CANADIAN NUTRIENT FILE

COMPILATION OF CANADIAN FOOD COMPOSITION DATA

USERS' GUIDE

2010

Nutrition Research Division
Food Directorate
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INTRODUCTION

The Canadian Nutrient File (CNF) is a computerized, bilingual food composition database containing average values for nutrients in foods available in Canada. Much of the data in the CNF have been derived from the comprehensive United States Department of Agriculture (USDA) National Nutrient Database for Standard Reference, up to and including Standard Release 22[1]. Foods included in the USDA database that are known not to be on the Canadian market are excluded. Modification for Canadian levels of fortification and regulatory standards[2], along with addition of Canadian only foods or Canadian commodity data, as well as where appropriate, some brand name foods, forms this standard Canadian resource.

This manual is a technical document meant to guide clients using the CNF as to appropriate uses of the data, technical definitions of the nutrients, background on the sources and quality of the data as well as changes specific to this edition, 2010.

For clients accessing the online searchable site and needing additional help specific to navigating the site itself, please read carefully the instructions on the search screens. Refer to the search guide located on the search page. Alternatively send your questions to cnfusers@hc-sc.gc.ca.

Some of the features discussed in this document are not available in the online version (i.e. food group codes, USDA source codes, etc.) and are only available through downloading the full version files.

For more detail on the structure of the database, please refer to the section “Download files” at: www.healthcanada.gc.ca/cnf

LIMITATIONS

It is essential that potential users of the CNF recognize its strengths and limitations. The database is maintained and updated on an ongoing basis. USDA releases, relevant scientific literature, industry data, and current analyses from Canadian government, university and research laboratories, are gathered and examined to meet inclusion criteria. Imputations are added when determined to be valid. Thus, *average* amounts of nutrients in foods available in Canada are supplied. The exact nutrient composition of a specific apple or cookie is not found on the CNF. These averages, except where indicated otherwise, take into account sources of a given food across Canada. Local foods may have a different profile than the national average.

Every food item may not contain a complete nutrient data set. Where data is unavailable for a particular nutrient it is a missing value and not a true zero. Software developers and others personalizing the database must learn to understand and account for the missing values.

The CNF is particularly suited for assessment of diets, recipe development, menu planning when ingredients or menu items are not specific and for population nutrition surveillance activities, where nutrient intake distributions are used to conduct risk assessments such as modeling for fortification proposals. It is also useful in the initial stages of product development to ensure that nutritional targets can be met. Use of generic information from reference databases for calculating nutrient values for labelling purposes is generally not recommended since a close match to the product formulation or specific ingredients and processes can not be assured.

Most users are looking for an average or mean value for a generic representation of the foods as described. These generic values have been derived from combining brands of similar products, for example all major brands of ketchup; various varieties of oranges or similar beef cuts from various producers. These data may also be developed by a commodity association utilizing sample units from different producers, to provide a hypothetical, generic product that is represented by a single nutrient profile. Those individuals seeking brand specific nutrient data are encouraged to look for the Nutrition Facts Table found on all pre-packaged foods sold in Canada.

Analytical values represent the total amount of the nutrient present in the edible portion of the food, including any nutrients added in processing. The values do not necessarily represent the nutrient amounts available to the body which may be influenced by nutrient interactions, physiological mechanisms, nutritional status and other factors where not enough information is available.

NEW FOR THIS EDITION

This is the twelfth edition of the Canadian Nutrient File and contains data on 5807 food items for up to 150 food components. Since the April 2007b release the following modifications have been made to the database.

1. Canadian Sampling and Nutrient Analysis Program (SNAP-CAN)

Occasional collaborations with various sectors of the Canadian food commodities industry and limited research from government and outside laboratories have been the only source of Canadian analytical nutrient profile data in the past.

Lack of funding dedicated to generation of nutrient profiles on Canadian sample sets resulted in an inability to set our own priorities for updating/improving the CNF.

Increasingly, stakeholders expressed dissatisfaction with the traditional approach, as compositional data is often crucial to Food Directorate nutrition policy decisions:

i.e., micronutrient addition policy formulation
submission for addition of DHA to milk
regulations for sodium reduction
development of new definitions for whole wheat flour

Under the aim to address this data need, in 2007 the Sampling and Nutrient Analysis Program of Canadian foods was initiated. Under this program, priority foods are chosen, sample designs are implemented and the samples are analyzed for a comprehensive set of nutrients by Health Canada regional laboratories. Scarce resources for the time being, limit us to only considering the very highest priority foods for this program. These are chosen based on:

- the amounts consumed by Canadians; staple foods are high priorities
- strong evidence that the Canadian product is very different from the US
- recently reformulation due to market forces
- complete lack of data for foods often cited in national nutrition surveys.
- a final consideration is the degree to which a cost saving collaboration with a food industry sector will benefit the CNF. This usually involves the industry partner financing all of the aspects of sampling (collection, transport, storage, processing etc.), while Health Canada is responsible for analyzing these samples for a comprehensive set of nutrients.

During 2008 and 2009, we were able to complete the sample design, collection, processing and analyses of 5 types of flour and 12 categories of granola bars. These data are incorporated into the 2010 release of the CNF.

In 2009 we took advantage of an opportunity to collaborate with the Turkey Farmers of Canada to generate profiles for 5 cuts (breast, back, wing, drumstick, thigh) for each of 3 age/sex market weight categories (broiler, tom and hen) of turkey available on the Canadian market.

2. Eating Well with Canada's Food Guide

Portion size measures which relate Canada's Food Guide to Healthy Eating (CFGHE)[3] food grouping principles to each of the CNF foods were added to the 2005 version of the database. Some of these assignments are in the process of being updated to reflect revisions recently published under the new title Eating Well with Canada's Food Guide (CFG).[4] Therefore, for the present we are not publishing these assignments in the 2010 version of the CNF.

Interested parties are encouraged to go to the website of the Office of Nutrition Policy and Promotion at Health Canada. They have developed a new website where all of the information regarding the Food Guide can be located.
www.healthcanada.gc.ca/foodguide

3. *Important Nutrient Code Change*

For many years the CNF has listed Vitamin D in micrograms in the database using nutrient code 339. Up until now, USDA did not include Vitamin D in these units in their database. However, with their latest release USDA is including this nutrient expression in their database using nutrient code 328. As we borrow heavily from data provided by USDA we will be changing our nutrient code to correspond with that from USDA.

4. USDA Changes incorporated:

Changes include those adopted by USDA[1] since SR19 (SR 20, 21, 22) which were appropriate for addition of foods and/or nutrients as data became available. Prominent changes within the USDA updates include:

Nutrients

- Added nutrient values for

Choline	862
Betaine	863
Campesterol	866

- Expanded values for Vitamin D in µg for many foods (nutrient code 328)
- Nutrient values were updated for many foods. These updated values can be found in the Nutrient Amount file and the Change Nutrient file.
- Some nutrient profiles were expanded to include a more comprehensive dataset. These new values can be found in the Nutrient Amount file and the Added Nutrients file.

- Nutrient data were updated for cottage cheese, canned blueberries, sour cherries, canned blue crab, farmed Atlantic salmon, commercial pecan pie, pumpkin pie, cream-filled snack cakes, snack crackers, saltines, chocolate sandwich cookies, chocolate chip cookies, pie crust, beef pot pies, chicken pot pies, and several snack items. These can be found in the Nutrient Amount file and the Change Nutrient file.

Added food groups

- USDA added a new food group, Group 36, Restaurant Foods. However, we have elected not to include this food group as most of the featured restaurants are not found in Canada and there can be significant supplier differences between the two countries. We have added some foods from the Restaurant Foods group and have added them to other groups.
- USDA has also added a new group, Group 35 featuring the American Indian and Alaska Native foods. However, again we are not creating a new group for these foods. Instead, traditional native foods appear in the appropriate food group i.e., Caribou in the game meat group, with the descriptor, "Native" in the foodname to help users search for these foods.

Added Foods

- A number of the new foods have been added to the CNF: 5 less common grains, raw and cooked; new chicken products (nuggets, tenders, patties); 4 types of dark chocolate representing different cacao levels, reduced calories honey mustard dressing, several types of pie crust, frozen turkey dinner, pomegranate juice, vegetarian refried beans, several rotisserie chicken items; 5 Stellar sea lion items, gold kiwi; energy drinks and some restaurant foods.

5. Data from Canadian sources

Foods

- From the SNAP-CAN program described on page 5 we were able to generate nutrient profiles for 5 types of flour sold at retail; all-purpose bleached white flour, all-purpose unbleached white flour, cake and pastry flour, bread flour and whole-wheat flour. Also, data for 12 categories of granola bars sold in Canada are now included in the CNF. These replace the old granola bar foods which reflected a market very different than our own. Also, the new data demonstrate the effect of recent reformulation of these products in efforts to lower or eliminate the trans fat content.
- Also, in 2009 we took advantage of an opportunity to collaborate with the Turkey Farmers of Canada to generate profiles for 5 cuts (breast, back, wing, drumstick, thigh) for each of 3 age/sex market weight categories (broiler, tom and hen) of turkey available on the Canadian market. Whole turkeys in each of these categories are calculated from the parts. Both raw and cooked, meat only and meat plus skin are included.
- The Canadian Sheep Federation have generated and submitted comprehensive nutrient profiles for popular cuts of lamb raised in Canada. Profiles are now included for

Canadian lamb foreshank, whole leg, loin, rib and shoulder as lean only and lean + 3mm fat trim.

