



**Thyroid Cancer Canada's  
Low Iodine Diet: Food Guide, Shopping List and Menu Planner – FAQ**

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**Q1: Why a TCC LID?**

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**Our centre (or my doctor) provides a Low Iodine Diet (LID) to patients. Why did TCC develop its own version?**

A: TCC collected over 15 versions of the LID from hospitals across North America and found that there was a vast difference among them. Initial research on our part indicated that some recommended

foods were in fact high sources of iodine (such as dairy products and eggs) and other foods were restricted for no apparent reason.

In 2006, with the help of over 30 experts in the fields of medicine, nutrition, government and the packaging industry, we developed a definitive and reliable Low Iodine Diet.

In 2009, we revised and improved the resource. We have now consulted with over 80 experts, including those in the food industry, associations, government, etc. A list of the TCC reviewers is available as a separate document entitled “TCC Low Iodine Diet 2009, References, Writers & Reviewers” available at [www.thyroidcancerCanada.org](http://www.thyroidcancerCanada.org).

## Q2: Is a LID Necessary?

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**My doctor said it’s not necessary to go on the LID and/or my doctor did not mention the LID to me. Is the diet necessary for a successful radioactive iodine treatment (RAI)?**

A: Studies since the mid-1960’s that have investigated use of the LID in preparation for RAI generally conclude that using the LID for two weeks prior to RAI will improve the efficacy of the treatment.

In 2010, *Sawka et al* examined and reported on more than 75 studies on the topic of the LID. The authors report that the overall evidence indicates that a LID does reduce urinary iodine output and that two weeks on the diet is about twice as effective as one week. Albeit small studies, at least two research teams, convincingly found that a LID increases uptake of I-131 and ablation of remnant tissue or tumours. Although *Sawka et al* state “unfortunately, there are still no studies examining long-term recurrence or mortality rates in patients treated with an LID compared to an unrestricted diet”, they do conclude that there is compelling evidence that a LID should be utilized to aid a successful preparation for RAI treatment and scanning.

*Hinds et al* (2008) concludes that “An LID is an integral element in the management of differentiated thyroid cancer. Proper guidance and emphasis on the implementation of the diet needs to be provided to patients. Non-compliance may lead to false negative imaging results, misleading the medical professionals and patient. Potentially inadequate management of the patient’s thyroid cancer may follow.”

References:

Hinds, S.R., Stack, A.L and Stocker, D.J., (2008), “Low-iodine Diet Revisited. Importance in Nuclear Medicine Imaging and Management. *Clinical Nuclear Medicine*, 33(4), p. 247 – 250.

Sawka AM, Ibrahim-Zada I, Galacgac P, Tsang RW, Brierley JD, Ezzat S, and Goldstein DP, Dietary Iodine Restriction in Preparation for Radioactive Iodine Treatment or Scanning in Well-Differentiated Thyroid Cancer: A Systematic Review, *THYROID*, 2010 October; 20(10): 1129–1138

## Q3: How long should I be on the LID?

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A. TCC’s research indicated that 2 weeks before ingesting the RAI dose, and 1-2 days after ingesting it, is an adequate length of time for patients undergoing RAI treatment or scans in order for an effective result of the diet.

References: as above, and

[www.thyroidcancerdoctor.com](http://www.thyroidcancerdoctor.com), Entry: Urinary Iodide Testing - ThyroidCancerHelp, August, 2007 and How long on LID post RAI? - ThyroidCancerHelp, June, 2007

#### Q4: Layout and Wording of *TCC LID*

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**Why is the *TCC LID: Food Guide, Shopping List and Menu Planner* written the way it is (ie. using plain language and colour-coded)?**

A: There is important and relevant Canadian data indicating that in regard to literacy (and especially health literacy) techniques of clear language and design are very important. There is considerable evidence-based research supporting the use of a patient and family-centred approach to developing health information.

The use of red and green backgrounds to emphasize restricted and allowed foods, respectively, was supported by the conventional use of that colour scheme. The design and layout choices were painstakingly researched and, to that end, *TCC* recommends that healthcare providers not photocopy the *TCC LID*. Full-colour, professionally printed copies are easily available by contacting *TCC* directly.

