Composition of Foods
Raw, Processed, Prepared
USDA Nutrient Database for Standard Reference, Release 13

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Introduction

The USDA Nutrient Database for Standard Reference (SR) is the major source of food composition data in the United States. It provides the foundation for most food composition databases in the public and private sectors. As information is updated, new versions of the database are released. This version, Release 13 (SR13), contains data on 6,210 food items and up to 82 food components. It replaces SR12, issued in March 1999 and adds food composition data for a couple hundred new items.

SR13 includes all the food composition data published in the 21 volumes of Agriculture Handbook No. 8 (U.S. Department of Agriculture 1976–88), and its four supplements (U.S. Department of Agriculture 1990–93), which superseded the 1963 edition (Watt and Merrill 1963). Since 1992, updated data have been published electronically on the web. The electronic release supersedes the printed version in the event of any differences.

Data were compiled from published and unpublished sources. Published sources include the scientific and technical literature. Unpublished data are from the food industry, other government agencies, and research conducted under contracts initiated by the Agricultural Research Service (ARS). Values in the database may be based on the results of laboratory analyses or calculated by the use of appropriate factors or recipes, which is indicated by the source code in the Nutrient Data File. Every food item may not contain a complete nutrient profile.

Specific Changes

Several changes were made to the database since the last release.

- New and revised data were added for brand name products in dairy products, salad dressings, baked products, sweets, and mixed dishes.

- Supplementary data on Australian lamb, previously released as a separate table, have been incorporated.

- New and expanded data were added for nuts, mushrooms, bison, and mustard.

- Values for vitamin D in selected foods have been added. Data are primarily on selected dairy foods, breakfast cereals, meats, and seafood. These values include data from the “Provisional Table on the Vitamin D Content of Foods” (Weihrauch and Tamaki 1991)

- Selenium values were expanded for beef, lamb, veal, and game.

- The snack items in food group 19, Snacks and Sweets, were moved to food group 25, Snacks. Food group 19 was renamed Sweets.

Data Files

The CD contains the data files for SR13, which are presented in two file formats: ASCII and DBF. An abbreviated file, with fewer nutrients is also provided in these two file formats. A description of each field in these files and the relationships between each is provided below (p. 14).

Reports

Reports, as page images, of all items in SR13, separated according to food groups, are also available. The page reports are in the directory

[CD–ROM drive]:\SR13DATA\SR13PAGE

The Adobe Acrobat viewer is needed to see these files.

File Content

As mentioned, the database consists of several separate data files. Details about the information in each is provided in the sections below. More extensive details on many specific foods are available in the printed Agriculture Handbook No. 8 sections (U.S. Department of Agriculture 1976–88).

The four principal files are the Food Description File, Nutrient Data File, Gram Weight File, and Footnote File. The four support files are the Nutrient Definition File, Measure Description File, Food Group Description File, and Source Code File.

Food Description File

This file includes descriptive information about the food items. Descriptions are based on those published in Agriculture Handbook No. 8, although they may not match exactly. Food descriptions for brand name items are in upper case. A full description and a short description (containing abbreviations) are provided. Abbreviations used in creating short descriptions are given in appendix A. In creating the short description, the first word in the long description was not abbreviated. Also, if the long description was 25 characters or less, the short description contains no abbreviations. Abbreviations used elsewhere in the tables are given in appendix B. Scientific names, amounts of refuse, and refuse description are provided where appropriate. The factors used to calculate protein from nitrogen are included, as well as those used to calculate calories.

Refuse

The refuse and refuse description fields contain amounts and descriptions of inedible material (for example, seeds, bone, skin) for applicable foods. These amounts are expressed as a percentage of the

total weight of the item as purchased, and they were used to compute the weight of the edible portion. Refuse data were obtained from Agriculture Handbook Nos. 102 and 456 (Adams 1975, Matthews and Garrison 1975) and unpublished sources. To calculate "Amount in edible portion of 1 pound as purchased" use the following formula:

$$Y = V*(4.536*[(100–R)/100)]$$

where

Y = nutrient value per 1 pound as purchased
V = nutrient value per 100 g (Nutr_Val in the Nutrient Data File), and
R = percent refuse (Refuse in the Food Description File).

For meat cuts containing bone, any connective tissue present is included in the value given for bone. Separable fat is not shown as refuse if the meat is described as separable lean and fat. Separable fat generally refers to seam fat and intramuscular fat. Separable lean refers to muscle tissue that can be readily separated from the intact cut; it includes any fat striations within the muscle. For boneless cuts, the refuse values apply to connective tissue or connective tissue plus separable fat. The percentage yield of cooked, edible meat from 1 pound of raw meat with refuse can be determined from the following formula:

$$Y = (W_c / 453.6)*100$$

where

W_c = weight of cooked, edible meat.

Nutrients

Nutrient values per 100 g are contained in the Nutrient File, along with the mean, number of samples, standard error, and source code. The source code field indicates how the data value was determined (for example, analytical, calculated, assumed zero). For more details on this file, see the discussion under Explanation of File Formats (p.17).

Table 1 gives an idea of the comprehensiveness of the database by listing for each nutrient the number of items that contain data. 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.

When nutrient data for prepared or cooked products were unavailable or incomplete, nutrient values were calculated from comparable raw items. Values for such nutrients are computed for cooked items by applying nutrient retention and yield factors (U.S. Department of Agriculture 1994). To obtain the

content of nutrient per 100 g cooked foods, the nutrient content per 100 g of raw food is multiplied by the percentage retained after cooking, and this product is divided by the percentage yield of cooked food.

$$V_c = (V_r * RF)/Y_c$$

where

V_c = nutrient content of cooked food,
V_r = nutrient content of raw food,
RF = retention factor, and
Y_c = yield of cooked food.

