



INE | INSTITUTE OF
NUTRITIONAL
ENDOCRINOLOGY

Micronutrients: Iodine

Dr. Ritamarie Loscalzo



Medical Disclaimer: The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, drritamarie.com, and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.



What is Iodine?

- ✓ A non-metallic trace element
- ✓ A mineral essential to life
- ✓ It must be included in your diet – your body can't make it!
- ✓ Part of the Halides group on the periodic table of the elements
- ✓ Related to bromine, fluorine, and chlorine (iodine antagonists)



Halides

Periodic Table of Elements

Including Names, Atomic Numbers, Weights, Symbols



1																	18	
1	H Hydrogen																	
2	Li Lithium	B Boron																
3	Na Sodium	Mg Magnesium																
4	K Potassium	Sc Scandium	Ti Titanium	V Vanadium	Cr Chromium	Mn Manganese	Fe Iron	Co Cobalt	Ni Nickel	Cu Copper	Zn Zinc	Ga Gallium	Ge Germanium	As Arsenic	Se Selenium	Br Bromine	Kr Krypton	
5	Rb Rubidium	St Strontium	Y Yttrium	Zr Zirconium	Nb Niobium	Mo Molybdenum	Tc Technetium	Ru Ruthenium	Rh Rhodium	Pd Palladium	Ag Silver	Cd Cadmium	In Indium	Sn Tin	Sb Antimony	Te Tellurium	I Iodine	Xe Xenon
6	Cs Cesium	Ba Barium	Ra Radium	Hf Hafnium	Ta Tantalum	W Tungsten	Re Rhenium	Os Osmium	Ir Iridium	Pt Platinum	Au Gold	Hg Mercury	Tl Thallium	Pb Lead	Bi Bismuth	Po Polonium	At Astatine	Rn Radon
7	Fr Francium	Rf Rutherfordium	Rf Rutherfordium	Db Dubnium	Sg Singapore	Bh Bohrium	Hs Hassium	Mt Moscovium	Ds Darmstadtium	Rg Roentgenium	Cn Copernicium	Uut Ununtrium	Uup Ununpentium	Uuh Ununhexium	Uus Ununseptium	Uuo Ununoctium		
6	La Lanthanum	Ce Cerium	Pr Praseodymium	Nd Neodymium	Pm Promethium	Sm Samarium	Eu Europium	Gd Gadolinium	Tb Thulium	Dy Dysprosium	Ho Holmium	Er Erbium	Tm Thulium	Yb Ytterbium	Lu Lutetium			
7	Ac Actinium	Th Thorium	Pa Protactinium	U Uranium	Np Neptunium	Pu Plutonium	Am Americium	Cm Curium	Bk Berkelium	Cf Californium	Es Einsteinium	Fm Fermium	Md Mendelevium	No Neptunium	Lr Lawrencium			



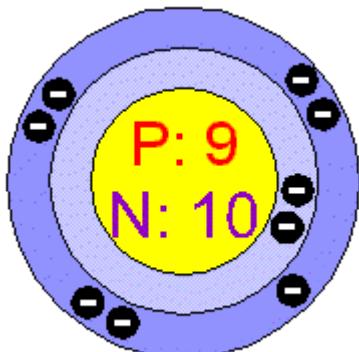
Why We Become Iodine Deficient

- ✓ Toxins compete with iodine receptors
- ✓ Iodine-depleted soil
- ✓ Radioactivity exposure
- ✓ Chlorinated and fluoridated water
- ✓ Baked goods use bromine as a dough conditioner
- ✓ Lack of iodine-rich foods in diet
- ✓ Iodized salt loses 100% of iodine content after exposure to air for 4 weeks