- The nutrient data for brand name breakfast cereals have been updated. Data were solicited from the manufacturers representing some major retails brands sold in Canada. Some new cereals have entered the market and are now included, while those which are discontinued have been deleted from the CNF.
- As some yogourts are now made from milk fortified with Vitamins A and D, two new yogourt foods have been created to reflect this difference.

Food Groups

- Group 3, Babyfoods, has been eliminated from this version of the database. The data are not current and attempts to secure updates of comprehensive profiles from industry were unsuccessful.

Recipes

- Profile for many popular mixed dishes were calculated from their ingredients using sophisticated internal recipe formulation software and added to the CNF. More than one hundred recipes have been added to the CNF: Greek salad, meat lasagna, poutine, sushi with and without fish, egg Benedict, sugar pie, etc.
    - 1 – Dairy and Egg Products,
    - 6 – Soups, Sauces and Gravies,
    - 14 – Beverages,
    - 15 – Finfish and Shellfish Products,
    - 19 – Sweets,
    - 18 – Bakery Products,
    - 21 – Fast Foods,
    - 22 – Mixed Dishes.

Nutrients

- Two new fatty acid totals have been created. In consultation with a Health Canada lipid expert, we have imputed many missing values. As a result, total omega 3 (nutrient code 902) and total omega 6 (nutrient code 903) are now available for selected food groups.
- The nutrient code for Vitamin D in micrograms has changed from 339 to 328

6. *Measure Descriptions*

New measure descriptions have been added to the database. Please refer to table 4 in the Appendix.

7. Structure

- Once again for the 2010 version we are offering update files which track records that have been changed, added or deleted since the release of the 2007b version of the CNF. These update files are available for the added, changed, or deleted foods,

nutrient names, nutrient values, and conversion factors. The structure of the database (tables and fields) remains very similar to that of CNF 2007b except for a change that results in the field listing the food codes is no longer the primary field used to join the tables.

- For further details of the database tables and fields, update files and the food code field change please see the Database Structure Guide in the section “Download files” at www.healthcanada.gc.ca/cnf
- For this edition we are offering the downloadable files in CSV format in addition to DBF and TXT. This will be of benefit to a number of clients using Mac computer systems.

8. Interactive Website

The interactive website has 2 new features:

- The Search by Nutrient function now includes the option to search the entire database rather than just by one food group at a time.
- The Search by Food function has been improved. Keywords will be matched in any order against any part of food descriptions. If more than one keyword is used, they may be separated by a space or any of the operators 'or' or 'not'. The operator, “and” is no longer required. In all cases, keywords are searched both as whole words and partial words, which means that a singular keyword will also find the corresponding plural forms, and prefixed forms. Examples: a) **'fish'** will also find 'Crayfish', b) **'apple raw'** (or 'apple and raw') will find all the foods having both keywords anywhere in their description, but also: 'Pineapple, raw', c) **'apple or raw'** will find any food having either or both keywords anywhere in the description, while **'apple not raw'** will find all instances of 'apple' except where 'raw' is also present anywhere in the description.
- The Search Guide is available in which one can locate more detailed instructions on how to use features of the Online Program at www.healthcanada.gc.ca/cnf

HIGHLIGHT FEATURES

1. The CNF is a food composition database featuring bilingual (French and English) foodnames, measure descriptions and background information. The measures follow the metric system. Only foods available on the market in Canada are included, usually as generic representative composites, except where each brand is considered unique such as breakfast cereals, margarines and baby foods. Also, in response to the fast pace of change in the food marketplace today, we are including some brand name data of bakery products and snacks submitted by the food manufacturers.

2. Each food and each nutrient record carry a date of entry field which can be extremely important in assessing how current and relevant the data are for a specific application. Also this feature can be helpful in tracking changes.

3. While we are still offering the downloadable files (without software) for those who prefer all of the metadata or wanting to update their existing programs, beginning in April 2005 we also introduced a new interactive online searchable program from which clients can view, print or export reports of nutrient profiles per reasonable serving sizes.
www.healthcanada.gc.ca/cnf (select the link 'Search online for foods...')

4. Trace field

When a nutrient is known not to be zero but estimated (by recipe analysis or by reference to international databases) to be present in very small amount, a field separate from the nutrient value field indicates a **trace** amount. In the past, these would have remained as missing values and the user had no indication of significance. Now, when a nutrient level is trace, the user can evaluate significance to their study based on the frequency of consumption of that food or other factors.

Trace amounts are different for every nutrient. Please refer to Table 5 in the Appendix for trace nutrient levels.

5. Nutrient Value of Some Common Foods (2008)[5]

The *Nutrient Value of Some Common Foods* (NVSCF) booklet provides Canadians with a resource that lists 19 nutrients for 1000 of the most commonly consumed foods in Canada. Selected nutrient values are extracted from the CNF and recalculated in terms of a reasonable serving size of the foods in the ready-to-eat form of the food. This printed, portable version is very popular with students, health professionals, and those who don't have ready access to the Internet.

This new version now emphasizes mixed dishes rather than just individual ingredients. Use this quick and easy reference to help make informed food choices through an understanding of the nutrient content of the foods you eat.

This updated version is now free of charge. Printed copies to order are sometimes limited, but those interested can easily print out a copy of our pdf version available at:

www.healthcanada.gc.ca/cnf (select the link 'Nutrient Value of Some Common Foods')

6. Tagnames

International Network of Food Data Systems (INFOODS), **Tagnames**. A unique abbreviation for a food component developed by INFOODS to aid in the interchange of data. Only the tagnames as codes are included in the Nutrient Name file (formerly in the Nutrient Amount file). For a written description of these tagnames please see the INFOODS website[6].

7. Country Code

A field called Country Code can be found in the foodname file. Originally designed to reference the origin of a food profile from any country, at the moment, full profiles, or near full profiles, are only borrowed from USDA so this is now a quick reference to the USDA NDB code for that food.

8. Contact email for questions and Listserv for announcements

If you have any questions or concerns regarding the CNF database, please send them along to our email address at cnfusers@hc-sc.gc.ca .

If you would like to be added to our listserve for announcements of upcoming changes to the CNF, please send us an email to the address above stating that you would like to join and we will add your email address to the list.

INFORMATION ON NUTRIENTS

For the most part nutrients were determined by AOAC methods[7] or by methods approved by Health Canada nutrition research scientists. Documentation accompanying each standard release of the USDA Nutrient Database for Standard Reference[1] outlines methodologies employed for each nutrient in detail.

a) Proximate components include moisture (water), protein, total lipid (fat), carbohydrate and ash. Addition of these 5 components should approach 100. **Carbohydrate,** when present, is determined as the difference between 100 and the sum of the remaining proximate components (and alcohol when present). The determination of Total carbohydrate values by this method of calculation includes total dietary fibre. Care should be exercised when making comparisons with some other food composition databases worldwide as many countries employ a different approach to the assessment of the carbohydrate content. Please note that adding total sugar and total dietary fibre does not usually equal carbohydrate; this is because there can be many other fractions of carbohydrate for which we do not have values, such as oligosaccharides, polydextrins, and starch to name a few. Carbohydrate values are assumed zero in animal products (nutrient source code 12).

b) Protein values are calculated from the level of measured total nitrogen in the food, using the conversion factors recommended by Jones (1941)[8]. Protein values for soy products, chocolate, cocoa products, coffee, mushrooms and yeast are adjusted for non-nitrogenous material. The adjusted protein conversion factors used to calculate protein for these items are as follows:

Soy products	5.71
Chocolate and cocoa	4.74
Coffee	5.3
Mushrooms	4.38
Yeast	5.7
White flours	5.7
Whole wheat flour	5.83

Amino acids are analyzed by a different method of analysis than total protein. Therefore, the sum of amino acids will be close to but not identical to the total protein.

c) Total lipid or crude fat usually includes both the triglyceride, energy yielding fraction and other lipid components such as glycerol, sterols and phospholipids and are determined by gravimetric methods. This is unlike the triglyceride fat or 'triglyceride equivalent' required on the Nutrition Facts table which accounts only for the energy yielding fatty acid as triglyceride component. However, in the rare cases where we accept data from industry which has been generated for labelling, the total fat will be in triglyceride equivalents. The data is identified as coming from industry.

