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Update of a database for estimation of whole grain content of foods in Australia

Leanne M. Galea

University of Wollongong, lg906@uowmail.edu.au

Sayne Dalton

University of Wollongong, sdalton@uow.edu.au

Eleanor Beck

University of Wollongong, eleanor@uow.edu.au

Chris Cashman

Grains and Legumes Nutrition Council

Yasmine Probst

University of Wollongong, yasmine@uow.edu.au

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Abstract

Food composition data is essential for calculating consumption based on reported dietary intake. Inclusion of the whole grain content of foods in food composition databases is limited. In Australia, quantification of whole grain composition does not include all foods within the current survey database, AUSNUT (Australian Food, Supplement and Nutrient) 2011-13. This study aimed to update an existing Australian whole grain database to include all foods and food products within AUSNUT 2011-13 (n = 5741). Whole grain content (g) per 100 g was calculated using a systematic recipe-based approach, and input from industry stakeholders, product packaging, and ingredient lists. Overall 590 foods were identified as containing whole grain. Cereals and cereal products formed the majority (43%) of the database. Foods with whole grain content 100.0 g/100 g were raw or puffed whole grains, whole grain flours, and ready to eat cereals made from 100% whole grains. Considerable variation in whole grain content exists between and within food groups. The updated database may be a useful tool for assessing whole grain content of Australian food intake data. Application will allow estimation of whole grain intake in highly varied Australian population groups.

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Original Research Article

Update of a database for estimation of whole grain content of foods in Australia

Author names and affiliations: Leanne M. Galea,^{ab*} Sayne M.C. Dalton,^a Eleanor J. Beck,^{ab} Chris J. Cashman,^c Yasmine C. Probst^{ab}

^a *School of Medicine, University of Wollongong, Wollongong, NSW 2522, Australia*

^b *Illawarra Health and Medical Research Institute, Wollongong, NSW 2522, Australia*

^c *Grains and Legumes Nutrition Council, North Sydney, NSW 2060, Australia*

***Corresponding author at:** School of Medicine, University of Wollongong, Wollongong, NSW 2522, Australia. Phone +61 4 2529 1343

Email addresses: lg906@uowmail.edu.au (L.M. Galea), sct20@uowmail.edu.au (S.M.C. Dalton), eleanor@uow.edu.au (E.J. Beck), c.cashman@glnc.org.au (C. J. Cashman), yasmine@uow.edu.au (Y.C. Probst).

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Highlights:

- An Australian whole grain database updated to include 590 foods containing whole grain
- Methods were based on a recipe approach and input from the food industry
- Considerable variation in whole grain content exists within and between food groups
- The database enables comparison of whole grain dietary intake to recommendations

Abstract

Food composition data is essential for calculating consumption based on reported dietary intake. Inclusion of the whole grain content of foods in food composition databases is limited. In Australia, quantification of whole grain composition does not include all foods within the current survey database, AUSNUT (Australian Food, Supplement and Nutrient) 2011-13. This study aimed to update an existing Australian whole grain database to include all foods and food products within AUSNUT 2011-13 (n=5741). Whole grain content (g) per 100g was calculated using a systematic recipe-based approach, and input from industry stakeholders, product packaging, and ingredient lists. Overall 590 foods were identified as containing whole grain. Cereals and cereal products formed the majority (43%) of the database. Foods with whole grain content 100.0g/100g were raw or puffed whole grains, whole grain flours, and ready to eat cereals made from 100% whole grains. Considerable variation in whole grain content exists between and within food groups. The updated database may be a useful tool for assessing whole grain content of Australian food intake data. Application will allow estimation of whole grain intake in highly varied Australian population groups.

Keywords: Australia; AUSNUT 2011-2013; whole grain; food composition; food analysis; survey database; food products; food industry.

1 Introduction

Recommendations within the Australian Dietary Guidelines (ADG) encourage consumption of mostly whole grain and/or high cereal fibre varieties of core grain (cereal) foods (National Health and Medical Research Council, 2013). This recommendation has been quantified, with the Grains and Legumes Nutrition Council (GLNC), a not for profit organisation promoting grain and legume nutrition in Australia, supporting a 48g whole grain Daily Target Intake (DTI) (Griffiths and Nestel, 2006). Whole grains are defined by Food Standards Australia New Zealand (FSANZ) as “the intact grain or the dehulled, ground, milled, cracked or flaked grain where the constituents- endosperm, germ and bran- are present in such proportions that represent the typical ratio of those fractions occurring in the whole cereal, and includes wholemeal” (FSANZ, 2011a). Despite these recommendations, no current, nationally representative data exist to quantify whole grain intake in the Australian population. Nationally representative data exist for the US and UK, indicating current whole grain intake amongst adults appears to be less than one 16g serving per day, below the recommended three servings per day (Cleveland et al., 2000; Lang et al., 2003; Mann et al., 2015b; O'Neil et al., 2010).

There is no analytical method for measuring whole grain in foods, and there are currently no recognised, validated biomarkers of whole grain intake. The use of plasma alkylresorcinols (or their metabolites) is promising, as they are found only in the outer layers of wheat and rye, remain stable during food processing, and are well absorbed by humans (Ross et al., 2015). However, inter-individual variation is high, and alkylresorcinols are not accurate biomarkers from intake of all commonly consumed whole grains such as rice and oats. Therefore, in order to allow quantification of whole grain intake, an up to date whole grain database, matched to the food supply is essential to be used together with current dietary intake data.

The 2011-13 Australian Health Survey (AHS) provides the most recent national survey data within Australia, collecting information on dietary intake, physical activity, and biochemical markers (FSANZ, 2013a). Each food reported within the survey was categorised within the related Australian survey database, AUSNUT 2011-13 Food, Supplement and Nutrient Database (FSANZ, 2013a), to allow calculation of nutrients from 24-hour recall data obtained in the survey. Each food within the AUSNUT database has a name and an eight-digit identification code. These codes are grouped into broader food groups using a hierarchical nested coding system. For example, within the major (two digit) food group *Cereals and cereal products*, sub-major (three digit) food group classifications include “*Breakfast cereals, ready to eat*” and “*Breakfast cereals, hot porridge style.*” Minor (five digit) food groups categorise foods based on fortification, whether they have saturated fat or sugar content above or below a certain value, and production or processing considerations. For example, “*Breakfast cereal, wheat based, fortified, sugars >20g/100g*” and “*Porridge style, other cereals.*”

A recent whole grain database developed by Dalton, Probst and colleagues (2014) represents a significant advance in the ability to quantify whole grain intake within Australia. The database provides compositional data related to manufactured and packaged food products available on the Australian market in 2011. Whole grains are most often consumed as an ingredient within products or mixed dishes, such as breads and breakfast cereals. They may make up a proportion of the food, but in many cases, not one hundred percent of the weight of the total food. Hence it is of great importance to adjust for the proportion of whole grains contained in whole grain products, as the assumption that the weight of whole grains consumed is the same as the weight of the food product itself could result in dramatic overestimations of whole grain consumption. With additional work relating to mixed dishes, and coding for foods to match the AUSNUT 2011-13 database (FSANZ, 2013a), the existing whole grain database by Dalton, Probst and colleagues (2014) can be updated.

The aim of the present study was to update the existing whole grain database, to include all foods and food products included within the most recent Australian survey database, AUSNUT 2011-13. Challenges encountered during the multi-step process are described. This database can be used in future studies to quantify whole grain intake of the Australian population using data from the most recent population survey, the 2011-13 AHS, along with application in other dietary studies.

2 Material and methods

This update of a whole grain database has adapted methods described elsewhere (Dalton et al., 2014), applied to the most recent Australian food composition survey database, AUSNUT 2011-13. The update involved input from GLNC, food manufacturers, product packaging and whole grain content claims, ingredient lists, and a recipe-based approach informed by previous research (Dalton et al., 2014; Franz and Sampson, 2006; Kyrø et al., 2012). In summary, the process included the identification of foods in the AUSNUT database containing whole grains, calculating the whole grain content from cooked and mixed dishes by considering final weight and weight change, calculating the whole grain content of cooked grains using a weight change factor and applying professional judgement to assign values from similar foods in the absence of the above data.

2.1 Data extraction and management

Product data were collated and managed in a Microsoft Excel spreadsheet (Version 14.0.0, 2011, Microsoft Corporation, North Ryde, NSW, Australia). Foods within AUSNUT 2011-13 were categorised according to the AUSNUT 2011-13 food coding system at the major, sub-major, and minor food group levels (FSANZ, 2015).

2.2 Development of a framework to update foods and food products containing whole grain ingredients

For the purpose of this research, cereal grains and ingredients were classified in accordance with the FSANZ (Australian regulatory organisation) definition of whole

grains (FSANZ, 2011a). This included buckwheat, buckwheat flour, BarleyMax™, millet, rolled oats, rice (brown, wild, black, red), rye, rye flour, sorghum, triticale, wheat and wholemeal wheat flour (including burghul, faro, einkorn, freekeh, kamut spelt, teff), and sprouted whole grains. For this research, pseudo grains (amaranth, buckwheat, and quinoa) were also considered as whole grains due to their similar macronutrient profile.

In order to add whole grain values to the existing whole grain database, all foods containing whole grains were identified within the AUSNUT 2011-13 Database (FSANZ, 2013a) and Food Recipe File (FSANZ, 2013b). No limits were set on the minimum whole grain content to be contained in a product, allowing reporting of total grams of whole grain content as suggested by Ross et al. (2015).

2.3 Whole grain content calculations

An overview of the systematic method for calculating whole grain content is provided in Figure 1. Adapted from Dalton et al. (2014), the whole grain content of cooked grains and mixed dishes composed of more than one ingredient, such as brown rice salad or porridge, involved disaggregating mixed foods to their individual ingredient levels using the AUSNUT Food Recipe File (FSANZ, 2013b). In this recipe-based approach, grams of ingoing whole grain (ingredients) were divided by the final weight of the product, after applying a total weight change percentage factor (FSANZ, 2011b) to account for moisture losses during processing as shown in Equation 1:

$$\text{Whole grain content (g/100g)} = \frac{\text{ingoing whole grain weight (g)}}{\text{final weight of product (g)}} \times 100$$

Where

$$\text{final weight of product (g)} = \text{sum of ingoing ingredients (g)} \times \left(\frac{100 + \text{weight change factor}}{100} \right)$$

Equation 1: Calculation of whole grain content using a recipe-based approach

This approach was also adopted for cooked grains containing a recipe within the FSANZ Food Recipe File for AUSNUT 2011-13, and for toasted products, as shown in Table 1.