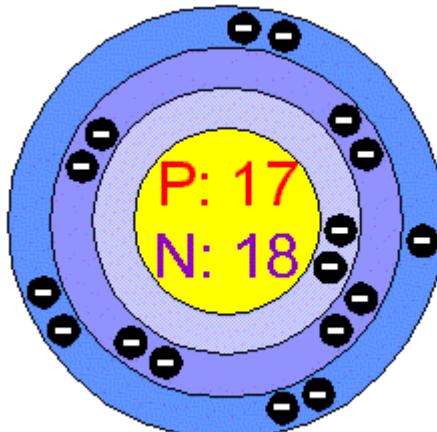


Halides

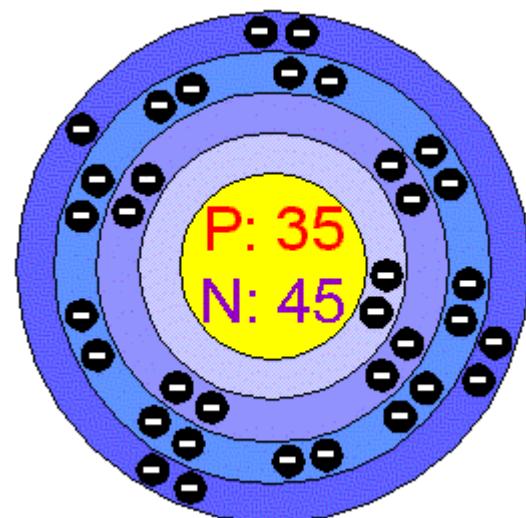
9
F
Fluorine
18.9984032



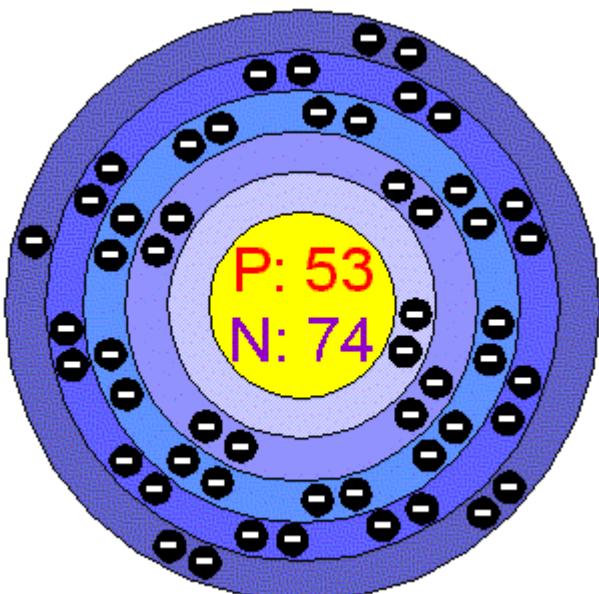
17
Cl
Chlorine
35.453



35
Br
Bromine
79.904



53
I
Iodine
126.90447

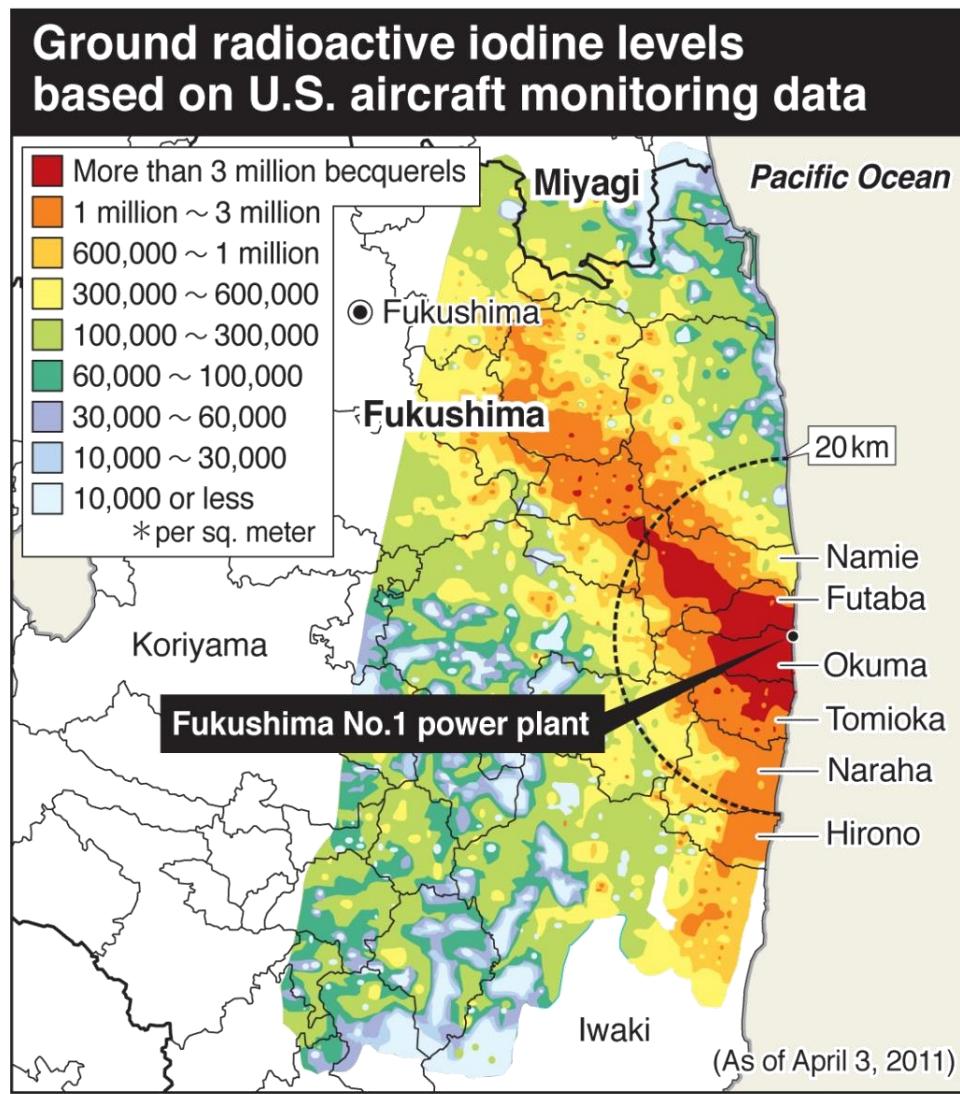


Radio Active Iodine

Iodine-131	
Full table	
General	
Name, symbol	Radioiodine, ^{131}I
Neutrons	78
Protons	53
Nuclide data	
Half-life	8.0197 days
Isotope mass	130.9061246(12) u
Excess energy	971 keV