Table 1. Number of foods in database (*n*=6,210) containing selected nutrients

Nutrient	Number of foods	Nutrient	Number of foods
Protein	6210	Vitamin A (IU)	6040
Total lipid (fat)	6210	Vitamin A (RE)	5417
Carbohydrate, by difference	6210	Vitamin D	303
Water	6209	Vitamin E	3461
Total dietary fiber	5531	Ascorbic acid	5978
Ash	6186	Thiamin	5825
Calcium	6094	Riboflavin	5834
Iron	6110	Niacin	5828
Magnesium	5795	Pantothenic acid	5459
Phosphorus	5846	Vitamin B_6	5680
Potassium	5935	Folate	5645
Sodium	6205	Vitamin B_{12}	5710
Zinc	5775	Cholesterol	6104
Copper	5706	Total saturated fatty acids	6018

Manganese	5071	Total monounsaturated fatty acids	5796
Selenium	4997	Total polyunsaturated fatty acids	5803

Retention factors are based on data from USDA research contracts, recent research reported in the literature, and USDA publications. Retention factors were calculated by the True Retention Method (%TR) (Murphy et al. 1975). This method, as shown below, accounts for the loss of solids from foods that occurs during preparation and cooking.

$$\%TR = (N_c \times G_c) / (N_r \times G_r) \times 100$$

where

N_c = nutrient content per g of cooked food,
G_c = g of cooked food,
N_r = nutrient content per g of raw food, and
G_r = g of food before cooking.

In general, levels of fortified nutrients are the values calculated by the manufacturer or Nutrient Data Laboratory food specialists, based on the Nutrition Labeling and Education Act label declaration of %Daily Value (DV) (CFR, Title 21, Pts. 100–169). Such values represent the minimum nutrient level one can expect in the product. If analytical values were available to estimate levels of added nutrients, a number is present in the sample count field for these nutrients.

Proximates. Proximate components include moisture (water), protein, total lipid (fat), total carbohydrate, and ash. The values for protein were calculated from the level of total nitrogen (N) in the food, using the conversion factors recommended by Jones (1941). The specific factor applied to each food item is provided in the N_Factor field in the Food Description File. The general factor of 6.25 is used to calculate protein in items that do not have a specific factor. There is no factor for items prepared using the recipe program of the Nutrient Data Bank System or for items where protein is calculated by the manufacturer.

Protein values for chocolate, cocoa products, coffee, mushrooms, and yeast were adjusted for nonprotein nitrogenous material. The adjusted protein conversion factors used to calculate protein for these items are as follows:

chocolate and cocoa	4.74
coffee	5.3
mushrooms	4.38
yeast	5.7.

When these items were ingredients, only their protein nitrogen content was used to determine their contribution to the protein and amino acid content of the food. Protein calculated from total nitrogen, which may contain nonprotein nitrogen, was used in determining carbohydrate by difference. This unadjusted protein value is not given in the Nutrient Data File for SR13; rather, it is given as a footnote in printed sections of Agriculture Handbook No. 8.

For soybeans, a factor of 5.71 (Jones 1941) was used for calculating protein. The soybean industry, however, uses 6.25 to calculate protein. The protein content of soy flours, soy meals, soy protein concentrates, and soy protein isolates is expressed both ways. The item calculated using the 6.25 factor is identified as "crude protein basis."

Total lipid content of most foods was determined by gravimetric methods, including extraction methods such as those which employ ether or a mixed solvent system consisting of chloroform and methanol, or acid hydrolysis.

Carbohydrate, when present, was determined as the difference between 100 and the sum of the percentages of water, protein, total lipid (fat), ash, and, when present, alcohol. Total carbohydrate values include total dietary fiber. Total dietary fiber content was determined by the following enzymatic-gravimetric methods: 985.29 and 991.43 of the Association of Official Analytical Chemists (1995). Total sugars were determined using AOAC methods (1995), either—HPLC or GLC—and are the sum of individual monosaccharides (galactose, glucose, and fructose) and disaccharides (sucrose, lactose, and maltose). Data for total sugars are available primarily for formulated foods, but we anticipate that values for other foods will likely be added in future releases.

Food energy is expressed in kilocalories (kcal) and kilojoules (kJ). One kcal equals 4.184 kJ. The data are for physiological energy, which is the energy value remaining after losses from digestion and metabolism are deducted from gross energy. Calorie values, with the exception of formulated foods, are based on the Atwater system for determining energy values. Derivation of the Atwater calorie factors is outlined in Agriculture Handbook No. 74 (Merrill and Watt 1973). For formulated foods, calorie values (source codes 8 or 9; for more information on source codes, see page 18) generally reflect industry practices (as permitted by the Nutrition Labeling and Education Act) of calculating calories from 4–4–9 kcal/g for protein, carbohydrate, and fat, respectively, or from 4–4–9 kcal/g for protein, carbohydrate minus insoluble fiber, and fat. The latter method is frequently used for high-fiber foods.

Calorie factors for protein, fat, and carbohydrates are included in the Food Description File. For foods containing alcohol, a factor of 6.93 was used to calculate calories from alcohol. No calorie factors are presented for items prepared using the recipe program of the Nutrient Data Bank System. Instead, total calories for these items equal the sums of the calories contributed by each ingredient after adjustment for changes in yield, as appropriate. For formulated foods, if the calories calculated by the manufacturer are reported, no calorie factors are presented.

Calorie factors for fructose and sorbitol, not available in the Atwater system, were derived from the work of Livesay and Marinos (1988). Calorie factors for coffee and tea were estimated from seeds and vegetables, respectively.

Minerals. Levels of minerals for most foods were determined by methods of the Association of Official Analytical Chemists (1995). Phosphorus was determined colorimetrically. Sodium and potassium were usually determined by flame photometry. Calcium, iron, magnesium, zinc, copper, and manganese were determined by atomic absorption and plasma emission spectrophotometry.

Data on selenium were added for a large number of foods. Much of the analytical data on selenium were published earlier (USDA 1992) and were determined by the modified selenium hydride and fluorometric methods. The newly added values were calculated from these previously published values. Procedures for imputing values used by the Nutrient Data Lab were described by Schakel et al. (1997).

