Explanatory Notes

for use with the NUTTAB 2006 Online Version and NUTTAB 2006 Electronic Release

March 2007

Disclaimer

Food Standards Australia New Zealand (FSANZ) makes *NUTTAB 2006 (Electronic Release)* available on the understanding that users exercise their own skill, care and judgment with respect to its use.

NUTTAB 2006 (Electronic Release) is made available only for the purposes of providing nutrient data and ancillary information to users. FSANZ makes no warranty that the data contained in *NUTTAB 2006 (Electronic Release)* will be free from error, or if used will ensure compliance with the relevant requirements of the *Food Standards Australia New Zealand Code*. FSANZ recommends that users viewing this publication for dietary purposes consult a heath care practitioner for a comprehensive dietary assessment.

By using the data in *NUTTAB 2006 (Electronic Release)*, you acknowledge that in no event shall FSANZ be liable for any incidental or consequential damages resulting from its use.

FSANZ also advises you that any reference to a brand name product contained in these tables is not to be taken as an authoritative statement of the composition of that product, due to changes in formulation that may have occurred since the FSANZ data were generated. It is also not to be taken as a statement that that product complies, or does not comply, with any labelling declarations that might have been made for it or with any regulatory requirements. If you require current data on a specific branded product you should contact the manufacturer of that product.

Copyright

ISBN number: 978 0 642 34552 3

Acknowledgements

FSANZ would like to thank those organisations and individuals who have contributed to the production of this publication. In particular we wish to thank Professor Heather Greenfield and others at the University of New South Wales for the provision of nutrient composition data, Mr Charles Wannop for programming assistance, and members of FSANZ's food composition external steering group. Many food companies have also generously provided data and assistance that has aided in the compilation of *NUTTAB 2006.*

CONTENTS

INTRODUCTION

NUTTAB 2006 is a food composition publication containing nutrient data for foods available in Australia. It is intended to replace *NUTTAB 95* and its 1997 Supplement, Nutritional Values of Australian Foods (1992), and Food for Health (1991). This publication incorporates a wider range of foods and nutrients than previous publications and includes nutrient values that reflect the composition of foods currently available in Australia.

NUTTAB 2006 is available in three versions depending on the users needs. These are the:

- *NUTTAB 2006* Food Composition Tables;
- *NUTTAB 2006* Online Version; and
- *NUTTAB 2006* Electronic Release.

While the majority of information contained is this document is relevant to all three versions of *NUTTAB 2006*, this document was developed to be used with the *NUTTAB 2006 Online Version* and *NUTTAB 2006 Electronic Release*.

BACKGROUND

NUTTAB 2006 was developed to be used as a comprehensive reference compilation of nutrient data for foods available in Australia. In preparing *NUTTAB 2006*, FSANZ investigated the types of foods currently available for sale in Australia and reviewed nutrient data from previous FSANZ publications, recent analytical programs and other published papers for quality and relevance before including these data in the new publication. FSANZ has also undertaken cross-checks against industry data for major foods to identify inconsistencies with nutrient levels in currently available foods.

The majority of data contained in *NUTTAB 2006* are analysed values generated from analytical programs commissioned by FSANZ and others since the 1980s onwards. However, some data contained in *NUTTAB 2006* are based on borrowed data from overseas food tables, data supplied by the food industry, data taken from food labels, imputed values from similar foods or values calculated using a recipe approach.

Both the *NUTTAB 2006 Online Version* and *NUTTAB 2006 Electronic Release* contain the same food composition data for approximately 2600 foods and include nutrient data for up to 169 nutrients. Ancillary details such as common and scientific names, food descriptions, sampling details and references that were obtained during the data collection process have also been included in both the *NUTTAB 2006 Online Version* and *NUTTAB 2006 Electronic Release*.

NUTRIENT DATA

NUTTAB 2006 Online Version and *NUTTAB 2006 Electronic Release* contain data for up to 169 nutrients. A list of nutrients reported in *NUTTAB 2006* is shown in Table 1.

Table 1: Nutrients reported in NUTTAB 2006 Online and Electronic Release

Proximates	Minerals Cont.	Lipids Cont.	Lipids Cont.
Energy	Mercury	C6:0	C22:4 (undifferentiated)
Moisture	Molybdenum	C8:0	C22:4ω6
Nitrogen	Nickel	C10:0	C22:5 (undifferentiated)
Protein	Phosphorus	C11:0	C22:5ω3
Fat	Potassium	C12:0	C22:6 (undifferentiated)
Ash	Selenium	C13:0	C22:6ω3
Fructose	Sodium	C14:0	Total Polyunsaturated Fatty Acids
Glucose	Sulphur	C15:0	Total Long Chain Omega 3 Polyunsaturates
Sucrose	Tin	C16:0	Cholesterol
Maltose	Zinc	C17:0	**Amino Acids**
Lactose	**Vitamins**	C18:0	Alanine
Galactose	Thiamin	C19:0	Arginine
Maltotriose	Riboflavin	C20:0	Aspartic Acid
Sugars, total	Niacin	C21:0	Cystine + Cysteine
Starch	Niacin derived from Tryptophan or Protein	C22:0	Glutamic Acid
Glycogen	Niacin Equivalents	C24:0	Glycine
Dextrins	Vitamin B6	Total Saturated Fatty Acids	Histidine
Maltodextrin	Vitamin B12	C10:1	Isoleucine
Raffinose	Biotin	C14:1	Leucine
Stachyose	Folate	C15:1	Lysine
Oligosaccharides, total	Folic Acid	C16:1	Methionine
Inulin	Dietary Folate Equivalents	C17:1	Phenylalanine
Available Carbohydrate	Pantothenic Acid	C18:1	Proline
Carbohydrate by difference	Vitamin C	C20:1	Serine
Glycerol	Alpha Carotene	C22:1	Threonine
Mannitol	Beta Carotene	C24:1	Tryptophan
Sorbitol	Cryptoxanthin	Total Monounsaturated Fatty Acids	Tyrosine
Total Dietary Fibre	Beta Carotene equivalents	C18:2 (undifferentiated)	Valine
Alcohol (mass basis)	Retinol	C18:2ω6	**Organic Acids**
Alcohol by Volume	Retinol Equivalents	C18:3 (undifferentiated)	Acetic Acid
Minerals	Cholecalciferol	C18:3ω3	Butyric Acid
Aluminium	25-hydroxy vitamin D	C18:3ω6	Citric Acid
Antimony	Vitamin D3 Equivalents	C18:4 (undifferentiated)	Fumaric Acid
Arsenic	Alpha Tocopherol	C18:4ω3	Lactic Acid
Cadmium	Alpha Tocotrienol	C20:2 (undifferentiated)	Malic Acid
Calcium	Beta Tocopherol	C20:2ω6	Oxalic Acid
Chromium	Beta Tocotrienol	C20:3 (undifferentiated)	Propionic Acid
Cobalt	Delta Tocopherol	C20:3ω3	Quinic Acid
Copper	Delta Tocotrienol	C20:3ω6	Shikimic Acid
Fluoride	Gamma Tocopherol	C20:4 (undifferentiated)	Succinic Acid
Iodine	Gamma Tocotrienol	C20:4ω6	Tartaric Acid
Iron	Vitamin E	C20:5 (undifferentiated)	**Other**
Lead	**Lipids**	C20:5ω3	Caffeine
Manganese	C4:0	C22:2ω6	

DERIVATION OF NUTRIENT DATA

Nutrient data presented in *NUTTAB 2006* have been obtained from a range of sources. Although most of the data have been derived by direct analysis of foods, some have been borrowed from overseas food tables, supplied by the food industry, taken from food labels, imputed from like foods or calculated using a recipe approach.