Fatty acids are analyzed by a different method of analysis than total fat. Therefore, the sum of fatty acids will be close to but not identical to the total fat.

d) Food Energy is expressed in both kilocalories (kcal) and kilojoules (kJ). One kcal equals 4.184 kJ. Calorie values are based on the Atwater system for determining energy values; as the specific Atwater factors (specific to described food types) are used, for most foods the calorie value will differ from that calculated by the general 4/9/4 factors for protein/fat/carbohydrate. Details for the derivation of the Atwater calorie factors are outlined in Agriculture Handbook No. 74[9].

e) Total Dietary Fibre (TDF) is made of complex and heterogeneous polymeric materials that are not easy to separate from other food components particularly starch. Methods for dietary fibre have evolved remarkably over the past decade and at the moment there are 3 different AOAC approved methods for measuring TDF. TDF values originating from USDA data are analysed by AOAC[7] methods 985.29 (Prosky) and 991.43 (Lee). Values originating from Canadian government laboratories (nutrient source code 3) were analysed using AOAC method 992.16 (Mongeau). TDF is assumed zero in many foods after review of literature and/or consultation with scientific experts (nutrient source code 12).

f) Minerals. Minerals included in the database are calcium, iron, magnesium, phosphorus, potassium, sodium, zinc, copper, manganese and selenium. Levels of minerals for most foods are determined by the methods of AOAC (2003) usually by atomic absorption (AOAC 985.35) or inductively coupled plasma emission spectrophotometry (AOAC 984.27) or for the SNAP-CAN foods by ICP/MS which is based on EPA 3051[10]

g) Vitamin A

The primary unit of biologic activity for Vitamin A is called all-trans retinol. Carotenoids are a group of plant pigments that are provitamin or precursors to Vitamin A. The body cannot use these inactive forms until they are converted to the active form, retinol. Total Vitamin A activity of a food then is expressed as a sum of its retinol and carotenoid content after conversion. Unfortunately, more than one method of expressing this total activity has been developed and no single method has been universally adopted. Also, the National Academy of Sciences[13], in 2000, determined that the contribution from carotenoids is roughly half of that thought previously, resulting in the new unit, Retinol Activity Equivalents.

Nutrition labels in the United States use International Units or IU. We do not use these units in Canada.

Vitamin A on the Canadian Nutrition Facts table is expressed in Retinol Equivalents, RE

1 RE = 1 mcg retinol + mcg beta-carotene/6 + mcg other carotenoids/12

The new Dietary Reference Intakes (DRI)[11] recommendations have now suggested

Vitamin A should be expressed in terms of Retinol Activity Equivalents or RAE

1 RAE = 1 mcg retinol + mcg beta-carotene/12 + mcg other carotenoids/24

It is not advisable to convert between RE's and IU's in a food containing both retinol and carotenoids as one doesn't have information on the proportions of each. Calculating any of these activity standards is best done by starting with the amounts, in mcg, of each fraction contributing to activity.

The CNF lists values of Vitamin A activity in terms of RAE, retinol in micrograms, and Beta-carotene in micrograms.

h) Other Carotenoids. Data compiled by USDA for 4 additional classes of carotenoids are also available in the CNF:

alpha-carotene
lycopene
beta-cryptoxanthin
lutein & zeaxanthin (combined)

These carotenoids have a much lower contribution to Vitamin A activity, but act as antioxidants which may have roles in reducing risks of cancer and other diseases.

i) Vitamin D is expressed in units of mcg or IU's

40 IU Vitamin D = 1 mcg

Recent studies have suggested a relation between Vitamin D status and health outcomes among even apparently healthy Canadians[12]. Therefore, CNF staff has an objective to provide as comprehensive a dataset as possible of Vitamin D values, which would better support nutrition research studies on this topic. Thus we have added some Vitamin D data resulting from a limited analytical study in Canada[13] for Vitamin D in fish, pork, and certain dairy products. Data from this study do include the contribution from the metabolite of Vitamin D, 25-hydroxy cholecalciferol. In addition, for SR22 USDA has generated data for Vitamin D in many foods and we have included them where appropriate for this edition. The method for the USDA values involved extraction with solvent(s), cleanup steps and quantification by HPLC or LC/MS.

Critical examination of the high percentage of formerly "missing values" of Vitamin D was undertaken. Some which were known by scientific deduction to be zero i.e., all plant foods except mushrooms) are now assigned assumed zero status, some values were borrowed from international databases, and some were estimated by recipe calculation to be below international standards for trace amounts. One can always deduce the source of the data by consulting the field entitled Nutrient Source Code.

Cholcalciferol or vitamin D3 is the form naturally occurring in animal products and the form most commonly added to fortified foods. Ergocalciferol, or vitamin D2, is the form found in some plants and is sometimes added to fortified foods, such as soy beverages. The database only reports the sum of D3 and D2.

j) Vitamin E

There are a number of isomers of Vitamin E. In the past a calculation of Vitamin E equivalents, which took into account activities of various isomers, was most commonly used. However, the National Academy of Sciences[11] has now determined that the only isomer of significant activity is the RRR-alpha-tocopherol expressed in mg. As such the only expression of Vitamin E activity now in the CNF is alpha-tocopherol in mg. For the time being, there are no foods to which micronutrient addition regulations allow the addition of synthetic Vitamin E (except meal replacements which are not found on the CNF).

k) Niacin is expressed both in terms of mg of preformed niacinamide present in the food as well as niacin equivalents (NE) which includes that which can be formed from tryptophan. There are 2 methods of calculating niacin equivalents (code 409):

If preformed niacin, mg and tryptophan, g were present in the database then:

(tryptophan x 1000/60) + preformed niacin = NE

If a tryptophan value was not available, it was imputed to be 1.1% of total protein and:

(0.011 x protein) x 1000/60 + preformed niacin = NE

USDA reports that niacin values are determined by microbiological methods. For the SNAP-CAN foods determination is by an adaptation of an LC-isotope dilution MS method[14].

l) Folate, Folic acid, **Total Folacin**

There are two chemical forms now in foods which contribute to folate bioactivity:

- Naturally occurring or food folate
- Added synthetic form, folic acid.

The folic acid form is more active than the food folate form. As a result one finds in sources of nutrient data:

- Folic acid in mcg
- Food folate or naturally occurring folate in mcg

- The arithmetic sum of the two (not accounting for activity) sometimes referred to as total folacin or simply as Folate in mcg. This is the unit to be used on the Canadian Nutrition Facts Table.
- Dietary Folate Equivalents
  1 DFE = (mcg folic acid x 1.7) + mcg food folate
  The DFE is now the most common unit of expression when referring to recent population nutrition studies.

These data assume that the additions of folic acid are as outlined in the regulations[2]. In practice overages are common. Where a range is allowed, calculated values are based on the midpoint.

For cornmeal, pasta and rice, addition is optional, but some realities in the marketplace allow us to make generalizations. There are very few manufacturers of cornmeal and they do not want to produce both fortified and unfortified batches.

Most pasta is fortified in Canada. There are some imported brands which are not fortified and there is a separate listing for these in the database. However, when it is an ingredient in the manufacture of another food we are assuming it is fortified. In practice up to this point, most types of rice are not fortified; only precooked rice is commonly fortified.
Values for cooked pasta were calculated based on the moisture difference between cooked and dry. There are no standard retention factors for folic acid upon cooking/processing.

Recently generated data would use the trienzyme microbiological procedure[15] which measure the total folate including folic acid in enriched foods. Folic acid is measured either by the microbiological method without enzymes or by LC-MS/MS[16]. Food folate is then calculated by difference. For unenriched foods food folate would be equivalent to total folacin since folic acid does not occur naturally in foods.

m) Other Vitamins. Methods and reporting for Vitamin C, thiamin, riboflavin, pantothentic acid, vitamin B6, vitamin B12, total choline and betaine, as well as Vitamin K, are identical to those detailed in the USDA Release 22 documentation[1].

n) Fatty acids

Nomenclature

Fatty acids are referred to by a variety of nomenclature systems, many of which date back prior to common knowledge of specific and geometric isomers. For unsaturated fatty acids, the trivial and systematic names reflect the most common isomer, although all isomers are included in the value. The most specific descriptor of the isomers is that indicated through the use of a shorthand system of numbers and letters. The first number in the nutrient description (before the colon) is the number of carbon atoms and the second (after the colon) is the number of double bonds in the chain. The letter c, t or i indicates whether or

not the bond is cis or trans. The i indicates that this polyunsaturated fatty acid has a mixture of cis and trans double bonds and is not a single isomer but the peaks cannot be easily differentiated.

i,e., 18:2 t,t depicts a fatty acid with 18 carbon atoms,
2 double bonds, and
a trans configuration about both of those double bonds.

Where the word 'undifferentiated' appears, the proportions of cis and trans are unknown as the values were entered into the database prior to the practice of analyzing separately for the geometric isomers. This is especially of note in the bakery products group and snack food group where the trans content may be high, but is not reported.

Current methods used to measure fatty acids in foods from SNAP-CAN allow for the separate identification of cis and trans isomers. For these foods, undifferentiated fields are the calculated sum of all differentiated isomers.
i,e., 18:2 undiff is the sum of 18:2ccn-6, 18:2t,t , 18:2i and 18:2cla

Omega-3 and Omega-6 isomers are denoted in shorthand as n-3 and n-6. The n-number indicates the position of the first double bond from the methyl end of the carbon chain.

i.e., 18:2 c,c n-6 18 carbon atoms
2 double bonds
the position of the first double bond indicates an omega 6
a cis configuration about both of those double bonds.