The selenium content of plants, in particular cereal grains, is strongly influenced by the quantity of biologically available selenium in the soil in which they grow, that is, by their geographical origin (Kubota and Allaway 1972). The selenium content of fruits and vegetables is normally very low. While the soil affects the selenium content of fruits and vegetables, it does not significantly increase the amount of selenium in them. The values given are national averages and should be used with caution when considering levels of selenium in locally grown foods.

Vitamins. In the current database system, all data for ascorbic acid are listed under nutrient number 401 (total ascorbic acid), although reduced ascorbic acid content is reported for many food groups, especially those which are major nutritional contributors of ascorbic acid such as fruits and vegetables. Total ascorbic acid was reported for food groups 1 (Dairy and Eggs), 2 (Spices and Herbs), 4 (Fats and Oils), 12 (Nut and Seeds), and 17 (Lamb, Veal, and Game). Food group 10 (Pork and Pork Products) contains a mixture of total and reduced forms, which are reported under nutrient number 401. Reduced ascorbic acid was determined by the dichloroindophenol method, and total ascorbic acid by the fluorometric method.

Thiamin was determined chemically by the thiochrome procedure or by microbiological methods. Fluorometric or microbiological methods were used to measure riboflavin. The values for niacin are for preformed niacin only and do not include the niacin contributed by tryptophan, a niacin precursor. The term “niacin equivalent” applies to the potential niacin value, that is, to the sum of the preformed niacin and the amount that could be derived from tryptophan. In estimating the amounts of niacin available from foods, the mean value of 60 mg tryptophan is considered equivalent to 1 mg niacin (National Academy of Sciences 1989).

Pantothenic acid was determined microbiologically. Vitamins B_6 and B_{12} were determined by microbiological or chromatographic methods. Vitamin B_{12} is found in foods of animal origin or those

containing some ingredient of animal origin; for example, cake that contains eggs or milk. For foods that contain only plant products, the value for vitamin B_{12} is assumed to be 0. Some reports contain values for vitamin B_{12} in certain fermented foods (beer, soy sauce, and miso). It is believed that this B_{12} is synthesized not by the microorganisms responsible for the fermentation of the food but, rather, by other contaminating microorganisms. Therefore, one should not consider these foods to be a consistent source of vitamin B_{12} (Liem et al. 1977).

Folate values represent total folate content, including folic acid added during fortification as well as bound folate, which occurs naturally in food. Most analytical values shown for folate were determined by the use of conjugase and *Lactobacillus casei*. Beecher and Matthews (1990) reported that the methodology used in determining folate values needed improvement particularly in the areas of extraction procedures and applications to specific foods. Research on determining the folate content of high-protein and high-carbohydrate foods indicates that additional improvements in methodology are needed (Martin et al. 1990). Limited amounts of data generated by USDA were obtained by a modified method using additional enzymes to release bound forms.

As mentioned, the folate values in the database were updated to reflect regulations requiring the addition of folic acid to enriched cereal grain products subject to standards of identity (CFR, Title 21, Pts. 136, 137). These products include flour, cornmeal and grits, farina, rice, macaroni, noodles, bread, rolls, and buns. Folic acid may continue to be added (with some restrictions on amounts) to breakfast cereals, infant formulas, medical foods, food for special dietary use, and meal replacement products. For the most part, values for this database were calculated based on enrichment levels specified in the regulations, since analytical values were not yet available. For those foods where the enrichment level is given as a range, the midpoint was used to set the value. Food items containing any of these enriched products as ingredients, such as baked products made with enriched flour, were also updated.

The data for vitamin A include chemically determined preformed vitamin A and provitamin-A carotenoids as determined by methods of the Association of Official Analytical Chemists. Total vitamin A activity is expressed in international units (IUs) and retinol equivalents (REs). One IU is equivalent to 0.3 mcg retinol, 0.6 mcg beta carotene, or 1.2 mcg other provitamin-A carotenoids. One RE is equivalent to 1 mcg retinol, 6 mcg beta carotene, or 12 mcg other provitamin-A carotenoids. One RE is equal to 3.33 IU retinol or 10 IU beta carotene (National Academy of Sciences 1989).

Vitamin E was determined by gas-liquid chromatography. Total vitamin E activity is reported as mg alpha-tocopherol equivalents and was calculated from the amounts and relative activities of the various tocopherols and tocotrienols.

Lipid Components. Most fatty acid data were obtained as the percentage of fatty acid methyl esters and were primarily determined by gas-liquid chromatographic analyses. The values shown are for the actual quantity (mg/100 g) of each fatty acid and do not represent fatty acid triglycerides. These data were converted to g fatty acid per 100 g total lipid (fat) using lipid conversion factors and then to g fatty

acid per 100 g edible portion of food using the total lipid content. Details of the derivation of lipid conversion factors were published in Weihrauch et al. 1977. The first number in the nutrient description of individual fatty acids is the number of carbon atoms and the second is the number of double bonds in the chain. Common and systematic names for the fatty acids are given in table 2. For unsaturated fatty acids, the common name is that of the most common isomer, although the value covers all isomers, including *cis* and *trans*.

Values for total saturated, monounsaturated, and polyunsaturated fatty acids may include individual fatty acids not reported in SRs; therefore, the sum of their values may exceed the sum of the individual fatty acids listed. In rare cases, the sum of the individual fatty acids may exceed the sum of the values given for the total saturated fatty acids (SFA), monounsaturated fatty acids (MUFA), and polyunsaturated fatty acids (PUFA). These differences are generally caused by rounding and may be relatively small.

For formulated brand name foods, industry data were often available for fatty acid classes (SFA, MUFA, and PUFA) but were lacking for individual fatty acids. In these cases, individual fatty acids were calculated from the fatty acids of the individual listed ingredients and normalized to the total fat level. A best-fit approximation was made to fatty acid classes but, unavoidably, calculated sums of individual fatty acid totals did not always match industry data for fatty acid classes. Zero values for individual fatty acids should be understood to mean that trace amounts may be present. When g fatty acids per 100 g total lipid were converted to g fatty acids per 100 g food, values of less than 0.0005 were rounded to 0.