Whole grain content of foods that did not contain recipes within the FSANZ Food Recipe File involved data transferred by an author from an existing whole grain product database, calculated using methods described for the previous version of the database (Dalton et al., 2014). Cooked grains that did not have an associated recipe in the 2011-13 AUSNUT database, for example *Rice, brown, boiled, no added salt*, were considered an exception; this calculation involved using a weight change factor from the FSANZ Nutrition Panel Calculator Explanatory Notes (FSANZ, 2011b) which demonstrates the uptake of water by the rice during cooking. For example:

$$\begin{aligned}
 \text{FSANZ weight change factor for brown rice, boiled} &= 170 \\
 \therefore \text{Final weight of 100g dry brown rice, boiled} &= 100\text{g} \times \left(\frac{100\text{g} + 170}{100} \right) \\
 &= 270\text{g boiled brown rice} \\
 \therefore \text{Percentage of whole grain in 270g boiled brown rice} &= \frac{100\text{g}}{270\text{g}} \times 100 \\
 &= 37.4\%
 \end{aligned}$$

If a weight change factor was not present for a cooked grain in the FSANZ Explanatory Notes (FSANZ, 2011b), whole grain content was calculated using nutrient profile information of ingredients, based on the assumption that raw whole grains are composed of 100% whole grain. For example:

	Energy (kJ)/100g
Bulgur, dry	1349
Bulgur, soaked in water, no added fat or salt	665
Bulgur, boiled, no added fat or salt	341

Ingoing weight of bulgur, dry in 100g bulgur, soaked in water:

$$= \frac{665\text{kJ}}{1349\text{kJ}} \times 100\text{g}$$

$$= 49.3\text{g whole grain in 100g}$$

Ingoing weight of bulgur, dry in 100g bulgur, boiled:

$$= \frac{341\text{kJ}}{1349\text{kJ}} \times 100\text{g}$$

$$= 25.3\text{g whole grain in 100g}$$

If a food did not contain a recipe in the Food Recipe File nor data in the existing whole grain product database, whole grain content was imputed from data obtained from an annual product audit of grain and legume product manufacturers (GLNC, 2014). Within this audit, whole grain content was determined based on values corresponding to manufacturer whole grain content claims. If the claim did not allow an estimation of whole grain content, ingredient lists were used to determine an estimate based on the percentage contribution of characterising ingredients containing whole grain. This approach was adopted for multiple products; for example, *Bread, from rye flour, organic, commercial*.

If product data remained absent, ingredient information was imputed from product packaging, company websites, or through company advice. If whole grain data remained unavailable, matched data for equivalent products were used, assuming similar whole grain composition. For example, data for *Biscuit, sweet, Anzac style, commercial* was transferred from a recipe calculation of *Biscuit, sweet, Anzac style, homemade from basic ingredients, fat not further defined*.

The whole grain content of food without equivalent products or where a standard recipe was not considered applicable, for example *Muesli, commercial, gluten free*, was estimated using an ingredient list approach. This involved estimating weight of whole grain ingredients by deducting the ingoing weight of characterising ingredients, as listed on the product ingredient list, and estimating the ingoing weight of remaining ingredients based on order of descending weight. This process was repeated for multiple recipes to obtain an average within each food code.

For example, a gluten free muesli product listing ingredients in order of descending ingoing weight as (whole grain ingredients are italicised): *puffed brown rice*, rice bran, prune juice concentrate, pepitas, honey, sulphur free apricots, sultanas, *roasted buckwheat*, apples, sunflower seeds, linseeds, *amaranth*, sliced cranberries (8%), currants.

In 100g of the product:

Weight of sliced cranberries	= 8g
Weight of first 11 ingredients	≥ 8g per ingredient
Whole grain ingredients	n=3
∴ Whole grain weight	≥ 3 × 8g
	≥ 24g

3 Results

3.1 Calculation of whole grain content of foods in the AUSNUT 2011-13 database

Of the 5741 foods reported across the AHS period, 590 foods (10.3% of all foods in AUSNUT2011-13) were identified using the AUSNUT 2011-13 Food, Supplement and Nutrient Database (FSANZ, 2013a) and Food Recipe File (FSANZ, 2013b) as containing any amount of whole grain or whole grain ingredients. A complete list of estimated whole grain content of all foods containing whole grains in AUSNUT 2011-13 has been compiled (see supplementary material). The whole grain content of a sample of commonly consumed foods is shown in Table 2.

At the **major** food group level, cereals and cereal products comprised 43% of the updated database (n=256), followed by cereal based products and dishes (34%, n=203) (Table 3). Whole grain containing products were also identified in snack foods, cereal/nut/fruit/seed bars, soup, dairy substitutes, and meat, poultry, game, fish, fruit, vegetable, legume, and milk products and dishes, however products from the latter categories only comprised 22% (n=131) of all products within the updated whole grain database.

At the **sub-major** level, mixed dishes where cereals are the major ingredient comprised 29% of the total sample (n=173/590), followed by regular breads and bread rolls (16%, n=94/590) and ready to eat cereal (RTEC) (16%, n=94/590)(Table 3). Sub-major food groups containing the highest mean whole grain content included flours and other cereal grains and starches (65.5g $\pm$ 32.9g), extruded or reformed snacks (63.0g $\pm$ 2.7g), and pastries (59.1g $\pm$ 5.3g).

Foods with whole grain content 100.0g/100g were raw or puffed whole grains, whole grain flours, and RTEC made from 100% whole grains. Considerable variation in whole grain content exists between and within food groups. For example, whole grain content of whole grain-containing RTEC ranged from 1.9g/100g (*Breakfast cereal, corn based, not further defined*) to 100.0g/100g (*Breakfast cereal, puffed or popped rice, no added sugar or salt, unfortified*).

4 Discussion

This study builds upon an existing database to expand quantitative estimates of whole grain foods reported within the 2011-13 AHS, and considers the challenges faced in this process. This is necessary to allow accurate assessment of whole grain intake in population and other Australian food-related studies.

Whole grains contain a range of nutrients and bioactive substances, and no standardised method to assess whole grain content is available, unlike standardised methods to measure nutrients. The measurement of whole grain content based on the presence or absence of key nutrients would be difficult as nutritional composition differs between and within whole grain varieties, affected by factors including seed type, variety, climate and production conditions. It is unlikely that a feasible method will be developed within the near future. Hence a whole grain database developed using a systematic recipe-based approach, represents a favourable method of estimating the whole grain content of foods.

The method adopted in the current study allows estimation of whole grain content of a range of foods within the AUSNUT 2011-13 database, building upon the most

recent Australian work in this area (Dalton et al., 2014). The method may also be adapted to other countries globally by applying geographically specific data to food composition survey databases. The United States Department of Agriculture has also sought to quantify whole grain intake in the development of the Food Pattern Equivalents Database (United States Department of Agriculture, 2014). The aims of both databases are similar in that they intend to allow for translation of food information to recommendations provided by the Dietary Guidelines. They also allow for dietary pattern analyses to be conducted both in relation to these Dietary Guidelines, and also the ingredient component(s) of focus. Prior to this, quantification of whole grain data was limited in Australia and globally, with known databases found only in the US and Europe. These databases applied similar methods and faced similar challenges to those described in this study.

This study exposed the challenges in updating a whole grain database. The whole grain definition adopted within the current study (FSANZ, 2011a) is harmonised with current international consensus statements and definitions of whole grains (American Association of Cereal Chemists International, 1999; Björck et al., 2012; van der Kamp et al., 2014). In this definition, germ and bran are not included in whole grain calculations. Until more recently (Mann et al., 2015a), international epidemiological studies have included added bran and germ in calculations, affecting the comparison of results with data from other nations which is likely to overestimate whole grain intake (Maras et al., 2009).

An additional challenge arose in obtaining quantified whole grain content of the range of whole grain products, given the significant variability in whole grain content within and between product categories. Difficulty in identifying whole grain ingredients and determining whole grain content arose where product data were not available, and where manufacturers were unable to share data related to the proportion of whole grain ingredients within their products. Furthermore, while some cereals could contain a proportion of whole grain, removal of some whole grain components may occur due to processing. Input from food manufacturers and

organisations were important in clarifying ingredient specifications, in line with proprietary product information. The AUSNUT 2011-13 Food Recipe File (FSANZ, 2013b) also does not specify between whole grain corn and corn meal, which is often refined. Thus, it was challenging to define which corn-based products contain whole grain corn. It was assumed that cornmeal within the Australian food supply was not whole grain, hence excluded from whole grain content calculations, unless data from the existing whole grain product database (Dalton et al., 2014) indicated otherwise.

Greenfield and Southgate (2003) acknowledge the development of a truly complete food composition database is not possible. However, databases should reflect the main consumed foods of the population in order to avoid limitations of data use and imprecision of nutrient intake estimations (Rittenschober et al., 2016). By updating a whole grain database based on AUSNUT 2011-13, it is believed the current study captures all foods containing whole grains as reported within a nationally representative and recent Australian survey. Therefore within the limitations described, this approach provides the best estimate for the whole grain content of foods at this point in time.

Cooperation amongst multiple stakeholders was instrumental in the collation of product information, although limitations in access to food manufacturer proprietary information for product formulations led to assumptions and imputed values from similar products. Integrated efforts from an independent organisation (GLNC) and contributing food manufacturers were necessary in collating whole grain content information given sparse labelling on many foods. Clear quantification is required to help communicate messages to consumers, which is an area for further work now that quantification has been achieved.

Values used to update the whole grain database are a source of non-sampling error, as values were calculated using a recipe approach, borrowed from food industry, product labels, or imputed from products assumed to have a similar whole grain composition. Chemical analyses were not conducted to validate the accuracy of the

data (Dalton et al., 2014). Values were applied by one researcher and checked by another researcher to ensure consistency and minimise error in calculation and data entry.