Reference:

Wizowski, L., Harper, T. and Hutchings, T. (2008). Writing health information for patients and families. 3<sup>rd</sup> edition. Hamilton, ON: Hamilton Health Sciences. For information or to order: [PatientEducation@hhsc.ca](mailto:PatientEducation@hhsc.ca)

#### Q5: Order of Food Item/Ingredient Listings

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**Why are the AVOID foods listed in the first column and the ALLOWED foods in the second column, in the *TCC LID Food Guide*?**

A: Expert opinion advised us that patients (who may have difficulty following the directions especially if they are hypothyroid) are better off knowing first what they cannot consume. To further emphasize this point, the AVOID ingredients are listed in a column shaded with a red background.

#### Q6: Serving Sizes

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**Why does the *TCC LID Food Guide* specify serving sizes for some foods?**

A: A LID is a LOW iodine diet, not a NO iodine diet. It is virtually impossible to eliminate iodine completely from one's diet. Thus one must adhere to *TCC LID* in order to make the best effort to stay under the 50mcg/day (or less) level, considered the standard by experts. In order to balance nutrients and give patients as many choices as possible, foods with low amounts of iodine are allowed as long as moderate servings are consumed. This includes meats and grain products, which have restricted serving sizes on *TCC LID*. Wherever possible, serving sizes are in accordance with the Canada Food Guide.

Reference:

<http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php>

#### Q7: 50 micrograms or less per day

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**Why does the *TCC LID* specify a 50mcg per day limit on iodine?**

A: Although more research into the effects of the LID on RAI treatment as well as LID limitations is needed, most of that which does exist specifies a standard of 50mcg or less/day.

References:

Ain, KB, 2005. "Introduction: What is the Low Iodine Diet and Why do you Need it?" in Gilletz, N. The Low Iodine Cookbook. Your Health Press, Toronto.

## Q8: Food Package Labels

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**Which part of a food package label should a patient be sure to read?**

A: In Canada, food packages contain both a *Nutrition Facts* chart and an *Ingredients* list. Patients may find it confusing to view the Nutrition Facts chart as, for example, “sodium” content may be listed. Since the source of the sodium may not be salt, this information is not normally relevant.

*TCC* recommends that patients on the LID pay special attention to the *Ingredients* list, as it lists (in paragraph form) the ingredients in the package in descending order (by largest to smallest in content). The *Ingredients* list provides vital information in regard to restricted items, such as: salt, dairy, soy and eggs.

## Q9: Brand Name Items

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**Why does the *TCC LID Shopping List* specify brand names?**

A: To aid patient-shoppers when they are faced with an overwhelming number of products to choose from, we have specified some products by brand name for their convenience. However, we have limited the number of products identified in *TCC LID Shopping List*, as we are mindful that there can be variations in the ingredients and manufacturing processes for otherwise identical products, depending on the manufacturing location (ie. from one region of Canada to another). As well, package ingredients may change over time. We strongly recommend that all packages be checked for content prior to purchase, and provide this reminder in several locations on the pamphlet.

## Q10: Consuming Salt on the LID

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**Should salt be allowed on the LID? Is it possible to purchase iodine-free salt in Canada?**

A: All table salt sold in Canada has been iodized by federal regulation. In the USA, both iodized and non-iodized table salt is available. Windsor Salt Company assures us that they do not add iodine to their coarse salts nor Kosher salts. However, the same may not be true of other manufacturers of coarse salts. As well, sea salt of any type is restricted on the LID as all products from the sea have varying levels of iodine, often beyond that allowed on a low iodine diet.

As Canadian packaging regulations do not require manufacturers to specify the origin or type of salt used in their products, all packaged goods and all food items listing salt as an ingredient are restricted on *TCC LID*.

Because all of the above information regarding salt has the potential of being confusing to patients, every attempt is made to be specific in *TCC LID* materials.