Table 2. Systematic and common names for fatty acids

Fatty acid	Systematic name	Common name of most typical isomer
Saturated fatty acids		
4:0	butanoic	butyric
6:0	hexanoic	caproic
8:0	octanoic	caprylic
10:0	decanoic	capric
12:0	dodecanoic	lauric
14:0	tetradecanoic	myristic
15:0	pentadecanoic	
16:0	hexadecanoic	palmitic
17:0	heptadecanoic	margaric
18:0	octadecanoic	stearic

20:0	eicosanoic	arachidic
22:0	docosanoic	behenic
24:0	tetracosanoic	lignoceric
Monounsaturated fatty acids		
14:1	tetradecenoic	myristoleic
16:1	hexadecenoic	palmitoleic
18:1	octadecenoic	oleic
20:1	eicosenoic	gadoleic
22:1	docosenoic	erucic
Polyunsaturated fatty acids		
18:2	octadecadienoic	linoleic
18:3	octadecatrienoic	linolenic

Table 2. Systematic and common names for fatty acids (Continued)

Fatty acid	Systematic name	Common name of most typical isomer
Polyunsaturated fatty acids (continued)		
18:4	octadecatetraenoic	parinaric
20:4	eicosatetraenoic	arachidonic
20:5	eicosapentaenoic	timnodonic
22:5	docosapentaenoic	clupanodonic
22:6	docosahexaenoic	

Cholesterol values were generated primarily by gas-liquid chromatographic procedures. It is assumed that cholesterol is present only in foods of animal origin and foods containing at least one ingredient of animal origin (for example, cake that contains eggs). For mixtures containing ingredients derived from animal products, the cholesterol value may have been calculated from the value for those ingredients. For foods that contain only plant products, the value for cholesterol is assumed to be 0.

Data on plant sterols (campesterol, stigmasterol, â-sitosterol) were obtained by colorimetric or gas-chromatographic procedures and summed to calculate total phytosterols.

Amino Acids. Data to develop amino acid patterns for simple foods were obtained primarily by ion-exchange chromatography. The amino acid patterns and the total nitrogen content were used to calculated the levels of individual amino acids per 100 g of food, using the following formula:

$AA_f = (AA_n * V_p) / N_f$

where

AA_f = amino acid content per 100 g food,
AA_n = amino acid content per g nitrogen,
V_p = protein content of food, and
N_f = nitrogen factor.

Number of samples appears only on the food item for which the amino acid pattern was developed, not other foods that use the same pattern. It refers to the number of observations used in developing the amino acid pattern for the food.

If amino acid values are presented for an item with more than one protein-containing ingredient, the values may have been calculated on a per-gram-of-nitrogen basis from the amino acid patterns of the various protein-containing ingredients. Then the amino acid contents for an item on the 100-g basis were calculated as the sum of the amino acids in each protein-containing ingredient multiplied by total nitrogen in the item.

Weights and Measures

Information is provided on household measures for food items (for example, 1 cup, 1 tablespoon, 1 fruit, 1 leg). Weights are given for edible material without refuse. The Weight File contains the gram weights for each food item. The description of each measure is provided in the Measure Description File. The Weight File can be used to calculate nutrient values for food portions from the values provided per 100 g food (columns E and F in Agriculture Handbook 8). The formula used to calculate the nutrient content per household measure is

$N = (V * W)/100$

where

N = nutrient value per household measure,
V = nutrient value per 100 g (Nutr_Val in the Nutrient Data File), and
W = g weight of portion (Gm_wt in Weight File).

Together these files can be used to produce reports showing the household measure and nutrient values calculated for that portion. The weights were derived from published sources, industry files, studies conducted by USDA (Adams 1975, Fulton et al. 1977), and the weights and measures used in USDA's Continuing Survey of Food Intakes by Individuals (USDA 1995). Although special efforts were made to provide representative values, weights and measures obtained from different sources

vary considerably for some foods.

Footnotes

Footnotes are provided for a few items where information about food description, weights and measures, or nutrient values could not be accommodated in existing fields. Many of the footnotes published in Agriculture Handbook 8 are no longer needed because the information was moved to other fields and tables. For example, details about the measure description, once contained in footnotes, are now part of the description. Values for additional nutrients once included in footnotes were given nutrient numbers, when appropriate, and included in the Nutrient Data File. The database also incorporates data that cover enrichment or fortification or cases where nutrient content is affected by plant part or color (yellow and white corn, for example).