Each food published in *NUTTAB 2006* is assigned a derivation code which indicates where the majority of nutrient data for each food were derived. More detailed information on the derivation of each individual nutrient published for each food can be found in the sampling details section.

Derivation Codes

Analytical data (Analysed)

The majority of nutrient values presented in *NUTTAB 2006* have been determined by laboratory analysis of foods purchased in Australia. In most cases, these foods have been purchased in one or more capital cities, generally Sydney, Melbourne or Adelaide. For packaged foods, four to eight separate purchases are usual, chosen to reflect the market composition at the time of analysis. For unpackaged foods, generally six to 12 purchases are made. In nearly all cases, the purchased items are mixed together (or 'composited') to form a single analytical sample that therefore reflects the average composition of that type of product at the time the sample was prepared. No data on variation between samples is available under these circumstances. In the case of samples purchased for the 19th, 20th or 22nd Australian Total Diet Studies, values are means of sub-samples purchased nationally, with the sub-samples analysed separately.

For data commissioned by the Commonwealth of Australia (either FSANZ or the Commonwealth Department of Health & Ageing), analyses have largely been conducted by the National Measurement Institute (formerly AGAL), in either Adelaide or Melbourne. Data generated by researchers at the University of New South Wales (Greenfield, Wills and others) largely reflect samples purchased and analysed in Sydney.

For some foods, particularly major foods such as breads, a number of analytical programs may have been conducted over time. The results presented in *NUTTAB 2006* usually reflect the average results of these programs, with values adjusted on a dry matter basis to reflect the average moisture content. However, where changes have occurred to the formulation of a product, and processing or growing conditions, or where an improved analytical method is now available, only newer data are reported.

A small number of values in these records identified as being analysed may have been determined by other techniques, such as imputation or borrowing, where analytical data were not available for some nutrients.

Recipe data (Recipe)

A number of foods reported in *NUTTAB 2006* are 'recipe' foods. For these foods, an average recipe for the food, as commonly prepared in Australia, is developed and the overall nutrient profile for that food is calculated from the nutrient data for the individual recipe ingredients, taking into account, where necessary, loss or gain of moisture and nutrients during processing. Examples of recipe foods include toasted bread, prepared cordials and some home-prepared traditional foods such as Anzac biscuits. Information on the recipes used in *NUTTAB 2006* including weight changes and nutrient retention factors are available in the *Recipe File* of the *Electronic Release*. Because the generation of a recipe requires assumptions about weight change and nutrient change during processing, these records may be less representative of the foods they refer to, compared with analytical data.

Imputed data (Imputed)

Imputation is the process of assuming that a nutrient value in one food can represent that in another similar food. For example, in the case of an unsalted vegetable juice, nutrient values other than sodium and chloride will be imputed from those for salted vegetable juice. Imputation also includes the process of assuming that some foods contain none of a particular nutrient, based on knowledge of the composition of that food. For example for soft drinks, vitamin E has been imputed as zero as soft drinks contain no fat (vitamin E is a fat soluble nutrient) and are not labelled as containing added vitamin E. Imputation has only been used where FSANZ has had confidence in the validity of the assumptions made.

Industry data (Industry)

For a small number of foods, Australian food companies have supplied FSANZ with nutrient data for their products. These data may have been generated by analysis or by other means. Industry data form only a small proportion of data in *NUTTAB 2006*. As noted earlier, if you require information on the nutrients in a specific product, you should check the product's nutrition information panel or contact the manufacturer.

Label data (Label)

A small number of records contain nutrient data derived from label information. Label information has been included where no analytical or other appropriate data were available for that food, where the food was considered significant in the diet for all or some of the population, or where there have been known changes to fortification practices since the original data were generated. Values presented are, wherever possible, averaged over a number of brands and taken from the nutrition information panels for these products. Because nutrition information panels are only required to report nutrient data for a small number of nutrients, some values in these records may have been derived by other techniques such as imputation.

Calculated data (Calculated)

Some older records, particularly for some beverages, have been calculated by FSANZ using techniques similar to the recipe approach described above, but without generation of a formal recipe. These records have been retained where FSANZ considered there is a need for the data but suitable analytical data could not be identified. In some cases (such as some food additives), nutrient levels have been calculated directly from the molecular formula of the food additive.

National Nutrition Survey data (NNS 1995)

Nutrient data were generated specifically for the 1995 National Nutrition Survey and subsequently included in *AUSNUT*. Much of these data have been calculated, as described above, and for most of these foods the basis for data generation has not been fully recorded. Some of these records were generated by a documented recipe approach and where the information on recipe composition is available it is included in the *Recipe File* of the *Electronic Release***.** As with calculated records, NNS records have been retained where FSANZ considered there was a need for the data but suitable analytical data could not be identified. NNS records have a more limited range of nutrient values and do not include individual sugars, fatty acids or amino acids.

Borrowed data (Borrowed - by country)

Small amounts of data have been borrowed from food composition tables published by the governments of the United States (USDA, 2005), the United Kingdom (Food Standards Agency, 2002), New Zealand (Athar et al, 2003), and Denmark (Miller et al, 2005). Data has also been included from the tables of *Composition of Australian Aboriginal Foods* (Brand Miller et al, 1993). In a small number of cases, individual nutrient values in an analysed or NNS food may have been obtained by borrowing. In general, nutrient data are only borrowed from overseas food tables where the food is imported into Australia or where it was considered there was a need for the nutrient data but suitable Australian data could not be identified.

METHODS OF NUTRIENT ANALYSIS

In general, the analytical techniques used are widely-accepted methods conducted by experienced laboratories with NATA [1]accreditation. However, because nutrient data reported in *NUTTAB 2006* have been generated over approximately 25 years, the techniques used for nutrient analysis may have changed over this time. Therefore, the following information provides a summary of major methods of analysis used for nutrients reported in *NUTTAB 2006*. Further information on the methods of analysis, including limits of detection and reporting may be available on request from FSANZ.

Values reported as 'trace' or 'less than the limit of reporting (LOR)' have been assigned zero numerical values in *NUTTAB 2006*. Summary information on the limits of detection and reporting are presented in Appendix 1.

Individual Nutrients

Water

Water in foods has been determined by drying a food in an oven at a temperature of approximately 102 ºC until the food reaches a constant weight. Higher temperatures may have been used for cereal foods and vacuum drying at 70ºC may have been used for high sugar foods.

Energy

In *NUTTAB 2006*, energy levels are determined by calculation using the following formula:

> Energy (kJ) = protein (g)*17 + sugars (g)*16 + other available carbohydrate (g)*17 + fat (g)*37 + dietary fibre (g)*8 + alcohol (g)*29 + sorbitol (g)*16 + citric/malic/quinic acids (g)*10 + lactic/acetic acids (g)*15.

Please note this equation is not consistent with labelling requirements specified in Standard 1.2.8 of the Australia New Zealand Food Standards Code ('the Code'), and therefore should not be used for the purpose of food labelling.

