

## The Low-Iodine Diet — Summary

The short-term low-iodine diet is another part of preparing to receive radioactive iodine for papillary or follicular thyroid cancer or one of their variants. The diet, recommended by ThyCa Medical Advisors, other thyroid cancer experts, and the American Thyroid Association, increases the effectiveness of the radioactive iodine treatment.



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- This diet should be undertaken for about 1 to 2 weeks before your radioiodine, and for about 1 to 2 days afterward.
- This diet reduces your consumption of regular iodine so that when the radioactive iodine is given for treatment, any remaining thyroid cells, including thyroid cancer cells, will be “hungry” for iodine. These cells will then more readily absorb the radioactive iodine, which will eventually destroy them.
- A low-iodine diet has less than 50 micrograms of iodine per day. It is low in iodine, not “no-iodine.” Iodine is not related to sodium, so this diet is different from a “low-sodium” diet. The normal recommended daily allowance for iodine is 150 micrograms per day. Most people in the United States consume much more than 150 micrograms daily.
- The foods and beverages you consume will have small amounts of iodine that total less than 50 micrograms each day.
- There are slight variations in guidelines from different doctors. The ThyCa diet and guidelines have received input and review by numerous thyroid cancer specialists.

## Brief Overview

### Not Allowed—Avoid These Foods and Ingredients

- Iodized salt, sea salt, and any foods containing iodized salt and sea salt
- Seafood and sea products, including carrageenan, agar, algin, alginate, and nori
- Dairy products
- Egg yolks or whole eggs or foods with whole eggs
- Bakery products with iodine/iodate dough conditioners or high-iodine ingredients. Low-iodine items are fine.
- Red Dye #3, erythrosine
- Most chocolate (due to milk content). Cocoa powder and some dark chocolates are allowed
- Soybeans and soybean products (however, soy oil is allowed)
- Iodine-containing vitamins and food supplements
- If you take a medication containing iodine or red dye #3, check with your physician.

### Allowed Foods and Ingredients

- Fresh fruits and vegetables, unsalted nuts and nut butters, whites of eggs, fresh meats (provided no broth injected) with some diets limiting intake to 6 ounces a day, grains and cereal products

without high-iodine ingredients (some diets limit to 4 servings a day), pasta without high-iodine ingredients

- Sugar, jelly, jam, honey, maple syrup, black pepper, fresh or dried herbs and spices, all vegetable oils (including soy oil),
- Sodas (except with Red Dye #3 or E127 in Europe), cola, diet cola, non-instant coffee, non-instant tea, beer, wine, other alcoholic beverages, lemonade, fruit juices
- **Read the ingredient list on all packaged foods. Check with your physician about any medications you are taking.**

Note that sodium is not an issue. What is to be avoided is the added iodine found in iodized salt, which is widely used, especially in processed foods.

It's preferable to avoid processed foods while on the diet, if possible, because food manufacturers are not required to list the iodine content. Therefore, if salt is a listed ingredient, you have no way of knowing whether it's iodized or non-iodized. This does not apply to foods that naturally contain sodium without salt as an ingredient.

**There are many foods you can eat while on the low-iodine diet.** It is a good idea to cook meals yourself, using fresh ingredients, including fruits, vegetables, and unprocessed meats.

## Low-Iodine Diet Details

Many thyroid cancer patients with papillary or follicular thyroid cancer receive a dose of radioactive iodine (RAI) about two months after their surgery in an attempt to destroy (ablate) any remaining thyroid cells in their bodies.

These thyroid cancer patients may also undergo whole-body radioiodine scans at periodic intervals, using a "tracer" dose of RAI. If their scan is not "clean," they may then receive treatment with a larger dose of RAI in an attempt to eliminate remaining thyroid cells.

In preparation for an RAI scan or RAI treatment, patients are usually asked to go on a low-iodine diet. The diet is to prepare for the RAI. The patient follows the diet when preparing for RAI either by temporarily stopping levothyroxine (withdrawal) or by receiving injections of Thyrogen® (recombinant TSH) while continuing on levothyroxine.

The purpose of a low-iodine diet is to deplete the body of its stores of iodine, to help increase the effectiveness of the radioactive iodine scan or treatment. The premise is that when the radioactive iodine is administered, the thyroid cells will "suck" up the iodine, because the body has been so depleted.