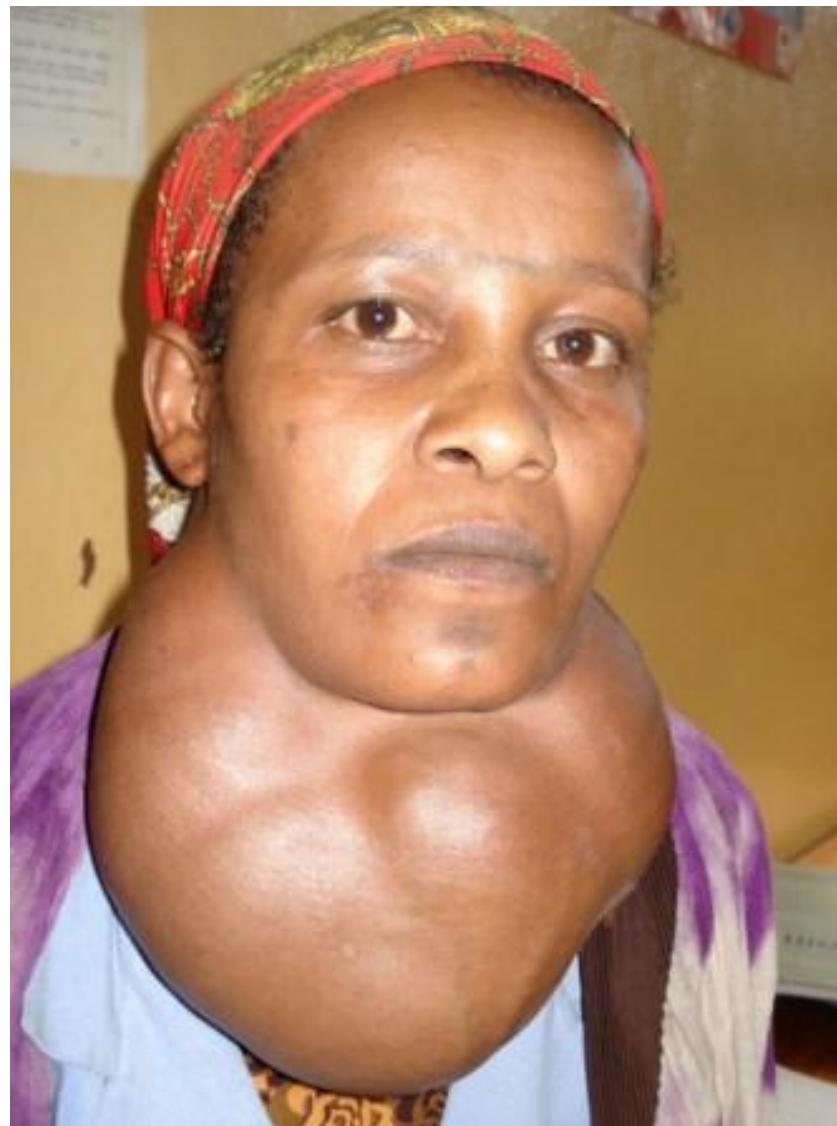


Radio Active Iodine Map



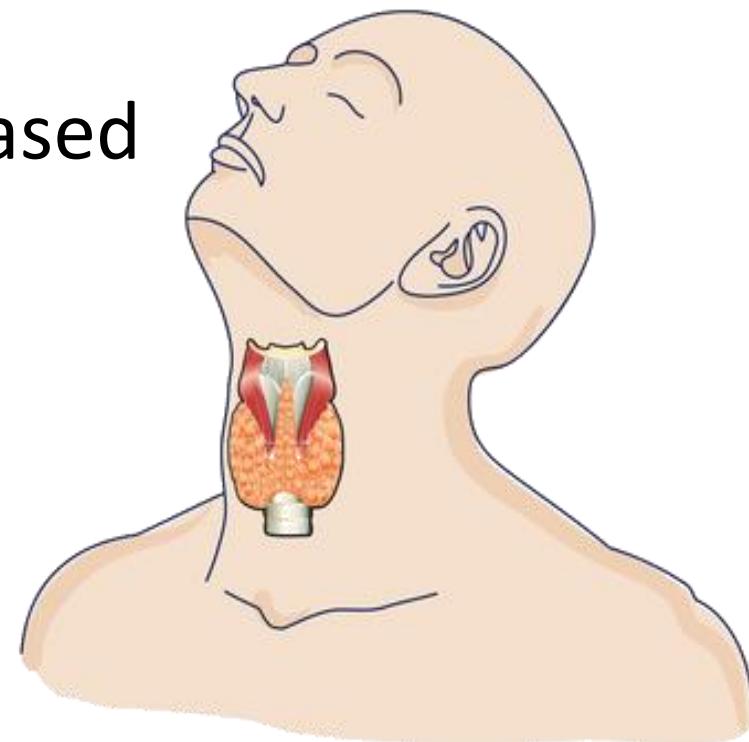
Consequences of Iodine Deficiency

- ✓ Hypothyroidism
- ✓ Goiter
- ✓ Fibrocystic breasts
- ✓ Uterine fibroids
- ✓ Intellectual development disorder
- ✓ Breast cancer



Symptoms of Iodine Deficiency

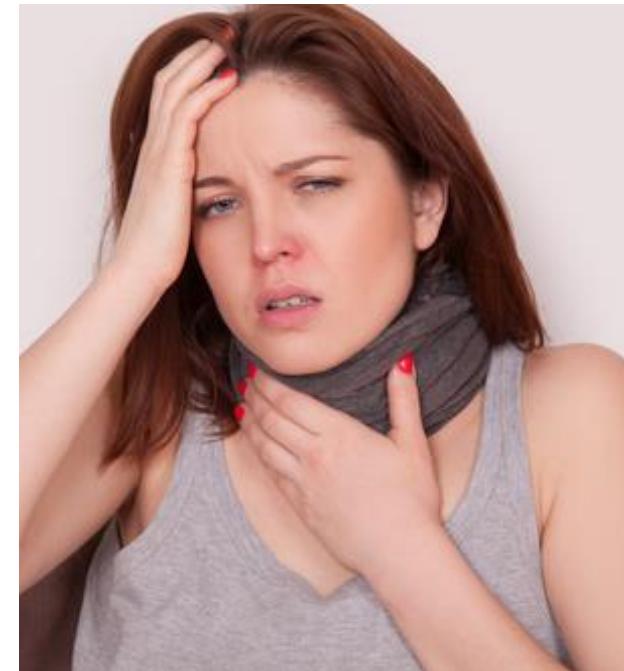
- Goiter
- Fatigue
- Blood levels of TSH increased
- Intolerance of cold
- Cold hands and feet
- Foggy thinking
- Increased need for sleep
- Dry skin
- Thinning hair
- Constipation



Symptoms of Iodine-Deficiency

Lymphatic Congestion

- Skin irritation
- Sore joints
- Aching hands and feet
- Cold hands and feet
- Swollen or sore breasts
- Swollen belly
- Cellulite
- Sore throat
- Allergies
- Headaches
- Chronic colds
- Cyst formation
- Accumulated fibrous or scar tissue

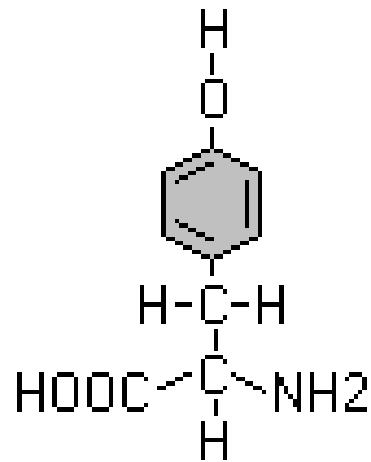


Benefits of Iodine

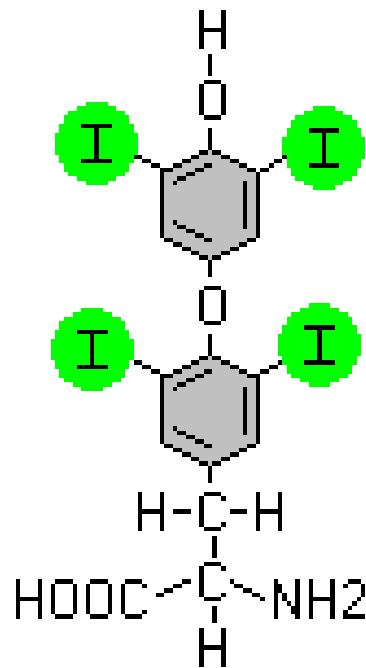
- ✓ Supports immunity
- ✓ Supports natural detoxification
- ✓ Supports thyroid function
- ✓ Supports cellular metabolism
- ✓ Supports memory, energy, mood, and weight
- ✓ Supports optimal hormonal function
- ✓ Supports breast tissue



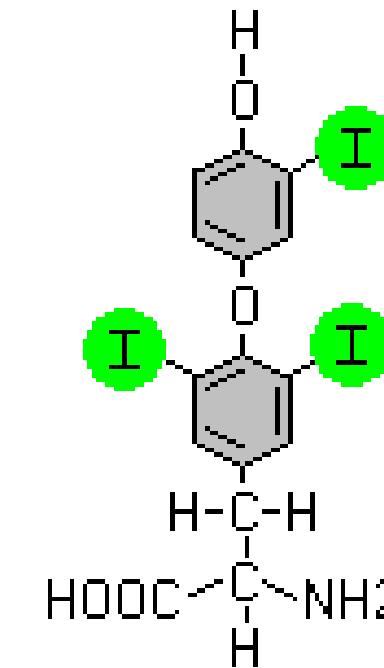
Thyroid and Iodine



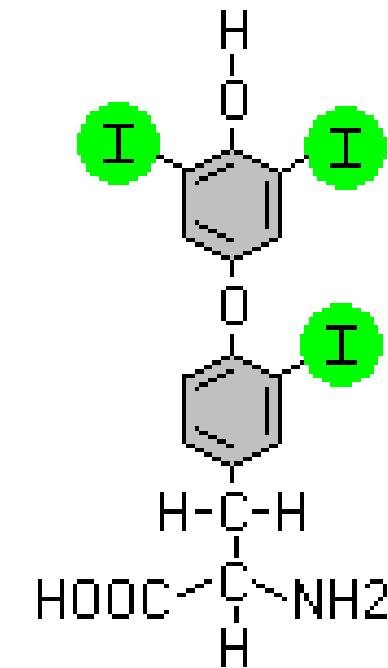
Tyrosine



Thyroxine (T4)