Fatty Acids in the Canadian Nutrient File

NUTR_CODE	NUTR_SYMBOL	Fatty acids	Systematic name	Common name of most typical isomer
606	TSAT	Fatty acids, saturated, total		
607	4:0	4:0	butanoic	Butyric
608	6:0	6:0	hexanoic	Caproic
609	8:0	8:0	octanoic	Caprylic
610	10:0	10:0	decanoic	Capric
611	12:0	12:0	dodecanoic	Lauric
696	13:0	13:0	tridecanoic	
612	14:0	14:0	tetradecanoic	Myristic
613	16:0	16:0	hexadecanoic	Palmitic
614	18:0	18:0	octadecanoic	Stearic
615	20:0	20:0	eicosanoic	Arachidic
624	22:0	22:0	docosanoic	Behenic
652	15:0	15:0	pentadecanoic	pentadecylic

NUTR_CODE	NUTR_SYMBOL	Fatty acids	Systematic name	Common name of most typical isomer
653	17:0	17:0	heptadecanoic	Margaric
654	24:0	24:0	tetracosanoic	Lignoceric
645	MUFA	Fatty acids, monounsaturated, total		
860	12:1	12:1	lauroleic	
625	14:1	14:1	tetradecenoic	Myristoleic
697	15:1	15:1	pentadecenoic	
626	16:1undiff	16:1 undifferentiated	hexadecenoic	Palmitoleic
673	16:1c	16:1c		
662	16:1t	16:1t		
687	17:1	17:1	heptadecenoic	
617	18:1undiff	18:1 undifferentiated	octadecenoic	Oleic
674	18:1c	18:1c		
663	18:1t	18:1t		
628	20:1	20:1	eicosenoic	Gadoleic
630	22:1undiff	22:1 undifferentiated	docosenoic	Erucic
676	22:1c	22:1c		
664	22:1t	22:1t		
859	24:1undiff	24:1 undifferentiated	tetracosenoic	Nervonic
671	24:1c	24:1c		
646	PUFA	Fatty acids, polyunsaturated, total		
618	18:2	18:2	octadecadienoic	Linoleic
666	18:2i	18:2 trans isomers not specified		
675	18:2ccn-6	18:2cc omega 6		
670	18:2cla	18:2 Conjugated linoleic acid		
669	18:2t,t	18:2t,t		
619	18:3undiff	18:3 undifferentiated	octadecatrienoic	Linolenic
851	18:3cccn-3	18:3ccc omega 3		Alpha-linolenic
685	18:3cccn-6	18:3ccc omega 6		Gamma - linolenic
856	18:3i	18:3 trans isomers not specified		
627	18:4	18:4	octadecatetraenoic	Parinaric
672	20:2cc	20:2cc		
689	20:3	20:3	eicosatrienoic	

NUTR_CODE	NUTR_SYMBOL	Fatty acids	Systematic name	Common name of most typical isomer
852	20:3n-3	20 :n-3		
853	20:3n-6	20:3n-6		
620	20:4	20:4	eicosatetraenoic	Arachidonic
855	20:4n-6	20:4n-6		
629	20:5n-3	20:5n-3	eicosapentaenoic	Timnodonic
857	21:5	21:5		
862	22:2	22:2	docosadienoic	
861	22:3	22:3		
858	22:4n-6	22:4n-6	docosatetraenoic	
631	22:5n-3	22:5n-3	docosapentaenoic	Clupanodonic
621	22:6n-3	22:6n-3	docosahexaenoic	

Expression

The values shown are for the actual quantity (g/100g) of each fatty acid and do not represent fatty acid triglycerides. Raw methyl ester data are converted to grams of free fatty acid per 100g of total lipid (fat) using Sheppard conversion factors[17] and then to grams of fatty acid per 100g edible portion of food using the total lipid content.

Fatty Acid Totals

As the individual fatty acids are determined by a different analytical method than that of total fat, the sum of fatty acids is rarely exactly equal to the total fat value. Moreover, total fat may include other fatty acids, phospholipids or sterols and the recovery of fatty acids in the recommended AOAC method for fatty acid profiles is not expected to yield 100% recoveries even with the application of theoretical response factors[18]. Values for total saturated, monounsaturated and polyunsaturated fatty acids may include individual fatty acids not listed in the CNF; therefore, the sum of their values may exceed the sum of the individual fatty acids listed. In rare cases, the sum of individual fatty acids may exceed the sum of the values given for the total saturated fatty acids (SFA), monounsaturated fatty acids (MUFA), and/or polyunsaturated fatty acids (PUFA). These differences are generally caused by rounding and should be relatively small.

Values for conjugated linoleic acid are not included in the total trans sum as there are reports that CLAs yield health benefits and do not carry the negative effects of other trans fatty acids.

For formulated or brand name foods, industry data were often available for only the fatty acid classes (SFA, MUFA, PUFA) or only for the fatty acids required on the Nutrition Facts Table (SFA and TRFA), but were lacking for individual fatty acids.

Table 6 of the appendix lists the fatty acids included in the different totals: monounsaturated, polyunsaturated, saturated fatty acids, etc.

Omega fatty acids
The following omega fatty acid isomers are listed in the CNF:

Nutrient Code	Nutrient Name
	Omega 6
675	Fatty acids, polyunsaturated, 18:2ccn-6, linoleic
685	Fatty acids, polyunsaturated, 18:3cccn-6, gamma linoleic
689	Fatty acids, polyunsaturated, 20:3n-6, eicosatrienoic
855	Fatty acids, polyunsaturated, 20:4n-6, arachidonic
858	Fatty acids, polyunsaturated, 22:4n-6, docosatetraenoic
	Omega 3
851	Fatty acids, polyunsaturated, 18:3cccn-3, alpha linolenic
	Fatty acids, polyunsaturated, 20:3n-3
629	Fatty acids, polyunsaturated, 20:5n-3, eicosapentanoic
631	Fatty acids, polyunsaturated, 22:5n-3, docosapentanoic
621	Fatty acids, polyunsaturated, 22:6n-3, docosahexanoic

Note: Isomers of omega 3 arachidonic and omega 6 docosapentaenoic do exist in nature, but the USDA does not list these as separate nutrient codes.

Where the data profile is sufficient we are now reporting the sum of omega 3 (Nutr Code 902) and the sum of omega 6 fatty acids (Nutr Code 903).

o) Cholesterol is present only in foods of animal origin. For foods of plant origin, the value for cholesterol is assumed to be zero (nutrient source code 12).

p) Amino acids are extracted in 3 groups: tryptophan, methionine/cystine and the remaining 18 amino acids. All samples from SNAP-CAN were analyzed by UPLC-MS/MS[19].

DESCRIPTION OF FILE CONTENTS

This next section describes some of the most practical aspects of the file contents. For a more detailed outline of the database structure, field names/type etc and the appropriate linkages please see the section entitled "Download files" at www.healthcanada.gc.ca/cnf

A. Food Name File

a) Canadian Food Code

The food code is a four digit number which uniquely identifies each food, but doesn't describe or classify the food in any way. Starting with this edition this is not longer the primary key, but is nonetheless always unique to that food and will remain unchanged over time. Please see the Database structure file for further details.

For those wanting to retrieve information regarding whether or not a food is derived from a USDA food and which food, please refer to the field entitled COUNTRY_C (only available in the full download version).

b) Food group code

At present foods are grouped under 22 different group headings based on similar characteristics of the foods.

Food Group Code	Description
1	Dairy and Egg Products
2	Spices and Herbs
4	Fats and Oils
5	Poultry Products
6	Soups, Sauces and Gravies
7	Sausages and Luncheon Meats
8	Breakfast Cereals
9	Fruits and Fruit Juices
10	Pork Products
11	Vegetables and Vegetable Products
12	Nuts and Seeds
13	Beef Products
14	Beverages
15	Finfish and Shellfish Products
16	Legumes and Legume Products
17	Lamb, Veal and Game
18	Baked Products
19	Sweets
20	Cereals, Grains and Pasta

21	Fast Foods
22	Mixed Dishes
25	Snacks

c) Changing the **food source code** indicates the degree of Canadian content for the full profile.

Food Source Code	Description
0	Food based on data from USDA: no changes
1	Food based on data from USDA: some nutrients changed to meet Canadian regulations
3	Food based on data from USDA: some nutrients analyzed in the Canadian product
4	Food based on data from USDA: some nutrients calculated in the Canadian product
6	Food based on data from USDA: some nutrient values supplied by the manufacturers of the Canadian product
9	Data supplied by an international database other than USDA
10	Food based on data from USDA: some nutrients analyzed in the Canadian product. Food has been deleted from USDA
11	Food based on data from USDA: no changes. Food has been deleted from USDA
12	Food based on data from USDA: information from USDA survey files
20	Food available in the Canadian supply, but not found in the USDA: no changes from the Nutrition Canada Survey (1970-1972)
23	Food available in the Canadian supply, major nutrients analyzed in the Canadian product
24	Food available in the Canadian supply, but not found in the USDA: major nutrients calculated in the Canadian product
26	Food available in the Canadian supply, but not found in the USDA: nutrient values supplied by manufacturers of the Canadian product
28	Traditional food
35	CNF recipe compilation
36	Food is considered an ingredient
37	Food is from the Sampling and Nutrient Analysis Program (SNAP-CAN)

d) Descriptive information about the food items is included in this file in both French and English versions. The **foodnames** are available in two different lengths. As previously, the first measures 60 characters (A_FD_NM) in length and utilizes many abbreviations (Table 3 in the Appendix) to maintain this limit. The second (L_FD_NM) has no abbreviations, contains alternate food descriptions (i.e. wiener/hot dog) and can be up to 255 characters long. It is the later food description from which the online system

performs its search function. A systematic hierarchy is utilized for recording common food names. Elements that may be included are product type, breed, part, physical state, shape or form, cooking method, preservation method, and/or brand name.