Explanation of File Formats

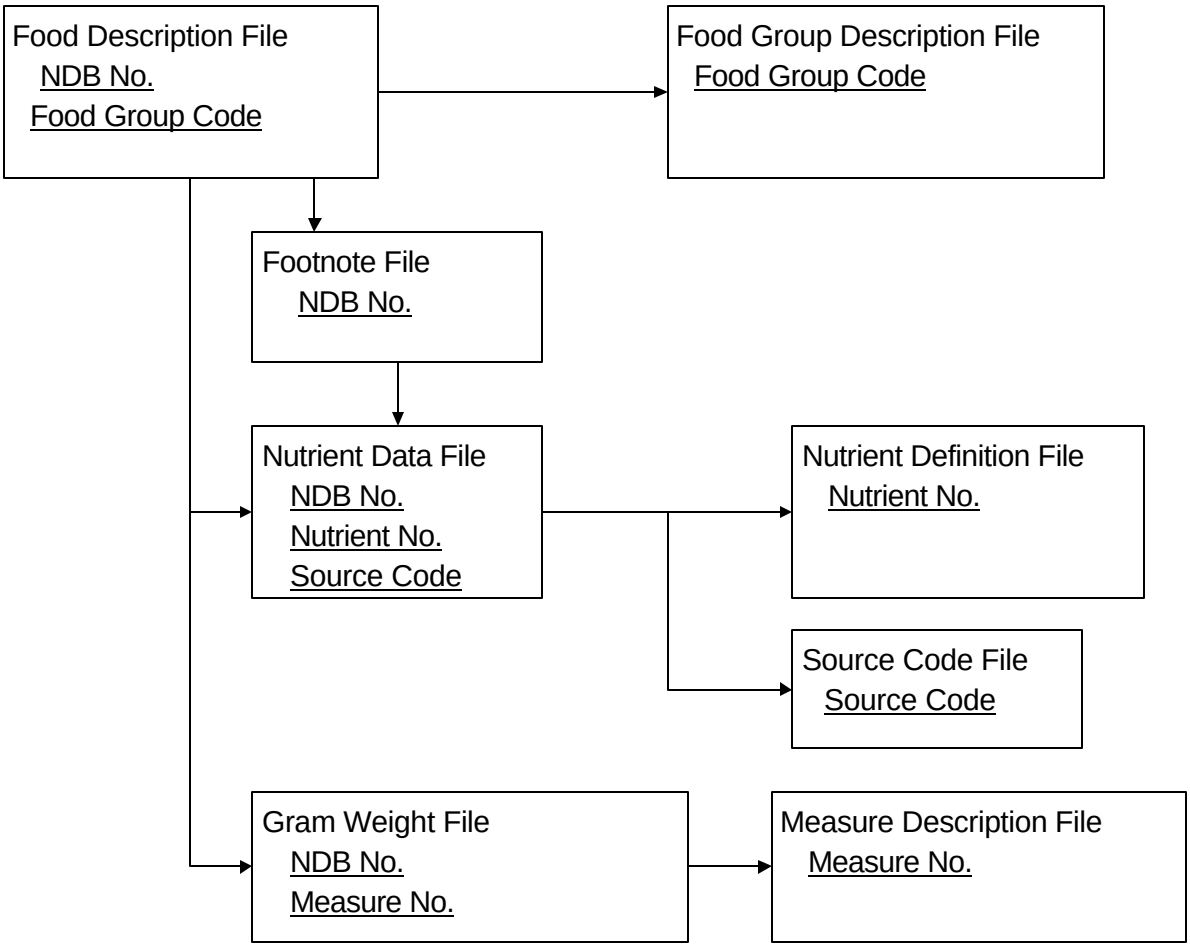
The CD contains the data in two different organizational formats. One is a relational format of four principal and four support files comprising the database (figure 1). The relational format is complete and contains all food, nutrient, and related data. The other is a flat file, which is an abbreviated file, with fewer nutrients and related information. Both of these organizational formats are provided in two different data formats—ASCII and DBF.

Figure 1. Relationship among files in the USDA Nutrient Database for Standard Reference

Relational Files

The four principal and four support files of the relational database can be linked together in a variety of combinations to produce queries and generate reports. The formats of these files are identified in tables 3–16. Information on the various relationships that can be made among these files is also given. Fields that always contain data and fields that can be left blank or null are identified in the "blank" column (see tables 3–16). An asterisk (*) indicates that the field is indexed. Although the ASCII and DBF files are not indexed, the file descriptions show where indices were used to sort and manage records within the Nutrient Data Bank System. When importing these files into a database management system, if files are to be indexed, it is important to use the indices listed here, particularly with the Nutrient Data File, which uses two.

ASCII. ASCII files are delimited. All fields are separated by carets (^) and text fields are surrounded



by tildes (~). A double caret (^^) appears when a field is null or blank. Format descriptions include the name of each field, its type [N=numeric with width and number of decimals (w.d) and A=alphanumeric], and its length. The ASCII relational files are in the directory

[CD–ROM drive]:\SR13DATA\ASCII

DBF. Files in DBF format can be read by most database management systems. If necessary, refer to the appropriate program manuals or on-line help to find out how to import the files. The files and fields are identical to those in ASCII. The DBF relational files are in the directory

[CD–ROM drive]:\SR13DATA\DBF

Food Description File (file name = FOOD_DES). The Food Description File (table 3) contains a long and a short description for 6,210 food items, along with the scientific name of the food group,

percentage of refuse, and factors used for calculating protein and calories, if applicable.

- Links to the Food Group Description File by the FdGp_Cd field.
- Links to the Nutrient Data File by the NDB_No field.
- Links to the Gram Weight File by the NDB_No field.
- Links to the Footnote File by the NDB_No field.

Table 3. Food Description File Format

Field name	Type	Blank	Description
NDB_No	A 5*	N	5-digit Nutrient Data Bank number which uniquely identifies a food item
FdGp_Cd	A 4	N	4-digit code indicating food group to which a food item belongs.
Desc	A 200	N	200-character description of food item
Shrt_Desc	A 60	N	60-character abbreviated description of food item. Generated from the 200-character description using abbreviations in Appendix A. If short description was longer than 60 characters, additional abbreviations were made.
Ref_desc	A 45	Y	Description of inedible parts of a food item, such as, seeds or bone.
Refuse	N 2.0	Y	Percentage of refuse
SciName	A 60	Y	Scientific name of the food item. Given for the least processed form of the food (usually raw), if applicable.
N_Factor	N 4.2	Y	Factor for converting nitrogen to protein

Table 3. Food Description File Format (Continued)

Field name	Type	Blank	Description
Pro_Factor	N 4.2	Y	Factor for calculating calories from protein.
Fat_Factor	N 4.2	Y	Factor for calculating calories from fat.
CHO_Factor	N 4.2	Y	Factor for calculating calories from carbohydrate.

Food Group Description File (file name = FD_GROUP) (table 4)

- Links to the Food Description File by FdGp_Cd.

Table 4. Food Group Description File Format

Field name	Type	Blank	Description
FdGp_Cd	A 4*	N	4-digit code identifying a food group. Only the first 2 digits are assigned. In the future the last 2 digits may be used.
FdGp_Desc	A 60	N	Name of food group

Nutrient Data File (file name = NUT_DATA). The Nutrient Data File (table 5) contains the nutrient values and information about the values, including sample count, standard error for analytical values, and a source code indicating the type of data.

- Links to the Food Description File.
- Links to the Gram Weight File by NDB_No.
- Links to the Footnote File by NDB No.
- Links to the Nutrient Definition File and Footnote File by Nutr_No.
- Links to the Source Codes File by Src_Cd.