## Q11: Milk and Dairy

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**Patients often miss being able to have a little milk in their coffee. Can one allow a small consumption of milk/dairy daily?**

A: Although there are varying degrees of iodine in milk products, it is potentially a very high source. According to data collected by Jean Pennington (Pennington, J; Douglass J, *Bowes & Churches Food Values of Portions Commonly Used*), 8 fl oz of milk on average has almost 50mcg of iodine (ie. all the iodine allowed in one day on the LID). The same is true for other dairy products, which generally are high in iodine (Pearce et al, 2004; Pennington & Douglass, 2005; USFDA, 2006) and are not permitted on *TCC Low Iodine Diet*. The actual levels of iodine in milk can vary regionally, seasonally and per processing method (Hemling, 2001). The *TCC LID* does provide information for milk substitutes such as rice, hemp and nut milks (see Q13 below).

Reference:

<http://www.milkproduction.com/Articles1/articleFramedMain.asp?NSI0164>

## Q12: Butter substitutes

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### Can a person on the LID eat margarine?

A: Currently in Canada, we don't know of any brand of margarine that is LID-compatible (previously to December 2010, ***Fleischmann's Salt Free, Lactose Free Margarine*** was a LID-allowed product, but Unilever has now discontinued this product).

It may be possible to find a margarine product in the USA that meets all the criteria of the LID -- that is; is milk/dairy, salt and soybean free. Alternatively in recipes calling for margarine, one can substitute vegetable oil on a 1:1 ratio.

References:

Unilever Canada (416) 964-1857

Norene Gilletz, author of *The Low Iodine Diet Cookbook*, Your Health Press, Toronto. (personal conversation, March 2011)

## Q13: Milk Substitutes

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### Why does the *TCC LID* specify **YÜ RICE BEVERAGE** and **LIVING HARVEST HEMP MILK**?

A: Our research indicated that only the YÜ brand of rice milk is salt-free. The same applies to the Living Harvest brand of hemp milk. Patients can also prepare homemade rice milk, hemp milk and nut milk. The recipes are available online at [www.thyroidcancercanada.org](http://www.thyroidcancercanada.org)

## Q14: Egg Whites Allowed

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### Why does *TCC LID* allow egg whites but not egg yolks?

A: Most of the iodine in eggs is concentrated in the yolk. Although egg yolk is about 1/3 of the egg by weight, it contains 96% of the iodine.

According to Kaufmann (1997) hen eggs contain on average  $1,135 \pm 205$  µg iodine per kg of yolk and  $49 \pm 14$  µg iodine per kg of albumen (egg white). That is, one egg on average has 20mcg of iodine in the yolk and 1.5 mcg in the white.

References:

Veterinari Medicina, 51, 2006 (3): 93–100 Iodine content in consumer hen eggs J. Travnicek, V. Kroupova, I. Herzig, J. Kurša  
<http://www.joyofbaking.com/eggs.html>

## Q15: Frozen Peas

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### **Why does TCC LID specify avoiding frozen peas?**

A: A food quality expert at McCains Foods (Canada) advised us that unlike other frozen vegetables that may be salt-free, peas are routinely washed in a salt-solution (brine) prior to freezing. The amount of salt is small enough that government food regulations do not require them to list salt in the ingredient list on the package. However, the sodium content listed in the Nutrition Facts on a package of frozen peas (for the most part) refers to residue salt content. Since we cannot be sure what quantity and which type of salt was used, we have included frozen peas in the AVOID list on *TCC LID*.

Reference:  
<http://www.mccain.com/>

## Q16: Fruits and Vegetables

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### **The TCC LID does not restrict most vegetables and fruits, nor does it address variation in levels of iodine in soils across various regions. Why is that?**

A: While there is some iodine in fruits and vegetables, and soils can vary in regards to their iodine content, the amounts measured in these food items is relatively low regardless of the source or type.

Reference:  
[http://www.foodcomp.dk/fcdb\\_foodcomplist.asp?Compld=0066](http://www.foodcomp.dk/fcdb_foodcomplist.asp?Compld=0066)  
Souci, Fachmann & Kraut, Food composition & nutrition tables 6th ed.2000  
Composition of Core Foods of the US Food Supply, 1982-1991" By Pennington, Schoen et al.  
The Composition of Foods, McCance & Widdowson, 6th ed 2002

## Q 17: Potato Skins

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### **Are potato skins a high source of iodine?**

A: Several versions of the LID restrict the consumption of potato skins (presumably due to iodine levels in soils). However, there is no known plant physiology indicating that plants are able to selectively concentrate iodine, so there is no reason for the peel to be any higher than the rest of the vegetable. *TCC* research indicates that restrictions against potato skins are not necessary. Our data suggests that a single average-sized potato including its skin contains less than 1mcg of iodine.