Energy is reported only in kilojoules (kJ) in *NUTTAB 2006*. One calorie is equal to 4.18 kilojoules

Protein

In *NUTTAB 2006*, protein content is estimated from the measurement of the nitrogen content of foods. Nitrogen content has generally been measured by a kjeldhal technique with protein content then estimated from nitrogen content by the application of a conversion factor. The conversion factors used in this publication are those specified in Greenfield and Southgate (2003) and are set out in Appendix 2 of this document, with the factor selected being determined by a consideration of major protein sources in the food. For example, in a wholewheat crispbread, where no other significant protein sources are present, the factor applicable to whole wheat is applied. However in a

[1] NATA is the National Association of Testing Authorities

crispbread where protein is derived from both wheat and maize, an average factor is applied. In foods where there are more than two protein sources present, the general protein factor of 6.25 is used. Information on the conversion factors (or nitrogen factors) used for each food is provided for both the *NUTTAB 2006 online and electronic versions*.

Fat

For analysed foods, fat has generally been determined by one of two gravimetric methods: acid hydrolysis followed by ether and petroleum ether extraction, or soxhlet extraction using chloroform and methanol, or diethyl and/or petroleum ether.

Carbohydrate

Available carbohydrate is determined by the following equation:

> Available carbohydrate (g) = fructose (g) + glucose (g) + sucrose (g) + lactose (g) + maltose (g) + galactose (g) + maltotriose (g) + starch (g) + glycogen (g) + oligosaccharides (g) + maltodextrin (g) + dextrins (g)

This definition does not include sugar alcohols and is consistent with the definition of available carbohydrate in Standard 1.2.8 of the Code.

For foods derived using label information, the reported carbohydrate content may refer to either the available carbohydrate content or the carbohydrate content by difference, which is determined as follows:

> Carbohydrate by difference (g) = 100 – (water + protein + fat + dietary fibre + ash + alcohol + (if quantified or added to the food) organic acids + sugar alcohols + polydextrose (g)

For indigenous foods reported in *NUTTAB 2006*, the reported carbohydrate content refers to carbohydrate by difference.

Sugars, total and individual

Sugars values reported in analysed foods have generally been determined by high performance liquid chromatographic (HPLC) analysis of an aqueous extract of the food using refractive index detection.

The total sugars value presented in *NUTTAB 2006* is determined by the following equation:

> Total sugars (g) = fructose (g) + glucose (g) + sucrose (g) + lactose (g) + maltose (g) + galactose (g)

Oligosaccharides

A small number of values are reported for undifferentiated oligosachharides. This generally occurs in processed foods where substances such as maltodextrins or fructooligosaccharides are known to be added. These values have generally been imputed or borrowed. In beers, maltotriose has been analysed and is reported as such, not as undifferentiated oligosaccharides. For some dried soups, analysed inulin values are presented.

Starch and other available polysaccharides

Starch content is generally determined by the removal of sugars followed by digestion of the remaining food with an enzyme (usually amyloglucosidase) that breaks starch into component glucose molecules, which are then analysed by HPLC. In older records, the liberated glucose may have been measured colourimetrically.

In beers, levels of dextrins are reported. In a small number of meats (primarily organ meats), glycogen is reported. These are determined using similar methods to that for starch.

Sugar alcohols

Sorbitol and mannitol are the only sugar alcohols reported in *NUTTAB 2006*. They have generally been determined using a similar method to that for sugars, using a different HPLC column.

Dietary fibre

Dietary fibre refers to that fraction of the edible part of plants or their extracts, or synthetic analogues that is resistant to the digestion and absorption in the small intestine, usually with complete or partial fermentation in the large intestine; and that promote one or more of the following beneficial physiological effects – laxation, reduction in blood cholesterol or modulation of blood glucose. It includes unavailable polysaccharides, unavailable oligosaccharides (degree of polymerisation > 2) and lignins.

Dietary fibre values reported in this publication have largely been determined, in analysed foods, by the total dietary fibre method (Section 985.29 of the AOAC, 17th Edition (2000)) or equivalent method in older records. If another method of analysis has been used, this is identified in the sampling details section.

Cholesterol

Cholesterol has been determined by gas chromatography using a flame ionisation detector. Plant sterols have not been determined.

Minerals

From around the mid 1990s onwards, minerals other than selenium have been determined largely by inductively coupled plasma optical emission spectroscopy (ICPOES) (for sodium, potassium, calcium, magnesium and phosphorus) or by inductively coupled plasma mass spectrometry (ICPMS) (for manganese, iron, copper and zinc). Selenium and arsenic have generally been analysed by hydride generation. Data derived from the Australian Total Diet Studies (ATDS) for antimony, arsenic, cadmium, copper, lead, mercury, selenium, tin and zinc have been generated using ICPMS. Older samples have generally been analysed using atomic absorption spectroscopy.

Analysed selenium, antimony, arsenic, tin and mercury, levels found in many foods are close to, or below, the limit of reporting and may be associated with a significant measurement uncertainty. Values below this limit are reported as zero in *NUTTAB 2006*.

Many sodium values have been updated since the time of analysis to reflect reductions in salt use in some categories of processed foods. Where updates have occurred, revised values are based on label information.

Fluoride and iodine

Fluoride is determined using a specific ion electrode and chloride by back titration of excess silver nitrate using standardized sodium thiocyanate. Iodine values other than those reported from the 22nd ATDS have been determined using a colourimetric method and have a limit of reporting of 100 µg/kg so that low levels of iodine in foods would not have been able to be detected or quantified. Results from the 22nd ATDS were determined using ICPMS with a limit of reporting of 10 µg/kg.

Vitamin A (retinol and carotenes)

Vitamin A values are expressed as Retinol Equivalents and are calculated from measured levels of retinol and carotenes, as follows:

> Vitamin A (µg) = (retinol + beta-carotene/6 + alpha-carotene/12 + cryptoxanthin/12) (µg)

More recent retinol and carotene values reported for analysed foods have been determined using HPLC with ultraviolet absorbance detection. Older analyses (from the 1980s) are likely to have used column chromatography.

Vitamin C

In analyses from approximately 1990 onwards, vitamin C has been determined using HPLC, whereas in studies from the 1980s, a microfluorimetric method may have been used. Both types of techniques measure both L-Ascorbic acid and dehydroascorbic acid, both of which have vitamin C activity.

Vitamin E

Tocopherols have been determined by HPLC using fluorescence detection. Alpha-tocopherol only was determined in some older analyses whereas from the late 1990s onwards, beta-, gamma- and delta-tocopherol have also been analysed. Alpha tocopherol has not been separated into specific stereoisomers.

In *NUTTAB 2006* Vitamin E is calculated using the following equation:

> Vitamin E (mg) = (alpha tocopherol + beta-tocopherol/2 + gamma-tocopherol/10)(mg)

Thiamin and riboflavin

Both these vitamins are generally determined by HPLC using fluorescence detection.

Niacin

HPLC techniques are now usual for analysis of preformed niacin, replacing older techniques that required reaction with cyanogen bromide.

Derived niacin has been calculated from the tryptophan content of a food, where this has been able to be estimated, as follows:

> Niacin derived from tryptophan (mg) = tryptophan (mg)/60

Alternatively, where information on the tryptophan level in a food is not available, derived niacin is estimated from the protein content of the food as follows:

> Niacin derived from tryptophan (mg) = protein (g)*0.167

A past comparison of derived niacin calculated from protein or tryptophan indicates that for most foods, the two calculation techniques yield similar values. However, this may not be the case for fish, eggs and cheese.

