

Iodine Replacement

Iodine is an element that has the symbol **I** and the atomic number 53. Chemically, iodine is the second least reactive of the halogens (which are members of Group XVII in the periodic table). However, the element does not occur in its free state in nature. It occurs as either a compound (i.e. **-KI**) or as a diatomic molecule (**I₂**) in its isolated form.

Iodine and its compounds are primarily used in medicine, photography and dyes. The iodides are very soluble in water, and the element is concentrated in seawater. This helps to explain how the element came to be required in trace amounts by all animals and some plants. It is the heaviest element commonly used by living organisms.

Iodine is an essential element for life, the heaviest element commonly needed by living organisms. Iodine's main role is as a constituent of the thyroid hormones, thyroxine (T4) and triiodothyronine (T3), but it is an important nutrient for virtually all of the tissues in the body. Thyroid hormones play a basic role in biology, acting on gene transcription to regulate the basal metabolic rate. Its role in mammary tissue is related to fetal and neonatal development, but its role in the other tissues is relatively unknown. It has been shown to act as an antioxidant in these tissues. A total deficiency of thyroid hormones can reduce basal metabolic rate up to 50%, while an overproduction of thyroid hormones can increase it to more than 100% of the baseline. The thyroid gland actively absorbs iodide from the blood by the sodium-iodide symporter system and uses it to make T3 and T4. It then releases these hormones into the bloodstream. 15-20 mg (~30%) of iodine is concentrated in thyroid tissue and thyroid hormones, but 70% of the body's iodine is distributed in other tissues, including mammary glands, eyes, gastric mucosa, the cervix, and salivary glands.

It is known that a diet lacking in iodine is connected with adverse health effects collectively referred as iodine deficiency diseases or disorders. In the past where there was little iodine in the diet, typically remote inland areas and semi-arid equatorial climates where no marine foods were eaten, iodine deficiency gave rise to hypothyroidism, symptoms of which are extreme fatigue, goiter, mental slowing, depression, weight gain, and low basal body temperatures. In the present day, iodine deficiency is widespread due to the popularity of manufactured, processed foods lacking in nutrients and minerals. Some theorize that soil depletion of the nutrients and minerals is partly responsible. Iodine deficiency is also the leading cause of preventable mental retardation, a result which occurs primarily when babies or small children are

rendered hypothyroid by a lack of the element. The addition of iodine to table salt has largely eliminated this problem in the wealthier nations, but as of March 2006, iodine deficiency remained a serious public health problem in the developing world. Iodine deficiency is also a problem in certain areas of Europe. In Germany it has been estimated to cause a billion dollars in healthcare costs per year. Studies also indicate that iodine deficiency, either dietary or pharmacological, can lead to breast atypia and an increased incidence of malignancy in animal models, while iodine treatment can reverse dysplasia. Laboratory evidence demonstrates that the effect of iodine on breast cancer is in part independent of thyroid function and that iodine inhibits cancer promotion through modulation of the estrogen influence. This suggests that iodine/iodide may be useful as an important adjuvant therapy via the normalization of the estrogen pathway in women with breast cancer. Iodine also has an important action on the immune system and is present in larger amounts in immune tissues such as the thymus gland. Although some Chinese data associate "excess" iodine with autoimmune thyroiditis and hypothyroidism, these effects have not been observed in Japanese populations (consumption is much higher due to the frequent consumption of seafood and seaweed/kelp). "Excess" levels have even been hypothesized to have a protective effect on breast cancer, fibrocystic disease, uterine fibroids as well as the entire immune system based on the fact that these disorders are of low incidence in populations that get higher levels of iodine in their diets.

The United States Recommended Daily Allowance (RDA) is 150 micrograms per day (mcg/day) for both men and women, with a Tolerable Upper Intake Level (UL) for adults said to be 1,100 micrograms/day (1.1mg/day). This was established in 1980 and is based on the amount of iodine/iodide needed to prevent goiter, cretinism, and hypothyroidism. It was not based on the amount needed to optimize body function. Newer studies by Abraham MD and others would suggest that these recommended levels are in fact way too low. The optimal requirement for whole body need has not been studied adequately yet, but it appears to be about 6-12mg per day. This is approximately 6000% of the RDA. The Tolerable Upper Intake Level was assessed by analyzing the effect of supplementation on creating a slight increase in thyroid-stimulating hormone. Newer Iodine loading and excretion studies have shown that in most patients iodine didn't even appear in the urine until a daily dose of 6-12mg was achieved and this was only after a loading dose of 50mg/d for three months. The slight elevation of TSH appears to be a transient effect and is of little consequence.