Table 5. Nutrient Data File Format

Field name	Type	Blank	Description
NDB_No	A 5*	N	5-digit Nutrient Data Bank number
Nutr_No	A 3*	N	3-digit unique identifier code for a nutrient
Nutr_Val	N 10.3	N	Amount in 100 grams, edible portion.†
Sample_Ct	N 5.0	N	Number of samples
Std_Error	N 8.3	Y	Standard error of the mean. Null if could not be calculated
Src_Cd	A 2	N	Code indicating type of data

† Due to limitations of the file formats all nutrient values are displayed to three decimal places; this does not necessarily reflect the accuracy of the data.

Nutrient Definition File (file name = NUTR_DEF). The Nutrient Definition File (table 6) is the support file to the Nutrient Data File. It provides the 3-digit nutrient code, unit of measure, INFOODS tagname, and description.

C Links to the Nutrient Data File by Nutr_No.

Table 6. Nutrient Definition File Format

Field name	Type	Blank	Description
Nutr_No	A 3*	N	3-digit unique identifier code for a nutrient
Units	A 6	N	Units of measure (mg, g, mcg, etc.)
Tagname	A 20	N	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.
NutrDesc	A 60	N	Name of food component

† Klensin et al. 1989.

Source Code File (file name = SOURCE) (table 7)

C Links to the Nutrient Data File by Src_Cd.

Table 7. Source Code File Format

Field name	Type	Blank	Description
Src_Cd	A 2*	N	2-digit code
SrcCd_Desc	A 60	N	Description of source code that identifies the type of nutrient data

The Source Code File contains codes indicating the type of data (analytical, calculated, assumed zero, and so on) in the Nutrient Data File. To improve the usability of the database, Nutrient Data Lab staff imputed nutrient values for many proximate components, total dietary fiber, and vitamin and mineral values.

A description of each source code follows:

Source code	Description
1	Value is analytical or derived from the analytical
4	Value is imputed
5	Value upon which a manufacturer based their label claim for added nutrients (used primarily for Breakfast Cereals and Infant Formulas)
7	Value is an assumed zero because, biologically, the nutrient could not be present (such as dietary fiber in animal products), or the nutrient is expected to be present in insignificant amounts (such as vitamin C in meat products).
8	Value is calculated from the nutrient label by Nutrient Data Lab
9	Value is calculated by the manufacturer, not adjusted or rounded for compliance to the Nutrition Labeling and Education Act
12	Value is analytical, supplied by the manufacturer with partial documentation.

Gram Weight File (file name = WEIGHT). The Gram Weight File (table 8) contains the gram weights for household measures of a food item, as well as the measure number, which links to the description of the measure.

- Links to Food Description File by NDB_No.
- Links to Nutrient Data File by NDB No.
- Links to Measure Description File by Msre_No.

Table 8. Gram Weight File Format

Field name	Type	Blank	Description
NDB_No	A 5*	N	5-digit Nutrient Data Bank number
Msre_No	A 5*	N	Unique code in the Measure Description File referencing the description

Gm_wt	N 9.2	N	Weight of food item

Measure Description File (file name = MEASURE). The Measure Description File (table 9) is the support file for the Gram Weight File. It contains the 5-digit measure number and measure description.

- Links to the Gram Weight File by Msre_No .

Table 9. Measure Description File Format

Field name	Type	Blank	Description
Msre_No	A 5*	N	5-digit code denoting the measure
Msre_Desc	A 120	N	The description of the measure (cup; cup, chopped; tomato; tbsp; etc.)

Footnote File (file name = FOOTNOTE). This file (table 10) contains additional information about the food item, household weight, and nutrient value.

- Links to the Food Description File by NDB_No.
- Links to the Nutrient Data File by NDB No.
- Links to the Nutrient Data File by Nutr_No.

Table 10. Footnote File Format

Field name	Type	Blank	Description
NDB_No	A 5*	N	5-digit Nutrient Data Bank number
Footnt_no	A 4*	N	Sequence number

Footnt_typ	A 1	N	The type of footnote D=indicates a footnote adding information to the description N=indicates a footnote providing additional information on a nutrient value. If the Footnt_typ = N, the Nutr_No will also be filled in.
Nutr_No	A 3	Y	3-digit unique identifier code for a nutrient to which footnote applies
Footnt_txt	A 200	N	Footnote text

Flat Files

Abbreviated File (file name = ABBREV). The abbreviated file is available in ASCII and DBF formats. The ASCII file (table 11) is in free format. Fields are separated by a caret (^). Text fields are surrounded by a tilde (~). Data refer to 100 g of the edible portion of the food item. Decimal points are included in the fields. Missing values are denoted by the null value of two consecutive carets (^^). The file is sorted in ascending order by the food item number.

The ASCII file is in the directory

[CD–ROM drive]:\SR13DATA\ABBRASC

and the DBF file is in the directory

[CD–ROM drive]:\SR13DATA\ABBRDBF

This file is an adaptation of the Abbreviated File included with releases prior to SR11 and is provided as a convenience. Because of file restructuring with the release of SR11, some changes were made to this file as well:

1. A 60-character short description replaces the 20-character name;
2. The nutrients magnesium, zinc, copper, manganese, selenium, vitamin B_6, pantothenic acid, folate, vitamin B_{12}, and vitamin E were added; and
3. In the Gram Weight File, only the first two weights and their description for each NDB No. are included, which may not be the same two weights published in previous releases.