For example:

Chicken, broiler, thigh, meat and skin, water chill, stewed
Cereal, ready to eat, Mini-Wheats: with white frosting, Kellogg's
Soup, cream, mushroom, canned, condensed, whole milk added

B. Nutrient Amount File

Nutrient values per 100 g of food (edible portion) are contained in the Nutrient Amount file. Unique fields are:

a) The **nutrient code** – three digit nutrient codes as adopted from the USDA system are maintained. They are not alphabetical or sequential.

b) **Mean value**, all available data per 100 grams edible portion

c) **Standard error** of the samples, sample composites or contributing papers

d) **Number of observations**, or the number of samples on which the data are based. If no standard error or number of samples is included, the values have been imputed or calculated from another form of the food, from a similar food, or are based on a calculated recipe.

e) **Source of Nutrient Amount Data.** The CNF supplies a numeric code or flag for each nutrient value which reveals to the user of the database, the source and/or type of each individual nutrient value.

Types of Data found on the CNF:

Analyzed	Will show a mean, standard error and number of observations.
Calculated	Will only show a mean value. No actual analyses are made but the calculations are straightforward. E.g. Soup diluted according to label specifications.
Recipe	Calculated value based on ingredient proportions
Imputed	Will only show a mean value. Assumptions have been made about the data by the compiler upon consultation with scientific experts or scientific literature.
Provisional	May show a mean, standard error and number of observations, but there are questions surrounding the sampling and/or methods of analysis for these data, which remain to be verified.

List of the Nutrient Source Codes:

Nutrient Source Code	Description
0	No change from USDA
1	Nutrient ***changed*** to meet Canadian regulations
2	Nutrient ***calculated*** from data other than USDA
3	Nutrient ***analyzed*** in a Canadian government lab
4	Nutrient ***calculated*** from USDA data
5	Nutrient ***imputed*** from a similar USDA food
6	Nutrient supplied by Canadian industry, documentation incomplete
7	Nutrient ***analyzed*** in Canadian product (non-government lab)
8	Nutrient value of food created for the Nutrition Canada Survey
9	Nutrient from the label declaration
10	Nutrient derived from scientific literature
12	Nutrient value is an assumed zero
14	Provisional data
15	Nutrient ***imputed*** from data other than USDA
16	Calculated field
17	Calculated from analytical Canadian data
51	Calculated using a recipe editor
81	International database – Puerto Rico USDA
82	Danish Food Composition Databank (Revision 5.0) – Danish Institute for Food and Veterinary Research
83	Fineli. 1999-2003. Finnish Food Composition Database. National Public Health Institute

C. Conversion Factor File

Portion size conversion factors

The conversion factors are food specific multipliers by which the nutrient values for each food may be multiplied to give the nutrients in described portions. Mathematically they are the weight of the portion as described divided by 100 (the nutrient values are recorded per 100 grams of the food). The following formula is used to calculate the nutrient content per household measure.

N= V*W/100 where

N= nutrient value per household measure
V= nutrient value per 100g (all nutrient values are stored in the database per 100g edible portion)
W= g weight of portion

- multiplying by the factors provides the nutrients in the edible portions described on the file (e.g. 1 fruit; 100 mL puree). These are generic weights of a described portion which could differ from local markets (i.e. organic tend to be smaller, fall vegetables larger). If this is crucial to a study one may want to consider weighing the specific items(s) and using those weights instead.
- Weights are given for edible material without refuse, that is, the weight of an apple without the core or stem, or a chicken leg without the bone etc.
- All measurements are in metric. Metric System Equivalents employed in conversions are supplied in Table 1. All linear measurements are in mm or cm.

D. Refuse Amount File

Refuse is the inedible material (ie seeds, bone, and skin) contained in some foods. For raw meats, the items as purchased are raw; for cooked meats, the percent refuse is inedible material from the cooked state. For meat cuts containing bone, any connective tissue present is included in the value given for bone. Separable fat is not part of the refuse if the meat is described as lean and fat. Lean refers to muscle tissue that can be readily separated out of the intact cut and includes any marbled fat within the muscle not removable by dissection.

E. Yield Amount File

Occasionally it is more useful to provide a weight of edible cooked food from a raw as purchased or raw with refuse state. These **yields** reflect both losses as refuse, and cooking losses as moisture and/or evaporation. They cannot be applied to data for the comparable raw food to “cook by calculation” as there are other factors such as nutrient retention to consider in such calculations. Alternatively they can reflect gains in moisture if prepared from a dry product (ie pudding mix).

APPENDIX

TABLE 1 - METRIC SYSTEM EQUIVALENTS FOR UNITS OF MEASURE

	US and Imperial measures	Metric System Equivalents	Canadian Metric household measure	
Volume	1 teaspoon	**4.9 ml**	**5 ml**	
	1 tablespoon	**14.8 ml**	**15.0 ml**	
	1 fluid ounce (US)	**29.57 ml**		
	1 fluid ounce (Imperial)	**28.41 ml**		
	1 cup (8 US fluid ounces)	**236.6 ml**	**250 ml**	
	1 pint (16 US fluid ounces)	**473.2 ml**		
	1 pint (20 Imperial fluid ounces)	**568.3 ml**	**500 ml**	
	1 quart (32 US fluid ounces)	**946.4 ml**		
	1 quart (40 Imperial fluid ounces)	**1136.5 ml**	**1 L**	
	1 gallon (128 US fluid ounces)	**3786 ml**		
	1 gallon (160 Imperial fluid ounces)	**4546 ml**	**4 L**	
	1 cubic inch	**16.39 ml**	**2.54 cm cube**	**15.63 ml**
Length	1 inch	**2.54 cm, 25.40 mm**		
Weight	1 ounce	**28.35 g**		
	1 pound	**453.6 g**		
	1 cup (poultry and cooked meats chopped and diced)	**140 g**	**250 ml**	**148 g**
	1 cup (poultry and cooked meats ground)	**110 g**	**250 ml**	**116 g**
Energy	1 Calorie	**4.184 kJ**		

TABLE 2 - LIST OF ABBREVIATIONS

Abbreviation	Name	Abbreviation	Name
&	And	CONV	Conventional
ADD	Added	CR	Creamed
ADHE	Adherent	CLR	Cereal
AL	Aluminum	CRUM	Crumbled
ANIM	Animal	CTD	Coated
AP	As purchased	DEG-OF-DONE	Degree of doneness
ASP	Aspartame	DECAF	Decaffeinated
BAN	Banana	DEHYD	Dehydrated
BARB	Barbequed	DIETET	Dietetic
BAT	Battered	DK	Dark
BIF	Beefsteak	DOM	Domestic
BLD	Boiled	DRND	Drained
+BONE	Bone in	DRSTK	Drumstick
-BONE	Boneless	EN	Enriched
BOT	Bottom	ENCHIL	Enchilada
BRDD	Breaded	FLR	Flour
BRLD	Broiled	FLVR	Flavour
BRSD	Braised	FORTIF	Fortified
BRWD	Browned	FRD	Fried
BR SUG	Brown sugar	FRSTD	Frosted
BTRML	Buttermilk	FRZ	Frozen
BUT	Butter	FROM RECIPE	Prepared from recipe
CAL	Calorie	GIB	Giblets
CANNED/OIL	Canned in oil	GRAN	Granules
CANNED/WATER	Canned in water	HAMB	Hamburger
CASS	Casserole	HTD	Heated
CASULPH	Calcium sulphate	HYDRG	Hydrogenated
CHEESEBU	Cheeseburger	INSD	Inside
CHKN	Chicken	L	Lean
CHOC	Chocolate	L+F	Lean and fat
CHOL	Cholesterol	LEM	Lemon
CIN	Cinnamon	LIQ	Liquid
CKD	Cooked	LT	Light
CND	Canned	MACA	Macaroni
COMM	Commercial	MARSHM	Marshmallow/s
COMP	Composite	MED	Medium
COND	Condensed	M.F.	Milk fat
CONCEN	Concentrate	MGCHLOR	Magnesium chloride
CONDIM	Condiments	MIX	Mixed
MONT JACK	Monterey Jack	TRAD	Traditional
MSH	Mashed	TOM	Tomato

