

XymoDine™

Supra-Dose Iodine



Available in 90 capsules

Discussion

Iodine is an essential trace element, recognized for its traditional role in thyroid hormone synthesis. Iodine is directly incorporated into thyroxine (T4) and the biologically active form of the thyroid hormone triiodothyronine (T3). Thyroid hormones regulate metabolism and energy production throughout the body and, in turn, affect core body temperature, growth, reproduction, protein synthesis (including the formation of hair and skin), and neuromuscular function.*^[1,2]

In addition to its well-known role in thyroid health, iodine has antioxidant activity, and it plays a critical role in intellectual development, endocrine function, and breast and reproductive system health.^[2-8] Approximately 15-20 mg of iodine is concentrated in the thyroid and thyroid hormones, while 70% of the body's iodine is distributed in other tissues, including the mammary glands, ovaries, eyes, gastric mucosa, cervix, and salivary glands.*^[3,8,9]

Sources of Iodine

Iodine must be obtained from the diet or in supplement form. Iodine intake through seaweed consumption, such as in Japanese populations, is naturally higher than in other populations. Current estimates put Japanese daily intake of iodine from seaweed at 1-3 mg/d^[10]; but previous estimates have been much higher, such as 5.3-13.8 mg/d, and even as high as 50-80 mg/d.^[2,3] In other regions, the iodine content of food is dependent upon the presence and availability of iodine in the soil in which food is grown. In many countries, table salt and cattle feed have been fortified with iodine to help consumers meet minimum intake requirements. For instance, universal salt iodization was instituted to reduce the prevalence of goiter.^[11] It is interesting to note that over the last 25 years, the consumption of (iodized) table salt by US citizens has decreased by 65% as a result of people trying to reduce their sodium intake for health reasons.*^[2]

Iodine Sufficiency

Iodine sufficiency is a controversial topic. The US RDI for iodine is 150 mcg/d for adults, which governing bodies consider to be adequate. The tolerable upper limit is set at 1 mg/d. Among functional medicine practitioners, there is no consensus on the actual human requirement

Clinical Applications

- » Supports a Healthy Synthesis of Thyroid Hormones*
- » Helps Maintain Healthy Breast Tissue*

*XymoDine™ is a superior iodine formulation created to enhance thyroid support and offer long-term, consistent results. XymoDine contains the ideal balance of potassium iodide and molecular iodine (I₂).**

for iodine sufficiency. Some believe that individual iodine requirements hinge upon the exposure to or consumption of goitrogens—substances in food or the environment that interfere with iodine utilization or thyroid hormone production. Examples of goitrogens include toxic halides (fluoride and bromide), organochlorides, perchlorates, cabbage, Brussels sprouts, soybean isoflavones, and several other foods.*^[1]

According to some iodine experts, the requirement of the whole human body for iodine is about 14 mg/d or more (6 mg/d needed for the thyroid gland, the rest for extra-thyroidal tissues).^[12] Although there is not a consensus, many experts agree that the focus of sufficiency cannot reside solely with the thyroid, but rather it must address *whole body* sufficiency.*^[2]

Doses ranging from 3 mg/d up to 50 mg/d have been used successfully in clinical practice.^[2,11,13] It is postulated that intakes that reflect those of seaweed-consuming Japanese would come closer to meeting whole body sufficiency. Furthermore, it is a little-known fact that under certain circumstances, high doses of potassium iodide (up to 130 mg) can be used to saturate the thyroid and protect it in the event of a nuclear accident.*^[14]

Breast Health

Next to the thyroid gland, the breasts and ovaries concentrate the most iodine.^[3,9] The relationship between breast health and iodine levels has been reported on for decades, and it has been proposed that inadequate iodine prohibits normal breast architecture to develop.^[11] Moderately high doses of supplemental iodine have been used to promote breast comfort after animal and human studies suggested that such a protocol would have positive effects. A randomized, double-blind, placebo-controlled, multicenter clinical trial (N = 111) investigated the effect of supraphysiologic doses of iodine on breast health in women with normal thyroid function. The 3 and 6 mg/d doses resulted in significant improvement in breast comfort.^[5] According to Ghent et al, certain breast tissue “reacts differently to sodium iodide, protein-bound iodide and molecular iodine. Molecular iodine is nonthyrotropic and was the most beneficial.”^[4] It is important to note that individuals with a history of autoimmune thyroid pathologies were excluded from the study.*

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XymoDine™ Supplement Facts

Serving Size: 1 Capsule

	Amount Per Serving	%Daily Value
Iodine (7500 mcg as potassium iodide and 5000 mcg as molecular iodine)	12,500 mcg	8333%

Other Ingredients: Microcrystalline cellulose, HPMC (capsule), silica, magnesium stearate, and sodium copper chlorophyllin.