Some assumptions made during calculation may have led to small under- or overestimations of whole grain intake. However, use of strict inclusion and exclusion criteria of whole grain ingredients and rigorous calculation within a systematic approach was adopted to obtain the best possible estimates. Variations in the composition of manufactured foods due to product reformulation cannot be accounted for in the database. Rather, the database provides an estimation of whole grain content of reported foods calculated at the time of the study. Therefore future users of the database must ensure values are relevant to the food supply. Finally, classification of whole grains was based on the FSANZ definition, which excludes added bran and germ (FSANZ, 2011a). Future work could include a separate analysis to include high fibre grain foods, which would capture foods containing added bran and germ and therefore provide valid comparison of Australian data directly with that overseas.

5 Conclusion

This updated whole grain database provides a useful resource for estimating whole grain intake within the Australian context, particularly relevant for analysis of the 2011-13 AHS. Future research may address validation of the database and incorporation of serve sizes to enable ease of translation into practice.

Disclaimers:

EB is a member of the Code of Practice for Whole Grain Ingredient Content Claims Steering Committee for the not for profit Grains and Legumes Nutrition Council (GLNC). CC is an employee of GLNC. YP is a member of the Campbell Arnott's Nutrition Advisory Group, the Food Standards Australia New Zealand Food

Composition Advisory Group and the International Nutrient Databank Directory Committee.

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Figure 1: Schematic process for calculation of whole grain content of foods within the AUSNUT 2011-13 Food, Supplement and Nutrient Database

¹ Whole grains include BarleyMaxTM, millet, oats, rice (brown, black, wild, red), rye, rye flour, sorghum, sorghum flour, triticale, whole grain wheat and wheat flour

(including burghul, faro, einkorn, freekeh, kamut spelt, teff), sprouted whole grains, amaranth, buckwheat, buckwheat flour, quinoa.

² Recipe-based approach: Whole grain content (g/100g) = $\frac{\text{ingoing whole grain weight (g)}}{\text{final weight of product (g)}} \times 100$, where final weight of product = sum of ingoing ingredients + weight change factor. This approach was also applied to cooked grains and toasted products, where ingoing whole grain weight is calculated based on the raw grain, and untoasted product respectively.

³ Whole grain product database developed by Dalton, Probst and colleagues (2014) used with permission.

⁴ GLNC 2014 Grains and Legumes Product Audit (GLNC, 2014) contains whole grain content based on label data from foods.

⁵ Values from foods with similar nutritional compositions, and within the same food group at the sub-major food group level were assigned. Whole grain content was based on composition of the assigned food.

⁶ A weight change factor was transferred from the FSANZ Nutrition Panel Calculator Explanatory Notes (FSANZ, 2011b) for cooked grains that did not contain a weight change factor within the AUSNUT 2011-13 Food Recipe File (FSANZ, 2013b). Whole grain calculation was based on the recipe approach from step 3.

⁷ Food composition approach: adopted for cooked whole grains where a weight change factor was not available. The proportion of ingoing (ingredient) raw whole grain per 100g of the cooked whole grain = $\frac{\text{energy content of cooked whole grain per 100g}}{\text{energy content of raw whole grain per 100g}}$

⁸ Standard recipes were sourced from recipe books (Australian Women's Weekly) to determine ingoing weight of ingredients, develop a recipe, and calculate whole grain content using the recipe approach from step 3.

⁹ Ingredient list approach: developed a recipe by deduction, based on the product ingredient list in descending order of weight. Whole grain content was calculated for multiple products within each food category, and an average obtained

Table 1: Sample calculation of whole grain content (g) per 100g, using a recipe-based approach applied to cooked grains and toasted products.

Food name	Weight change factor (%) ¹	Ingoing ingredients	Ingoing ingredient weight (g)	Total ingoing weight (g)	Final weight (g) ²	Whole grain (g) per 100g	
Recipe							
Bread, damper, from wholemeal commercial flour,	-9	Sugar, white, granulated or lump	8	1039.0	945.5	55.5	
		Water, tap	310				
		Flour, wheat, wholemeal, self-raising	525				
		Shortening, commercial, vegetable fat	40				
		Milk, cow, fluid, regular fat (~3.5%)	129				
		Salt, table, iodised	10				
		Folic acid	17				
		Thiamin	0.015				
Cooked grain							
Quinoa, cooked in milk, no added salt	-5	Quinoa, uncooked	180	930.0	883.5	20.4	
		Milk, cow, fluid, unflavoured, not further defined	750				
Toasted product							
Bread, damper, from wholemeal commercial, toasted	- 15	Bread, damper, from wholemeal flour, commercial	100	100.0	85.0		65.3 ³

¹ Adapted from Food Standards Australia New Zealand (FSANZ, 2011b)

² Final weight of product (g) = sum of ingoing ingredients (g) $\times$ $\left(\frac{100 + \text{weight change factor}}{100} \right)$

³ Whole grain content of *toasted product* (g/100g) = $\frac{\text{ingoing whole grain weight of untoasted product (g)}}{\text{final weight of toasted product (g)}} \times 100$

Table 2: Whole grain content of a sample of foods from the AUSNUT 2011-13 Food, Supplement and Nutrient Database

Food name	Whole grain content (g/100g)
Bar, muesli or snack, plain or with 10% dried fruit	46.3
Biscuit, savoury, from wholemeal wheat flour, crispbread	81.7
Biscuit, sweet, Anzac style, commercial	14.3
Bread, from wholemeal flour, commercial	60.2
Breakfast cereal, whole wheat, biscuit, no added sugar or salt, unfortified	100.0
Milk, rice, fluid, added calcium	13.0
Muffin, English style, from wholemeal flour, commercial, toasted	65.4
Pasta, wholemeal wheat flour, plain, boiled from dry, no added salt	37.2
Popcorn, air-popped, no added fat or salt	100.0
Porridge, rolled oats, prepared with cows milk	17.7
Rice, brown, fried with bacon or ham, egg & mixed vegetables	21.4
Sandwich or roll, filled with egg	9.4

Table 3: Contribution of major food group categories to whole grain database, and mean (standard deviation, SD) whole grain content of sub-major food groups within whole grain database.

Food group	Foods containing whole grain, n (%)	Mean whole grain content, g (SD)
<i>Cereals and cereal products</i>	256 (43)	
Flours and other cereal grains and starches	27	65.5 (32.9)
Breakfast cereals, ready to eat	94	55.0 (22.9)
Regular breads, and bread rolls (plain/unfilled/untopped varieties)	94	38.7 (20.4)
English-style muffins, flat breads, and savoury and sweet breads	16	33.7 (21.6)
Pasta and pasta products (without sauce)	5	32.3 (32.7)
<i>Cereal based products and dishes</i>	203 (34)	
Pastries	2	59.1 ¹
Savoury biscuits	12	55.6 (31.7)
Batter-based products	2	31.8 ¹
Cakes, muffins, scones, cake-type desserts	6	28.6 (28.2)
Sweet biscuits	7	10.5 (33.6)
Mixed dishes where cereal is the major ingredient	173	5.4 (6.3)
<i>Fish and seafood products and dishes</i>	9 (2)	
Fin fish (excluding commercially sterile)	9	0.3 (0.1)
<i>Fruit products and dishes</i>	4 (1)	
Mixed dishes where fruit is the major component	4	2.8 (0.3)
<i>Meat, poultry and game products and dishes</i>	38 (6)	
Mixed dishes where poultry or feathered game is the major component	18	0.3 (0.1)
Mixed dishes where beef, sheep, pork or mammalian game is the major component	18	0.3 (0.1)
Mixed dishes where sausage, bacon, ham or other processed meat is the major component	2	0.3 ¹
<i>Milk products and dishes</i>	3 (1)	
Yoghurt	3	1.0 (0.1)
<i>Dairy & meat substitutes</i>	4 (1)	
Dairy milk substitutes, unflavoured	4	12.0 (0.8)
<i>Soup</i>	13 (2)	
Soup, commercially sterile, prepared from condensed or sold ready to eat	2	0.2 ¹
Soup, homemade from basic ingredients	11	0.1 (0.1)
<i>Savoury sauces and condiments</i>	1 (0)	
Dips	1	1.00 ¹
<i>Vegetable products and dishes</i>	8 (1)	
Mixed dishes where vegetables are the major component	8	2.7 (4.5)

<i>Legume and pulse products and dishes</i>	<i>6 (1)</i>	
Mature legume and pulse products and dishes	6	1.3 (0.8)
<i>Snack foods</i>	<i>17 (3)</i>	
Extruded or reformed snacks	3	63.0 (2.7)
Corn snacks	11	53.1 (27.0)
Other snacks	3	6.7 (5.4)
<i>Confectionery and cereal/nut/fruit/seed bars</i>	<i>28 (5)</i>	
Muesli or cereal style bars	27	26.6 (15.7)
Fruit, nut and seed-bars	1	6.0 ¹
<i>Total</i>	<i>590 (100)</i>	

AUSNUT 2011-13 major food groups shown in bold and italicised.

¹ Standard deviation is not reported if less than or equal to two products were contained within the respective food group category.