Abbreviation	Name	Abbreviation	Name
MTBLLS	Meatballs	SHLDR	Shoulder
MULTIPUR	Multipurpose	SMOK	Smoked
N	Not	SMRD	Simmered
NA	Sodium	SUG	Sugar
NATUR	Natural	SWTND	Sweetened
NEW ENG	New England	SWTNR	Sweetener
NEWY	New York	UNDIL	Undiluted
NEW ZEA	New Zealand	UNHTD	Unheated
NOO	Noodle	UNSPEC	Unspecified
NUG	Nugget/s	VAN	Vanilla
O-BR	Oat bran	VEG	Vegetable
ORIE	Oriental	VIT	Vitamin
OUTS	Outside	W-BR	Wheat bran
PART	Partially	WH	Whole
PDR	Powder	W/	With
PKT	Packet	WO/	Without
PKD	Packed	/	And / or
PPD	Prepared	**Brand Names**	
POT	Potatoes	BARBARA'S	Barbara's Bakery
PROD	Product/s	HZ	Heinz
PUDD	Pudding	ICANT	I Can't Believe its Not Butter
RED	Reduced	KELL	Kellogg's
REFR	Refrigerated	LACT	Lactantia
REG	Regular	LECL	Leclerc
RESTAU	Restaurant	QKR	Quaker
R-S-F	Reduced saturated fat	NB	Nabisco
RST	Roasted	RH	Robin Hood
R-T-C	Ready to cook	RGS	Rogers
RTE	Ready to eat	TGTBT	Too Good To be True
R-T-P	Ready to prepare	**Units**	
R-T-S	Ready to serve	cm	Centimetre
SAL	Salted	dm	Diameter
SAU	Sauce	g	Gram
S/AS	Such as	l	Litre
SE	Seed	mL	Millilitre
SEAS	Seasoned	mm	Millimetre
SELESS	Seedless	tsp	teaspoon
SEPAR	Separable	tbsp	tablespoon
SOL	Solids	''	inch

TABLE 3 -LIST OF DEFINITIONS

Heaping teaspoon	refers to an ordinary teaspoon rather than to a standard measuring teaspoon
Not packed	lightly filled measure without pressing down on the food
Packed	maximum amount of food that can be pressed into the measure without altering its physical structure
Pared	skin removed plus some adhering flesh
Peeled	skin removed with a minimum of adhering flesh

TABLE 4: LIST OF MEASURES ADDED SINCE 2007b PUBLICATION

Measure Code #	Description English
1656	60ml shredded, not packed
1657	60ml shredded
1658	100ml flowerets
1659	125ml flowerets
1660	250ml flowerets
1661	1 licorice
1662	2 rectangles
1663	4 crackers
1664	4 slices
1665	3 medium
1666	7 medium
1667	99g
1668	5 large
1669	4 medium
1670	3 pieces
1671	3 slices
1672	1 pee wee egg
1674	1 small bag
1675	17 chips
1676	2 social tea
1677	1 packet, prepared
1678	1 small container
1679	1 large container
502333	26 small chips
502334	2 jumbos
502335	15 small
502337	1 ear, small, 14 - 16.5cm
502338	1 ear, medium, 17 - 19cm
502339	1 ear, large, 20 - 23cm
502340	1 container (200ml)
502341	1/6 cake (15cm diam)
502342	1/6
502343	1 individual shell
502390	1 sweet roll
502403	1 medium (5cm dia)
502404	1 large (6.4cm dia)
502405	1 loaf
502406	1 pizza
502407	1 piece (5cm x 5cm)
502408	1 spray (about 1/3 second)
502409	1 rusk
502410	1 slice (10.8cm x 10.8cm x 0.2cm)
502411	1 snack bag
502412	2 bars
502413	1 hop & go
502414	1 leclerc
502415	nature valley
502416	quaker
502417	leclerc
502418	president's choice
502419	1 bar, unspecified
502420	kellogg's
502421	1 large egg white
502422	1 naan (25 cm dia)
502423	1 small (7.6 cm dia)
502425	1 large (17.8 cm dia)
502426	1 small (6.4 cm dia)
502427	1 medium (7cm dia)
502428	1 large (8.3cm dia)
502429	1 tart
502430	1/10 cake (1-layer)
502431	1/10 cake (2-layer)
502432	1 serving (approx. 10 sprays)
502434	1 bottle (358ml)
502435	1 cocktail
502436	125ml flaked
502437	250ml flakes
502438	1 fillet (16cm x 9cm x 1cm)
502439	1 square (7.5 cm x 9 cm)
502440	1 samosa
502441	1 sandwich, 15 cm long (6")
502442	1 stick (7.6 cm long)
502443	1 fajita
502444	1 quesadilla
502433	bone and cartilage
502445	1 large cookie (8.9 cm x 10.2 cm)
502446	1 piece (1/10 of a loaf)
502447	2 round waffles
502448	1 piece, bone and skin removed
502450	akin, subcutaneous fat and breading
502452	2 egg yolks
502453	½ piece
502454	¼
502455	100 g raw as purchased, with skin (including bone)

TABLE 5 - NUTRIENT TRACE AND SIGNIFICANT DIGITS

Nutrient Trace and Significant Digits			
Nutrient	**Unit**	**Number of significant digits**	**Trace = less than**
Energy	kJ (kcal)	3	0.6
Major constituents			
Water	g	3	0.06
Protein	g	3	0.06
Fat	g	3	0.06
Carbohydrate	g	3	0.06
Dietary fibre	g	3	0.06
Alcohol	g	3	0.06
Organic acids	g	3	0.06
Amino acids	mg	3	0.06
Fatty acids	g	3	0.06
	mg	3	0.06
Cholesterol	mg	3	0.6
Inorganic constituents	mg	3	0.06
	µg	2	6
Vitamins			
Vitamin A			
retinol	µg	3	0.06
carotenes	µg	3	0.06
Vitamin D	µg	2	0.06
Vitamin E tocopherols	µg	2	0.006
Vitamin K	µg	2	0.06
B Vitamins			
Thiamin	mg	2	0.006
Riboflavin	mg	2	0.006
Niacin	mg	2	0.006
Vitamin B6	mg	2	0.006
Pantothenic acid	mg	2	0.006
Biotin	mg	2	0.006
Vitamin B 12	µg	2	0.006
Folates	µg	2	0.06
Vitamin C	mg	3	0.06

1. Southgate, D.A.T., Greenfield H. (2003). Food Composition Data: Production, Management and Use. Food and Agriculture Organization of the United Nations.

TABLE 6: LIST OF FATTY ACIDS CONTRIBUTING TO THE DIFFERENT TOTALS

NUTR_CODE	NUTR_SYMBOL	TSAT	MUFA	PUFA	TCMO	TCPO	TRFA	TRMO	TRPO	Omega 3	Omega 6
607	**4:0**	X									
608	**6:0**	X									
609	**8:0**	X									
610	**10:0**	X									
611	**12:0**	X									
696	**13:0**	X									
612	**14:0**	X									
652	**15:0**	X									
613	**16:0**	X									
653	**17:0**	X									
614	**18:0**	X									
615	**20:0**	X									
624	**22:0**	X									
654	**24:0**	X									
860	**12:1**		X		X						
625	**14:1**		X		X						
697	**15:1**		X		X						
626	**16:1undiff**		X								
673	**16:1c**				X						
662	**16:1t**						X	X			
687	**17:1**		X		X						
617	**18:1undiff**		X								
674	**18:1c**				X						
663	**18:1t**						X	X			
628	**20:1**		X		X						
630	**22:1undiff**		X								
676	**22:1c**				X						
664	**22:1t**						X	X			
859	**24:1undiff**		X								
671	**24:1c**				X						
618	**18:2undiff**			X							
675	**18:2ccn-6**					X					X
669	**18:2t,t**						X		X		
666	**18:2i**						X		X		
670	**18:2cla**						NO		NO		
665	**18:2t**						X		X		
619	**18:3undiff**			X							
851	**18:3cccn-3**					X				X	
685	**18:3cccn-6**					X					X
856	**18:3i**						X		X		
627	**18:4**			X		X					
672	**20:2cc**			X		X					

NUTR_CODE	NUTR_SYMBOL	TSAT	MUFA	PUFA	TCMO	TCPO	TRFA	TRMO	TRPO	Omega 3	Omega 6
689	**20:3**			X							
852	**20:3n-3**					X				X	
853	**20:3n-6**					X					X
620	**20:4**			X		X*					
855	**20:4n-6**					X*					X
629	**20:5n-3**			X		X				X	
857	**21:5**			X		X					
862	**22:2**			X		X					
861	**22:3**			X		X					
858	**22:4n-6**			X		X					X
631	**22:5n-3**			X		X				X	
621	**22:6n-3**			X		X				X	

Only one of 620 and 855 should be included in the total TCPO as they are the same.
Values for conjugated linoleic acid are not included in the total trans sum as there are reports that CLAs yield health benefits and do not carry the negative effects of other trans fatty acids.