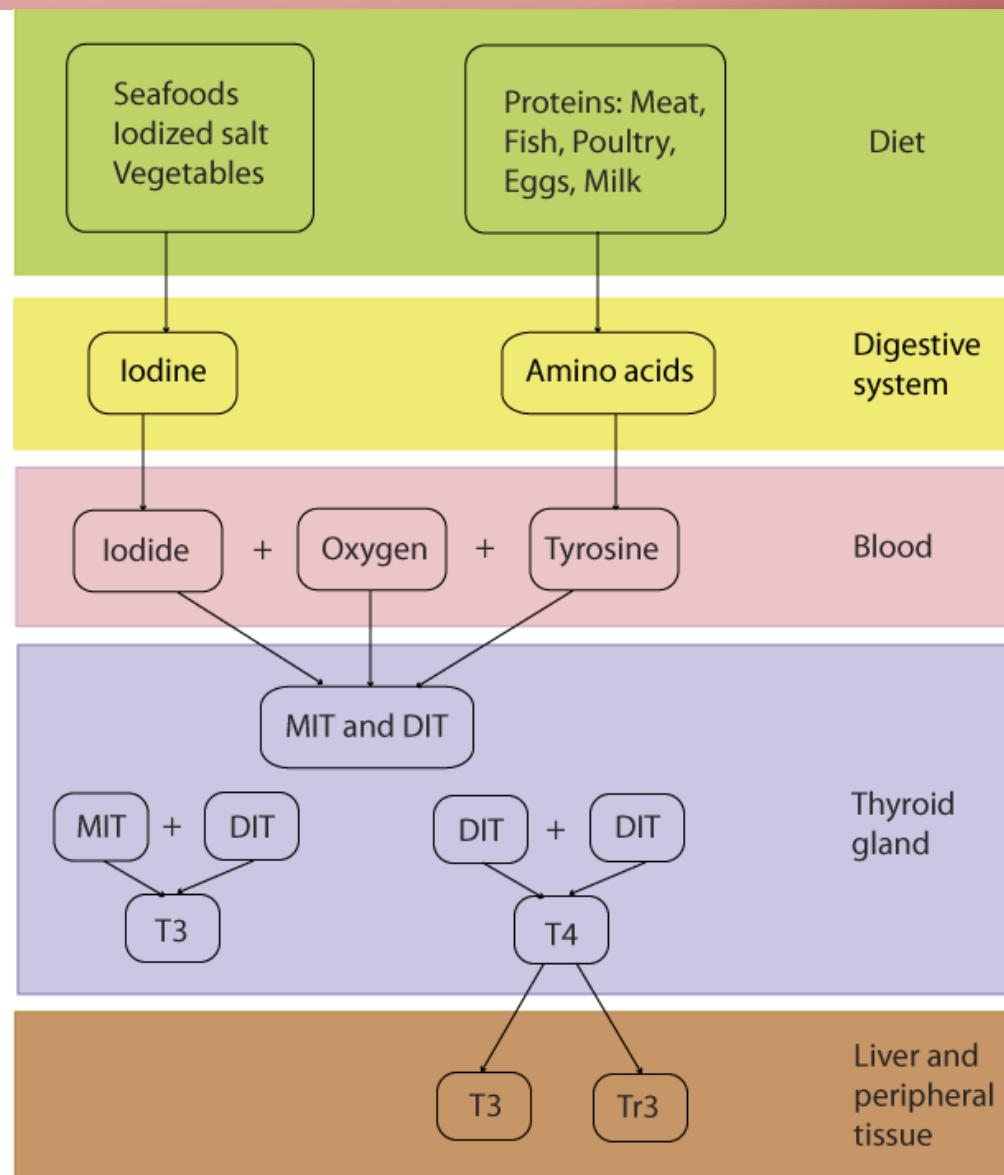


Triiodothyronine (T3)

