outs. We get radioactive iodine, and it's been shown that it travels very far, very long distances.

Of course it gets diluted as it gets further and further away from the site of the accident, but it's still in all, it’s in the environment. It's been measured in the environment, and it's considered to be a hazard when it's in the environment.

In addition, radioactive iodine is used in a lot of medical scans. For example, when somebody is having thyroid problems and they want to check the thyroid, they're shot up with radioactive iodine. There are also other things in terms of contrast MRIs and contrast CT scans that use a radioisotope of iodine.

The other reason we become deficient is, like I said earlier, chlorinated and fluoridated water. The municipalities, and just about every place in the US, are chlorinated for disinfection and fluoridated because we have been convinced that fluoride actually helps with teeth. In fact, there have been a lot of studies that show that it makes the teeth thicker, but not stronger. Similar to some of the drugs that are used for osteoporosis.

Typical baked goods, like if you go to the store and buy a loaf of bread, which 99% of your clients are doing. Maybe your clients are more sophisticated than that. They're not anymore, but they had been doing it most of their life, buying commercial baked goods, which use bromine as a dough conditioner. Bromine is an antagonist of iodine.

The other thing is the lack of iodine-rich foods in the diet. Yes, the soils are deficient in iodine and foods are generally not that rich of a source. We'll take a look at what those are. Sea vegetables are a very high source of iodine, but very few people, at least in the US, are using sea vegetables on a daily basis. I actually use them quite a bit and I sprinkle Kelp into my foods. That's something you could teach your clients to do.

Dulse is a really easy way to get iodine. Dulse is iondine-rich nutrient. I've got soaking for my dinner later, I've got a bowl of Wakame and I love Arame, and all those different sea vegetables. There are some amazing ways that you can make them. Even for people who say, "I don't like sea vegetables," there are a lot of really fun ways to make sea vegetables. That's something you can teach your clients. We'll talk more about that later.

Then iodized salt, it's where the public is being duped again into thinking that, "Oh, you have to buy this commercial grade iodized salt", which has been stripped of all its minerals and then iodine is added. The truth to the matter is that iodized salt actually loses one 100%, not 90, not 50, one 100% of its iodine content after exposure to air in about four weeks.

These are why we're becoming deficient in iodine as a population. We'll look at some of the iodine controversy later. The Halides, we look a little bit more closely at them. You can see that fluorine is the lowest in molecular weight, next chlorine, and bromine, and then iodine. I just use that for academic prowess, but really memorizing the atomic weight and the atomic number on all of these is really not necessary. Just knowing that they go from lightest, this fluorine, to heaviest, iodine, would be a good thing.

What's radioactive iodine? There's an isotope of iodine, iodine-131, and basically it's called Radioiodine. Then it's got atomic weight and atomic numbers, number of neutrons, number of protons, and then various things about it.

One of the cool facts that's not so cool, but it is its half life, it's eight days. If you're exposed to radioactive iodine, only half of it is going to be detoxified and leaving you or breaking down within eight days.

Here's a map that shows where a lot of the radioactive iodine was in relationship to the Fukushima accident several years back. You can see that right there at the heart of the accident, there was a lot of iodine and these becquerels is a way that they were measuring them.

As you get further away, you could see the perimeter around it starts to get a little lighter, but the orange, which is expanding pretty far is expanding pretty far across the country. Then the yellow, and then green is little less and purple all the way down to the very light blue, which you have to get pretty far away. Some places were protected. That may have something to do with the mountains. This is just something that they put together to just show how widespread it all was.

What happens when somebody has iodine deficiency? This would be a clear one if you look at the picture we're showing. That's a huge goiter. That's just not common. That's not typically what you're going to see in iodine deficiency, but you will see goiter in a lot of folks and it's usually much more subtle than this.

This is obviously a Third World country where medical care and observation are not widespread, or this woman would have had some attention given to this goiter long before it became as big as it is right now.