This diet is intended for short term use. The usual time period is around two to four weeks. The diet usually begins around two weeks before testing and continues through the testing and treatment period. However, recommendations for the time period can vary, depending partly on the individual patient's circumstances.

The following is a combination of diet guidelines from several sources. Your physician may have different guidelines. Please check with your doctor before you start the diet.

## General Comments

- Remember: LOW IODINE has NOTHING TO DO WITH SODIUM. The diet is a low-iodine diet, NOT a low-sodium diet. Sodium is in most foods. Table salt is sodium chloride, not iodine.
- Sodium in any form is OK, as long as it is not provided as IODIZED salt. NON-IODIZED salt is OK for the diet, as long as it is not sea salt. As noted below, you should avoid any product or ingredient from the sea. That's because sea-based products are high in iodine.
- Also, this is a "low-iodine" diet, NOT a "no-iodine" diet and NOT an "iodine-free" diet. A low-iodine diet reduces iodine consumption (on most diets to below 50 micrograms (mcg) of iodine per day (on some diets to below 80-100 mcg per day). The American Thyroid Association recommends that the low-iodine diet include less than 50 mcg of iodine per day. (The Recommended Daily Allowance of iodine is 150 mcg per day for adults. One teaspoon of iodized salt contains 400 mcg of iodine.)
- During your time on the diet, you may freely eat any foods that are low in iodine (up to 5 mcg per serving). There are lots of foods that you can eat. Pages 10 and 11 have lists. However, avoid foods high in iodine (over 20 mcg per serving). Also, many thyroid cancer specialists' guidelines recommend limiting foods that are moderate in iodine (5 to 20 mcg per serving).
- For recipes and a snack list, use ThyCa's free Low Iodine Cookbook. You can download it free from [ThyCa.org](http://ThyCa.org).
- You also can adapt your favorite recipes from your own cookbooks to the low-iodine diet. To do this, eliminate ingredients that are high in iodine, or substitute ingredients from the list of foods and ingredients that are fine on the diet.
- If you follow other dietary guidelines due to allergies, diabetes, other medical conditions, or other reasons, you can adapt your recipes and meal plans. Use the [ThyCa.org](http://ThyCa.org) cookbook's lists and tips.

## Avoid These Foods and Additives

Avoid the following foods, starting when instructed by your physician before your radioactive iodine test or treatment. Continue as instructed until after your radioactive iodine treatment (often for about 24 hours after). These foods and ingredients are high in iodine.

- Iodized salt and sea salt and any foods containing iodized salt or sea salt. Non-iodized salt may be used. For example, Kosher salt is okay unless the label says that it is iodized or sea salt. The reason to avoid sea salt is that all products from the ocean tend to be high in iodine. You can usually find plain, non-iodized salt next to the iodized salt at your grocer. Read the label. (One teaspoon of iodized salt has 400 mcg of iodine.)
- Seafood and sea products (fish, shellfish, seaweed, seaweed tablets, kelp). These are all very high in iodine and should be avoided.
- Foods or products that contain these sea-based additives: carrageenan, agar-agar, algin, alginate, nori (these food additives are seaweed by-products).
- Dairy products (milk, cheese, cream, yogurt, butter, ice cream, powdered dairy creamers, whey, casein, other dairy products). Note: Nondairy creamers often have iodine-containing ingredients, too. A study published in 2004 in the Journal of Clinical Endocrinology and Metabolism reported

on tests of 18 brands of milk in the Boston, Massachusetts area. It reported that 250 ml of milk (about 8 ounces, or 1 cup, or 16 Tablespoons) contained from 88 to 168 micrograms of iodine and averaged 115 mcg. It noted that sources of iodine in milk include iodine in cattle feed, the products containing iodine used to clean teats and udders, and a small amount from equipment cleaning products. (Some low-iodine diets allow very small amounts of milk or other dairy, if not listed in the first three ingredients on a label. There is no dairy in any of the recipes in this cookbook.)