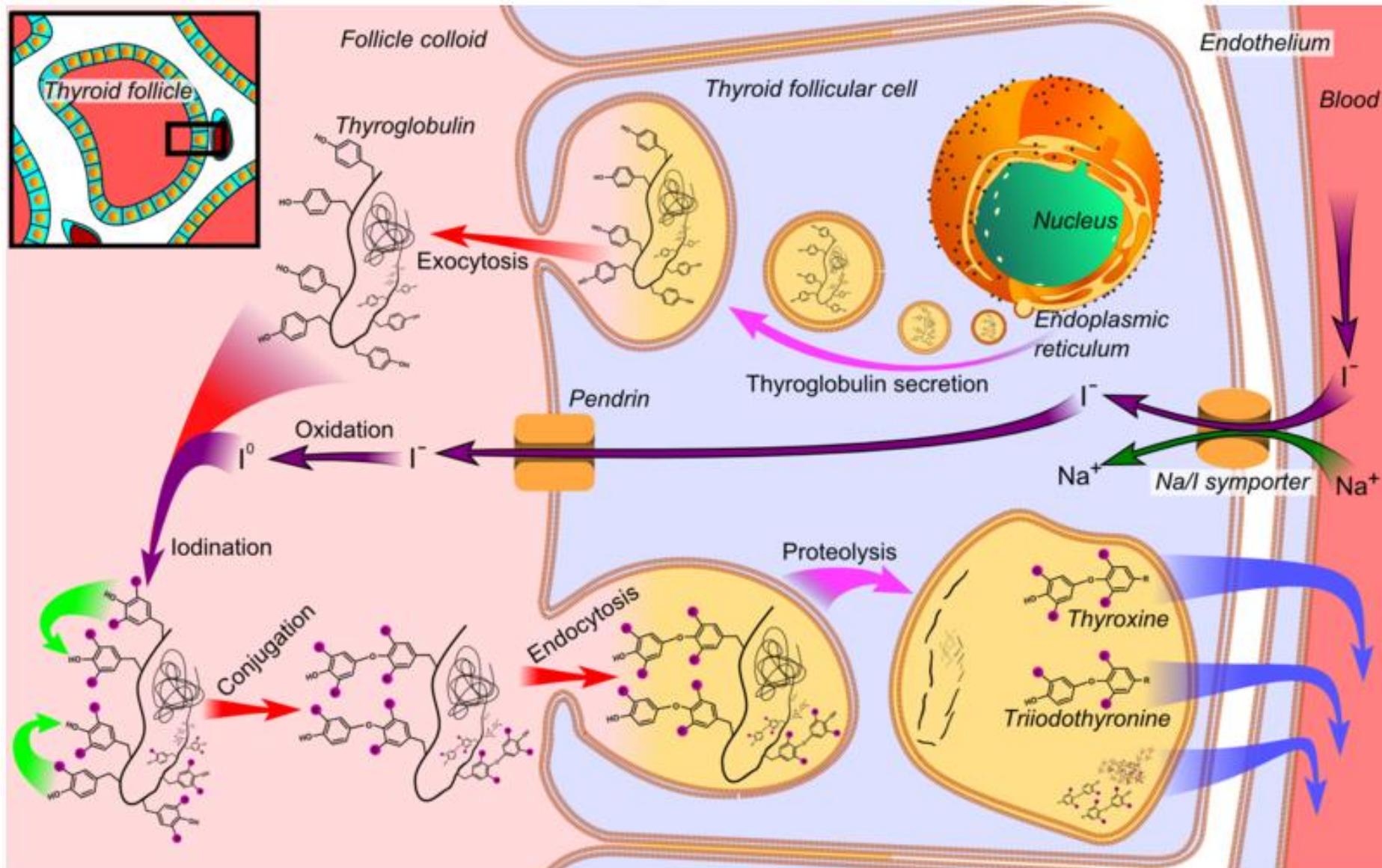


"Reverse T3" (inactive)

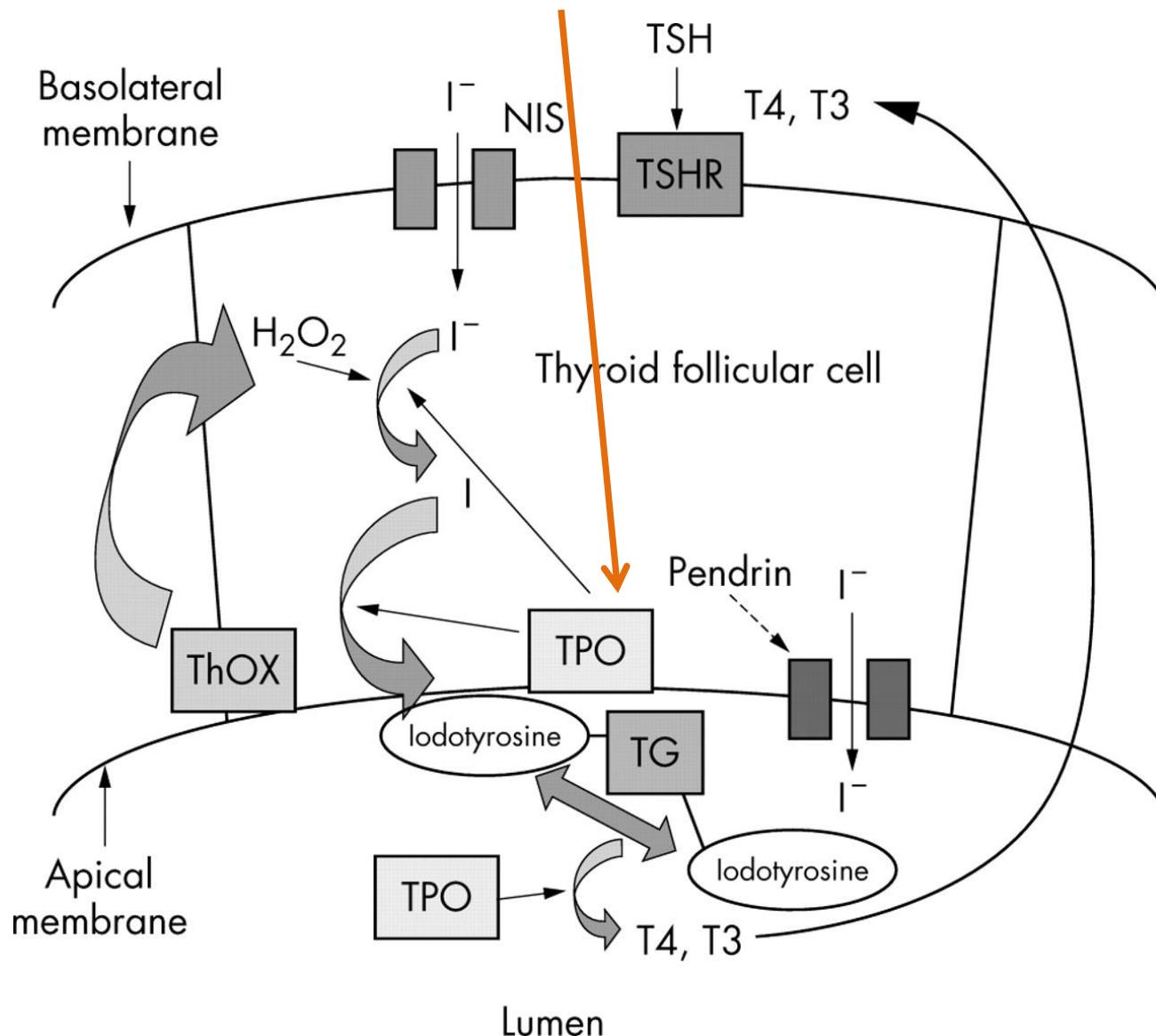
Thyroid Hormone Production



Thyroglobulin



Thyroid Peroxidase



Iodine Deficiency

- ✓ Not much in land foods
- ✓ Rich in sea veggies
- ✓ Needs good stomach acid for absorption
- ✓ Bladderwrack has T2
- ✓ Kombu: 10% T3 and T4



Iodine Assessment

- Symptoms
- Sign: First morning temperature, daytime temperature
- Thyroid labs
- 24-Hour urinary iodine load test
- Iodine spot test



How To Do an Iodine Load Test

- ✓ Stop ingesting iodine and iodine-containing foods 24 to 48 hours before the test.
- ✓ Discard first morning urine.
- ✓ Take 4 tablets of Iodoral®.
- ✓ Start collection of urine, following instructions from the lab.
- ✓ The first void on the following morning should be included in the urine collection.
- ✓ If total urine volume is above 3 liters, follow instructions supplied with the kit.



Iodine Load Test Labs

Doctor's Data, Inc.

3755 Illinois Avenue
St. Charles, IL 60174-2420
Phone: 1 (630) 377-8139
Toll Free: 1 (800) 323-2784
Fax: 1 (630) 587-7860
<http://www.doctorsdata.com>

Hakala Research

885 Parfet Street Unit E
Lakewood, CO 80215
Phone: 1 (303) 763-6242
Toll Free: 1 (877) 238-1779
Fax: 1 (303) 763-5247
Email: HakalaResearch@aol.com

FFP Laboratories

576 Upward Rd. Suite 8
Flat Rock, NC 28731
Toll Free: 1 (877) 900-5556
Fax: 1 (828) 697-9020
Email: ffp_lab@yahoo.com



Labrix Clinical Services, Inc.