SD: standard deviation

Original research article

Update of a database for estimation of whole grain content of foods in Australia

Author names and affiliations: Leanne M. Galea,^{ab*} Sayne M.C. Dalton,^a Eleanor J. Beck,^{ab} Chris J. Cashman,^c Yasmine C. Probst^{ab}

^a *School of Medicine, University of Wollongong, Wollongong, NSW 2522, Australia*

^b *Illawarra Health and Medical Research Institute, Wollongong, NSW 2522, Australia*

^c *Grains and Legumes Nutrition Council, North Sydney, NSW 2060, Australia*

*Corresponding author

Supplementary Table

1. Table S1: Whole grain content of Australian foods within the AUSNUT 2011-13 Food Nutrient Database, as reported in the 2011-13 Australian Health Survey

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
12	CEREALS AND CEREAL PRODUCTS	
121	Flours and other cereal grains and starches	
12101	Grains (other than rice) and grain fractions	
12101003	BarleyMax, dry, uncooked	100.0
12101004	Buckwheat groats, uncooked	100.0
12101005	Buckwheat groats, cooked in water, no added salt	21.3
12101006	Bulgur (burghul, burgaul), dry, uncooked	100.0
12101007	Bulgur (burghul, burgaul), soaked in water, no added fat or salt	49.3
12101008	Bulgur (burghul, burgaul), cooked in water, no added fat or salt	25.3
12101012	Grains, boiled, for homemade mixed dishes	0.9
12101013	Grains & pasta, for homemade soup recipes	1.9
12101014	Millet, uncooked	100.0
12101015	Millet, boiled in water, no added fat or salt	41.7
12101017	Oats, rolled, uncooked	100.0
12101018	Oats, rolled, uncooked, added fibre & Ca	80.0
12101019	Quinoa, uncooked	100.0
12101020	Quinoa, cooked in milk, no added salt	20.4
12101021	Quinoa, cooked in water, no added salt	27.9
12101022	Quinoa, cooked in water & fat, no added salt	27.5
12101023	Rice, wild, uncooked	100.0
12101024	Rice, wild, boiled, no added salt	37.0
12101025	Rye, uncooked	100.0
12101026	Rye, grains, cooked in water	49.7
12101030	Spelt, uncooked	100.0

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
12102	Rice and rice grain fractions	
12102007	Rice, brown, uncooked	100.0
12102008	Rice, brown, boiled, no added salt	37.0
12102009	Rice, brown, purchased par-cooked or instant, cooked	36.7
12102014	Rice, red, steamed or rice cooker, no added salt	37.0
12103	Cereal flours and starches	
12103010	Flour, rye, wholemeal	100.0
12103011	Flour, spelt	100.0
12103014	Flour, wheat, wholemeal, plain	100.0
12103015	Flour, wheat, wholemeal, self-raising	100.0
12201009	Bread, from spelt flour, commercial	29.8
12201010	Bread, from spelt flour, commercial, toasted	35.4
12203013	Bread, from white or wholemeal flour, organic, commercial	52.8
12203014	Bread, from white or wholemeal flour, organic, commercial, toasted	61.2
12203017	Bread, paratha	27.2
122	Regular breads, and bread rolls (plain/unfilled/untopped varieties)	
12204	Breads, and bread rolls, mixed grain, mandatorily fortified	
12204001	Bread, mixed grain, commercial	30.0
12204002	Bread, mixed grain, commercial, toasted	35.3
12204003	Bread, mixed grain, added seeds, commercial	28.8
12204004	Bread, mixed grain, added seeds, commercial, toasted	35.3
12204005	Bread, mixed grain, extra grainy & seeds, added pumpkin seeds, commercial	6.1
12204006	Bread, mixed grain, extra grainy & seeds, added pumpkin seeds, commercial, toasted	7.2
12204007	Bread, mixed grain, French stick or baguette, commercial	33.3
12204008	Bread, mixed grain, French stick or baguette, commercial, toasted	37.0
12204009	Bread, mixed grain, commercial, fresh, not further defined	29.5

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12204010	Bread, mixed grain, commercial, toasted, not further defined	34.7
12204011	Bread, mixed grain, for sandwiches purchased from a cafe, takeaway shop or canteen	29.5
12204012	Bread, mixed grain, for sandwiches purchased from a cafe, takeaway shop or canteen, toasted	34.7
12204013	Bread, from white flour, extra grainy & seeds, commercial	6.8
12204014	Bread, from white flour, extra grainy & seeds, commercial, toasted	8.0
12204015	Bread, soy & linseed, commercial	27.0
12204016	Bread, soy & linseed, commercial, toasted	31.8
12204017	Bread roll, mixed grain, commercial	47.8
12204018	Bread roll, mixed grain, commercial, toasted	56.2
12206	Breads, and bread rolls, mixed grain, not stated as to fortification	
12206001	Bread, from white or wholemeal flour, organic, added grains, commercial	52.8
12206002	Bread, from white or wholemeal flour, organic, added grains, commercial, toasted	62.1
12206003	Bread, mixed grain, homemade from basic ingredients, added salt	28.5
12206004	Bread, mixed grain, homemade from basic ingredients, added salt, toasted	33.6
12206005	Bread, mixed grain, for homemade sandwiches	29.5
12206006	Bread, mixed grain, for homemade sandwiches, toasted	34.7
12207	Breads, and bread rolls, wholemeal and brown, mandatorily fortified	
12207001	Bread, damper, from wholemeal flour, commercial	55.5
12207002	Bread, damper, from wholemeal flour, commercial, toasted	65.3
12207003	Bread, from wholemeal flour, commercial	60.2
12207004	Bread, from wholemeal flour, commercial, toasted	70.8
12207005	Bread, from wholemeal flour, added seeds, commercial	54.1
12207006	Bread, from wholemeal flour, added seeds, commercial, toasted	64.4
12207007	Bread, from wholemeal flour, mixed grain & seeds, commercial	27.3
12207008	Bread, from wholemeal flour, mixed grain & seeds, commercial, toasted	32.1
12207009	Bread, from wholemeal flour, mixed grain, with quinoa & flaxseeds, commercial	52.6

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12207010	Bread, from wholemeal flour, mixed grain, with quinoa & flaxseeds, commercial, toasted	61.9
12207011	Bread, from wholemeal flour, extra grainy, four seeds, commercial	21.6
12207012	Bread, from wholemeal flour, extra grainy, four seeds, commercial, toasted	25.4
12207013	Bread, from wholemeal flour, extra grainy & seeds, commercial	57.9
12207014	Bread, from wholemeal flour, extra grainy & seeds, commercial, toasted	68.2
12207015	Bread, from wholemeal flour, extra grainy & seeds, added oats, commercial	46.3
12207016	Bread, from wholemeal flour, extra grainy & seeds, added oats, commercial, toasted	54.5
12207017	Bread, from wholemeal flour, sour dough, commercial	62.3
12207018	Bread, from wholemeal flour, sour dough, commercial, toasted	63.9
12207019	Bread, from white & wholemeal flour, commercial	15.0
12207020	Bread, from white & wholemeal flour, commercial, toasted	17.7
12207021	Bread roll, from wholemeal flour, commercial	67.5
12207022	Bread roll, from wholemeal flour, commercial, toasted	79.4
12208	Breads, and bread rolls, wholemeal and brown, additional voluntary fortification	
12208001	Bread, from wholemeal flour, commercial, added fibre	66.0
12208002	Bread, from wholemeal flour, commercial, added fibre, toasted	78.6
12208003	Bread, from wholemeal flour, commercial, added fibre & vitamins B1, B3, B6 & E, Fe & Zn	49.0
12208004	Bread, from wholemeal flour, commercial, added fibre & vitamins B1, B3, B6 & E, Fe & Zn, toasted	58.3
12208005	Bread, from wholemeal flour, commercial, added iron	52.2
12208006	Bread, from wholemeal flour, commercial, added iron, toasted	61.4
12208007	Bread, from wholemeal flour, commercial, added omega-3 polyunsaturates	50.0
12208008	Bread, from wholemeal flour, commercial, added omega-3 polyunsaturates, toasted	58.8
12209	Breads, and bread rolls, wholemeal, not stated as to fortification	
12209001	Bread, damper, from wholemeal flour, homemade from basic ingredients	56.9
12209002	Bread, from wholemeal flour, organic, commercial	18.0
12209003	Bread, from wholemeal flour, organic, commercial, toasted	21.2

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12209004	Bread, from wholemeal flour, commercial, fresh, not further defined	59.5
12209005	Bread, from wholemeal flour, commercial, toasted, not further defined	70.1
12209008	Bread, from wholemeal flour, for homemade sandwiches	59.6
12209009	Bread, from wholemeal flour, for homemade sandwiches, toasted	70.1
12210	Breads, and bread rolls, rye, mandatorily fortified	
12210001	Bread, from rye flour, dark, commercial	22.9
12210002	Bread, from rye flour, dark, commercial, toasted	27.0
12210003	Bread, from rye flour, light, commercial	19.8
12210004	Bread, from rye flour, light, commercial, toasted	23.3
12210005	Bread, from rye flour, sour dough, commercial	20.0
12210006	Bread, from rye flour, sour dough, commercial, toasted	23.5
12210007	Bread, from rye flour, added grains, commercial	17.7
12210008	Bread, from rye flour, added grains, commercial, toasted	20.8
12210009	Bread, pumpernickel, commercial	48.0
12210010	Bread, pumpernickel, commercial, toasted	56.5
12212	Breads, and bread rolls, rye, not stated as to fortification	
12212001	Bread, from rye flour, organic, commercial	25.3
12212002	Bread, from rye flour, organic, commercial, toasted	23.3
12212003	Bread, from rye flour, homemade from basic ingredients	32.4
12212004	Bread, from rye flour, homemade from basic ingredients, toasted	38.2
12213	Breads, and bread rolls, gluten free	
12213001	Bread, gluten free, commercial	14.0
12213002	Bread, gluten free, commercial, toasted	16.7
12213003	Bread, gluten free, with added grains, commercial	12.9
12213004	Bread, gluten free, with added grains, commercial, toasted	15.2
12213005	Bread, gluten free, homemade from basic ingredients	14.5

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12213006	Bread, gluten free, homemade from basic ingredients, toasted	17.3
12214	Breads, and bread rolls, not stated as to major flour or fortification	
12214002	Bread, commercial, fresh, not further defined	19.4
12214003	Bread, commercial, toasted, not further defined	22.8
12214004	Bread, homemade from basic ingredients, not further defined	19.2
12214005	Bread, homemade from basic ingredients, not further defined, toasted	22.5
12214006	Bread roll, commercial, fresh, not further defined	13.5
12214007	Bread roll, for use in hamburger or hot dog recipes	4.0
12214008	Bread roll, for use in subway sandwich recipes	21.1
12214009	Bread, tortilla, for use in Mexican recipes	4.0
12214010	Bread, fresh, not further defined	3.6
12214011	Bread, toasted, not further defined	4.2
123	English-style muffins, flat breads, and savoury and sweet breads	
12301	English-style muffins	
12301004	Muffin, English style, from wholemeal flour, commercial, toasted	65.4
12301005	Muffin, English style, mixed grain, commercial, toasted	6.5
12302	Flat breads (e.g. Pita bread), wheat based	
12302001	Bread, chapatti, commercial	32.1
12302004	Bread, flat (pita or Lebanese), wholemeal, commercial	52.0
12302005	Bread, flat (pita or Lebanese), wholemeal, commercial, toasted	61.9
12302008	Bread, flat wrap or tortilla, mixed grain	28.6
12302009	Bread, flat wrap or tortilla, mixed grain, toasted	31.8
12302010	Bread, flat wrap or tortilla, wholemeal, commercial	44.0
12302011	Bread, flat wrap or tortilla, wholemeal, commercial, toasted	48.9
12302012	Bread, Roti, commercial	73.7
12302015	Bread, flat, not further defined, commercial	15.4