Hypothyroidism is more subtle. Somebody that comes in and they're consistently showing elevated TSH on their thyroid testing, and they have the symptoms of low thyroid, the energy, and cold hands and feet, and constipation, and coarse skin, and hair falling out and all the rest, then it could be iodine deficiency. That's one of the causes of primary hypothyroidism. It needs to be looked at. It needs to be ruled out, because I think it's overlooked a lot.

Fibrocystic breasts. The breast tissue uses iodine, a lot of iodine. In fact, I have some statistics later that show about 5 milligrams of iodine a day are used and pulled into the breasts. That's a lot. It's way beyond what the RDA is.

In addition, it's good for uterine fibroid. What can you do with that clinically is you can have a patient or client rub or massage into their breasts some iodine liquid like Lugol's solution. You can also have them paint the vagina or the vulva with the iodine solution and actually see a shrinkage in uterine fibroids.

Another consequence is the lack of brain development, intellectual development. Children that are fed in goiter belts, fed an iodine deficient diet, can definitely have delayed development of their brains. Then, of course, breast cancer is another one. Basically, when there's a deficiency of iodine, we get lumps. We get lumps, and so that's why the fibrocystic breasts and the breast cancer are part of this.

What are some of the symptoms, the less overt symptoms then the big old goiter in the neck, beyond the goiter? Fatigue. Fatigue is oftentimes related to the low thyroid, but it can be also independent of the low thyroid. Blood levels of TSH, Thyroid Stimulating Hormone, are increased indicating that the pituitary is having to work really hard to get the thyroid to produce, and it could be due to a lack of iodine.

Intolerance to cold, cold hands and feet very, very common. Foggy thinking, very common with iodine deficiency. Increased need for sleep, just like wanting to stay in bed and not get up for long periods of time. Dry skin, thinning hair, and constipation. These symptoms of iodine deficiency are all very similar to the symptoms that we think of as hypothyroidism. With this, in addition to the possibility of uterine fibroids and fibrocystic breasts.

Other symptoms of iodine deficiency that are related to lymphatic congestion can be skin irritation, sore joints, aching hands and feet, cold hands and feet, we talked about that, swollen or sore breasts, that's fibrocystic breasts or something just swollen, a swollen belly, cellulite builds up.

You see, a lot of these things are related to a build-up of tissue in areas where it shouldn't be building up. Sore throat, allergies, headaches, chronic colds, formation of cysts, and accumulated fibrosis or scar tissue, all of these seem to be related to lymphatic congestion as a result of iodine deficiency.

What are some of the benefits of iodine? Iodine supports the immune system. In the olden days, one of the most common uses of iodine was topically for skin infections. We've shied away from the use of iodine in our modern society because they've come up with more, let's just say, costly and tangible prescription medications to take care of infections wherein indeed iodine has been used for a very long period of time.

It also supports natural detoxification. It helps with the breakdown of estrogens into the favorable estrogens as opposed to the non-favorable estrogens. That helps to support thyroid function. Why? Because iodine is at the heart of the thyroid molecule. If you think about T3 and T4, the 3 has to do with how many iodines are connected to a tyrosine molecule in the middle, and then the 4 is for molecules of iodine.

It supports cellular metabolism, so, increase in energy production. It supports memory, energy, mood, and weight as well as optimal hormonal function, as I mentioned earlier, especially in regards to estrogen. It supports the breast tissue; helps the breast tissue to grow strong and free of lumps. This is a picture. Tyrosine is at the middle of the thyroid molecules. T4 you see next to tyrosine and it has the tyrosine in the middle and then it’s got these four iodines hanging off of it.

Triiodothyronine, T3, has three iodines hanging off of it and one empty place. If you look at Reverse T3, it's actually the opposite. The same place in the upper ring is missing as is in the second one. It's actually 5 -- They number these things -- And it's 5 versus 5 prime. The 5 prime is where the iodine sits in the T3 and then in reverse T3, it's in the 5 position.

Thyroid hormone production. This is a graphic. You may have seen me show this before. You get foods from the diet. Mostly where people are getting their iodine these days is from iodized salt. We do a lot of putting it in to various things like smoothies and soups, et cetera, and seafood.