Table 11. Abbreviated File Format

Field name	Type	Description
NDB No.	A 5*	5-digit Nutrient Data Bank number
Shrt_Desc	A 60	60-character abbreviated description of food item†
Water	N 10.3	Water (g/100 g)
Energ_Kcal	N 10.3	Food energy (kcal/100 g)
Protein	N 10.3	Protein (g/100 g)
Tot_Lipid	N 10.3	Total lipid (fat; g/100 g)
Carbohydrt	N 10.3	Carbohydrate, by difference (g/100 g)
Fiber_TD	N 10.3	Total dietary fiber (g/100 g)
Ash	N 10.3	Ash (g/100 g)
Calcium	N 10.3	Calcium (mg/100 g)
Phosphorus	N 10.3	Phosphorus (mg/100 g)
Iron	N 10.3	Iron (mg/100 g)
Sodium	N 10.3	Sodium (mg/100 g)
Potassium	N 10.3	Potassium (mg/100 g)
Magnesium	N 10.3	Magnesium (mg/100 g)
Zinc	N 10.3	Zinc (mg/100 g)
Copper	N 10.3	Copper (mg/100 g)
Manganese	N 10.3	Manganese (mg/100 g)
Selenium	N 10.3	Selenium (mcg/100 g)
Vit_A	N 10.3	Vitamin A (IU/100 g)
Vit_E	N 10.3	Vitamin E (mg alpha-tocopherol equivalents)
Thiamin	N 10.3	Thiamin (mg/100 g)
Riboflavin	N 10.3	Riboflavin (mg/100 g)
Niacin	N 10.3	Niacin (mg/100 g)
Panto_acid	N 10.3	Pantothenic acid (mg/100 g)
Vit_B6	N 10.3	Vitamin B_6 (mg/100 g)
Folate	N 10.3	Folate (mcg/100 g)
Vit_B12	N 10.3	Vitamin B_{12} (mcg per 100 g)
Vit_C	N 10.3	Vitamin C (mg/100 g)
FA_Sat	N 10.3	Saturated fatty acid (g/100 g)
FA_Mono	N 10.3	Monounsaturated fatty acids (g/100 g)
FA_Poly	N 10.3	Polyunsaturated fatty acids (g/100 g)
Cholestrl	N 10.3	Cholesterol (mg/100 g)
GmWt_1	N 9.2	First household weight for this item from the Gram Weight File‡

Table 11. Abbreviated File Format (Continued)

Field name	Type	Description

GmWt_Desc1	A 120	Description of household weight number 1
GmWt_2	N 9.2	Second household weight for this item from the Gram Weight File‡
GmWt_Desc2	A 120	Description of household weight number 2
Refuse_Pct	N 2.0	Percent refuse§

† 200-character description and other descriptive information can be obtained by linking to the Food Description File.
‡ For the complete list and description of the measure, link to the Gram Weight and Measure Description files.
§ For a description of refuse, link to the Food Description File.

Update Files. These update files provide changes made between Release 12 and Release 13. If you are using an earlier release, you will need to first obtain those files, which are available on NDL's Home Page (http://www.nal.usda.gov/fnic/foodcomp), and update your database to Release 12, before using the change files here. Update files in ASCII and DBF are provided for those users who reformatted previous releases for their systems and wish to do their own updates. Items added to this release do not have corresponding pages in Agriculture Handbook 8.

The ASCII files are in the directory

[CD–ROM drive]:\SR13DATA\UPDASC

and the DBF files are in the directory

[CD–ROM drive]:\SR13DATA\UPDDBF

Added items are given in six files:

- ADD_FOOD for descriptions of the new items,
- ADD_NUTR for the nutrient data,
- ADD_WGT for the gram weight data,
- ADD_FTNT for the footnotes,
- ADD_FDGP for the Food Group File,
- ADD_MSRE for the Measure Description File, and
- ADD_NDEF for the Nutrient Definition File.

These files are in the same formats as the Food Description File, the Nutrient Data File, the Gram Weight File, the Measure Description File, the Footnote File, and the Nutrient Definition File.

Three files contain changes made since SR 12. CHG_FOOD contains records having changes in the

descriptive information for a food item. CHG_NUTR contains changes to nutrient values, standard errors, or counts. If the nutrient value, number of samples, or standard error changed, the entire record is included. CHG_FDGP contains changes in the Food Group File. CHG_MSRE contains changes in the Measure Description File. These files are in the same format as the Food Description, Nutrient Data, Gram Weight, Food Group Definition, and Nutrient Definition files. The 11 update files are provided in ASCII and DBF formats.

Food items that were deleted from the database are given in the file DEL_FOOD (table 12). In some cases, nutrient values were removed. These records are in the file DEL_NUTR (table 13). The file DEL_WGT (table 14) contains deleted household weights. The file DEL_MSRE (table 15) contains household measures removed from the database because either the corresponding household weight or food item was also removed.

Update files in ASCII and DBF are also provided for the Abbreviated File. The file CHG_ABBR contains records for food items where a food description, household weight, refuse value, or nutrient value was added, changed, or deleted since SR12. This file is in the same format as the Abbreviated File. DEL_ABBR contains food items that were removed from the database; it is in the same format as DEL_FOOD. ADD_ABBR contains food items added since SR12; it is also in the same format as the Abbreviated File.

Table 12. Foods Deleted Format

Field name	Type	Blank	Description
NDB_No	A 5*	No	5-digit unique number identifying deleted item
Shrt_Desc	A 60	No	60-character abbreviated description of food item

Table 13. Nutrients Deleted Format

Field name	Type	Blank	Description
NDB_No	A 5*	No	5-digit unique number identifying the item that contains the deleted nutrient record
Nutr_No	A 3	No	Nutrient number of deleted record

Table 14. Weights Deleted Format

Field name	Type	Blank	Description
NDB_No	A 5*	No	5-digit unique number identifying the item that contains the deleted nutrient record
Msre_No	A 5*	No	Unique code in the Measure Description File referencing the description

Table 15. Measures Deleted Format

Field name	Type	Blank	Description
Msre_No	A 5*	No	Unique code in the Measure Description File referencing the description
Msre_Desc	A 120	No	Description of the deleted measure

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Appendix A. Abbreviations Used in Short Descriptions