16255 SE 130th. Avenue
Clackamas, OR 97015
Phone: 1 (503) 656-9596
Toll Free: 1 (877) 656-9596
Fax: 1 (877) 656-9756
Email: info@labrix.com



Iodine Supplementation Protocol

from the 2007 Iodine Conference

- ✓ **Iodoral or Lugol's (Liquid):** 50 mg minimum for breast cancer
- ✓ **Vitamin C:** 3,000 mg per day (more may be necessary to detox bromide)
- ✓ **Magnesium oxide, glycinate, or citrate:** 300 - 600 mg
- ✓ **Selenium (Selenomethionine):** 200 mcg
- ✓ **Niacin (B3):** [NOT niacinamide] 500 mg twice a day
- ✓ **Vitamin B2:** 100 mg three times a day
- ✓ A comprehensive vitamin and nutrition program
- ✓ Salt load for bromine detox



Bromide Exposure

- ✓ **PBDE fire retardants:** mattresses, carpeting, electronics, furniture, car interiors
- ✓ Dough conditioners
- ✓ Hot tubs, swimming pools
- ✓ Pesticides
- ✓ Plastics like those used to make computers
- ✓ Bakery goods and some flours often contain a “dough conditioner” called potassium bromate
- ✓ Soft drinks
- ✓ Medications



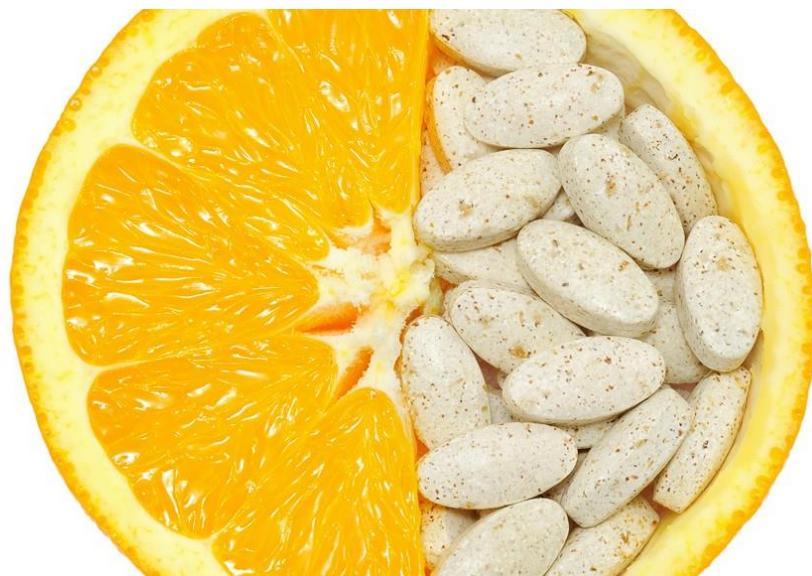
Iodine Related Bromide Symptoms

- Eyelid and foot twitching
- Tingling in hands or feet
- Dark thoughts, depression
- Anxiety
- Mouth and tongue sores
- Acne
- Hair loss
- Brain fog
- Leg and hip ache
- Rash
- Metallic taste
- Sinus ache
- Cherry angiomas
- Runny nose
- Headache
- Lethargy
- Difficulty swallowing
- Body odor
- Unusual urine odor
- Dry mouth
- Frequent urination
- Diarrhea or constipation
- Vision changes
- Irritability
- Increased salivation
- Dream changes
- Hormone changes
- Kidney pain
- Breast tenderness



Bromide Detox Strategies

1. Salt loading.
2. Stop iodine for 48 hours to rest the kidneys.
3. Reduce the iodine dose temporarily, then work back up.
4. Take several grams vitamin C spread throughout the day with the iodine companion nutrients.
5. Drink more water.
6. Add 25 mg zinc.



Salt Loading Protocol for Possible Bromide Side Effects

- ✓ Take 1/4 teaspoon salt dissolved in 1/2 cup warm water. Follow immediately with 12-16 oz. pure water.
- ✓ Repeat in 30-45 minutes if needed. May repeat again until copious urination begins.
- ✓ Observe response (usually within several hours).

Iodine Investigation Project participants have found 1/2 teaspoon salt dissolved in the recommended amount of water works faster than the 1/4 teaspoon dosage.



Food Sources of Iodine

- ✓ Sea vegetables
- ✓ Seafood: cod, sea bass, haddock, perch, shrimp, tuna
- ✓ Potato with peel, baked
- ✓ Milk (cow's)
- ✓ Turkey and chicken
- ✓ Beans
- ✓ Egg



Iodine RDA

Life stage	Iodine required per day (mcg)*
Adults	150
Pregnant women	250
Breastfeeding women	250



Iodine Content of Land Foods

World's Healthiest Foods ranked as quality sources of iodine

Food	Serving Size	Cals	Amount (mcg)	DV (%)
Yogurt	1 cup	154.3	87.22	58.15
Cow's milk, grass-fed	4 ounces	74.4	28.06	18.71
Eggs, pasture-raised	1 each	77.5	27.00	18.00
Strawberries	1 cup	46.1	12.96	8.64



Iodine Content of Sea Vegetables

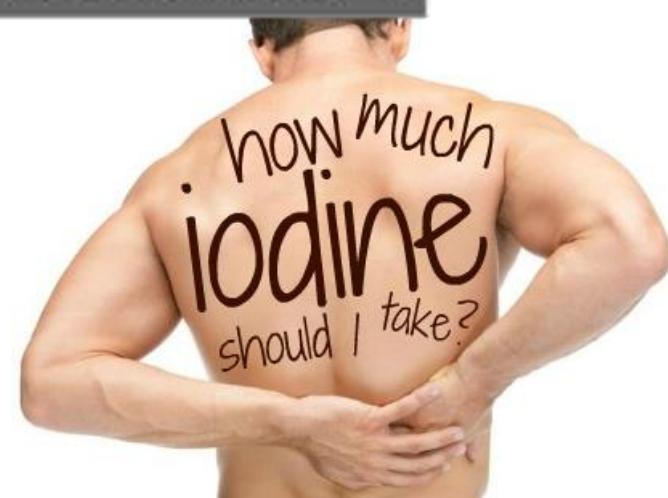
(per 7 g, approximately 1 teaspoon)

Nori	Dulse	Kelp	Wakame	Arame	Hijiki
.098 mg	1.169 mg	3.170 mg	.910 mg	6.860 – 39.480 mg	2.8 mg