References:  
As above

## Q18: Lentils, Beans and Legumes

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### **Some LIDs suggest that lentils, beans and legumes are all high in iodine. Is that true?**

A: Lentils, beans and legumes have been tested at less than 1mcg per serving on average in the data quoted above.

References:  
As above

## Q19: Rhubarb

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**Some LIDs specify that rhubarb has relatively high iodine content. Is that true?**

A: Reliable food content listings indicate that rhubarb is no more iodine-laden than any other common fruit or vegetable, that is, it is a relatively low source of iodine.

Reference:

[http://www.foodcomp.dk/fcdb\\_foodcomplist.asp?CompId=0066](http://www.foodcomp.dk/fcdb_foodcomplist.asp?CompId=0066)

## Q20: Nuts

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**Should there be restrictions on the amount of nuts consumed daily while on the LID?**

A: Nuts are generally a moderately low source of iodine, rather than a very low source of iodine. They should be consumed in portion sizes as per the Canada Food Guide, (ie. as a meat alternative, one serving would be 1/4 cup nuts, or 2 tbsp). That is, they should not be consumed in unlimited quantities. It is for this reason that nuts are listed as a meat-alternative item (e.g. for vegetarians) but not listed as a snack item in TCC LID.

Reference:

<http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/choose-choix/meat-viande/serving-portion-eng.php>

## Q21: Breads & Iodate Conditioners

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**Are iodate conditioners added to breads as a preservative? Are these a high source of iodine?**

A: Yes, iodate conditioners are potentially a high source of dietary iodine and are to be avoided. We have been advised that Canadian source flour does not have iodate added, but this may not be so if the bread or its flour originates from outside the country. As well, most breads contain other high sources of iodine such as: milk, whole eggs, and iodized salt.

TCC has found that 2 brands of breads are available that meet all requirements of the LID, as follows:

*Nature's Path Manna Bread* (available in the frozen food section of Loblaws/Fortinos/SuperStores supermarkets)

*Dimpflmeier Salt-Free Rye Bread* (available at the deli counter of Metro supermarkets)

References: *The Journal of Clinical Endocrinology & Metabolism* July 1, 2004 vol. 89 no. 7 3421-3424 Sources of Dietary Iodine: Bread, Cows' Milk, and Infant Formula in the Boston Area, Elizabeth N. Pearce, Sam Pino, Xuemei He, Hamid R. Bazrafshan, Stephanie L. Lee and Lewis E. Braverman <http://jcem.endojournals.org/content/89/7/3421.full>

IODINE NUTRITION IN NORTH AMERICA, Angela M. Leung, MD; Elizabeth N. Pearce, MD, MSc (Boston University Medical Center) Hot Thyroidology; Online ISSN: 2075-2202, [http://www.hotthyroidology.com/editorial\\_176.html](http://www.hotthyroidology.com/editorial_176.html)

## Q22: Calcium and Vitamins

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**Is it safe to take Calcium supplements while on the LID? What about vitamins?**

A: Although iodine may not have been added to some calcium products, one must also be aware that if the origin of the product was sea-based (such as oyster shell based), such products may be high in natural iodine. Iodine-free calcium is available and patients can consult with their pharmacist to insure

that the products they take are free of both added and natural iodine (in the form of sea based ingredients).

Patients on the LID can also be reminded that green leafy vegetables and raw almonds are a good source of calcium, and allowable on the diet.

Vitamins are also often a high source of added iodine, and best avoided altogether while on the LID.

However, any patient who takes doctor-prescribed doses of minerals and/or vitamins should discuss this issue with their doctor prior to the LID. This is especially true for those taking calcium due to hypoparathyroidism.

