Testing for Iodine Deficiency

Whole Body Levels Crucial for Thyroid and Breast Health

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Iodine is essential for health, although it has been unjustly maligned throughout much of the 20th century. Iodine plays an important role in thyroid and breast health as well as protecting against certain forms of cancer.

Organic iodine is toxic to cells (cytotoxic) and produces severe side effects. The inorganic form, however, is not only safe, but also highly beneficial. Unfortunately, the severe side effects of iodine-containing drugs have been attributed to inorganic iodine/iodide, even though published studies demonstrate that the organic molecule is cytotoxic, not the inorganic iodine bound to this molecule.1

The last national nutritional survey showed a trend of decreasing iodine intake by the US population.2,3 Currently 15 percent of the US adult female population excreted in their urine less than 0.05 mg iodide/L, a level classified by the World Health Organization (WHO) as iodine deficiency. As iodine levels in the United States declined, autoimmune thyroid disorders and breast, prostate, thyroid, endometrial and ovarian cancers increased.2

Daily iodine intake levels set by the WHO were recommended with the goal of preventing simple goiter and not for nourishing the whole body with the amount of iodine it needs. This approach can be disastrous because of the 50 mg of iodine found in the human body, only 10 to 15 mg is found in the thyroid.

Surprisingly, the breast is a substantial reservoir for iodine. When iodine is ingested, the thyroid uses 6 mg and the rest of the body uses 8 mg. The breasts use about 5 mg of the non-thyroid amount. Countries with the highest iodine consumption have the lowest breast cancer incidence.2 Researchers have estimated that in both women and female rats, the amount of iodine required for protection against breast cancer and fibrocystic breast disease is at least 20 to 40 times the amount required for control of goiter.4-5

Modern day humans are exposed to an onslaught of goitrogens—substances that block iodine absorption and inhibit the thyroid gland. In the early 1960s, iodine was added to bread as a dough conditioner. But in the 1980s, bromine replaced iodine in the bread-making process.6 Bromide is known to cause goiters, the term for enlarged thyroid glands, because it competes with iodine for use by the body, producing a relative iodine deficiency even when iodine intake is sufficient.7 Sangster, et al reported a decreased ability to concentrate and sleepiness in normal male subjects ingesting sodium bromide.8 These symptoms are consistent with hypothyroidism caused by iodine deficiency.

Iodine was first added to sodium chloride (table salt) in the 1920s in the US. That practice gave a false sense of iodine sufficiency and resulted in the public relying on iodized salt for supplementation instead of the previously used forms of iodine and iodide found in the Lugol solution, a 5 percent solution of 50 mg iodine and 100 mg potassium iodide per milliliter that was commonly used by medical practitioners. However, by the 1950s, most physicians forgot their predecessors were using amounts of iodine/iodide two orders of magnitude greater than the amounts present in the average daily consumption of table salt. In addition, although supplementation with both iodine and iodide produces the most desirable effects, table salt supplies only iodine.

Hypothyroidism

Iodine deficiency is likely one of the causes of the current hypothyroid epidemic. In several communities worldwide, an increased incidence of chronic autoimmune thyroiditis (inflammation of the thyroid gland) was reported following the adding of iodine to table salt.9 Mayo Clinic researchers studied the average annual incidence of Hashimoto’s thyroiditis (a type of autoimmune thyroiditis that causes hypothyroidism) among women of Olmsted County, Minnesota during three consecutive periods from 1935 to 1967.10 They found there was a progressive increase in the incidence of Hashimoto's thyroiditis after the introduction of iodinated table salt.

Prior to the iodinization of salt, autoimmune thyroiditis was almost non-existent in the US although Lugol solution and potassium iodide were used extensively in medical practice in amounts two orders of magnitude greater than the average daily amount ingested from iodized salt. This suggests that inadequate iodine intake aggravated by goitrogens, not excess iodide, was the cause of this condition.9, 11

In addition, the Japanese, who consume plenty of iodine-rich seaweed, have an extremely low incidence of iodine-deficiency goiter and hypothyroidism.12

Graves’ Disease

Graves’ disease represents up to 90 percent of hyperthyroidism. Today, goitrogenic drugs and radioactive iodine are used to manage this condition. However, iodine was used in the treatment of toxic goiter as early as 1840.13 Thompson, el al, in a 1930 publication, quoted several authors in the late 1800s and early 1900s who used Lugol solution alone successfully in Graves’ disease, with complete remission, eliminating the need for surgery.14-15

Iodine Testing

A user-friendly, oral loading test can detect iodine deficiencies. Inorganic iodine is an ideal element for this test because it is absorbed by the gastrointestinal tract and is highly bioavailable with most of the ingested inorganic iodine/iodide excreted in the urine.16

Testing involves collecting urine immediately upon arising in the morning to use in what's called a spot test. Then, 50 mg. of potassium iodide and iodine is ingested. Urine is collected throughout the day until the first urine of the next morning. The samples, including the baseline spot test, are shipped to the lab.

If the body has sufficient iodine, at least 90 percent will be excreted in the urine. In iodine deficiency, however, the body will hold on to some of the iodine to compensate for the deficiency. The more iodine that remains in the body, the more a person is iodine deficient and needs to begin supplementation.

After determining an iodine deficiency, supplementation should begin gradually, because iodine mobilizes toxic metals and goitrogenic substances from their storage sites potentially increasing peripheral levels high enough to cause symptoms. Testing should be repeated every three to four months to monitor proper iodine doses.

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