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
12302016	Bread, flat, not further defined, commercial, toasted	18.2
12303	Flat breads (e.g. Pita bread), other cereal flours	
12303004	Bread, flat wrap or tortilla, rye, commercial	8.0
12303005	Bread, flat wrap or tortilla, rye, commercial, toasted	8.9
12307	Fried bread products and garlic breads	
12307002	Bread, garlic or herb, homemade, cooked	17.3
12307004	French toast, wholemeal bread, plain	27.1
124	Pasta and pasta products (without sauce)	
12401	Pasta and noodles, wheat based, other than instant noodles	
12401018	Pasta, wholemeal wheat flour, plain, dry	86.0
12401019	Pasta, wholemeal wheat flour, plain, boiled from dry, no added salt	37.2
12401020	Pasta, wholemeal wheat flour, plain, boiled from dry, with added salt	37.2
12401022	Pasta, unfilled, for commercial pasta recipes	1.1
12401023	Pasta, unfilled, for homemade pasta recipes	1.7
12403	Pasta and noodles, not wheat based	
12403001	Noodle, buckwheat or soba, dry	28.9
12403002	Noodle, buckwheat or soba, boiled, drained	11.2
125	Breakfast cereals, ready to eat	
12502	Breakfast cereal, corn based, fortified	
12502012	Breakfast cereal, corn based, not further defined	1.9
12503	Breakfast cereal, rice based	
12503001	Breakfast cereal, puffed or popped rice, no added sugar or salt, unfortified	100.0
12504	Breakfast cereal, rice based, fortified	
12504006	Breakfast cereal, puffed or popped rice, not further defined	5.7
12505	Breakfast cereal, wheat based	
12505001	Breakfast cereal, wheat bran, flakes, unfortified	67.0

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12505002	Breakfast cereal, whole wheat, biscuit, no added sugar or salt, unfortified	100.0
12505003	Breakfast cereal, whole wheat, biscuit, no added sugar, unfortified	99.0
12505004	Breakfast cereal, whole wheat, biscuit, added sugar & salt, unfortified	97.0
12505005	Breakfast cereal, whole wheat, flakes, no added sugar, unfortified	99.0
12505006	Breakfast cereal, whole wheat, puffed, no added sugar or salt, unfortified	100.0
12506	Breakfast cereal, wheat based, fortified, sugars ≤20 g/100g	
12506001	Breakfast cereal, wheat bran, flakes, added vitamins B1, B2 B3, B6, & folate, Fe & Zn	53.0
12506007	Breakfast cereal, whole wheat, biscuit, added vitamins B1, B2 & B3	96.0
12506008	Breakfast cereal, whole wheat, biscuit, added vitamins B1, B2 & B3, Ca, Fe & Zn	96.0
12506009	Breakfast cereal, whole wheat, biscuit, added vitamins B1, B2, B3 & folate, Fe & Zn	97.0
12506010	Breakfast cereal, whole wheat, biscuit, bran, added vitamins B1, B2, B3 & folate & Fe	57.0
12506011	Breakfast cereal, whole wheat, biscuit, not further defined	94.2
12506012	Breakfast cereal, whole wheat, flakes, added vitamins B1, B2, B3 & folate	99.0
12506013	Breakfast cereal, whole wheat, flakes, added vitamins B1, B2, B3, C & folate & Fe	62.0
12506014	Breakfast cereal, whole wheat, small biscuit, added vitamins B1, B2, B3 & folate	76.0
12506015	Breakfast cereal, wheat based, commercial, not further defined	31.1
12507	Breakfast cereal, wheat based, fortified, sugars >20 g/100g	
12507002	Breakfast cereal, whole wheat, small biscuit, with honey, added vitamins B1, B2, B3 & folate, Fe & Zn	66.0
12508	Breakfast cereal, wheat based, with fruit and/or nuts, unfortified	
12508001	Breakfast cereal, whole wheat, flakes, added dried fruit &/or nuts, no added sugar, unfortified	55.0
12509	Breakfast cereal, wheat based, with fruit and/or nuts, fortified, sugars ≤25 g/100g	
12509001	Breakfast cereal, wheat bran, flakes, sultanas, added vitamins B1, B2, B3, B6 & folate, Fe & Zn	38.0
12509002	Breakfast cereal, whole wheat, small biscuit, with apricot, added vitamins B1, B2, B3 & folate, Ca & Fe	69.0
12509003	Breakfast cereal, whole wheat, small biscuit, with berries, added vitamins B1, B2, B3 & folate, Ca & Fe	71.0
12509004	Breakfast cereal, whole wheat, small biscuit, with blackcurrant paste, added vitamins B1, B2, B3 & folate	73.0
12509005	Breakfast cereal, whole wheat, small biscuit, with fruit paste, added vitamins B1, B2, B3 & C & Fe	50.0

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12509006	Breakfast cereal, whole wheat, flakes, dried fruit, added vitamins B1, B2, B3, C & folate	71.0
12509007	Breakfast cereal, whole wheat, flakes, dried fruit & nuts, added fibre, vitamins B1, B2, B3 & folate, Ca & Fe	55.0
12510	Breakfast cereal, wheat based, with fruit and/or nuts, fortified, sugars >25 g/100g	
12510001	Breakfast cereal, wheat bran, flakes, honey & almond, added vitamins B1, B2 B3, B6 & folate, Fe & Zn	42.0
12510002	Breakfast cereal, wheat bran, flakes, sultanas, added vitamins B1, B2, B3 & folate & Fe	45.0
12511	Breakfast cereal, mixed grain	
12511001	Breakfast cereal, mixed grain (barley & soy), flakes, honey, unfortified	73.0
12511002	Breakfast cereal, mixed grain (wheat & corn), flakes or extruded, no added salt, unfortified	30.0
12511004	Breakfast cereal, mixed grain (wheat, rice & oat), flakes, honey, unfortified	58.0
12511005	Breakfast cereal, oat & whole wheat, biscuit, added salt, unfortified	98.2
12512	Breakfast cereal, mixed grain, fortified, sugars ≤20 g/100g	
12512001	Breakfast cereal, mixed grain (rice & wheat), flakes, added vitamins B1, B2, B3, B6 & folate, Ca, Fe & Zn	12.5
12512002	Breakfast cereal, mixed grain (wheat, oat, rice & corn), clusters, added vitamins B1, B2, B3, C & folate, Fe & Zn	57.0
12512003	Breakfast cereal, mixed grain (wheat, corn, rice & oat), extruded, added vitamins B1, B2, B3, B6, C, E & folate, Ca, Fe & Zn	56.6
12512004	Breakfast cereal, mixed grain (wheat, corn, rice & oat), flakes, added vitamins B1, B2, B3, B6, E & folate, Ca & Fe	6.0
12512005	Breakfast cereal, mixed grain (wheat, rice & oat), flakes, honey, added vitamins B1, B2, B3 & folate & Fe	44.0
12512006	Breakfast cereal, whole wheat, biscuit, multigrain, added vitamins B1, B2, B3 & E & Fe	72.0
12513	Breakfast cereal, mixed grain, fortified, sugars >20 g/100g	
12513001	Breakfast cereal, mixed grain (wheat & corn), extruded, chocolate malt coating, added vitamins B1, B2, B3, B6, C, E & folate, Ca, Fe & Zn	53.0
12513003	Breakfast cereal, mixed grain (wheat, oat & corn), extruded, added vitamins B1, B2, B3, B6, C & folate, Fe & Zn	28.0
12513004	Breakfast cereal, mixed grain (wheat, oat & corn), extruded, added vitamins B1, B2, B3, B6, C & folate, Ca, Fe & Zn	30.0
12513006	Breakfast cereal, mixed grain (wheat, corn, rice & oat), extruded, honey, added vitamins B1, B2, B3, B6, C, E & folate, Ca, Fe & Zn	54.0
12513007	Breakfast cereal, mixed grain (wheat, oat & corn), extruded, cocoa coating, added B1, B2, B3, B6, C & folate, Ca, Fe & Zn	31.7

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12513008	Breakfast cereal, mixed grain (wheat, corn & rice), extruded, cocoa coating, added vitamins B1, B2, B3, B6, C, E & folate, Ca, Fe, Mg & Zn	51.0
12513010	Breakfast cereal, mixed grain (rice & wheat), flakes, almond & honey, vitamins B1, B2, B3, B6 & folate, Ca, Fe & Zn	10.6
12514	Breakfast cereal, mixed grain, with fruit and/or nuts	
12514001	Breakfast cereal, mixed grain (barley & oat), flakes, honey, added fruit, nuts & seeds, unfortified	72.6
12514002	Breakfast cereal, mixed grain (wheat & oat), flakes, dried fruit, no added salt, unfortified	63.0
12514003	Breakfast cereal, mixed grain (wheat, rice & oat), flakes, dried fruit, no added salt, unfortified	63.0
12514004	Breakfast cereal, mixed grain (wheat, rice & oat), flakes, cashew, almond, hazelnut & coconut, unfortified	49.0
12514005	Breakfast cereal, mixed grain (wheat, rice & oat), flakes & clusters, apple & raisins, unfortified	51.0
12514006	Breakfast cereal, mixed grain (wheat, corn, rice & oat), flakes, added fruit &/or nuts, no added salt, unfortified	68.0
12514007	Muesli, commercial, gluten free	23.1
12514008	Muesli, commercial, toasted, added dried fruit, unfortified	63.0
12514009	Muesli, commercial, toasted, added dried fruit & nuts, unfortified	62.0
12514010	Muesli, commercial, toasted, added nuts, unfortified	71.6
12514011	Muesli, homemade, toasted, added dried fruit	55.8
12514012	Muesli, homemade, toasted, added dried fruit & nuts	50.0
12514013	Muesli, homemade, toasted, added dried fruit & seeds	49.0
12514014	Muesli, homemade, toasted, added dried fruit, nuts & seeds	44.4
12514015	Muesli, homemade, toasted, added nuts & seeds	52.2
12514016	Muesli, commercial, untoasted or natural style, added dried fruit, unfortified	62.3
12514017	Muesli, commercial, untoasted or natural style, added dried fruit, low fat, unfortified	47.0
12514018	Muesli, commercial, untoasted or natural style, added dried fruit & nuts, unfortified	56.1
12514019	Muesli, commercial, untoasted or natural style, added nuts & seeds	67.8
12514020	Muesli, homemade, untoasted or natural, added dried fruit	62.8
12514021	Muesli, homemade, untoasted or natural, added dried fruit & nuts	55.6
12514022	Muesli, homemade, untoasted or natural, added dried fruit & seeds	54.3

