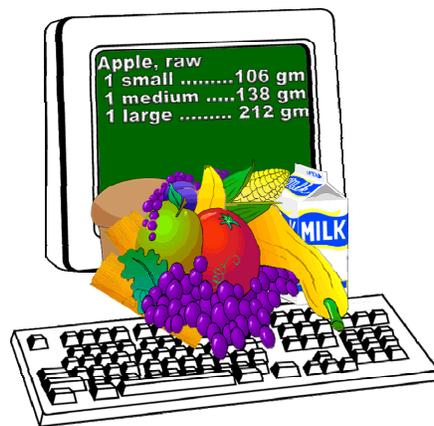


Vitamin D Addendum to USDA Food and Nutrient Database for Dietary Studies 3.0

Database developed for Estimating Vitamin D Intakes from Food and Water in What We Eat in America, NHANES 2005-2006



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WHAT IS THIS DATABASE AND HOW IS IT USED?

A special database of vitamin D values has been developed for all foods reported during the food intake interview in What We Eat in America, National Health and Nutrition Examination Survey (WWEIA, NHANES) 2005-2006 (1) for the purpose of estimating usual intakes of vitamin D from food and water. This database is an addendum to the Food and Nutrient Database for Dietary Studies (FNDDS) 3.0 used to code dietary intakes and to calculate nutrients for WWEIA, NHANES 2005-2006. Foods in the FNDDS 3.0 not reported in WWEIA, NHANES 2005-2006 are not included. This report documents development of the database hereafter referred to as Vitamin D Addendum to FNDDS 3.0 and provides information about its availability.

Naturally occurring vitamin D is found mainly in foods of animal origin and usually in small amounts. However, some fish species have relatively high levels of the vitamin. Vitamin D may be added to specific foods in the U.S. as regulated by the Food and Drug Administration (2). Milk on the retail market is usually fortified with vitamin D. Other foods with added vitamin D, at least in some brands, include other dairy products, infant formulas, margarine, breakfast cereals, soy milk, calcium-fortified orange juice, canned pasta products, and malted milk mix.

The source of nutrient data for any version of FNDDS is always the most current National Nutrient Database for Standard Reference (SR). The documentation for FNDDS 3.0 describes how nutrient values were derived using SR release 20 (SR20) (3). Those procedures were generally followed for vitamin D. However, SR20 was limited in its coverage of vitamin D and was not adequate as the data source for national intake estimates. The primary source of the data for this project is SR22 (4), which contains updated food vitamin D values based on improved and validated analytical methods.

The values in the Vitamin D Addendum to FNDDS 3.0 represent the sum of both ergocalciferol (vitamin D₂) and cholecalciferol (vitamin D₃), as documented in SR22. Although another form of the vitamin, 25-hydroxycholecalciferol, may be present in some foods, it was not included in this addendum, or in SR22, because adequate data from validated methods were not available (4).

In addition to using SR22 as the primary data source, the following guidelines were also applied to the preparation of vitamin D values:

- Values for foods fortified with vitamin D were not based on SR22 when it was known that they contained different levels of the nutrient during the years 2005-2006. Values representing 2005-2006 were used for those foods, mainly breakfast cereals, and were supplied by food specialists in USDA's Nutrient Data Laboratory (NDL).
- Some foods described generically (not broken down by brand names) in FNDDS and SR (e.g., margarine, fruit yogurt, orange juice) appear in the retail market in both vitamin D-fortified and unfortified forms, and SR22 contains items representing both forms. For these foods, composites of the two forms were

developed for this database because WWEIA, NHANES 2005-2006 dietary data do not specify whether these generic foods consumed were fortified with vitamin D. Composite values were based on recommendations by nutritionists in NDL.

- Some commercial foods are not present in SR and their values are routinely calculated for the FNDDS based on label ingredients. When the vitamin D values for these foods containing either milk or margarine were calculated for this project (e.g., low fat plain waffle), unfortified versions of the two ingredients were used.

Food codes in the Vitamin D Addendum to FNDDS 3.0 match food codes found in the individual foods file in WWEIA, NHANES 2005-2006. Vitamin D is expressed as micrograms per 100 grams of the edible portion of each food for 4,561 items.