Then what happens in the body is that it goes through the digestive track and iodine gets converted to iodide. Then the iodide gets mixed in the thyroid gland with the tyrosine and oxygen, which is required to catalyze it, and produces MIT and DIT, monoiodothyronine and diiodothyronine. You know that T3 is triiodothyronine, and for some reason T4 is the lone sheep: it's called Tyrosine.

It goes into the thyroid and two DITs, two diiodothyronines, two tyrosine molecules with two iodines. Two of them. There's a tyrosine with the two iodines and a tyrosine with two iodines and what does two plus two equal, but four? You put those two together and you get T4. When you take an MIT and you put a DIT with it, you get T3. There's T4 and there is T3.

This is a little bit more detail of what's happening as we're going through thyroglobulin and making the thyroid hormone. If you look at the bloodstream in the far right, you'll see iodine floating around, and sodium. There's something called the sodium-iodine symporter, which allows for the iodine and the sodium to pass into the cells, the follicular cells of the thyroid.

Once in there, it can be passed through. The iodine goes from iodine and then goes into the core part, the follicle, what they call the "colloid" of it. There's this almost like mucousy stuff in the middle. If you look at the top, you'll see. Right in the middle, the middle here is the colloid and these are all the cells, the follicular cells, lining it. The symporter is coming in through the cells. The iodine goes in and once it's inside this colloid, then the iodine is oxidized to iodide. Then it goes through iodination with the tyrosine, conjugated, and creates the thyroxine and the T3, which are then put out into the bloodstream.

All of this is happening inside the thyroid. It's a complicated process and there's a lot of room for error. What we're looking at here is, again, we have the sodium-iodine importer (NIS) up here. It's bringing in the iodine and the sodium, which is going through this process, but thyroid peroxidase, which is TPO, is actually facilitating that oxidation of the iodine.

TPO is where some of the autoimmune attack happens. We have TPO antibodies that actually attack the TPO in Hashimoto's. That's one of the antibodies. The other one is thyroglobulin, anti-thyroglobulin, which actually attacks the thyroid hormone. How do we get iodine deficient, and what does it look like to supplant the right amount of iodine in your patients and clients?

First of all, like we said before, there's not much in the land food, but also you need really good stomach acid for absorption of iodine. We know that many of the minerals, the main minerals we've talked about in this series, have a need for good hydrochloric acid. Iodine is especially sensitive to hydrochloric acid levels.

If you want to help your clients to get more iodine without having to take an iodine supplement, you can feed them all sea vegetables. I'll show you the charts that show how much is in there. Bladderwrack, which is a type of sea vegetable, actually has pre-formed T2. Remember, T2 plus T2 equals T4. T2 plus T1 equals T3. That's an important factor. It saves the work that the body has to do by a significant amount.

In Kombu, a specific kind called Digitata, Laminaria Digitata, about 10% of the iodine is already formed into T3 and T4. That makes it much better and easier for someone to get their appropriate amounts of T3 and T4 made. Here's the catch on that, everything that is good in a certain amount is not so good in excess. If we take in too much seaweed and we start to find ourselves getting agitated or your patient or client is being agitated, anxious, and all that as if they have hyperthyroidism like palpitations, et cetera, then you might be suspicious that they're taking in too much of this kelp that has pre-formed thyroid.

I've never seen a case written about it, but I just wanted you to be aware that that's a possibility. How do we assess if our client is actually low in iodine or actually high? First of all, you go by symptoms and we looked at some of those. You want to look at their thyroid labs and if their thyroid labs are off, we want to rule out the cause. If you've ruled out autoimmune, the antibodies look good, you want to make sure that you're taking a look at iodine as a potential cause.

Years gone by, it was everybody that had hypothyroidism, was put on iodine, now we're more discriminating because we want to see what the levels are. You can have them look at their first morning temperature compared to their daytime temperature. Again, these are thyroid assessments. You can also do a 24-hour urinary iodine loads test. I would take it a step further and say a 24-hour urinary halide load test or halide test, iodine load test with halides.