Iodine Supplementation

Lugol's content per drop	Iodine	Iodide	Total
2%	1.0 mg	1.50 mg	2.50 mg
3%	1.5 mg	2.25 mg	3.75 mg
5%	2.5 mg	3.75 mg	6.25 mg
7%	3.5 mg	5.25 mg	8.75 mg
10%	5.0 mg	7.50 mg	12.50 mg
15%	7.5 mg	11.25 mg	18.75 mg



Iodine Controversy and Iodophobia

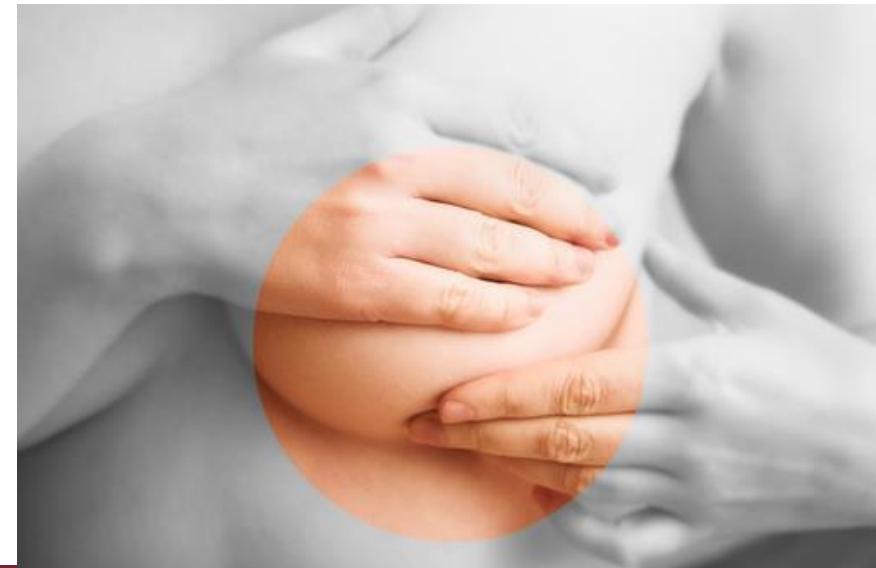
- ✓ **Kharrazian:** Avoid iodine in Hashimoto's
- ✓ **Brownstein:** Lots of iodine for Hashimotos
- ✓ **Iodine Sodium Transporter:** (NIS) Concentrates iodine from blood into thyroid



Is Iodophobia Warranted

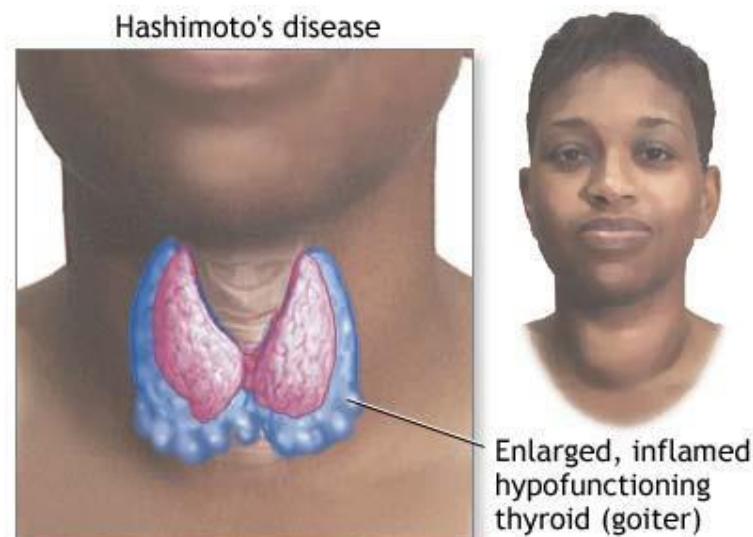
David Brownstein:

- ✓ Iodine levels have fallen over last 30 years
- ✓ Incidence of autoimmune thyroid, breast, thyroid and prostate cancer have risen
- ✓ Thyroid stores 50 mg/day
- ✓ Breasts need 5 mg/day for 110lb woman
- ✓ Extensive use for fibrocystic breasts
- ✓ Iodine deficiency linked to breast cancer BRCA1
- ✓ Iodine deficiency linked to thyroid and prostate cancer



Does Iodine Aggravate Hashimoto's?

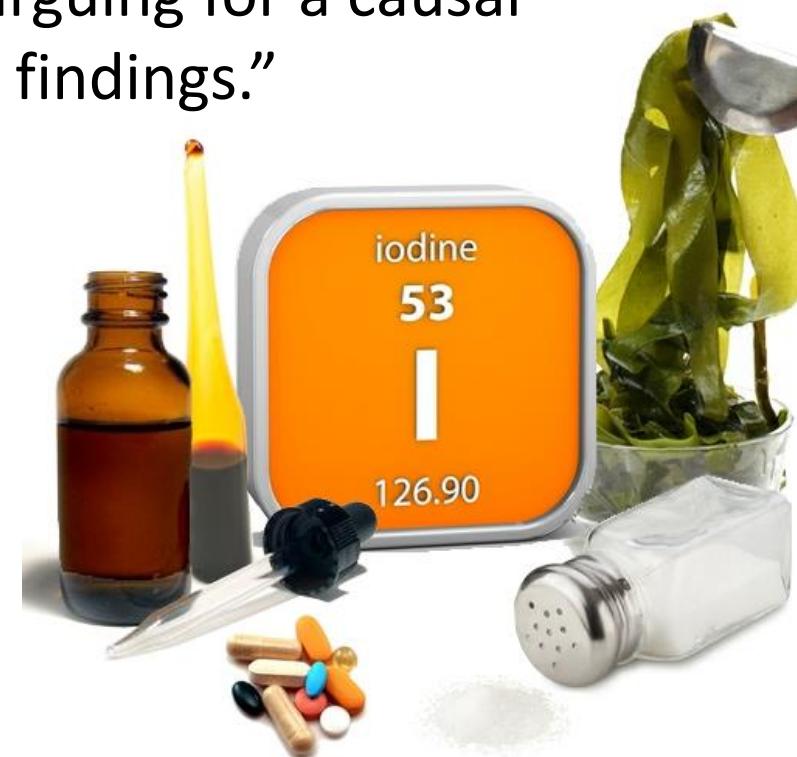
- ✓ Lots of studies, many conflicting results
- ✓ Mechanism is said to be the increased production of TPO
- ✓ Conclusion appears to be that selenium deficiency is the underlying prerequisite for iodine induced thyroid damage in Hashimoto's Thyroiditis



Iodine Tidbits

“Women with goiters have been found to have a three times greater incidence of breast cancer. A high intake of iodine is associated with a low incidence breast cancer, and a low intake with a high incidence of breast cancer. Animal studies show that iodine prevents breast cancer, arguing for a causal association in these epidemiological findings.”