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12514023	Muesli, homemade, untoasted or natural, added dried fruit, nuts & seeds	48.8
12514024	Muesli, homemade, untoasted or natural, added nuts & seeds	58.3
12515	Breakfast cereal, mixed grain, with fruit and/or nuts, fortified	
12515001	Breakfast cereal, mixed grain (rice & wheat), flakes, berries, added vitamins B1, B2, B3, B6 & folate, Ca, Fe & Zn	11.1
12515002	Breakfast cereal, mixed grain (rice & wheat), flakes, fruit & nut, added vitamins B1, B2, B3, B6, E & folate, Ca, Fe & Zn	24.0
12515003	Breakfast cereal, mixed grain (rice & wheat), flakes, nuts, added vitamins B1, B2 & B3, Ca & Fe	60.0
12515004	Breakfast cereal, mixed grain (wheat & corn), flakes, berries & sultanas, added vitamins A, B1, B2, B3, B6, E & folate, Ca, Fe & Zn	36.0
12515005	Breakfast cereal, mixed grain (wheat & corn), flakes, sultana, apple & currant, added vitamins B1, B2, B3, B6, E & folate, Ca, Fe & Zn	34.0
12515006	Breakfast cereal, mixed grain (wheat & oat), clusters, almond, added vitamins B1, B2, B3, B6, C, E & folate, Ca, Fe & Zn	71.0
12515007	Breakfast cereal, mixed grain (wheat & oat), flakes, apple, sultana & cranberry, added vitamins B1, B2, B3, B6, C, E & folate	26.5
12515008	Breakfast cereal, mixed grain (wheat & oat), flakes, apricot & sultana, added vitamins B1, B2, B3 & folate & Fe	63.0
12515009	Breakfast cereal, mixed grain (wheat & oat), flakes, berries, added vitamins B1, B2, B3 & folate & Fe	73.0
12515011	Breakfast cereal, mixed grain (wheat, oat & corn), flakes, fruit, added vitamins B1, B2, B3, B6, E & folate, Ca, Fe & Zn	44.0
12515012	Breakfast cereal, mixed grain (wheat, oat & corn), flakes, fruit & nuts, added vitamins B1, B2, B3, C & folate & Fe	42.0
12515013	Breakfast cereal, mixed grain (wheat, oat & corn), flakes, fruit & nuts, added vitamins B1, B2, B3, B6, E & folate, Ca, Fe & Zn	41.0
12515014	Breakfast cereal, mixed grain (wheat, rice & oat), flakes & clusters, apple, added vitamins B1, B2, B3, B6, E & folate, Fe & Zn	26.2
12515015	Breakfast cereal, mixed grain (wheat, oat & corn), flakes & clusters, pomegranate & berries, added vitamins A, B1, B2, B3, B6, E & folate, Ca, Fe & Zn	61.0
12515016	Breakfast cereal, mixed grain (wheat, rice & oat), flakes & clusters, sultanas, added vitamins B1, B2, B3, B6, C & folate, Fe & Zn	23.5
12515017	Breakfast cereal, mixed grain (wheat, rice & oat), flakes, dried fruit, added vitamins B1, B2, B3 & E & Fe	54.0
12515018	Breakfast cereal, mixed grain (wheat, corn, rice & oat), clusters, apple & almonds, added vitamins B1, B2, B3 & folate & Fe	51.0
12515019	Breakfast cereal, mixed grain (wheat, corn, rice & oat), clusters, sultana & berries, added vitamins B1, B2, B3, E & folate, Ca & Fe	44.0

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
12515020	Breakfast cereal, mixed grain (wheat, corn, rice & oat), flakes & clusters, honey & macadamias, added vitamins B1, B2, B3, E & folate, Ca & Fe	52.0
12515021	Breakfast cereal, mixed grain (wheat, corn, rice & oat), flakes, apricot & coconut, added vitamins B1, B2, B3, E & folate, Ca & Fe	45.0
12515022	Breakfast cereal, mixed grain (wheat, corn, rice & oat), flakes, berries, added vitamins B1, B2, B3, E & folate, Ca & Fe	50.0
12515023	Breakfast cereal, mixed grain (wheat, corn, rice & oat), flakes, fruit, added vitamins B1, B2, B3 & folate & Fe	39.0
12515024	Breakfast cereal, mixed grain (wheat, corn, rice & oat), flakes, fruit, added vitamins B1, B2, B3, & folate, Ca & Fe	70.0
12515025	Breakfast cereal, mixed grain (wheat, corn, rice & oat), flakes, fruit & nuts, added vitamins B1, B2, B3, C & folate & Fe	54.0
12515026	Breakfast cereal, mixed grain, commercial, not further defined	33.3
12515027	Muesli, commercial, toasted, added dried fruit & nuts, added vitamins B2, B3, E & folate & Ca	48.0
12516	Breakfast cereal, other	
12516001	Breakfast cereal, barley, flakes, honey, added sultanas, unfortified	70.9
12516003	Breakfast cereal, not further defined	52.7
126	Breakfast cereals, hot porridge style	
12601	Porridge style, oat based	
12601001	Porridge, rolled oats, prepared with water	18.5
12601002	Porridge, rolled oats, prepared with regular fat cows milk	17.3
12601003	Porridge, rolled oats, prepared with reduced fat cows milk	17.3
12601004	Porridge, rolled oats, prepared with skim cows milk	17.1
12601005	Porridge, rolled oats, prepared with cows milk	17.7
12601006	Porridge, rolled oats, prepared with rice milk	29.7
12601007	Porridge, rolled oats, prepared with soy milk	17.3
12601008	Porridge, rolled oats, prepared with cows milk & water	17.5
12601009	Porridge, rolled oats, prepared with soy milk & water	17.5
12601010	Porridge, rolled oats, with added fibre & Ca, prepared with cows milk	13.8
12601011	Porridge, rolled oats mixed with sugar or honey & other flavours, prepared with water	16.6

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
12601012	Porridge, rolled oats mixed with sugar or honey & other flavours, prepared with cows milk	16.3
12601013	Porridge, rolled oats mixed with sugar or honey & other flavours, prepared with soy milk	16.3
12601014	Porridge, rolled oats mixed with sugar, flavours & dried fruit, prepared with water	15.3
12601015	Porridge, rolled oats mixed with sugar, flavours & dried fruit, prepared with cows milk	15.1
12601016	Porridge, rolled oats mixed with sugar, flavours & dried fruit, prepared with soy milk	15.1
12601017	Oats, rolled, mixed with sugar or honey & other flavours, uncooked	73.0
12601018	Oats, rolled, mixed with sugar, flavours & dried fruit, uncooked	69.7
12602	Porridge style, other cereals	
12602002	Porridge, brown rice, with added dry fruit, cooked with cows milk	12.3
12602003	Rice, ground brown rice, with added dry fruit, uncooked	83.0
13	CEREAL BASED PRODUCTS AND DISHES	
131	Sweet biscuits	
13101	Sweet biscuits, plain or flavoured including short bread varieties	
13101001	Biscuit, sweet, Anzac style, commercial	14.3
13101002	Biscuit, sweet, Anzac style, homemade from basic ingredients, fat not further defined	14.3
13101011	Biscuit, sweet, oatmeal, commercial	12.5
13101022	Biscuit, sweet, wheatmeal, commercial	18.0
13101024	Biscuit, sweet, not further defined	1.5
13105	Sweet biscuits, chocolate-coated, chocolate chip	
13105010	Biscuit, sweet, wheatmeal, chocolate-coated, commercial	12.6
13106	Sweet biscuits, chocolate-coated, chocolate or cream filled	
13106007	Biscuit, sweet, chocolate, commercial, not further defined	0.2
132	Savoury biscuits	
13201	Savoury biscuits, wheat based, plain, energy ≤1800 kJ per 100 g	

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13201008	Biscuit, savoury, from wholemeal wheat flour	37.0
13201009	Biscuit, savoury, from wholemeal wheat flour, added grains	43.5
13201010	Biscuit, savoury, from wholemeal wheat flour, crispbread	81.7
13201011	Biscuit, savoury, from wholemeal wheat flour, Salada style, high fibre	26.0
13201013	Biscuit, savoury, not further defined	12.4
13203	Savoury biscuits, rye based	
13203001	Biscuit, savoury, from rye flour, crispbread	90.0
13203002	Biscuit, savoury, from rye flour, crispbread, with added grains (buckwheat, linseed, soy, sesame)	79.3
13204	Savoury biscuits, rice based (includes rice cakes)	
13204001	Biscuit, savoury, rice cake, from brown rice, plain	96.7
13204002	Biscuit, savoury, rice cake, from brown rice, flavoured	82.0
13204003	Biscuit, savoury, rice cake, from brown rice, carob coated	48.3
13204009	Biscuit, savoury, rice cracker, from brown rice, all flavours	67.6
13204010	Biscuit, savoury, rice cracker, not further defined	2.5
133	Cakes, muffins, scones, cake-type desserts	
13305	Cake-type desserts	
13305008	Dumpling, sweet, soaked in syrup	8.7
13306	Slices, biscuit and cake-type	
13306023	Slice, muesli, with sultanas & apricot, homemade from basic ingredients, fat not further defined	20.6
13306025	Slice, oat, with caramel, marshmallow & chocolate, homemade from basic ingredients, fat not further defined	10.7
13306029	Slice, not further defined	3.2
13307	Scones and rock cakes, plain or with added fruit or vegetables only	
13307010	Scone, wholemeal, commercial	66.8
13307011	Scone, wholemeal, homemade from basic ingredients	61.6