Natural sources of iodine include sea life, such as kelp and certain seafood, as well as plants grown on iodine-rich soil. Iodized salt is fortified with iodine but in an amount too small for true needs. As of 2000, the median intake of iodine from food in the United States was 240 to 300 mcg/day for men and 190 to 210 mcg/day for women. It

is for all of these reasons above that most people tend to be deficient in iodine. The most sensible plan to optimize the level of iodine in people is to supplement.

Supplementation of iodine should be done under the close supervision of someone familiar with the process, because rapidly replacing iodine is fraught with unpleasant side effects. Since most people are deficient in iodine there are usually an ample number of available binding sites for other chemicals, such as chlorine, fluorine and bromine to bind to. These toxic members of the halogen family get into our system through exposure to our drinking/bathing water (chlorine), exposure in our dental care products (fluorine), and exposure from plastics and bread dough conditioners (bromine) to name but a few ways. The body recognizes them as toxins but because they are so similar to iodine in structure it is able to put them away in these available binding sites created by the deficiency of iodine. There is some evidence that some of the heavy metals may be handled in this way also. At least they will cause less trouble there and do actually seem to function as poor substitutes for iodine. If supplemental iodine is put back into the system too fast then it will preferentially bind to the receptor, displacing the other halogens/heavy metals and releasing them into the system at a rapid rate. This can cause a number of unpleasant effects such as headache or a brassy metallic taste in the mouth. This is easy to avoid by using a sensible plan of replacement.

The first thing to do is to find out if you are deficient. There are 24-hour urine collections tests that can do this accurately but we have found a simple way to do this for a very low cost. This is called the iodine patch test. It is not as accurate but it tells you what you need to know. Take some tincture of iodine and “paint” a spot on your inner forearm. If your body needs iodine it will rapidly absorb the spot transdermally. It has been determined that if this process takes more than 24 hours you will only require maintenance levels of iodine. If the spot is completely gone in less than 24 hours you are very likely to be deficient. If the spot is gone in less than 12 hours you are almost certainly deficient. The faster the body draws in the iodine, the more likely you are to be deficient.

Begin replacement by taking Prolamine Iodide (3mg I). Any source of iodine is OK but I favor the Standard Process® (“SP”) Prolamine Iodine because of the level of iodine, the natural source, and the presence of both iodine and iodide which helps to optimize this process. Occasionally you might have to substitute other supplements like Iodomere (200mcg I), SP Organically Bound Minerals (250 mcg I), SP Min-Chex (300mcg I), or SP Min-Tran (200 mcg I) if you are sensitive to the corn protein in Prolamine Iodine, but this is unusual and requires much more time due to the lower amounts of iodine in the others.

Protocol for Supplementation

Loading Phase:

- ❖ Begin by taking 1 ^{SP} Prolamine Iodine (3 mg I) once a day and do so for 3 weeks
- ❖ If all is well in 3 weeks increase to 2 per day.
- ❖ In 3 weeks increase to 3 per day.
- ❖ In 3 weeks increase to 4 per day and continue for 3 weeks.
- ❖ At this point you are ready to change from ^{SP} Prolamine Iodine to Iodoral (12.5 mg I).
- ❖ Continue the process by taking 1 Iodoral per day.
- ❖ In 3 weeks increase to 2 per day.
- ❖ In 3 weeks increase to 3 per day.
- ❖ In 3 weeks increase to 4 per day.
- ❖ Continue taking 4 Iodoral per day for 3 months. This is the loading phase.
- ❖ If you should have any problems during this process just stop the iodine and ask for help. The majority of people do well on the above regimen but occasionally those with a heavier burden of toxic halogens or heavy metals may have problems. Most of the time, problems can include brassy metallic taste, increased salivation and sneezing, headache in the frontal region, fatigue, and perioral acne. All of these problems can be dealt with by reducing the dosage to one level lower and continuing for an additional 3 weeks at that level. Then resume the increase again as described above. If there is any indication of rash, swelling, or shortness of breath, please stop immediately and seek help. True allergy to elemental iodine is unusual as most problems (seafood, x-ray dye) are due to larger molecules the iodine is attached to and not the actual iodine. The iodine patch test you did to check for deficiency is a reasonable screening test for sensitivity to iodine.

Maintenance Phase:

- ❖ Reduce your level to 3-4 Prolamine Iodine per day or 1 Iodoral per day, whichever is more convenient for you. It is probably good to remain at this level for maintenance. I prefer the ^{SP} Prolamine Iodine better because it is a whole food source; however, the Iodoral is easier because it is one pill.