DIRECTIONS: Take one capsule daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged

STORAGE: Keep closed in a cool, dry place out of reach of children.

DOES NOT CONTAIN: Wheat, gluten, yeast, corn, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

**Iodine Supplementation**

Supplemental iodine has been found to be safe and well-tolerated in the inorganic, non-radioactive iodine/iodide form.^[12] XymoDine reflects the forms and ratios of iodine found in Lugol's solution—a liquid combination of molecular iodine and potassium iodide that has been safely and effectively employed since 1829.^[3,15,16] XymoDine provides 12.5 mg of iodine per capsule, with a breakdown of 5 mg of molecular iodine and 7.5 mg of potassium iodide. The provision of 12.5 mg of iodine per capsule allows healthcare practitioners to easily titrate iodine dosage as required. Due to the “high-potency” dose of iodine in XymoDine, individuals should consult their healthcare practitioner prior to use regarding any medical conditions, including thyroid conditions, and any possible interactions with medications. High doses should be monitored by a knowledgeable healthcare professional.*

Testing is an important aspect of supra-dose iodine supplementation and should guide the use of iodine in mg doses. Experts use spot/urine testing and load testing with subsequent (24/h) urine analysis to help determine iodine need and sufficiency.*

References

1. Linus Pauling Institute: Micronutrient Information Center. Iodine. <http://lpi.oregonstate.edu/infocenter/minerals/iodine/#safety>. Accessed March 19, 2015.
2. Miller D. Extrathyroidal benefits of iodine. *Journal of American Physicians and Surgeons*. 2006;11(4):106-10. <http://www.jpands.org/vol11no4/millerd.pdf>. Accessed March 17, 2015.
3. Patrick L. Iodine: deficiency and therapeutic considerations. *Altern Med Rev*. 2008 Jun;13(2):116-27. [PMID: 18590348]
4. Ghent WR, Eskin BA, Low DA, et al. Iodine replacement in fibrocystic disease of the breast. *Can J Surg*. 1993 Oct;36(5):453-60. [PMID: 8221402]
5. Kessler JH. The effect of supraphysiologic levels of iodine on patients with cyclic mastalgia. *Breast J*. 2004 Jul-Aug;10(4):328-36. [PMID: 15239792]
6. Stadel BV. Dietary iodine and risk of breast, endometrial, and ovarian cancer. *Lancet*. 1976 Apr 24;1(7965):890-91. [PMID: 58152]
7. Cann SA, van Netten JP, van Netten C. Hypothesis: iodine, selenium and the development of breast cancer. *Cancer Causes Control*. 2000 Feb;11(2):121-27. [PMID: 10710195]
8. Natural Medicines: Iodine. <https://naturalmedicines.therapeuticresearch.com/databases/food,-herbs-supplements/professional.aspx?productid=35>. Accessed March 20, 2015.
9. Iodine and the body. Iodine Research Web site. <http://iodineresearch.com/ovaries.html>. Accessed March 30, 2015.
10. Zava TT, Zava DT. Assessment of Japanese iodine intake based on seaweed consumption in Japan: A literature-based analysis. *Thyroid Res*. 2011 Oct 5;4:14. [PMID: 21975053]
11. Brownstein D. Clinical experience with inorganic non-radioactive iodine/iodide. http://www.optimox.com/pics/Iodine/IOD-09/IOD_09.htm. Accessed March 17, 2015.
12. Abraham GE. Orthoiodosupplementation: iodine sufficiency of the whole human body. http://www.optimox.com/pics/Iodine/IOD-02/IOD_02.htm. Accessed March 17, 2015.
13. Flechas JD. Orthoiodosupplementation in a primary care practice. http://www.optimox.com/pics/Iodine/IOD-10/IOD_10.htm. Accessed March 18, 2015.
14. Frequently asked questions on potassium iodide (KI). US Food and Drug Administration Web site. <http://www.fda.gov/drugs/EmergencyPreparedness/bioterrorismdrugpreparedness/ucm072265.htm>. Updated October 27, 2014. Accessed January 22, 2013.
15. Abraham GE. The safe and effective implementation of orthoiodosupplementation in medical practice. *The Original Internist*. 2004; 11:17-36. [On file]
16. Abraham GE, Flechas JD, Hakala JC. Optimum levels of iodine for greatest mental and physical health. *The Original Internist*. 2002;9:5-20. [On file]

Additional references available upon request

All XYMOGEN® Formulas Meet or Exceed cGMP Quality Standards.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.