Niacin values are also reported as niacin equivalents, which includes both preformed niacin and niacin derived from tryptophan:

> Niacin equivalents (mg) = preformed niacin + niacin derived from tryptophan

Because of the techniques used above to estimate derived niacin, the values for niacin equivalents reported in these tables are only approximations of the true niacin content of foods.

Folates

Where folates have been analysed in foods, this has generally been done using a single enzyme (human plasma conjugase) microbiological assay using *Lactobacillus casei* var. *rhamnosis*. A small proportion of the most recent analytical values (from 2005) are determined using the triple enzyme microbiological method (conjugase, protease and amylase).

Because Australian data holdings for folates are small, some folate values reported in *NUTTAB 2006* are borrowed from UK or US data (Food Standards Agency, 2002; US Dept Agriculture).

Reported folic acid levels are either analysed or imputed from analysed values or from label data.

Values reported for total folates are determined by the following equation:

Total Folates (µg) = food folate (µg) + folic acid (µg)

Folates are expressed in the Concise Tables as Dietary Folate Equivalents:

Dietary Folate Equivalent (µg) = food folate (µg) + 1.67*folic acid (µg)

Pantothenate

Vitamin B5 (or pantothenate) has been determined using a microbiological method using *Lactobacillus plantarum* based on the AOAC method for pantothenate in vitamin preparations. This method measures free pantothenates and does not include bound pantothenate.

Pyridoxine

Vitamin B6 is measured by reducing all forms of pyridoxine and measuring levels of pyridoxine hydrochloride using reverse phase HPLC with fluorescence detection.

Cobalamin

Vitamin B12 (or cobalamin) is determined using a microbiological technique (using *Euglena gracilis*) developed for the assay of serum cobalamin levels.

Biotin

Biotin has been developed by microbiological assay using *Lactobacillus plantarum*.

Vitamin D

Vitamin D3 (or cholecalciferol) and 25-hydroxy vitamin D were determined by normal phase HPLC, with ultraviolet detection, of an extract from saponified sample. This method is accredited only for the analysis of vitamin D3 and extraction difficulties may limit the completeness of the extraction process. Only limited data are available for vitamin D3 and vitamin D2 (or ergocalciferol) has not been determined.

Saturated, monounsaturated and polyunsaturated fatty acids

Individual fatty acids are determined by gas chromatography as a percentage of total fatty acids and conversion factors are used to estimate the levels of individual fatty acids present in the food on a mass basis, as follows using the example of oleic acid:

Oleic acid (g/100 g food) = oleic acid (% of total acids)/100*fat content*factor

A list of the conversion factors used in *NUTTAB 2006* is presented in Appendix 3.

Polyunsaturated fatty acids include all *cis*-isomers of these acids (including omega-3 and omega-6 forms). The majority of polyunsaturated fatty acids reported in *NUTTAB 2006* are not subdivided into the omega-3 and omega-6 isomers as the analytical methods used at the time did not unequivocally differentiate these. In analyses from the mid 1990s onwards, however, these two groups of acids were differentiated and are reported as such.

Data on levels of *trans*-fatty acids are not available in *NUTTAB 2006*.

Amino acids

Amino acids were determined in analytical programs conducted in the late 1980s and early 1990s by the then State Chemistry Laboratory of Victoria. Samples were hydrolysed and amino acids, other than tryptophan, measured using HPLC with an ion exchange column. Tryptophan was determined using a separate HPLC procedure or a colorimetric procedure.

In the *Supplement to NUTTAB 1995*, amino acid values were reported for all foods presented. In contrast, *NUTTAB 2006* restricts presentation of amino acids values to those foods that were analysed or foods for which the only significant protein source is one of those analysed foods.

Caffeine

Caffeine levels were determined by the then State Chemistry Laboratory of Victoria in 2002, using reversed phase HPLC with diode array detection.

IDENTIFICATION OF FOODS

Each food published in *NUTTAB 2006* has a unique 8-character alpha-numeric identification code based on the identification system initiated in the series *Composition of Foods, Australia* and used in the subsequent *NUTTAB 95* and *AUSNUT* publications. The code consists of a 4-character food group code followed by a 4-digit number. For a summary of the food grouping system used in NUTTAB 2006 see Appendix 4.

Please note, that foods published in *NUTTAB 2006* that were previously published in either *NUTTAB 95* or *AUSNUT* will not have the same identification code. To assist users incorporate these new food codes FSANZ has developed a file cross-linking the food identification codes from *NUTTAB 2006* with *NUTTAB 95*. This file is named *NUTTAB 95 & NUTTAB 2006 Matching File* and is available from the FSANZ website.

Foods are recorded in the FSANZ food composition database with a long and short name. The long name provides a detailed description of the food, while the short name provides a concise description of the food. Each food published in *NUTTAB 2006 Online and Electronic versions* has been recorded using its long name. The long name captures the most commonly available form of a food, and, where relevant, the exceptions to the commonly available form of the food and preparation. For example, sugar-sweetened soft drinks are simply referred to as 'soft drinks' whereas the intense-sweetened versions are referred to as 'soft drink, intense sweetened'. In situations where the common form of supply is not obvious, nutritionally relevant information is included; for example, boiled white rice is referred to as either "boiled with salt" if salt is included, or just "boiled" if no salt has been included.

Where vitamins and/or minerals are added to a food for fortification purposes, this is generally identified in the food name, by either identifying the specific nutrient or, where multiple nutrients are added, referring in general to the addition of nutrients, with further detail on the exact nutrients provided in the food description field. Where a food is always supplied in a fortified form, such as bread-making flour with the mandatory addition of thiamin, this information is not included in the food name but is included in the description.

The food description provides more detail about the processing of the food and, in processed foods, the major ingredients and food additives used, where known.

Very few foods are named with reference to a specific brand and use of brand names has been avoided wherever possible. This is because the formulation of specific products changes over time and nutrient levels at the time of analysis may not reflect those in a particular brand some years later. In the few cases where a specific brand is mentioned, this is generally intended to provide guidance for the user in situations where there are a number of products available with similar appearance but with differing nutrient composition. The values reported should be regarded as reflecting the average composition of that class of food. If you require information on the nutrients in a specific product as currently available, you should check the product's nutrition information panel or consult the manufacturer. Very few foods were analysed as a single brand only.

FOOD GROUPS

Beverages

This includes information on: alcoholic beverages; non alcoholic beverages; and powdered drinks.

Analytical data comprise a relatively small proportion of this chapter, approximately one-third of all data. Many of the remaining values are derived by recipe (e.g. diluted cordials, and prepared beverages), from data collected for the preparation of *AUSNUT* and/or by calculation from industry or label data. Data from these sources were retained where FSANZ could not identify analytical data for these foods but considered it was important to retain the data taking into account the significance of the product in the diet. Reference to brand names in some names or descriptions is not intended to imply that these values represent nutrient values in these products at all times, as formulations may change over time and as levels of some nutrients may vary from batch to batch. For these reasons, nutrient values reported in these tables may not be identical to those reported on food labels.

For beers, a significant proportion of the reported available carbohydrate content is in the form of dextrins and, to a lesser extent, the sugar maltotriose.

Cereals and cereal products

This includes information on: biscuits; breads; breakfast cereals; cakes, pastries and sweet pies; flours, grains and starches; noodles and pasta; and pastry.