All Purpose	ALLPURP
Aluminum	AL
And	&
Apple	APPL
Apples	APPLS
Applesauce	APPLSAUC
Approximate	APPROX
Approximately	APPROX
Arm and Blade	ARM&BLD
Artificial	ART
Ascorbic Acid	VIT C
Aspartame	ASPRT
Aspartame-sweetened	ASPRT-SWTND
Babyfood	BABYFD
Baked	BKD
Barbequed	BBQ
Based	BSD
Beans	BNS
Beef	BF
Beverage	BEV
Boiled	BLD
Boneless	BNLESS
Bottled	BTLD
Bottom	BTTM
Braised	BRSD
Breakfast	BRKFST
Broiled	BRLD
Buttermilk	BTTRMLK
Calcium	CA
Calorie, calories	CAL
Canned	CND
Carbonated	CARB
Center	CNTR
Cereal	CRL
Cheese	CHS
Chicken	CHICK
Chocolate	CHOC
Choice	CHOIC
Cholesterol	CHOL

Cholesterol-free	CHOL-FREE
Chopped	CHOPD
Cinnamon	CINN
Coated	COATD
Coconut	COCNT
Commercial	COMM
Commercially	COMMLY
Commodity	CMDTY
Composite	COMP
Concentrate	CONC
Concentrated	CONCD
Condensed	COND
Condiment, condiments	CONDMNT
Cooked	CKD
Cottonseed	CTTNSD
Cream	CRM
Creamed	CRMD
Dark	DK
Decorticated	DECORT
Dehydrated	DEHYD
Dessert, desserts	DSSRT
Diluted	DIL
Domestic	DOM
Drained	DRND
Dressing	DRSNG
Drink	DRK
Drumstick	DRUMSTK
English	ENG
Enriched	ENR
Equal	EQ
Evaporated	EVAP
Except	XCPT
Extra	EX
Flank steak	FLANKSTK
Flavored	FLAV
Flour	FLR
Food	FD
Fortified	FORT
French fried	FRENCH FR
French fries	FRENCH FR
Fresh	FRSH

Frosted	FRSTD
Frosting	FRSTNG
Frozen	FRZ
Grades	GRDS
Gram	GM
Green	GRN
Greens	GRNS
Heated	HTD
Heavy	HVY
Hi-meat	HI-MT
High	HI
Hour	HR
Hydrogenated	HYDR
Imitation	IMITN
Immature	IMMAT
Imported	IMP
Include, includes	INCL
Including	INCL
Infant formula	INF FORMULA
Ingredient	ING
Instant	INST
Juice	JUC
Junior	JR
Kernels	KRNLS
Large	LRG
Lean	LN
Lean only	LN
Leavened	LVND
Light	LT
Liquid	LIQ
Low	LO
Low Fat	LOFAT
Marshmallow	MARSHMLLW
Mashed	MSHD
Mayonnaise	MAYO
Medium	MED
Mesquite	MESQ
Minutes	MIN
Mixed	MXD
Moisture	MOIST
Natural	NAT

New Zealand	NZ
Nonfat Dry Milk	NFDM
Nonfat Dry Milk Solids	NFDMS
Nonfat Milk Solids	NFMS
Noncarbonated	NONCARB
Not Further Specified	NFS
Nutrients	NUTR
Nutrition	NUTR
Ounce	OZ
Pack	PK
Par fried	PAR FR
Parboiled	PARBLD
Partial	PART
Partially	PART
Partially fried	PAR FR
Pasteurized	PAST
Peanut	PNUT
Peanuts	PNUTS
Phosphate	PO4
Phosphorus	P
Pineapple	PNAPPL
Plain	PLN
Porterhouse	PRTRHS
Potassium	K
Powder	PDR
Powdered	PDR
Precooked	PRECKD
Preheated	PREHTD
Prepared	PREP
Processed	PROC
Product code	PROD CD
Propionate	PROP
Protein	PROT
Pudding, puddings	PUDD
Ready-to-bake	RTB
Ready-to-cook	RTC
Ready-to-drink	RTD
Ready-to-eat	RTE
Ready-to-feed	RTF
Ready-to-heat	RTH
Ready-to-serve	RTS

Ready-to-use	RTU
Reconstituted	RECON
Reduced	RED
Reduced-calorie	RED-CAL
Refrigerated	REFR
Regular	REG
Reheated	REHTD
Replacement	REPLCMNT
Restaurant-prepared	REST-PREP
Retail	RTL
Roast	RST
Roasted	RSTD
Round	RND
Sandwich	SNDWCH
Sauce	SAU
Scalloped	SCALLPD
Scrambled	SCRMBLD
Seed	SD
Select	SEL
Separable[1]	
Shank and sirloin	SHK&SIRL
Short	SHRT
Shoulder	SHLDR
Simmered	SIMMRD
Skin	SKN
Small	SML
Sodium	NA
Solids	SOL
Solution	SOLN
Soybean	SOYBN
Special	SPL
Species	SP
Spread	SPRD
Standard	STD
Steamed	STMD
Stewed	STWD
Stick	STK
Sticks	STKS
Strained	STR
Substitute	SUB
Summer	SMMR

Supplement	SUPP
Sweet	SWT
Sweetened	SWTND
Sweetener	SWTNR
Teaspoon	TSP
Thousand	1000
Toasted	TSTD
Toddler	TODD
Trimmed[1]	
Trimmed to[1]	
Uncooked	UNCKD
Uncreamed	UNCRMD
Undiluted	UNDIL
Unenriched	UNENR
Unheated	UNHTD
Unprepared	UNPREP
Unspecified	UNSPEC
Unsweetened	UNSWTND
Variety, varieties	VAR
Vegetable, vegetables	VEG
Vitamin A	VIT A
Vitamin C	VIT C
Water	H20
Whitener	WHTNR
Whole	WHL
Winter	WNTR
With	W/
Without	WO/
Yellow	YEL

[1] Removed in short description

Appendix B. Other Abbreviations

ap	as purchased
approx	approximately
ARS	Agricultural Research Service
ate	alpha-tocopherol equivalent
dia	diameter
fl oz	fluid ounce
g	gram
IU	international unit
kcal	kilocalorie
kJ	kilojoule
lb	pound
mcg	microgram
mg	milligram
ml	milliliter
NDB	Nutrient Data Bank
NDL	Nutrient Data Laboratory
NFS	not further specified
NS	not specified
oz	ounce
RE	retinol equivalent