The USDA's Food Surveys Research Group (FSRG) has used this database in conjunction with WWEIA, NHANES 2005-2006 to estimate the usual intakes of vitamin D for different population groups, including comparisons to Dietary Reference Intakes (5). Caution should be used when comparing these data to earlier reported vitamin D intakes by various investigators, since some differences may be attributed to improvements in analytical methods and food sampling. The documentation for SR22 provides information about current methods and the nationwide food sampling plan, as well as ongoing work to bring additional improvements to the data.

Researchers who wish to conduct further analyses of vitamin D intakes in WWEIA, NHANES 2005-2006 will need to calculate the amount of the nutrient for each record in the intake data. If conversion to International Units (IU) is required, one microgram of vitamin D₂ or vitamin D₃ equals 40 IU (6).

This database can be downloaded from the FSRG website as a Microsoft Access® database. It includes 3 data files – Main Food Descriptions (4,561 records), Nutrient Values (4,561 records), and Nutrient Descriptions (1 record). The nutrient code number for vitamin D is 328. File format descriptions are appended to this report, and correspond to files in FNDDS. Additional useful information may be found in the documentation for FNDDS 3.0 (3).

Future releases of the FNDDS will include vitamin D values for all foods in the database. Vitamin D values may change for some foods based on new analytical data planned for future updates to SR.

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APPENDIX: File Formats

Main food descriptions (MainFoodDesc)

There are 4,561 main food descriptions. The main food description is the primary (usually generic) complete description identified by a unique 8-digit food code. The food code links the food description to information in the nutrient file.

Table 1. Format of main food descriptions file†

Field Name	Type	Description
Food code‡	N 8*	a unique 8-digit number assigned to a given main food description
Start date	D (MM/DD/YYYY)	start and end dates indicate the time period for the value
End date	D (MM/DD/YYYY)	
Main food description	A 200	a complete description for the food, often including preparation method (e.g., boiled) and original form of the food (e.g., from frozen); usually generic in nature
Abbreviated description	A 60	a shortened description of the food

†See [table 4, Key to Tables](#) for an explanation of the abbreviations and symbols used in this table.

FNDDS nutrient values (FNDDSNutVal)

This file provides Vitamin D values for each food code.

Table 2. Format of FNDDS nutrient values file†

Field Name	Type	Description
Food code‡	N 8*	a unique 8-digit number assigned to each main food description
Nutrient code‡	N 5*	identifies a nutrient
Start date	D (MM/DD/YYYY)*	start and end dates indicate the time period for the value
End date	D (MM/DD/YYYY)	
Nutrient value	N 10	amount of nutrient in 100 grams edible portion of the food

†See [table 4, Key to Tables](#) for an explanation of the abbreviations and symbols used in this table.

Nutrient descriptions (NutDesc)

This file contains the names (nutrient descriptions) and codes for nutrients included in the FNDDS Nutrient Values file. The nutrient codes, nutrient descriptions, units of expression, and number of decimal places to which values are expressed are consistent with similar fields in the SR.

Table 3. Format of nutrient descriptions file†

Field Name	Type	Description
Nutrient code‡	N 5*	identifies a nutrient
Start date	D (MM/DD/YYYY)	start and end dates indicate the time period for the value
End date	D (MM/DD/YYYY)	
Nutrient description	A 45	the description for the nutrient code
Tagname	A 15	the nutrient or food component name or “tag” assigned by INFOODS, the International Network of Food Data Systems, for international interchange of nutrient data
Unit	A 10	the measurement unit in which values for the nutrient are expressed
Decimals	N	the number of decimal places to which the nutrient value is expressed; varies from nutrient to nutrient

†See [table 4, Key to Tables](#) for an explanation of the abbreviations and symbols used in this table.

Key to Tables

This key (Table 4) defines abbreviations and symbols used in tables 1 to 3, which outline the format of each file in the database.

Table 4. Key to abbreviations and symbols used in Tables 1 to 3

Abbreviation or symbol	Meaning	Additional information
N #.#	numeric field	Number (shown here as #) following field type indicates field length; number after decimal point indicates number of decimal places.
A #	alphanumeric field	Number (shown here as #) following field type indicates field length
D (MM/DD/YYYY)	date field	For this database, all start and end dates are the same (01/01/2005 and 12/31/2006).
*	indexed field (holds values by which the file is ordered)	
‡	linking field	Used to indicate links within the database