The majority of values presented in this chapter are analytically-derived or derived using single-ingredient recipes based on analysed foods, such as toasted breads. A small amount of data are borrowed from the US for cereal products that are not produced in any significant amount in Australia, including couscous, wild rice, corn pasta and buckwheat groats.

For many cereal products, particularly low-moisture baked products such as biscuits and breakfast cereals, the sum of proximates (the sum of moisture, protein, fat, sugars, starch, fibre, ash, alcohol and organic acids) is below generally acceptable levels for food composition tables (less than 97 g/100 g). This is likely to reflect problems with the analysis of starch and/or dietary fibre in these foods. Where this has occurred, the sampling details field will note that the sum of proximates is low and data should be used with caution.

Condiments

This includes information on: dressings, pastes and sauces; herbs, seasonings and spices; spreads; sugars and sweeteners.

Most of the data relating to individual herbs and spices has been borrowed from either the USDA or published literature.

For many other foods in this chapter, nutrient data are incomplete as analysis has tended not to focus on nutrients for which the foods are unlikely to be significant dietary contributors. For example, salt products have not been analysed for vitamins.

Confectionery
This includes information on chocolate-based and sugar-based confectionery. Little of these data are recent.

Dairy
This includes information on: butter and margarine; cheese; cream; milk and; yoghurt.

Much of the data for edible oil spreads has been substantially updated to reflect significant changes in this product category since *NUTTAB 95*, particularly reductions in fat and sodium content. However there are a number of types of spreads now available for which data are not included in *NUTTAB 2006*. Data for vitamin D in edible oil spreads is label data.

Data for many milks have been substantially updated and extended since *NUTTAB 95*. For example, previous fatty acid data have been replaced with data from 2004 and 2005, as analytical techniques have improved over time. However, there have been few updates to data for creams, ice creams and yoghurts, and the foods included will not cover the full range of products now available in these categories. Where some new foods have been included, such as extra light sour cream, much of these data will be derived from label information or by estimation or imputation.

Desserts
This includes information on foods such as ice cream, custard, ice confection, jelly, and meringue.

The majority of data for this chapter are derived from older analytical data. However, newer records for reduced fat custard, as well as a number of ice cream lines have been included in the *NUTTAB 2006* publication.

Eggs
This includes information on eggs and egg dishes.

Data for many egg records has been substantially updated and extended since *NUTTAB 95.*

Fast foods and takeaway foods
This includes information on foods such as: burgers; hot potato chips/fries; meat pastry products; deep fried products and takeaway salads.

Fatty acid and sodium data have been significantly updated for many of these records to reflect recent changes in formulation. However, there are many types of fast foods for which data are not included in NUTTAB 2006. Many fast food companies maintain websites with comprehensive and up-to-date nutrient information for their products.

Fats and oils
This chapter includes information on different types of fats and oils used in cooking.

A number of these records were not published in *NUTTAB 95*.

Fruit
This includes fresh and processed fruit products (including dried and canned products). The majority of data were included in *NUTTAB 95* but there are updates to vitamin and mineral values for many fruits included in *NUTTAB 2006*.

Indigenous foods
The majority of data for indigenous foods is reproduced from Brand-Miller et al (1993). The range of data for these wild-harvested foods is narrow and there are many data gaps. However, the data are the most comprehensive available for this significant category of foods. In addition, it should be noted that some of the mineral values for these foods are questionable, most notably the very high iron values reported for many foods. This may reflect difficulties in grinding hard foods during sample preparation.

There are a small number of commercialised indigenous foods for which nutrient data have been generated by FSANZ; a broader range of nutrients are included for these foods.

Infant foods
All values for these foods are from analytically derived records for foods analysed in the early 1990s and therefore the foods included may not represent all types of infant foods now available. In some cases, additional values have been imputed where possible (for example, fibre in filtered juices or saturated fat levels in low fat foods) and some mineral data has been taken from recent analyses (e.g. the 2004 22nd Australian Total Diet Study).

Legumes
This includes data for dried and canned beans and lentils. There have been few updates to these data since *NUTTAB 95*.

Meat and meat products
This includes data for raw and cooked beef, veal, lamb, mutton, pork, poultry and game meat, as well as a range of processed meat products.

Nutrient data for raw and cooked beef, veal, lamb and mutton is largely new data from *NUTTAB 95* and is based on data generated from research by Meat and Livestock Australia (MLA). Some older data has also been retained where cuts were not analysed in the MLA program. Pork data reflects analyses conducted predominantly in the mid 1990s.

There have been few updates to data for poultry meat and processed meats, other than the addition of data for grilled chicken breast and low fat processed chicken meat.

Nuts and seeds
This includes data for raw and roasted nuts and seeds and products produced from them, such as peanut butter. Apart from the inclusion of some new coconut products, there have been few updates to data for these foods, other than updates to the minerals present in peanut butter and additional vitamins determined for a range of nuts.

Restaurant foods

This includes foods purchased ready-to-eat from Asian and Mediterranean style restaurants.

There have been few updates to these data since *NUTTAB 95*.

Seafood and seafood products

This includes raw, cooked and processed finfish and shellfish products, including canned fish. There is a considerable amount of newer data for seafoods, including common aqua-cultured fish and sashimi style fish. Mineral data for a number of previously included food records has been updated.

Fatty acid data from the 1990s should be interpreted with caution as there were difficulties in separating and identifying some long chain fatty acids.

Snack foods

This includes information on corn chips, potato chips, fruit bars, muffin bars and cereal bars, popcorn, fruit based snacks and other cereal based snacks.

A number of new lines of crisps and muesli bars have been added to the *NUTTAB 2006* publication.

Soups

This includes home-prepared, dry mix and canned soups, as well as soups purchased from restaurants and takeaway outlets.

A large proportion of the data for dry mix soups is new data from around 2002. Please be aware that many of these soup powder records have a low sum of proximates, which is likely to reflect the use of oligosaccharides that are not completely recovered during analysis, as well as difficulties in analysis of the high salt, dry matrix.

Soy products

This includes soy beverages and products such as tofu.

Many of the updates to soy beverage data are based on label information and represent aggregated data from a range of similar products with similar fortification patterns. Data for specific products can often be obtained from company websites.

New data are included for some tofu type products.

Vegetables

This includes raw and cooked vegetables and processed vegetable products such as canned and frozen vegetables.

The majority of data published for this chapter is derived from analytical data published from the 1980s onwards or are single-ingredient recipes based on analysed foods (e.g. boiled carrot from raw carrot). Some newer varieties of vegetables have been included since *NUTTAB 95*, such as Jarrahdale pumpkin and some additional mineral and vitamin data included with existing records.

Additives and cooking ingredients

Many of these records are based on borrowed data, industry information or are calculated from the molecular formula of an additive. Data are often incomplete and focused largely on those nutrients required to be reported in nutrition information panels.

NUTTAB 2006 ONLINE VERSION

The *NUTTAB 2006 Online Version* contains updated food composition data for approximately 2600 foods and includes nutrient data for up to 169 nutrients.

The *NUTTAB 2006 Online Version* was developed to enable users with access to the internet to search for food and nutrient data. The Online Version contains an electronic search function for finding a particular food, as well as the option to browse an alphabetical list of foods, browse food group categories, and browse a full list of nutrients. Users can also access nutrient definitions and conduct a search for foods containing a particular nutrient. A number of supporting documentation and files relevant to NUTTAB 2006 are also accessible from the Online Version.