What happens is, I'll teach you how to do it exactly on the next two slides, but you're basically taking a loading dose of iodine. You're taking a urine sample before you take it, you're taking a loading dose of iodine and then you're going to collect for 24 hours and compare.

This is showing whether a person is utilizing all the iodine that you put in or they are excreting a fair amount of it. You do it by taking a large dose of iodine. You can also do an iodine spot test, but I haven't found that to be too clinically relevant.

Let's talk about how you do an iodine load test. You have to stop taking in iodine and iodine-containing foods for 24 to 48 hours before the test so it doesn't interfere with the dosing that you're going to be taking. If you're not doing the spot test with the load test, then you discard the first morning urine. If you are going to be doing a spot test, which I almost always do the first time, I'll have them do the spot test and then start to collect.

If they're not going to do the spot test, don't worry about the first morning urine. You can discard it. Then you're going to have them collect all of their urine for that 24-hour period and include the urination of the first morning the next day, so it's a full 24-hours. They're going to take four tablets of Iodoral. Iodoral comes in tablets and Iodoral is basically a tableted form for Lugol’s solution, which is half iodine and half potassium iodide.

Then you start the collection of the urine. The following morning should be included in the urine collection, but if the total of urine volume is above 3-liters, there's going to be some special considerations and instructions in the kit. It's a good idea to go ahead and check that out, because first of all, if they're peeing more than 3-liters a day, that could be problematic, like what's going on with their kidneys. Are they drinking too much? Do they have a filtration problem?

Assuming that that's valid and you're trying to check it out, maybe they have something like diabetes insipidus, which is inappropriate secretion of the hormone ADH, anti-diuretic hormone. For whatever reason, if they go over that amount, you want to make sure that they also collect whatever doesn't fit in the jug and collect it in a jar and then mix them all together.

Here's some labs that I've used. I've used Doctor's Data. I've used Hakala. I've seen the lab result from Labrix, but I haven't used them personally and I haven't used the FFP Lab. Here's what I found, number one, advantage of Hakala over Doctor's Data is they send the client a couple Iodorals to do the test with. With Doctor's Data, they have to go buy the Iodoral in addition.

The other thing is that, what else? I think that's the main difference. I think it might be about $10 less to use Hakala and the other main advantage is Hakala doesn't require a physician's authorization. You and just anybody can go call them up and send them a note, and get the kit. I've done that quite a number of times.

Let's look at an iodine supplementation protocol that came from a conference that was called the Iodine Conference back in 2007. What they're finding is that, for breast cancer, you want them to be taking at least 50mgs as a liquid iodine in the Lugol's solution. You want to include vitamin C with this especially if they show up for having halides and especially if it's bromine. That helps to detoxify the bromine.

Magnesium is an important one to go along with it, 300 to 600mgs. Selenium as Selenomethionine at 200-micrograms, and it's really important to have the selenium in there, because as we look at it later about what the controversy is about some doctors are saying, "Don't give people iodine ever." Other people are saying, "No, they need it when they have Hashimoto's." We'll talk about more of the details about selenium and how it's important that a lot of the complications of iodine excess or taking iodine with Hashimoto's is related to selenium deficiency. It's really important to include that.

Also, niacin, not niacinamides. We want the flushing niacin. If you can tolerate or have them tolerate 500mgs twice a day, that's going to help with the detoxification. Vitamin B2 which is riboflavin, a 100mgs, 3 times a day. It may seemed like a lot, but it's certainly worth it if they're going to get some change.

Then a comprehensive vitamin and nutrition program, making them eat all the good foundational foods and a salt load if they're having a bad bromine detox. What does that mean, the salt load? With bromine, bromide is found in a lot of things in our environment and also in food. When you start to take very high levels, or you encourage your clients to take very high levels of iodine, it actually will displace a lot of the bromine off the receptors for iodine and free it up.