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
134	Pastries	
13401	Pastry, plain/unfilled, all types	
13401021	Pastry, shortcrust, wholemeal, commercial, raw	55.3
13401022	Pastry, shortcrust, wholemeal, commercial, baked	62.8
135	Mixed dishes where cereal is the major ingredient	
13501	Pizza, saturated fat ≤ 5 g/100 g	
13501041	Pizza, vegetable, gluten free base, takeaway style & homemade	8.8
13503	Sandwiches and filled rolls, saturated fat ≤ 5 g/100 g	
13503002	Filled bread roll, commercial, bacon & egg, no sauce	14.1
13503003	Filled bread roll, commercial, bacon & egg, water based sauce	13.5
13503004	Filled bread roll, commercial, bacon & egg, cheese, water based sauce	12.1
13503005	Filled bread roll, commercial, beef, no sauce	8.4
13503006	Filled bread roll, commercial, beef, water based sauce	8.1
13503007	Filled bread roll, commercial, beef, cheese, no sauce	7.5
13503008	Filled bread roll, commercial, beef, cheese, oil based sauce	7.3
13503009	Filled bread roll, commercial, beef, cheese & water based sauce	7.3
13503010	Filled bread roll, commercial, chicken & no sauce	13.0
13503011	Filled bread roll, commercial, chicken & oil based sauce	12.5
13503012	Filled bread roll, commercial, chicken & water based sauce	12.5
13503013	Filled bread roll, commercial, chicken, cheese & no sauce	11.6
13503014	Filled bread roll, commercial, chicken, cheese & oil based sauce	11.2
13503015	Filled bread roll, commercial, chicken, cheese & water based sauce	11.2
13503016	Filled bread roll, commercial, crumbed chicken, no sauce	12.3
13503017	Filled bread roll, commercial, crumbed chicken, cheese & no sauce	11.1

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13503018	Filled bread roll, commercial, crumbed chicken, cheese & oil based sauce	10.7
13503019	Filled bread roll, commercial, crumbed chicken, cheese & water based sauce	10.7
13503020	Filled bread roll, commercial, ham & salami, cheese, oil based sauce	11.2
13503021	Filled bread roll, commercial, ham & salami, cheese, water based sauce	11.2
13503022	Filled bread roll, commercial, ham, oil based sauce	15.7
13503023	Filled bread roll, commercial, ham, cheese, no sauce	11.6
13503024	Filled bread roll, commercial, ham, cheese, oil based sauce	11.2
13503025	Filled bread roll, commercial, ham, cheese, water based sauce	11.2
13503026	Filled bread roll, commercial, meatball & no sauce	11.6
13503027	Filled bread roll, commercial, meatball, cheese, no sauce	10.5
13503028	Filled bread roll, commercial, meatball, cheese & oil based sauce	10.2
13503029	Filled bread roll, commercial, meatball, cheese & water based sauce	10.2
13503030	Filled bread roll, commercial, tuna & water based sauce	10.4
13503031	Filled bread roll, commercial, tuna, cheese & no sauce	9.8
13503032	Filled bread roll, commercial, tuna, cheese & oil based sauce	9.5
13503033	Filled bread roll, commercial, vegetable & water based sauce	11.2
13503034	Filled bread roll, commercial, vegetable, cheese & no sauce	10.5
13503035	Filled bread roll, commercial, vegetable, cheese & oil based sauce	10.2
13503036	Filled bread roll, commercial, vegetable, cheese & water based sauce	10.2
13503053	Sandwich or roll, filled with chicken	11.1
13503054	Sandwich or roll, filled with chicken & salad	7.5
13503055	Sandwich or roll, filled with egg	9.4
13503056	Sandwich or roll, filled with ham	14.2
13503057	Sandwich or roll, filled with ham & cheese, toasted	10.1

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13503058	Sandwich or roll, filled with ham & salad	8.8
13503059	Sandwich or roll, filled with ham & tomato, toasted	12.5
13503060	Sandwich or roll, filled with peanut butter	15.5
13503061	Sandwich or roll, filled with roast beef or lamb	8.3
13503062	Sandwich or roll, filled with roast beef or lamb & salad	6.1
13503063	Sandwich or roll, filled with salad	7.1
13503064	Sandwich or roll, filled with tuna	9.0
13503065	Sandwich or roll, filled with tuna & salad	6.5
13503066	Sandwich or roll, filled with vegemite	16.7
13503067	Sandwich or roll, not further defined	10.6
13503068	Wrap, filled, not further defined	5.0
13503070	Sandwich or roll, filled with canned spaghetti, toasted	7.1
13504	Sandwiches and filled rolls, saturated fat >5 g/100 g	
13504003	Sandwich or roll, filled with cheese	13.0
13504004	Sandwich or roll, filled with cheese, toasted	15.5
13504005	Sandwich or roll, filled with ham & cheese	10.9
13504006	Sandwich or roll, filled with vegemite & cheese	12.3
13504007	Sandwich or roll, not further defined, toasted	14.3
13505	Burgers, saturated fat ≤5 g/100 g	
13505001	Bacon burger, bread roll, bacon rasher, with cheese, takeaway & homemade	2.5
13505002	Bacon burger, bread roll, bacon rasher, with cheese & salad, takeaway & homemade	1.6
13505003	Bacon burger, bread roll, bacon rasher, with salad, takeaway & homemade	1.7
13505016	Chicken burger, bread roll, chicken fillet or patty, takeaway & homemade	2.0
13505017	Chicken burger, bread roll, chicken fillet or patty & salad, takeaway & homemade	3.7

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13505018	Chicken burger, bread roll, chicken fillet or patty, with bacon & salad, takeaway & homemade	1.3
13505019	Chicken burger, bread roll, chicken fillet or patty & cheese, takeaway & homemade	1.9
13505020	Chicken burger, bread roll, chicken fillet or patty, with cheese & salad, takeaway & homemade	1.7
13505031	Hamburger, bread roll, beef patty, takeaway & homemade	2.2
13505032	Hamburger, bread roll, beef patty, with avocado & cheese, takeaway & homemade	1.9
13505033	Hamburger, bread roll, beef patty, with avocado, cheese & salad, takeaway & homemade	1.4
13505034	Hamburger, bread roll, beef patty, with bacon & cheese, takeaway & homemade	1.8
13505035	Hamburger, bread roll, beef patty, with bacon, cheese & salad, takeaway & homemade	1.3
13505036	Hamburger, bread roll, beef patty, with bacon & salad, takeaway & homemade	1.4
13505037	Hamburger, bread roll, beef patty, with cheese, takeaway & homemade	2.0
13505038	Hamburger, bread roll, beef patty, with cheese & salad, takeaway & homemade	0.1
13505039	Hamburger, bread roll, beef patty, with egg & salad, takeaway & homemade	1.3
13505041	Hamburger, bread roll, goat fillet or patty, with salad, takeaway & homemade	1.5
13505042	Hamburger, bread roll, lamb fillet or patty, takeaway & homemade	2.2
13505043	Hamburger, bread roll, lamb fillet or patty, with cheese, takeaway & homemade	2.0
13505044	Hamburger, bread roll, lamb fillet or patty, with cheese & salad, takeaway & homemade	1.4
13505045	Hamburger, bread roll, lamb fillet or patty, with salad, takeaway & homemade	1.5
13505046	Hamburger, bread roll, processed meat, with onion, takeaway & homemade	1.9
13505055	Vegetable or lentil burger, bread roll, vegetable patty, takeaway & homemade	1.4
13505056	Vegetable or lentil burger, bread roll, vegetable patty, with cheese, takeaway & homemade	2.7
13505057	Vegetable or lentil burger, bread roll, vegetable patty, with cheese & salad, takeaway & homemade	1.9
13505058	Vegetable or lentil burger, bread roll, vegetable patty, with salad, takeaway & homemade	2.0
13505060	Bacon burger, bread roll, bacon rasher, with egg, takeaway & homemade	2.2
13505061	Fish burger, bread roll, with salad & mayonnaise, takeaway & homemade	1.4

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13507	Taco and tortilla-based dishes, saturated fat ≤5 g/100 g	
13507005	Mexican nachos, corn chips, with salsa	13.0
13507014	Mexican wrap, bean, with cheese, guacamole, salad & salsa	0.8
13507015	Mexican wrap, bean, with cheese & salsa	1.2
13507016	Mexican wrap, bean, with cheese, salad & salsa	0.9
13507017	Mexican wrap, bean, with salad & salsa	1.0
13507018	Mexican wrap, beef & bean, with cheese, salad & salsa	0.9
13507019	Mexican wrap, beef, with cheese & salsa	1.2
13507020	Mexican wrap, beef, with cheese, salad & salsa	0.9
13507021	Mexican wrap, beef, with cheese, guacamole & salsa	1.0
13507022	Mexican wrap, beef, with cheese, guacamole, salad & salsa	0.8
13507023	Mexican wrap, beef, with salad & salsa	0.9
13507024	Mexican wrap, beef & bean, with cheese & salsa	1.2
13507025	Mexican wrap, beef & bean, with cheese, guacamole, salad & salsa	0.8
13507026	Mexican wrap, beef & bean, with salad & salsa	0.9
13507027	Mexican wrap, chicken, with cheese & salsa	1.2
13507028	Mexican wrap, chicken, with cheese, salad & salsa	0.9
13507029	Mexican wrap, chicken, with cheese, guacamole & salsa	1.0
13507030	Mexican wrap, chicken, with cheese, guacamole, salad & salsa	0.8
13507031	Mexican wrap, chicken, with salad & salsa	0.9
13507032	Mexican wrap, chicken & bean, with cheese & salsa	1.3
13507033	Mexican wrap, chicken & bean, with cheese, salad & salsa	0.9
13507034	Mexican wrap, chicken & bean, with salad & salsa	0.9
13507035	Mexican wrap, fish, with cheese, guacamole, salad & salsa	0.8