Searching for a food

The *NUTTAB 2006 Online Version* allows users to search for nutrient data relating to specific foods in three ways:

- Searching by individual food name, with an option to further refine the search by food group;
- Searching alphabetically; and
- Searching by food group.

Each of these search methods will return information relating to the food name, scientific food name, food description, data derivation, food sampling details, references used in compiling nutrient data, the edible portion of the food, the inedible portion of the food, the fat factor of the food, the nitrogen factor of the food, the specific gravity of the food (if applicable), nutrient data for the food on a per 100 g basis, as well as the Food ID code.

A summary of this information can be found in Table 2 below.

Table 2: Summary of descriptions reported in the *NUTTAB 2006* Online Version

Heading	Description of Component Heading
Food ID	Food Identification code used to identify each product.
Name	Name commonly used to describe the product.
Scientific Name	Scientific name of the plant of animal food (if applicable).
Description	A detailed description of the product, including its appearance, texture, production and preparation.
Group	The group name that the food has been assigned to.
Derivation	Whether data for the particular product was analysed, calculated, borrowed or from labels etc.
Sampling Details	Includes information on where the nutrient data were obtained such as the number of samples purchased for analysis, the date and place of purchase, whether the data were imputed or borrowed etc.
Reference	Reference details that were used when researching food and nutrient data.
Edible Portion	Portion of the product that can be consumed.
Inedible Portion	Portion of the product that cannot be consumed.
Fat Factor	Fat factor of the product. Used to calculate mass of fatty acids.
Nitrogen Factor	Nitrogen factor of the product. Used to calculate protein content.
Specific Gravity	Specific gravity of the product (if applicable).
Nutrient	Values for all nutrients published in *NUTTAB 2006* for the food on a 100 g basis

Searching for a nutrient

The *NUTTAB 2006 Online Version* also allows users to search for data relating to specific nutrients. By clicking on the *Browse Nutrient List* link, users can access a list of nutrients published in the *NUTTAB 2006 Online Version*. By selecting a specific nutrient from the list users can access the nutrient definition, equation and analytical method used to calculate nutrient data where available and applicable. Please note this information may not be available for each nutrient.

A *List Foods* link has also been placed next to each nutrient definition to allow users to obtain a list of foods reported in *NUTTAB 2006* containing the specific nutrient. This nutrient data is reported on a per 100 g basis.

Supporting Documentation and Files

A number of supporting documentation and files relevant to NUTTAB 2006 are also accessible from the Online Version. These include: information on the development of NUTTAB 2006; Explanatory Notes for the Online Version and Electronic Release; a matching of NUTTAB 2006 nutrient component names with INFoods Tag Names; measures information, including information on portion sizes and standard measures; a file for common liquids reported per 100 ml; a NUTTAB 2006 and NUTTAB 95 matching file; a reference list; and some frequently asked questions.

NUTTAB 2006 ELECTRONIC RELEASE

NUTTAB 2006 Electronic Release contains approximately 2600 foods and includes nutrient values for up to 169 nutrients.

The *NUTTAB 2006 Electronic Release* was developed for users wanting to place the data into their own software and manipulate it for a specific purpose. Users can also, if they choose, access ancillary details about all foods included in *NUTTAB 2006 Electronic Release*, such as the foods common and scientific name, a description of the food, information about the sample origin (including date and place of purchase where relevant), conversion factors, recipe details (if applicable) etc.

The Electronic Release is only made available to users upon request to: npc@foodstandards.gov.au. Users intending to reproduce this data will need to obtain, sign and return a Copyright Reproduction Licence Agreement to FSANZ before *The Electronic Release* will be issued. A licence agreement does not incur any reproduction fees, but simply allows for the legal reproduction of FSANZ data incorporating the appropriate intellectual property and limitations statements.

Files for Upload

NUTTAB 2006 Electronic Release is comprised of the fourteen separate files:

- a file containing information relating to foods;
- a file containing information relating to all nutrients;
- nine files containing information relating to individual nutrients groups (i.e. these nine files together form the complete nutrient file);
- a file containing information relating to recipe foods;
- a retention factor file; and
- a food table definitions file.

The information reported in each of these files is outlined below.

Information reported in the Food File

The food file contains non-nutrient information about the foods reported in *NUTTAB 2006*. This includes information such as the food name, food description and other ancillary information.

A summary of the information recorded in the *NUTTAB 2006* Food File is summarised in Table 3 below.

Table 3: Summary of information included in the 'Food File'

File Name	Component Heading	Description of Component Heading
Food File	Food ID	Food Identification Code
	Name	Name commonly used to describe the product
	Optional Name	Other names used to describe the product
	Description	A detailed description of the product, including its appearance, texture, production and preparation.
	Scientific Name	Scientific name of the plant of animal food (if applicable)
	Derivation	Whether data for the particular product was analysed, calculated, borrowed or from labels etc.
	Nitrogen Factor	Nitrogen factor of the product. Used to calculate protein content.
	Fat Factor	Fat factor of the product. Used to calculate mass of fatty acids.
	Specific Gravity	Specific gravity of the product (if applicable)
	Sampling Details	Includes information on where the nutrient data were obtained, such as the number of samples purchased for analysis, the date and place of purchase, whether the data were imputed or borrowed etc.
	Inedible Portion	Portion of the product that cannot be consumed
	Edible Portion	Portion of the product that can be consumed
	Group	A broad category used to describe similar products. For example Cereal and Cereal Products is a broad category used to group a range of products such as Grains, Breads, and Breakfast Cereals etc.
	Sub Group	Used to describe a specific food category under the broad group heading. For example Breads is a sub-group under the group heading Cereal and Cereal Products.
	Sort Order	The order in which the product will appear from 1 onwards.

Information reported in the Nutrient File

The nutrient file contains information specific to the food nutrients. There will be one complete nutrient file as well as nine separate nutrient files grouped by nutrient type (all nine separate nutrient files together equal the complete nutrient file). This will include a separate file for each of the following nutrient classifications: proximates; vitamins;

minerals; fatty acids (per 100g), fatty acids (%T)[2], amino acids (per 100g), amino acids (MN)[3], organic acids and others (caffeine).

The nutrient values will be presented in each of these files on a per 100 g basis unless specified (e.g. fatty acids %T and amino acids MN).

A summary of the information recorded in *NUTTAB 2006* for the complete nutrient file is summarised in Table 4 below.

Table 4: Summary of information included in the complete Nutrient File

Nutrient File	**Component Heading**	**Description of Component Heading**
	Food ID	Food Identification Code
	Nutrient ID	Nutrient Identification Code (shorthand way of presenting Nutrient ID e.g. Protein is 'PROT')
	Description	Full nutrient name e.g. 'Protein'
	Scale	Units the nutrient is presented in e.g. grams
	Value	Value of the nutrient reported
	Category	Nutrient category the nutrient belongs to e.g. Calcium belongs to the 'Minerals' category.

A summary of the information recorded in *NUTTAB 2006* for the individual nutrient is summarised in Table 5 below.

Table 5: Summary of information included in the individual Nutrient File

Nutrient File	**Component Heading**	**Description of Component Heading**
	Food ID	Food Identification Code
	Food Name	Name commonly used to describe the product
	Individual Nutrient Names	Full nutrient name e.g. 'Protein'
	Individual Nutrient Values	Nutrient values for each individual nutrient reported on a per gram basis (unless specified otherwise).