Legend:

TSAT = Total saturated fatty acids
MUFA = Total monounsaturated fatty acids
PUFA = Total polyunsaturated fatty acids
TCMO = Total cis monoenoic fatty acids
TCPO = Total cis polyenoic fatty acids
TRFA = Total trans fatty acids
TRMO = Total trans monoenoic fatty acids
TRPO = Total trans polyenoic fatty acids
Omega 3 = Total omega 3 polyunsaturated fatty acids
Omega 6 = Total omega 6 polyunsaturated fatty acids

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CANADIAN NUTRIENT FILE
FOOD SOURCE SUMMARY

Food Source Code	Food Source Description	# foods	Percent
00	Foods based on data from USDA: no change from USDA	3657	62.95
01	Foods based on data from USDA: some nutrients changed to meet Canadian regulations	142	2.44
03	Foods based on data from USDA: some nutrients analyzed in the Canadian product	391	6.73
04	Foods based on data from USDA: some nutrient values calculated in the Canadian product	5	0.09
06	Foods based on data from USDA: some nutrient values supplied by manufacturers of the Canadian product	3	0.05
09	Data supplied by an international database other than USDA	1	0.02
10	Food based on data from USDA: some nutrients analyzed in the Canadian product, food has been deleted from USDA	3	0.05
11	Food based on data from USDA: no changes. Food has been deleted from USDA	33	0.57
12	Food based on data from USDA: information from USDA survey files	166	2.86
20	Foods available in the Canadian food supply, but not found in USDA: no change from Nutrition Canada survey	36	0.62
23	Foods available in the Canadian food supply, major nutrients analyzed in the Canadian product	477	8.21
24	Foods available in the Canadian food supply, but not found in USDA: major nutrients calculated in the Canadian product	87	1.50
26	Foods available in the Canadian food supply, but not found in USDA: nutrient values supplied by manufacturers without documentation	392	6.75
28	Traditional foods	149	2.56
35	CNF recipe compilation	112	1.93
37	Food is from the Sampling and Nutrient Analysis Program (SNAP-CAN)	155	2.67

CANADIAN NUTRIENT FILE
NUTRIENT SOURCE SUMMARY

Nutrient Source Code	Nutrient Source Description	# Records	Percent
0	No change from USDA	310712	58.58
1	Nutrient changed to meet Canadian regulations	1964	0.37
2	Nutrient calculated from data other than USDA	27177	5.12
3	Nutrient analysed in a Canadian government lab	4850	0.91
4	Nutrient calculated from USDA data	22601	4.26
5	Nutrient imputed from a similar food	13277	2.50
6	Nutrient supplied by Canadian Industry, documentation incomplete	7670	1.45
7	Nutrient analysed in Canadian product (non-government lab)	15161	2.86
8	Nutrient value of food created for the Nutrition Canada survey	778	0.15
9	Nutrient from the label declaration	61	0.01
10	Nutrient derived from scientific literature	4775	0.90
12	Nutrient value is an assumed zero	85872	16.19
14	Provisional data	4910	0.93
15	Nutrient value imputed from data other than USDA	1848	0.35
16	Calculated field	478	0.09
17	Calculated from analytical Canadian data	12483	2.35
51	Calculated using a recipe/formulation	11693	2.20
82	Danish Food Composition Databank (revision 5.0) Danish Institute for Food and Veterinary Research	31	0.01
83	Fineli. 1999-2003. Finnish food composition database. National Public Health Institute	32	0.01

NUTRIENT CODE LISTING

Percentage of foods containing the indicated nutrient for which a value is available. For each nutrient, the percentage is calculated as the number of foods containing an entry for the nutrient divided by the total number of foods in the database.

Nutrient Code	Nutrient Symbol	Unit	Nutrient Name	# Decimal places	# Foods	Percent
255	H2O	g	MOISTURE	2	5806	99.98
207	ASH	g	ASH, TOTAL	1	5790	99.71
203	PROT	g	PROTEIN	2	5807	100
204	FAT	g	FAT (TOTAL LIPIDS)	2	5807	100
205	CARB	g	CARBOHYDRATE, TOTAL (BY DIFFERENCE)	2	5807	100
208	KCAL	kcal	ENERGY (KILOCALORIES)	0	5807	100
268	KJ	kJ	ENERGY (KILOJOULES)	0	5807	100
291	TDF	g	FIBRE, TOTAL DIETARY	1	5541	95.42
301	CA	mg	CALCIUM	0	5720	98.50
303	FE	mg	IRON	2	5722	98.54
304	MG	mg	MAGNESIUM	0	5352	92.16
305	P	mg	PHOSPHORUS	0	5558	95.71
306	K	mg	POTASSIUM	0	5587	96.21
307	NA	mg	SODIUM	0	5761	99.21
309	ZN	mg	ZINC	2	5323	91.67
312	CU	mg	COPPER	3	5263	90.63
315	MN	mg	MANGANESE	3	4887	84.16
317	SE	µg	SELENIUM	1	4725	81.37
401	VITC	mg	VITAMIN C	1	5606	96.54
404	THIA	mg	THIAMIN	3	5467	94.14
405	RIBO	mg	RIBOFLAVIN	3	5472	94.23

Nutrient Code	Nutrient Symbol	Unit	Nutrient Name	# Decimal places	# Foods	Percent
406	N-MG	mg	NIACIN (NICOTINIC ACID) PREFORMED	3	5516	94.99
409	N-NE	NE	TOTAL NIACIN EQUIVALENT	3	5516	94.99
410	PANT	mg	PANTOTHENIC ACID	3	4840	83.35
415	B6	mg	VITAMIN B-6	3	5227	90.01
417	FOLA	µg	TOTAL FOLACIN	0	5286	91.03
432	FOLN	µg	NATURALLY OCCURRING FOLATE	0	5134	88.41
431	FOAC	µg	FOLIC ACID	0	5530	95.23
435	DFE	µg	DIETARY FOLATE EQUIVALENTS	0	5123	88.22
418	B12	µg	VITAMIN B-12	2	5430	93.51
421	CHOLN	mg	CHOLINE, TOTAL	1	2415	41.59
454	BETN		BETAINE	1	865	14.89
320	RAE	µg	RETINOL ACTIVITY EQUIVALENTS	0	5537	95.35
322	AC-µG	µg	ALPHA CAROTENE	0	2784	47.94
321	BC-µG	µg	BETA CAROTENE	0	5065	87.22
319	RT-µG	µg	RETINOL	0	5238	90.20
324	D-IU	IU	VITAMIN D (INTERNATIONAL UNITS)	3	5234	90.13
339	D-µG	µg	VITAMIN D (MICROGRAMS)	3	5240	90.24
323	ATMG	mg	ALPHA-TOCOPHEROL	0	3900	67.16
341	BTMG	mg	BETA-TOCOPHEROL	0	544	9.37
342	GTMG	mg	GAMMA-TOCOPHEROL	0	549	9.45
343	DTMG	mg	DELTA-TOCOPHEROL	0	545	9.39
430	VITK	µg	VITAMIN K	1	2845	48.99
501	TRP	g	TRYPTOPHAN	3	3970	68.37
502	THR	g	THREONINE	3	4024	69.30
503	ISO	g	ISOLEUCINE	3	4028	63.36
504	LEU	g	LEUCINE	3	4027	69.35
505	LYS	g	LYSINE	3	4042	69.61
506	MET	g	METHIONINE	3	4039	69.55
507	CYS	g	CYSTINE	3	3975	68.45

Nutrient Code	Nutrient Symbol	Unit	Nutrient Name	# Decimal places	# Foods	Percent
508	PHE	g	PHENYLALANINE	3	4033	69.45
509	TYR	g	TYROSINE	3	3995	68.80
510	VAL	g	VALINE	3	4028	69.36
511	ARG	g	ARGININE	3	4014	69.12
512	HIS	g	HISTIDINE	3	4022	69.26
513	ALA	g	ALANINE	3	3967	68.31
514	ASP	g	ASPARTIC ACID	3	3972	68.40
515	GLU	g	GLUTAMIC ACID	3	3962	68.23
516	GLY	g	GLYCINE	3	3968	68.33
517	PRO	g	PROLINE	3	3957	68.14
518	SER	g	SERINE	3	3959	68.18
521	HYP	g	HYDROXYPROLINE	3	565	9.73
601	CHOL	mg	CHOLESTEROL	0	5629	96.93
606	TSAT	g	FATTY ACIDS, SATURATED, TOTAL	3	5372	92.51
645	MUFA	g	FATTY ACIDS, MONOUNSATURATED, TOTAL	3	5270	90.75
646	PUFA	g	FATTY ACIDS, POLYUNSATURATED, TOTAL	3	5271	90.77
900	TCMO	g	FATTY ACIDS, TOTAL CIS MONOENOIC	3	600	10.33
901	TCPO	g	FATTY ACIDS, TOTAL CIS POLYENOIC	3	598	10.30
902	TOmega n-3		FATTY ACIDS, POLYUNSATURATED, TOTAL OMEGA n-3	3	1660	28.58
903	TOmega n-6		FATTY ACIDS, POLYUNSATURATED, TOTAL OMEGA n-6	3	1666	28.68
605	TRFA	g	FATTY ACIDS, TRANS, TOTAL	3	5160	88.86
693	TRMO	g	FATTY ACIDS, TOTAL TRANS-MONOENOIC	3	533	9.18
695	TRPO	g	FATTY ACIDS, TOTAL TRANS-POLYENOIC	3	4.51	7.77
607	4:0	g	FATTY ACIDS, SATURATED, 4:0, BUTANOIC	3	3292	56.69
608	6:0	g	FATTY ACIDS, SATURATED, 6:0, HEXANOIC	3	3314	57.07
609	8:0	g	FATTY ACIDS, SATURATED, 8:0, OCTANOIC	3	3489	60.08
610	10:0	g	FATTY ACIDS, SATURATED, 10:0, DECANOIC	3	3969	68.35
611	12:0	g	FATTY ACIDS, SATURATED, 12:0, DODECANOIC	3	4218	72.64
696	13:0	g	FATTY ACIDS, SATURATED, 13:0 TRIDECANOIC	3	327	5.63