- Dr. Donald Miller, Jr.



Iodine Need

“Iodine is needed in microgram amounts for the thyroid, milligram amounts for breast and other tissues, and can be used therapeutically in gram amounts.”

– Dr. David Miller

“After testing over 500 patients, I found that 94.7% of my patients are deficient in inorganic iodine.”

– Dr. David Brownstein

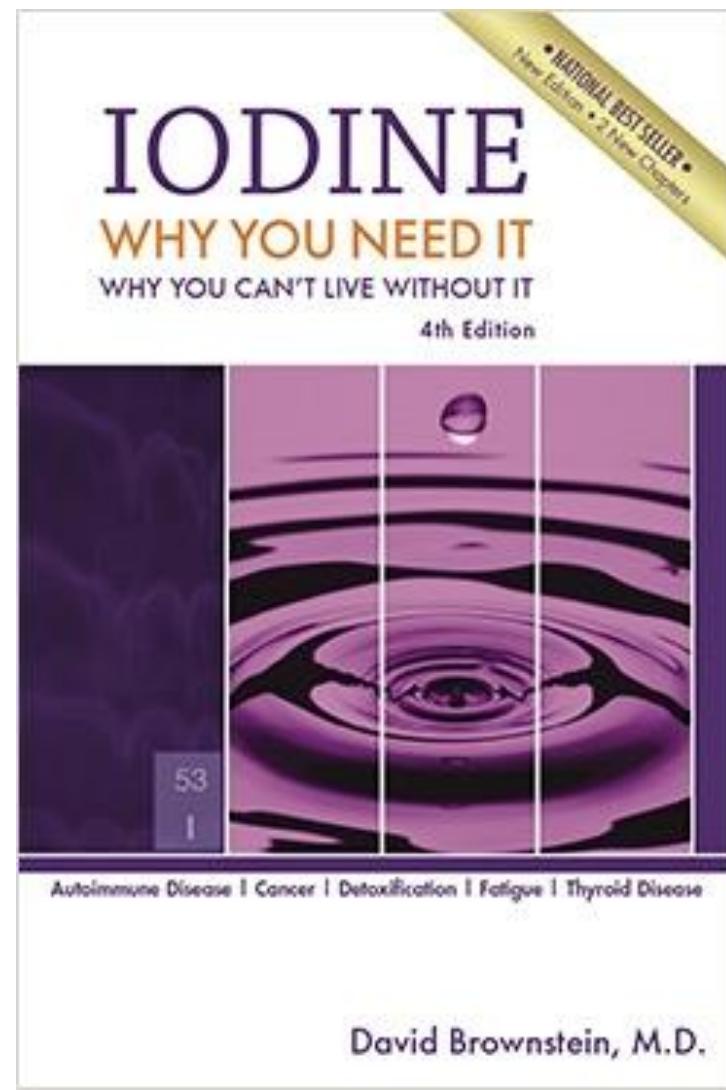
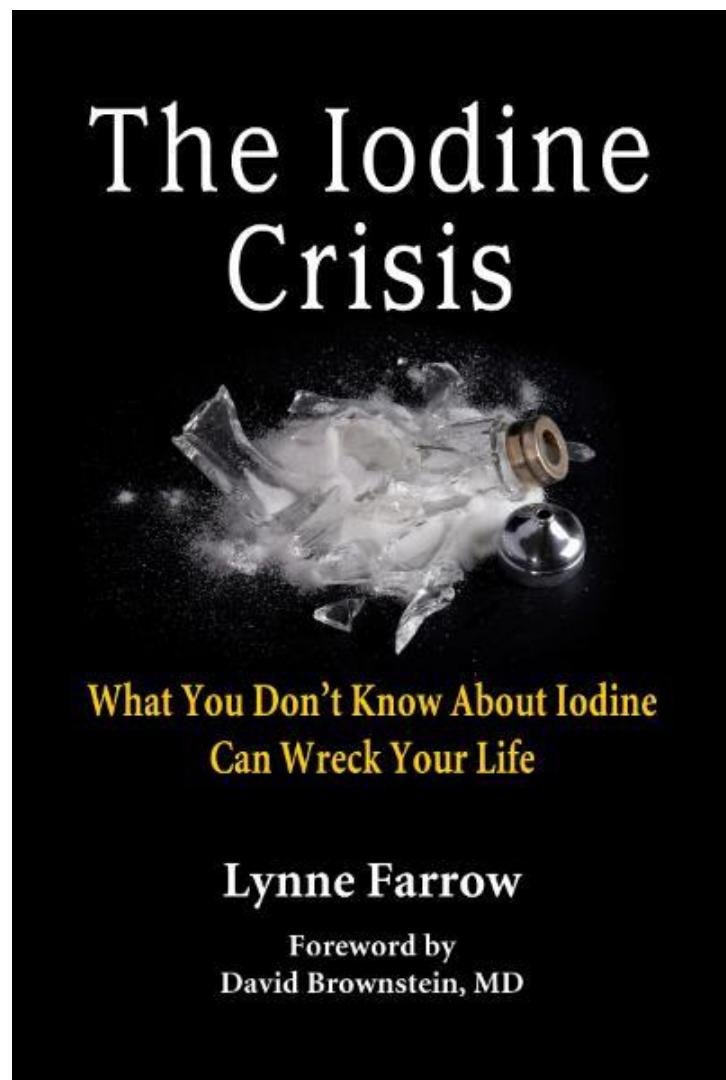


Iodine Consumption

- ✓ “People in the U.S. consume an average of 240 micrograms (μg) of iodine a day. In contrast, people in Japan consume more than 12 milligrams (mg) of iodine a day (12,000 μg), a 50-fold greater amount...
- ✓ “Health comparisons between the two countries are disturbing. The incidence of breast cancer in the U.S. is the highest in the world, and in Japan, until recently, the lowest.” - excerpt from *Iodine for Health*, by Donald W. Miller, Jr., MD



Books



Resources/References

- ✓ <http://www.drritamarie.com/go/IodineDeficiencyJohnDouillard>
- ✓ *A Review of the Scientific Literature as It Pertains to Gulf War Illnesses: Pyridostigmine Bromide* Vol. 2 by Beatrice Golumb, MD, PhD, <http://www.drritamarie.com/go/PyridostigmineBromide>
- ✓ Abraham G et al., *Evidence that the Administration of Vitamin C Improves a Defective Cellular Transport Mechanism for Iodine: A Case Report*, The Original Internist 2005
- ✓ Abraham G., *The Safe and Effective Implementation of Orthoiodosupplementation in Medical Practice*, The Original Internist 2004
- ✓ Cann S et al., *Hypothesis, Iodine, Selenium and the Development of Breast Cancer*, Cancer Causes Control 2000.
- ✓ *Breast Cancer Choices, Iodine Investigation Project Database*.