Information reported in the Recipe File

This file contains information about the ingredients used in a food derived using a recipe. Data contained in this file include: the food name and food identification code, the ingredient name and food identification code, the proportions of the ingredients, nutrient retention factors and weight change factors. The nutrient retention factors contained in this file are identified by code number only. More detailed information on the retention factors used in recipe foods can be found in the *Retention Factor* file.
A summary of the information recorded in *NUTTAB 2006* for the Recipe File is summarised in Table 6 below.

[2] Fatty acids expressed as a percentage of total fatty acids.
[3] Microgram of amino acid per gram of nitrogen.

Table 6: Summary of information included in the Recipe File

Recipe Files	**Component Heading**	**Description of Component Heading**
	Food ID	Food Identification Code
	Food Name	Name commonly used to describe the product
	Weight Change (%)	Weight change on a % basis after the food has been cooked
	Ingredient ID	Ingredient Identification Code
	Ingredient Name	Name commonly used to describe the ingredient
	Ingredient Weight (g)	Weight of the ingredient in grams
	Ingredient Retention Factor	Retention factor identification code

Information reported in the Retention Factor File

This file contains information relating to nutrient retention factors. Retention factors are used to take into account the effect of processing factors such as light, heat, oxidants and leaching on the levels of nutrients in foods. In particular, these factors are relevant for alcohol, minerals and vitamins. Retention factors will vary depending on the food in question and on the method of processing.

The nutrient retention factors used in *NUTTAB 2006* have been derived largely from USDA (2003).

A summary of the information recorded in *NUTTAB 2006* for the Retention Factor File is summarised in Table 7 below.

Table 7: Summary of information included in the Retention Factor File

Retention Factor Files	**Component Heading**	**Description of Component Heading**
	Retention Factor ID	Retention Factor Identification Code
	Retention Factor Name	Name commonly used to describe the product
	Retention Factor Nutrient ID	Retention Factor Nutrient Identification Code (shorthand of the nutrient description)
	Nutrient Description	Description of the Retention Factor Nutrient Identification Code (i.e. longhand).
	Nutrient Scale	Units the nutrient is presented in e.g. grams
	Retention Factor	Value of retention factor reported

Information reported in the Table Definitions File

This file contains information relating to the field type (e.g. whether the field is text or numeric), field length and number of decimal places for each component reported in the food, nutrient, recipe and retention factor files.

Supporting documentation

A number of supporting documents are available on the FSANZ website to assist users when using *NUTTAB 2006 Electronic Release*. These include a file cross referencing foods reported in *NUTTAB 95* with foods reported in *NUTTAB 2006*, specific gravities and references.

REFERENCES

Athar, N., McLaughlin, J. and Taylor, G. (2003) The Concise New Zealand Food Composition Tables. 6th edition. Palmerston North: New Zealand Institute for Crop and Food Research.

Australia New Zealand Food Authority. (2001) The 19th Australian Total Diet Survey, Canberra, Australian New Zealand Food Authority.

Brand Miller, J., James, K.W. and Maggiore, P. (1993) Tables of Composition of Australian Aboriginal Foods. Canberra: Aboriginal Studies Press.

Food Standards Agency. (2002) McCance and Widdowson's The Composition of Foods, 6th Summary Edition. Cambridge: Royal Society of Chemistry.

Food Standards Australia New Zealand. (2003) The 20th Australian Total Diet Survey, Canberra, Food Standards Australian New Zealand.

Food Standards Australia New Zealand. (Unpublished) The 22nd Australian Total Diet Survey, Canberra, Food Standards Australian New Zealand.

Miller, A., Saxholt, E., Christensen, A.T., Hartkopp, H.B. and Hess Ygil, K. (2005) Danish Food Composition Databank, revision 6.0. Food Informatics, Dept Nutrition, Danish Institute for Food and Veterinary Research. www.foodcomp.dk

United States Department of Agriculture National Nutrient Databank for Standard Reference. (2006) Release 19. www.nal.usda.gov/fnic/foodcomp/search

Add USDA (2005) Food Composition Tables to references
Greenfield, H. and Southgate, D.A.T. (2003) Food composition data. 2nd edition. Rome: Food and Agriculture Organisation of the United Nations.

APPENDIX 1 - Summary of limits of reporting and detection for *NUTTAB 2006* data in four analytical surveys

Nutrient	Units (per 100g)	1989		1993		1996		2002		2006
		LOR	LOD	LOR	LOD	LOR	LOD	LOR	LOD	LOD
Moisture	g	0.5	0.1	-	-	0.5	0.1	0.2	0.1	0.2
Protein	g	-	-	-	-	-	-	0.2	-	0.5
Nitrogen	g	0.1	-	-	-	0.1	-	-		
Fat	g	0.3	0.1	-	-	0.3	0.1	0.1	0.05	0.2
Sugars	g	-	-	-	-	0.1	0.1	0.1	0.02	0.2
Starch	g	-	-	-	-	0.5	0.5	0.2	-	0.5
Dietary fibre	g	-	-	-	-	0.5	0.5	0.5	0.2	0.5
Ash	g	-	-	-	-	0.1	0.1	0.1	0.05	0.2
Cholesterol	mg	1	0.2	-	-	1	0.2	1	0.5	1
Na	mg	1	0.1	1	0.1	1	0.1	1	0.1	5
K	mg	1	0.1	1	0.1	1	0.1	1	0.1	10
Ca	mg	1	0.1	1	0.1	1	0.1	0.2	0.1	10
Fe	mg	0.1	0.01	0.1	0.01	0.1	0.01	0.2	0.02	1
Mg	mg	1	0.1	1	0.1	1	0.1	0.2	0.01	5
Zn	mg	0.1	0.01	0.1	0.01	0.1	0.01	0.01	0.01	0.01
Cu	mg	0.05	0.01	0.05	0.01	0.02	0.01	0.01	0.01	0.01
Mn	mg	0.05	0.01	0.05	0.01	0.02	0.01	0.01	0.01	0.01
P	mg	1	0.1	1	0.1	1	0.1	1	0.1	1
Se	µg	-	-	1	1	1	1	2	2	1
S	mg	-	-	2	1	2	1	-	-	-
Cl	mg	-	-	1	0.5	1	0.5	0.1	0.01	-
F	mg	-	-	0.05	0.05	0.05	0.05	0.02	0.02	-
Thiamin	mg	0.05	0.02	0.05	0.02	0.05	0.02	0.025	-	0.05
Riboflavin	mg	0.05	0.02	0.05	0.02	0.05	0.02	0.05	-	0.05
Niacin*	mg	0.2	0.1	0.2	0.1	0.2	0.1	0.5	0.5	0.5
Vitamin C	mg	1	0.5	1	0.5	1	0.5	1	0.05	1
Retinol	µg	5	1	5	1	5	1	5	-	5

Nutrient	Units (per 100g)	1989		1993		1996		2002		2006
		LOR	LOD	LOR	LOD	LOR	LOD	LOR	LOD	LOD
Tocopherols	mg	-	-	0.1	0.05	0.1	0.05	0.1	0.05	0.1
Carotenes	µg	5	1	5	1	5	1	5	2	5
Cobalamin	ng	-	-	50	50	50	50.	5	-	0.2
Pyridoxine	µg	-	-	8	8	20	20	-		20
Pantothenate	µg	-	-	25	25	100	100	100	-	100
Biotin	µg	-	-	0.08	0.08	0.1	0.1			-
Folates	µg	-	-	-	-	-	-	10	-	1
Caffeine	mg	-	-	-	-	-	-	0.02	0.02	-
Fatty acids	%	0.1	0.1	-	-	-	-	0.1	-	0.1
Vitamin D3	µg	-	-	-	-	-	-	5	0.5	-
25-hydroxy D3	µg	-	-	-	-	-	-	0.5	0.5	-
Organic acids	mg	-	-	-	-	20	10	20	20	20

LOD = Limit of detection mg, LOR = Limit of reporting

Note that these values are indicative only and may not represent all limits achieved in all analytical programs.