Nutrient Code	Nutrient Symbol	Unit	Nutrient Name	# Decimal places	# Foods	Percent
612	14:0	g	FATTY ACIDS, SATURATED, 14:0, TETRADECANOIC	3	4701	80.95
652	15:0	g	FATTY ACIDS, SATURATED, 15:0, PENTADECANOIC	3	1114	19.18
613	16:0	g	FATTY ACIDS, SATURATED, 16:0, HEXADECANOIC	3	4887	84.16
653	17:0	g	FATTY ACIDS, SATURATED, 17:0, HEPTADECANOIC	3	1134	19.53
614	18:0	g	FATTY ACIDS, SATURATED, 18:0, OCTADECANOIC	3	4878	84.00
615	20:0	g	FATTY ACIDS, SATURATED, 20:0, EICOSANOIC	3	1250	21.53
624	22:0	g	FATTY ACIDS, SATURATED, 22:0, DOCOSANOIC	3	1227	21.13
654	24:0	g	FATTY ACIDS, SATURATED, 24:0, TETRACOSANOIC	3	841	14.48
860	12:1	g	FATTY ACIDS, MONOUNSATURATED, 12:1, LAUROLEIC	3	249	4.29
625	14:1	g	FATTY ACIDS, MONOUNSATURATED, 14:1, TETRADECENOIC	3	1252	21.56
697	15:1	g	FATTY ACIDS, MONOUNSATURATED, 15:1, PENTADECENOIC	3	725	12.48
626	16:1undiff	g	FATTY ACIDS, MONOUNSATURATED, 16:1undifferentiated, HEXADECENOIC	3	4615	79.47
673	16:1c	g	FATTY ACIDS, MONOUNSATURATED, 16:1c, HEXADECENOIC	3	1024	17.63
662	16:1t	g	FATTY ACIDS, MONOUNSATURATED, 16:1t, HEXADECENOIC	3	1010	17.39
687	17:1	g	FATTY ACIDS, MONOUNSATURATED, 17:1, HEPTADECENOIC	3	904	15.57
617	18:1undiff	g	FATTY ACIDS, MONOUNSATURATED, 18:1undifferentiated, OCTADECENOIC	3	4910	84.55
674	18:1c	g	FATTY ACIDS, MONOUNSATURATED, 18:1c, OCTADECENOIC	3	763	13.14
663	18:1t	g	FATTY ACIDS, MONOUNSATURATED, 18:1t, OCTADECENOIC	3	760	13.09
628	20:1	g	FATTY ACIDS, MONOUNSATURATED, 20:1, EICOSENOIC	3	760	13.09
630	22:1undiff	g	FATTY ACIDS, MONOUNSATURATED, 22:1undifferentiated, DOCOSENOIC	3	3719	64.04
676	22:1c	g	FATTY ACIDS, MONOUNSATURATED, 22:1c, DOCOSENOIC	3	2300	39.61
664	22:1t	g	FATTY ACIDS, MONOUNSATURATED, 22:1t, DOCOSENOIC	3	2235	38.49
859	24:1undiff	g	FATTY ACIDS, MONOUNSATURATED, 24:1undifferentiated, TETRACOSENOIC	3	633	10.90
671	24:1c	g	FATTY ACIDS, MONOUNSATURATED, 24:1c, TETRACOSENOIC	3	749	12.90
618	18:2undiff	g	FATTY ACIDS, POLYUNSATURATED, 18:2undifferentiated, LINOLEIC, OCTADECADIENOIC	3	4972	85.62

Nutrient Code	Nutrient Symbol	Unit	Nutrient Name	# Decimal places	# Foods	Percent
675	18:2ccn-6	g	FATTY ACIDS, POLYUNSATURATED, 18:2 c,c n-6, LINOLEIC, OCTADECADIENOIC	3	1892	32.58
669	18:2tt	g	FATTY ACIDS, POLYUNSATURATED, 18:2t,t , OCTADECADIENENOIC	3	472	8.13
666	18:2i	g	FATTY ACIDS, POLYUNSATURATED, 18:2i, LINOLEIC, OCTADECADIENOIC	3	595	10.25
670	18:2cla	g	FATTY ACIDS, POLYUNSATURATED, CONJUGATED, 18:2 cla, LINOLEIC, OCTADECADIENOIC	3	499	8.59
619	18:3undiff	g	FATTY ACIDS, POLYUNSATURATED, 18:3undifferentiated, LINOLENIC, OCTADECATRIENOIC	3	4876	83.97
851	18:3cccn-3	g	FATTY ACIDS, POLYUNSATURATED, 18:3 c,c,c n-3 LINOLENIC, OCTADECATRIENOIC	3	4685	80.68
685	18:3cccn-6	g	FATTY ACIDS, POLYUNSATURATED, 18:3 c,c,c n-6, g-LINOLENIC, OCTADECATRIENOIC	3	5677	97.76
856	18:3i	g	FATTY ACIDS, POLYUNSATURATED, 18:3i, LINOLENIC, OCTADECATRIENOIC	3	660	11.37
627	18:4	g	FATTY ACIDS, POLYUNSATURATED, 18:4, OCTADECATETRAENOIC	3	3325	57.26
672	20:2cc	g	FATTY ACIDS, POLYUNSATURATED, 20:2 c,c EICOSADIENOIC	3	1072	18.46
689	20:3	g	FATTY ACIDS, POLYUNSATURATED, 20:3, EICOSATRIENOIC	3	3007	1.78
852	20:3n-3	g	FATTY ACIDS, POLYUNSATURATED, 20:3 n-3	3	5430	93.51
853	20:3n-6	g	FATTY ACIDS, POLYUNSATURATED, 20:3 n-6, EICOSATRIENOIC	3	5427	93.46
620	20:4	g	FATTY ACIDS, POLYUNSATURATED, 20:4, ARACHIDONIC	3	4213	72.55
855	20:4n-6	g	FATTY ACIDS, POLYUNSATURATED, 20:4 n-6, EICOSATRIENOIC	3	2590	44.60
629	20:5n-3	g	FATTY ACIDS, POLYUNSATURATED, 20:5 n-3, EICOSAPENTAENOIC	3	4059	69.90
857	21:5	g	FATTY ACIDS, POLYUNSATURATED, 21:5	3	378	6.51
862	22:2	g	FATTY ACIDS, POLYUNSATURATED, 22:2, DOCOSADIENOIC	3	427	7.35
861	22:3	g	FATTY ACIDS, POLYUNSATURATED, 22:3,	3	367	6.32
858	22:4n-6	g	FATTY ACIDS, POLYUNSATURATED, 22:4 n-6, DOCOSATETRAENOIC	3	673	11.59
631	22:5n-3	g	FATTY ACIDS, POLYUNSATURATED, 22:5 n-3, DOCOSAPENTAENOIC	3	5705	98.24
621	22:6n-3	g	FATTY ACIDS, POLYUNSATURATED, 22:6 n-3, DOCOSAHEXAENOIC	3	5716	98.43
636	TPST	mg	TOTAL PLANT STEROL	0	747	12.502
8.64638	STIG	mg	STIGMASTEROL	0	502	8.64

Nutrient Code	Nutrient Symbol	Unit	Nutrient Name	# Decimal places	# Foods	Percent
639	CAMPSTR	mg	CAMPESTEROL	0	198	3.41
269	TSUG	g	SUGARS, TOTAL	2	4573	78.75
802	TMOS	g	TOTAL MONOSACCHARIDES	0	1532	26.38
803	TDIS	g	TOTAL DISACCHARIDES	0	1517	26.12
211	GLUC	g	GLUCOSE	2	2117	36.46
212	FRUC	g	FRUCTOSE	2	2113	36.39
287	GAL	g	GALACTOSE	2	2025	34.87
210	SUCR	g	SUCROSE	2	2120	36.51
213	LACT	g	LACTOSE	2	2082	35.85
214	MALT	g	MALTOSE	2	2074	35.72
288	RAFF	g	RAFFINOSE	0	1502	25.86
289	STAC	g	STACHYOSE	3	1497	25.77
260	MANN	g	MANNITOL	3	1492	25.69
261	SORB	g	SORBITOL	3	1501	25.84
221	ALCO	g	ALCOHOL	1	5510	94.89
262	CAFF	mg	CAFFEINE	0	5517	95.01
263	THBR	mg	THEOBROMINE	0	5499	94.70
550	ASPA	mg	ASPARTAME	0	98	1.69
245	OXAL	mg	OXALIC ACID	0	51	0.88
334	CRYPX	µg	BETA CRYPTOZANTHIN	0	3022	52.04
337	LYCPN	µg	LYCOPENE	0	3023	52.06
338	LUT+ZEA	µg	LUTEIN AND ZEAXANTHIN	0	2998	51.63

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