- Egg yolks or whole eggs or foods containing whole eggs. Egg whites are acceptable, because they contain little or no iodine. (Some low-iodine diets allow foods with very small amounts of eggs, if not listed in the first three ingredients on a label. The recipes in this cookbook use only egg whites.)
- Commercial bakery products unless you check the label to make sure that the ingredients are allowed. Avoid bread products that contain iodine/iodate dough conditioners (usually small bakery breads are safe; it's best to bake it yourself or substitute with Matzos). If you read labels closely, you may also be able to find crackers made only with flour and water. While a few commercial bakery products have tested low in iodine, manufacturing processes can change over time. The study published in the Journal of Clinical Endocrinology and Metabolism in 2004 reported that the iodine content of single slices of 20 different brands of bread ranged from 2.2 mcg to 587 mcg.
- Red Dye #3. However, Red Dye #40 is OK. We suggest that you avoid red, orange, or brown processed food, pills, and capsules. Many red, red-orange, and brown food dyes contain iodine and should be avoided. The problem with food colors is specific to Red Dye FD&C #3 (erythrosine) ONLY. However, the problem is that some food labels do not specify which red dyes are used. Better safe than sorry. For medications, the best source is the Physician's Desk Reference (PDR), which clearly states the ingredients. For example, Rocaltrol in the 0.5 mcg size is NOT good for the diet because it contains FD&C Red Dye #3. However, Rocaltrol 0.25 mcg does not and is safe for the diet (you can take two of them to get to the 0.5 mcg dose). Please always check with your physician.
- Most Chocolate (for its milk content). Cocoa powder and some dark chocolates are permitted. Check the label for other ingredients not allowed on the low-iodine diet. The ThyCa cookbook has recipes with permitted chocolate.
- Some Molasses. Most molasses is okay. Avoid if sulfured or blackstrap, which is concentrated and has a bitter taste. It's okay to use the milder, fairly sweet unsulfured molasses usually used in cooking and that is the type most often available in grocery stores in the USA. Sulfur is not related to iodine. However, it's a term used on molasses labels. Some diets don't make distinctions between kinds of molasses and say to avoid all molasses.
- Soybeans and most soy products (soy sauce, soy milk, tofu). However, soy oil and soy lecithin are both okay.
- Some beans besides soybeans. The National Institutes of Health diet says to avoid these beans: red kidney beans, lima beans, navy beans, pinto beans, and cowpeas. Other diets do not limit beans.
- Some diets say to avoid rhubarb and potato skins. They note that the inside of the potato is fine.

- Iodine-Containing Vitamins, and Food Supplements. Also products containing iodate or iodide. Check the label and ingredients and discontinue completely if iodine is included. Most vitamins with minerals contain iodine.

If you are taking a Medication that contains iodine, check with your physician.

## **Limit the Amounts of these Foods**

Some diets from thyroid cancer specialists and researchers recommend limiting the daily intake of foods that are moderate in iodine: 5 to 20 mcg per serving.

- Fresh meats. Up to 5 ounces per day of fresh meats such as chicken, beef, pork, lamb, and veal are fine on the low-iodine diet. (Up to 6 ounces, according to one of the researchers, who noted that meat contains 25-130 mcg of iodine per pound.) Whole cuts tend to contain less iodine than do ground meats. Also, check the package label on meats, including whole turkeys, turkey breasts, turkey cutlets, chicken, and all pork products. Many food makers inject broths into turkey or chicken or pork. The label may not indicate whether the broth contains iodized salt. If you are not sure, go to your local butcher for fresh turkey, pork, or chicken.
- Grains, cereals. Up to 4 servings per day of grains, cereals, pasta, and breads without iodine-containing ingredients are fine on this diet. The iodine content depends on the iodine content of the region where the grain was grown. Homemade baked goods and cereals are best on this diet. If you use processed foods, read the labels carefully to avoid iodine-containing ingredients. Also, remember that labels are not always accurate or up to date.
- Rices. Like grains, rices vary in the amount of iodine depending on the region where grown, so rice should be eaten only in limited amounts. Some low-iodine diets recommend avoiding rice. Basmati rice has been mentioned by some as the best for the diet.

## **What About Restaurant Foods and Fast Food?**

Although restaurants generally use non-iodized salt, it is not possible to know whether a particular restaurant is using iodized salt or sea salt. The manager or serving staff may not know what product is being used, or whether butter or other dairy products are present in foods. The ingredients that chain and fast-food restaurants use may change.

Therefore, we suggest that you avoid restaurant foods other than plain juices or soft drinks, or the inside of a plain baked potato. For most restaurant foods, there is no reasonable way to determine which restaurants use iodized salt. Avoid them if in doubt.