Sometimes, people don't need anything more than just that intervention. Where do they find bromine? In addition to in the dough conditioners, fire retardants, mattresses, carpeting, electronics, furniture, and other things on the inside. What you may find is that these things actually can rub off onto a person and be absorbed through the skin. Dough conditioners, we mentioned that as a source of bromide. Hot tubs and swimming pools are sometimes purified with bromide, but most of the time it's with chlorine.

Pesticide's a big exposure for bromide. Plastics that are used to make computers. It's such a really good idea to discard them once you're done with them. Bakery goods and some flours have a dough conditioner called Potassium bromate. It's also found in soft drinks and medications. It's really important. Iodine-related bromine toxicity or detox symptoms. These symptoms arise when you've got a bunch of bromine attached to an iodine receptor or iodine receptors.

When you test for it on the iodine load, what you see is that the bromine increases after they do the test dose, the 50mgs compared to the spot check before that. Now, that's going to tell us that there's a bromine toxicity. What it's also going to tell us is that the iodine is despising the bromine when we get the right doses.

Then, you put somebody on a protocol and you say, "You're very toxic. You've got high bromine levels. I want to put you on 50mgs of iodine," which is a good size. You put them on a 50mgs of iodine and then they say, "Oh my god, I feel awful. I have headaches. I have body aches. I feel anxious, I feel terrible." What you know is that the iodine is working, but it's working too fast. It's helping them to cleanse and detoxify their body from the effects of the bromine.

What do you do? There's a whole bunch of what you can do and we're going to look at that. Here's some of the symptoms you may see them have, and this indicates that they are excreting and getting rid of all that extra bromide. We have eyelid and foot twitching, tingling in hands and feet, dark thoughts, depression, anxiety, mouth and tongue source, acne, hair loss, brain fog, leg and hip ache, rash, metallic taste, sinus achiness, cherry angiomas where those little dots that look like it's a little blood vessel that's been burst, runny nose, headache, lethargy, difficulty swallowing, body odor, and usually urine odor, dry mouth, frequent urination, diarrhea and constipation, vision changes, irritability, increased salivation, dream changes, hormone changes, kidney pain, and breast tenderness.

These are the symptoms you want to be looking for. You may even give somebody a checklist like this. When you put them on high dose iodine to try to restore their iodine status, so that if they notice these symptoms, a whole batch of these symptoms that you might going to suspect that there's bromine toxicity and we're eliminating bromine and you want to do something about that to protect them.

Here's some bromide detox strategies. Number one is called, "Salt loading." Salt loading is basically every morning, you're going to take or have your client take say a quarter to a whole teaspoon of salt, a whole good combination or high quality salt that's from nature, Himalayan or something like that. They're going to take that and they're going to start drinking that in the morning.

You're going to stop iodine for 48-hours because you want to rest the kidneys. This is if you see those major symptoms happening, you just stop the iodine for 48-hours or you reduce the iodine dose temporarily and then work back up either way. You take several grams or have them take several grams of vitamin C spread throughout the day with the iodine companion nutrients. Then drink more water. Add 25mgs of zinc. This is all the stuff that you can do.

How do you do the salt loading? We talked about that earlier. I said take from a quarter teaspoon to a whole teaspoon. I usually start with a quarter teaspoon. Dr. Brownstein, David Brownstein likes to start higher and he sometimes starts with a whole teaspoon. Dissolve it in a half a cup of warm water and then drink it and followed immediately by 12 to 16-ounces of water. Repeat in 30 to 45 minutes if they need it, and you can continue to repeat it until copious urination begins, which means that the kidneys are starting to flush.

You want to look at the response. They should have some positive benefit from doing this within a few hours. What are some food sources of iodine? There's sea vegetables, there's seafood, a lot of different things like seafood cod, sea bass, haddock, all kinds of seafood. Potatoes with the peel because it's in the peel. Cow's milk, which I'm not a fan of. Turkey, and chicken, beans, and egg. I'm not a fan of all these food sources and you could see there's not a whole lot of it in the land foods.