*Some values reported above are affected by the matrix under study; for example the 2002 LOR for niacin was determined in dry soup powders, a difficult matrix for analysis.

APPENDIX 2 – Nitrogen conversion factors* used in *NUTTAB 2006*

Food	Factor
Meat and Fish	6.25
Gelatin	5.55
Milk and milk products	6.38
Casein	6.40
Human milk	6.37
Eggs – whole	6.25
Eggs – white	6.32
Eggs – yolk	6.12
Wheat – whole	5.83
Wheat – bran	6.31
Wheat – germ (embryo)	5.80
Wheat – white flour (endosperm)	5.70
Rice and rice flour	5.95
Rye and rye flour	5.83
Barley and barley flour	5.83
Oats	5.83
Millet	6.31
Beans	6.25
Soya	5.71
Almonds	5.18
Brazil nuts	5.46
Ground nuts	5.46
Other nuts	5.30
Cocoa and chocolate	4.74
Coffee	5.3
Mushrooms	4.38
Yeast	5.7
All other foods	6.25

Protein content (g/100 g food) is determined by multiplying the measured nitrogen content in a food (g N/100 g food) by the factor

Source: Greenfield & Southgate (2003), USDA (2005)

APPENDIX 3 - Factors for converting fatty acid levels (percentage of total fatty acids) to fatty acids per 100 g of food

Food	Factor
Milk and milk products	0.945
Eggs – whole	0.83
Beef and lamb – lean	0.916
Beef and lamb – fat	0.953
Pork – lean	0.91
Pork – fat	0.953
Poultry	0.945
Offal	0.74
Fish – fatty	0.90
Fish – white	0.70
Wheat – wholegrain	0.72
Wheat – bran	0.82
Wheat – flour	0.67
Rice and rice products	0.85
Oats	0.94
Vegetables and fruit	0.80
Avocado	0.956
Nuts	0.956
Fats and oils (except coconut oil)	0.956
Coconut oil	0.942
All other foods	0.92

Fatty acid content (g/100 g food) is determined by multiplying the measured fatty acid content (g/100 g total fatty acids) by the appropriate factor and then by the fat content of the food (g/100 g)

Source: Greenfield & Southgate (2003), other than factor for *All other foods* (FSANZ factor)

APPENDIX 4 - General food classification system used in *NUTTAB 2006*

Food group	Code	Food sub-group
Beverages	01A1	Beers
	01A2	Wines
	01A3	Other alcoholic beverages
	01B1	Teas, coffees, dry beverage flavourings
	01B2	Fruit drinks, cordials, flavoured drink bases, soft drinks
	01B3	Fruit & vegetable juices & juice drinks
Cereals & cereal products	02A1	Grains & starches
	02A2	Flours
	02B1	Breads rolls
	02B2	Muffins crumpets etc
	02B3	Other cereal-based bread equivalents
	02C1	Savoury biscuits
	02C2	Sweet biscuits
	02D1	Ready-to-eat breakfast cereals
	02D2	Cooked breakfast cereals
	02E1	Cakes, cake mixes, muffins, puddings
	02E2	Buns, scones, etc
	02E3	Batters
	02E4	Pastries
	02E5	Sweet pastry products
Fast Foods and Takeaway Foods	02E6	Savoury pastry products
	02F1	Pizza
	02F2	Sandwiches
	02F4	Other products where cereal is major ingredient
Eggs & egg products	03A1	Eggs
	03A2	Egg substitutes
	03B1	Egg dishes where egg is major component
Fats & oils	04A1	Butters
	04A2	Creams
	04B1	Polyunsaturated margarines
	04B2	Other margarines
	04C1	Vegetable oils
	04D1	Other fats
Fish & fish products	05A1	Fin fish
	05B1	Other sea & freshwater foods
	05C1	Crustacea & molluscs
	05D1	Fish products & dishes
	05D2	Crustacea & mollusc products & dishes
Fruit	06A1	Berry fruit
	06A2	Packing liquid processed berry fruit
	06B1	Citrus fruit
	06B2	Packing liquid processed citrus fruit
	06C1	Stone fruit
	06C2	Packing liquid processed stone fruit

Food group	Code	Food sub-group
	06D1	Other fruit
	06D2	Packing liquid processed other fruit
	06E1	Composite fruit product where fruit is major component
	06E2	Packing liquid processed composite fruits
Infant formulae & foods	07B1	Infant cereals
	07B2	Infant rusks and fingers
	07C1	Infant dinners strained junior & toddler
	07D1	Infant fruit and desserts
	07E1	Infant fruit juices
Meat, meat products, poultry & game	08A1	Beef
	08A2	Lamb
	08A3	Pork
	08A4	Veal
	08B1	Game & other carcass meats
	08C1	Poultry
	08C2	Feathered game
	08D1	Offal & offal products
	08E1	Battered & crumbed products
	08E2	Sausages, frankfurts, saveloys
	08E3	Other processed meats
	08E4	Meat pastes
	08F1	Composite meat & poultry products where meat is a major component
	08G1	Vegetarian meat substitutes
Milk & milk products	09A1	Milk, fluid
	09A2	Milk, condensed
	09A3	Milk, powdered
	09A4	Milk based drinks
	09B1	Traditional cheese
	09B2	Low fat & fat modified cheeses
	09B3	Cheese products
	09C1	Yoghurt full fat
	09C2	Yoghurt low fat
	09D1	Frozen milk products where milk is major component
	09D2	Other dishes where milk is major component
	09E1	Imitation dairy products
Sauces, pickles, soups, snacks	10A1	Savoury sauces
	10A2	Sweet sauces
	10B1	Pickles
	10C1	Soups
	10D1	Snack foods
Miscellaneous foods	10E1	Herbs & spices
	10F1	Vinegars
	10F2	Salad dressings
	10F3	Yeast
	10F4	Yeast vegetable extracts

Food group	Code	Food sub-group
	10F5	Essences
	10F6	Others
Seeds & nuts	11A1	Seeds and seed products
	11B1	Nuts & nut products
Sugar preserves & confectionery	12A1	Sugars
	12B1	Preserves
	12C1	Confectionery
	12D1	Composite foods where sugar is major component
Vegetable & vegetable dishes	13A1	Vegetables
	13A2	Mature legumes
	13B1	Composite food where vegetable is major component
	13B2	Composite food where mature legume is major component
Artificial sweeteners	14A1	
Additives and cooking ingredients	14B1	
Indigenous Australian	15A1	Plant foods
	15A2	Mammal foods
	15A3	Bird foods
	15A4	Insect foods
	15A5	Fish foods