## What About Manufactured and Processed Foods?

Some published low-iodine diets and researchers' presentations allow salty processed foods and other processed foods. Some of these foods include potato chips and cured and corned foods such as hot dogs, ham, corned beef, sauerkraut, bacon, sausage, and salami.

Currently, manufacturers of processed foods in the USA generally use non-iodized salt. However, food processing techniques can change and labels are not always accurate or up to date.

For that reason, if fresh foods are available, many patients prefer to eat fresh foods during the short period of being on the low-iodine diet. They avoid processed food, because it is not known for sure whether or not iodized salt has been used. For any processed food, it is also important to read the label to be sure there is no Red Dye #3.

In the past some patients have contacted manufacturers asking whether or not they used iodized salt in their products or iodine-containing cleansers or sanitizers for their equipment and surfaces involved in food processing. Doing this is NOT recommended for the following reasons:

- Manufacturers cannot guarantee that the ingredients they receive from their suppliers do not contain iodized salt.
- Manufacturers may change procedures and may use iodine-based cleaners or sanitizers on food-processing surfaces, utensils, equipment, and containers used in processing steps.
- Because fewer and fewer manufacturers in the USA have been using iodized salt in their food processing, there seems to be a rise in iodine deficiency. It might become the practice to start using iodized salt again.
- Also, some spice blends like chili powder may contain added salt.

Read the ingredient labels on all packaged foods and spices. Some support group participants have compiled lists of brands of processed and packaged foods low in iodine.

## Foods That Are Fine to Eat on the Low-Iodine Diet

The low-iodine diet consists mostly of fresh, low-fat, low-calorie foods. Because of this, following this diet greatly reduces the tendency to gain weight while hypothyroid.

The following foods and ingredients are fine to eat. You do not need to limit the quantity, except as noted.

- Fresh fruits and fruit juices, except rhubarb (on some diets provided to ThyCa), maraschino cherries (if they contain Red Dye #3), and fruit cocktail with maraschino cherries.
- Vegetables, preferably raw and fresh-cooked or frozen without salt. (But not skins of potatoes, soybeans, and, according to the NIH diet, some other beans like pinto, lima, navy, red kidney, cowpeas).
- Unsalted nuts and unsalted nut butters.
- Grain/cereal products in moderate amounts (see above).

- Fresh chicken, beef, and other meats in moderate amounts (see above).
- Sugar, jelly, honey, maple syrup, and unsulfured molasses.
- Black pepper and fresh or dried herbs.
- All vegetable oils. Salad dressings provided they contain only allowed ingredients.
- Homemade foods (see ThyCa's free Low-Iodine Cookbook, available online at [thyca.org](http://thyca.org)).
- Cola, diet cola, lemonade, sodas (except those with Red Dye #3), non-instant coffee and tea, beer, wine, other alcohol.

Food prepared from fresh meats, fresh poultry, fresh or frozen vegetables, and fresh fruits should be fine for this diet, provided that you do not add any of the iodine-containing ingredients listed above.

The cookbook also has a handy snack list.

### **What if it's not on the "okay" list here?**

- There are minor variations in low-iodine diet guidelines provided by different thyroid cancer specialist physicians. These guidelines combine the recommendations of several thyroid cancer specialists whose patients have successfully used their guidelines.
- Some guidelines say just to avoid certain items or certain food categories, and do not give details within categories.
- Other diets list foods and ingredients that are allowed, without limits on quantities consumed.
- Many of our web site visitors and correspondents request details as given here, so that they can plan their menus with their own preferences in mind.
- If your health care professional has recommended that you follow a low-iodine diet, please discuss your diet guidelines with him or her.

### **Final Notes**

The key to coping well with this diet is being prepared ahead of time, especially if you are preparing for RAI by stopping your levothyroxine pills and becoming hypothyroid. Before you start becoming hypothyroid, prepare the basics and freeze them. You do not want to be making chicken stock while you are hypothyroid.

Remember also the handy snack list. We suggest that you stock up on snack items from the list for times when you do not feel like cooking.

We encourage you to use [theca.org](http://theca.org)'s Low-Iodine Cookbook for variety and enjoyment of low-iodine meals and snacks.