Let's now take a look at how much of iodine we really need. Then we'll look at some details and how much is in various kinds of food. Adults need about a 150 micrograms according to the RDA. Pregnant women, 250 breastfeeding women, 250. Now, the truth to the matter is there's a lot of people who disagree with that. In particular, those doing a lot of the iodine research or Dr. Guy Abraham and Dr. David Brownstein have been doing a lot of research. There's a lot of published research on this and you're welcome to look at it.

Everybody's going to need to make their decisions themselves as to how much iodine you think is safe and how much iodine you think people need. According to Dr. Brownstein, the thyroid can pull in and store up to 50,000 micrograms a day, 50,000 that's 50-grams.

Then according to same David Brownstein based on research with Guy Abraham, that the breast tissue alone and an average of like a 120-pound woman is going to be about 5mgs or 5,000 micrograms a day.

Clearly, in light of that research, these numbers are very low. We'll take a look at some of the ways that we can know better. Here's a list. This is from the worldshealthiestfoods.com, whfoods.com. You can look up pretty much any nutrient there and you can get a list of nutrients. Now, these are the things that according to them, this is a serving size, the amount of calories, how much iodine.

A cup of yogurt, 87 micrograms. Grass-fed cow milk, 4-ounces, 28 milligrams. Eggs, 27. Strawberries, 12. They all have fairly small amounts. Although the yogurt has quite a bit compared to the daily volume. Let's take a look at how much iodine is in sea vegetables, 7-grams which is not very much, approximately a teaspoon of sea vegetables. With nori, .098 this is all in milligrams. If you multiply by a thousand you get micrograms.

We're looking at 98 micrograms, 1,100 micrograms, 3,000 micrograms, 910 micrograms. An Arame, depending can be anywhere from 7,000 to 40,000 and Hijiki, 2.8 or 2,800 if you're looking at micrograms. Compared to this which is in micrograms, so the best source in land foods is yogurt at 87 micrograms per cup, which is .008. That's a tenfold lower than the lowest of the sea vegetables which is nori at .098. Clearly, you can get more.

Now, can a person consume more cheese and milk than they can nori? Maybe. Quite frankly, a teaspoon is not very much. If I sit down and have a salad, a Hajiki salad or a Kelp salad, I'm looking at this big, big 'ol pile of it. You're getting quite a bit in sea vegetables. If you can learn how to do sea vegetables and encourage your clients and patients to do sea vegetables, they're going to be in good shape when it comes to iodine.

This is what some of the Lugol's iodine supplementation looks like. With Lugol's, it comes in different percentages. The most common percentage Lugol's is 2% and 5%. If you look at those per drop, every drop at 2% is 1-milligram of iodine. Every drop at 5% is 2.5mgs. One single drop of this stuff is the equivalent in iodine to about 12 cups of milk, 13 cups of milk. It's pretty concentrated. The 5% is 2.5 so 7.75.

Now, the total amount that you might want someone to take is ... Oh, and this is iodide only. Sorry, this is iodide. Iodide and iodine combine in Lugol's. You've got more when you add up the iodine along with it. What does this mean? It's very easy to get somebody supplemented with very large dose of iodine. On the one hand, you have to be careful. Make sure that they hear you say one drop versus one dropper. Because you if you tell them 8 drops and they take it 8 droppers, that's a toxic dose of iodine. You do have to be careful that way.

On the other hand, it's really freeing, because it's very easy to supplement with this. The liquid form, which is what I recommend, Dr. David Brownstein, Guy Abraham, they all recommend as well is really easy to absorb because it's in an ionic state.

Let's look at the controversy. We have something we're calling iodophobia. A lot of people are really scared of iodine. There's a big controversy. Dr. Datis Kharrazian who wrote the book, "Why Do I Still Have Thyroid Symptoms When My Lab Test are Normal?" He says we should always avoid iodine in Hashimoto's one 100%.

Dr. Brownstein says in his clinical research, he's used lots of iodine in people with Hashimoto's with good success. Who do you believe? I think you have to go to the studies and believe whichever studies you feel are more credible. There are studies on either side and I think it all goes down to biochemical individuality.