### Q23 : Liquid Diet Products

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**Can patients on a liquid diet, ie. such as BOOST, ENSURE, RESOURCE 2.0, CARNATION shakes, puddings etc. continue using these as substitutes for meals?**

A: No, these liquid meal substitutes are not LID-compatible. Patients, who have a medical requirement for liquid meal substitutes, should discuss their medical condition with their doctor prior to undergoing the LID.

### Q24: Red Dye #3 -- Erythrosine

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**What are the problems surrounding the consumption and labelling of Red Dye #3 in food products?**

A: Red Dye #3 (erythrosine) is made up primarily of iodine and is thereby a high source; restricted on *TCC LID*. Although it is a dye not commonly used in food products in Canada, patients on the LID must be diligent in avoiding it. It is primarily used to colour red soda pop (cream soda), maraschino cherries, and some red medications. Red dyes are also used as a colouring in some red-coloured breakfast cereals. In Canada, the packaging regulations do not require manufacturers to specify Red Dye #3 (or to specify any food colourings other than Annatto) on packages. Instead, if dye of any type has been added to a food, they need only specify the word "colour" on the ingredient list. **Therefore we advise patients on the LID to avoid any foods that list the word "colour" on the label and are red in colour.** This includes: the foods named above as well as red fruit punch drinks and powdered drinks. As well, patients should check with their pharmacists to be sure Red Dye #3 was not used in their medication

Specifically, the Canadian regulations state "one or more of the colours listed in Table III of Division 16, except annatto where used in accordance with paragraph B.14.031(i) or subparagraph B.14.032(d)(xvi)" can be declared as "colour".

### Q25: Topical Products

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**Should one be concerned with topical products made with iodine?**

A: Betadine is an antiseptic that has iodine as its active ingredient. It is mainly used in hospital settings as a surgical scrub (75% iodine solution is used). However, there is also a version (BETADINE®

Solution) meant for home use which is 10% iodine. This product is to be avoided while on the LID. As well, iodine may be used in some pre-moistened disposable products, such as baby wipes and feminine wipes.

Reference:

<http://www.pharma.com/PI/NonPrescription/A6910BE3.pdf>

## Q26: Cosmetics

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**Should one be concerned about the use of Red Dye #3 in cosmetics, especially red lipstick?**

A: The use of Red Dye #3 is not permitted in Canada in any cosmetic products.

Reference:

Paul Breha, R&D Chemist, The Bonne Bell Company, email: Sept 24/08

## Q27: Relevant Studies

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**What studies are available to reinforce the need for the LID?**

A: In addition to studies referenced above, we suggest the following studies:

Sawka AM, Ibrahim-Zada I, Galacgac P, Tsang RW, Brierley JD, Ezzat S, and Goldstein DP, Dietary Iodine Restriction in Preparation for Radioactive Iodine Treatment or Scanning in Well-Differentiated Thyroid Cancer: A Systematic Review, *THYROID*, 2010 October; 20(10): 1129–1138

Two-Week Low Iodine Diet Is Necessary for Adequate Outpatient Preparation for Radioiodine rhTSH Scanning in Patients Taking Levothyroxine, Joel T. Park II and James V. Hennessey *THYROID* Volume 14, Number 1, 2004

Effects of low-iodide diet on postsurgical radioiodide ablation therapy in patients with differentiated thyroid carcinoma Maurice J. H. M. Pluijmen, Carmen Eustatia-Rutten, Bernard M. Goslings, Marcel P. Stokkel, Alberto M. Pereira Arias, Michaela Diamant, Johannes A. Romijn and Jan W. A. Smit, *Clinical Endocrinology* (2003) 58, 428–435

Reevaluation of Stringent Low Iodine Diet in Outpatient Preparation for Radioiodine Examination and Therapy, TOMODA CHISATO, URUNO TAKASHI, TAKAMURA YUUKI, ITO YASUHIRO, MIYA AKIHIRO, KOBAYASHI KAORU, MATSUZUKA FUMIO, AMINO NOBUYUKI, KUMA KANJI, MIYAUCHI AKIRA, *Endocrine Journal* 2005 VOL.52;NO.2;PAGE.237-240

Low-iodine diet revisited: importance in nuclear medicine imaging and management, Hinds SR 2nd, Stack AL, Stocker DJ., *Clinical Nuclear Medicine* 2008 Apr;33(4):247-50