The ideas in this iodine-sodium transporter, it concentrates the iodine from the blood into the thyroid. If you think that's concentrated, it's even more concentrated in the thyroid and that's why we can fit up to 25 to 50mgs of iodine stored in the thyroid. Why do we need more? What would make it palatable to have more? What's the risk factors? Let's take a look at it in a little bit more detail.

I went recently to a Restorative Medicine Conference and at the Restorative Medicine Conference, Dr. Brownstein was speaking and of course he spoke about iodine, because that's what he speaks about. He showed a lot of studies, slide after slide after slide of studies. Bottom line is that he looks at the levels of iodine that in terms of consumption and they've fallen dramatically over the last 30 years.

He's looked at the incidents of autoimmune thyroid. He looked at the incidents of autoimmune thyroid, breast thyroid and prostate cancer. They've all risen. All of these have risen over the last 30 years. His take is that also the iodine intake has fallen, right? These things have risen, so therefore, you can't really come to the conclusion with that evidence that iodine is the cause of these things, yet people are saying, "Yes indeed," that iodine can cause autoimmune thyroid disease.

If that were the case, we'd see the less incidences of it these days as the iodine levels are falling. The thyroid can store 50mgs per day. The breasts can use 5mgs per day for a 110-pound woman. It's been extensively used for fibrocystic breasts. He talked about case after case after case. We're taking oral iodine and also topical and massaging it into the breast. It has been dramatic shifts.

Iodine deficiency has been linked to breast cancer via the way that it activates the BRCA 1 gene. When you don't have enough iodine, the BRCA 1 gene is activated after genetically modified so that the risk of breast cancer is much, much higher. It's also been linked to thyroid and prostate cancer. There's a number of studies that he shared on that as well.

How does iodine aggravate Hashimoto's? There's been lots of, I don't know about studies per se, but a lot of inquiries and many conflicting results. Mechanism is said to be that it increases the production of TPO. When you increase the production of TPO, if you have a person with TPO antibodies, that that increase production of TPO is going to increase the level.

The truth to the matter is, when we really look at this, it appears that whenever there is a problem with someone being put on a lot of iodine and having problems with their Hashimoto's getting worse, it almost exclusively has selenium deficiency as the underlying prerequisite. Let me say that again, it seems really clear that any of the downside of taking iodine with Hashimoto's has to do with selenium deficiency.

If a person is not selenium deficient, and you're taking care to make sure that they are supplementing with extra selenium any time they're on iodine, personally I believe that you're in good shape.

It's just a few little tidbits that I picked up about it, about iodine, that I thought you would be interested in, "Women with goiters have been found to have a three times higher incidents of breast cancer. What's the link? Iodine. A high intake of iodine is associated with low incidents of breast cancer and a low intake with a high incidents of breast cancer. Animal studies show that iodine prevents breast cancer, arguing for a causal, association in these epidemiological findings." That was from Dr. Donald Miller.

How much iodine do we need? According to Dr. David Miller, iodine is needed in microgram amounts for the thyroid, milligram amounts for the breast and other tissues, and can be used therapeutically in gram amounts. Recall that the RDA is around a 150 micrograms.

After testing over 500 patients, Dr. Brownstein is quoted as saying, "I found that 94.7% of the patients are deficient in iodine." He basically looks at everybody for the potential of iodine deficiency. When we look at iodine consumption, people in the US consume an average of 240 micrograms per day. In contrast in Japan, they consume more than 12 milligrams of iodine, which is a fiftyfold greater amount.

In addition, when you look at the health compared in the two countries, the incidents of breast cancer in the US is the highest in the world. In Japan, until recently, the very lowest, except, and that's an excerpt from iodine health by Dr. Donald Miller.

Some books, books that I've liked and enjoyed and have found to be helpful and useful is, "The Iodine Crisis," by Lynne Farrow and then, "Iodine Why You Need It and Why You Can't Live Without It," by Dr. David Brownstein. There are some resources, should you want to take this a step further. Thanks a lot for listening to our iodine presentation today as part of the Micronutrients Module. Go ahead and checkout whatever interests you and will see you next time. Bye-bye.