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13507036	Mexican wrap, with cheese, guacamole, salad & salsa	1.0
13508	Taco and tortilla-based dishes, saturated fat >5 g/100 g	
13508001	Mexican nachos, corn chips, beans, with cheese & salsa	7.9
13508002	Mexican nachos, corn chips, beans, with cheese, guacamole & salsa	6.7
13508003	Mexican nachos, corn chips, beef, with cheese & salsa	6.8
13508004	Mexican nachos, corn chips, beef, with cheese, guacamole & salsa	5.9
13508005	Mexican nachos, corn chips, beef & bean, with cheese & salsa	6.9
13508006	Mexican nachos, corn chips, beef & bean, with cheese, guacamole & salsa	6.0
13508007	Mexican nachos, corn chips, with cheese, guacamole, salad & salsa	8.3
13508008	Mexican nachos, corn chips, with cheese & salsa	10.8
13508009	Mexican nachos, corn chips, with cheese, salad & salsa	8.2
13508012	Mexican wrap, with cheese & salsa	2.0
13509	Savoury pasta/noodle and sauce dishes, saturated fat ≤5 g/100 g	
13509013	Pasta dish, commercial, cooked unfilled pasta, beef bolognese sauce	0.6
13509014	Pasta dish, commercial, cooked unfilled pasta, beef bolognese sauce & added vegetables	0.6
13509015	Pasta dish, homemade, cooked unfilled pasta, commercial beef bolognese sauce	0.8
13509016	Pasta dish, homemade, cooked unfilled pasta, commercial beef bolognese sauce & added vegetables	0.9
13509017	Pasta dish, homemade, cooked unfilled pasta, homemade beef bolognese sauce	0.9
13509018	Pasta dish, homemade, cooked unfilled pasta, homemade beef bolognese sauce & added vegetables	0.9
13509019	Pasta dish, commercial, cooked unfilled pasta, carbonara sauce, added chicken, with or without added vegetables	0.6
13509020	Pasta dish, commercial, cooked unfilled pasta, dairy based sauce, added chicken, with or without added vegetables	0.5
13509021	Pasta dish, commercial, cooked unfilled pasta, dairy based sauce, added seafood, with or without added vegetables	0.5
13509022	Pasta dish, homemade, cooked unfilled pasta, commercial dairy based sauce	0.9
13509023	Pasta dish, homemade, cooked unfilled pasta, commercial dairy based sauce, added bacon, with or without added vegetables	0.8

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13509024	Pasta dish, homemade, cooked unfilled pasta, commercial dairy based sauce, added chicken, with or without added vegetables	0.8
13509025	Pasta dish, homemade, cooked unfilled pasta, commercial dairy based sauce, added meat, with or without added vegetables	0.8
13509026	Pasta dish, homemade, cooked unfilled pasta, commercial dairy based sauce, added seafood, with or without added vegetables	0.8
13509027	Pasta dish, homemade, cooked unfilled pasta, commercial dairy based sauce, added vegetables	0.9
13509028	Pasta dish, homemade, cooked unfilled pasta, homemade dairy based sauce, added bacon, with or without added vegetables	0.7
13509029	Pasta dish, homemade, cooked unfilled pasta, homemade dairy based sauce, added chicken, with or without added vegetables	0.9
13509030	Pasta dish, homemade, cooked unfilled pasta, homemade dairy based sauce, added meat, with or without added vegetables	0.9
13509031	Pasta dish, homemade, cooked unfilled pasta, homemade dairy based sauce, added seafood, with or without added vegetables	0.9
13509032	Pasta dish, homemade, cooked unfilled pasta, homemade dairy based sauce, added vegetables	0.8
13509033	Pasta dish, cooked unfilled pasta, oil based sauce	1.2
13509034	Pasta dish, cooked unfilled pasta, oil based sauce, added bacon, with or without added vegetables	0.8
13509035	Pasta dish, cooked unfilled pasta, oil based sauce, added chicken, with or without added vegetables	0.8
13509036	Pasta dish, cooked unfilled pasta, oil based sauce, added seafood, with or without added vegetables	0.8
13509037	Pasta dish, cooked unfilled pasta, oil based sauce, added vegetables	0.9
13509038	Pasta dish, commercial, cooked unfilled pasta, tomato based sauce	0.7
13509039	Pasta dish, commercial, cooked unfilled pasta, tomato based sauce, added bacon, with or without added vegetables	0.6
13509040	Pasta dish, commercial, cooked unfilled pasta, tomato based sauce, added chicken, with or without added vegetables	0.6
13509041	Pasta dish, commercial, cooked unfilled pasta, tomato based sauce, added seafood, with or without added vegetables	0.6
13509042	Pasta dish, commercial, cooked unfilled pasta, tomato based sauce, added vegetables	0.6
13509043	Pasta dish, homemade, cooked unfilled pasta, commercial tomato based sauce	0.9

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13509044	Pasta dish, homemade, cooked unfilled pasta, commercial tomato based sauce, added bacon, with or without added vegetables	0.9
13509045	Pasta dish, homemade, cooked unfilled pasta, commercial tomato based sauce, added chicken, with or without added vegetables	0.8
13509046	Pasta dish, homemade, cooked unfilled pasta, commercial tomato based sauce, added seafood, with or without added vegetables	0.8
13509047	Pasta dish, homemade, cooked unfilled pasta, commercial tomato based sauce, added vegetables	0.9
13509048	Pasta dish, homemade, cooked unfilled pasta, homemade tomato based sauce	0.0
13509049	Pasta dish, homemade, cooked unfilled pasta, homemade tomato based sauce, added bacon, with or without added vegetables	0.9
13509050	Pasta dish, homemade, cooked unfilled pasta, homemade tomato based sauce, added chicken, with or without added vegetables	0.9
13509051	Pasta dish, homemade, cooked unfilled pasta, homemade tomato based sauce, added liver, with or without added vegetables	1.0
13509052	Pasta dish, homemade, cooked unfilled pasta, homemade tomato based sauce, added mixed seafood, with or without added vegetables	0.9
13509053	Pasta dish, homemade, cooked unfilled pasta, homemade tomato based sauce, added salmon or tuna, with or without added vegetables	0.9
13509054	Pasta dish, homemade, cooked unfilled pasta, homemade tomato based sauce, added vegetables	0.9
13509055	Pasta dish, cooked unfilled pasta, commercial tomato based sauce, added meat	0.7
13509056	Pasta dish, cooked unfilled pasta, homemade tomato based sauce, added meat	0.8
13509067	Pasta dish, not further defined	0.8
13510	Savoury pasta/noodle and sauce dishes, saturated fat >5 g/100 g	
13510001	Pasta dish, commercial, cooked unfilled pasta, carbonara sauce, added bacon, with or without added vegetables	0.6
13510002	Pasta dish, homemade, cooked unfilled pasta, homemade carbonara sauce, added bacon, with or without added vegetables	0.9
13510003	Pasta dish, commercial, cooked unfilled pasta, dairy based sauce	0.6
13510004	Pasta dish, commercial, cooked unfilled pasta, dairy based sauce, added bacon, with or without added vegetables	0.6

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
13510005	Pasta dish, commercial, cooked unfilled pasta, dairy based sauce, added vegetables	0.6
13510006	Pasta dish, homemade, cooked unfilled pasta, homemade dairy based sauce	0.8
13511	Savoury rice-based dishes, saturated fat ≤5 g/100 g	
13511004	Rice, brown, fried, no meat or vegetables, oil not further defined, homemade	50.4
13511005	Rice, brown, fried with bacon or ham, egg & mixed vegetables	21.4
13511006	Rice, brown, fried with chicken, egg & mixed vegetables	18.3
13511007	Rice, brown, fried with mixed vegetables	26.3
13511030	Salad, rice, with vegetables, added dressing	9.4
136	Batter-based products	
13601	Pancakes, crepes and dishes	
13601003	Crepe or pancake, buckwheat flour, homemade from basic ingredients	36.6
13601013	Crepe or pancake, wholemeal wheat flour, commercial or homemade	36.6
13606	Crumpets	
13606003	Crumpet, from wholemeal flour, commercial, toasted	22.2
15	FISH AND SEAFOOD PRODUCTS AND DISHES	
151	Fin fish (excluding commercially sterile)	
15602	Mixed dishes with fish as the major component, with rice, pasta or noodles	
15602001	Casserole, homemade, salmon or tuna & vegetable, homemade sauce, with rice or pasta	0.3
15602002	Casserole, homemade, salmon or tuna & vegetable, commercial sauce, with rice or pasta	0.4
15602003	Curry, homemade, fish, homemade sauce, with rice or noodles	0.3
15602004	Curry, homemade, fish & rice	0.5
15602005	Curry, homemade, fish & vegetable, homemade tomato based sauce, with rice or noodles	0.3
15602009	Stir-fry, homemade, fish & vegetable, with rice or noodles	0.3

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
15604	Mixed seafood dishes with crustacea, molluscs or other seafood products as the major component, with rice, pasta or noodles	
15604002	Curry, homemade, prawn & vegetable, homemade tomato based sauce, with rice or noodles	0.3
15604004	Stir-fry, homemade, prawn & vegetable, with rice or noodles	0.2
15604005	Stir-fry, homemade, seafood & vegetable, with rice or noodles	0.4
16	FRUIT PRODUCTS AND DISHES	
169	Mixed dishes where fruit is the major component	
16901	Mixed dishes where fruit is the major component	
16901003	Crumble, apple, baked, homemade	2.7
16901004	Crumble, apple & berry, baked, homemade	2.7
16901005	Crumble, apple & rhubarb, baked, homemade	2.7
16901006	Crumble, stone fruits, baked, homemade	3.2
18	MEAT, POULTRY AND GAME PRODUCTS AND DISHES	
187	Mixed dishes where beef, sheep, pork or mammalian game is the major component	
18702	Beef dishes, added pasta, noodles or rice	
18702001	Casserole, homemade, beef, homemade tomato based sauce, with rice or pasta	0.3
18702002	Casserole, homemade or commercial, beef & mushroom, homemade cream based sauce, with rice or pasta	0.3
18702003	Casserole, homemade, beef & vegetable, homemade cream based sauce, with rice or pasta	0.3
18702004	Casserole, homemade, beef & vegetable, homemade gravy, with rice or pasta	0.3
18702005	Casserole, homemade, beef & vegetable, homemade tomato based sauce, with rice or pasta	0.3
18702006	Casserole, homemade, beef, vegetable & legume, homemade sauce, with rice or pasta	0.3
18702007	Curry, homemade, beef & vegetable, commercial sauce, with rice or noodles	0.3
18702008	Curry, homemade, beef & vegetable, homemade coconut milk based sauce, with rice or noodles	0.3

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
18702009	Curry or casserole, homemade, beef & pasta, not further defined	0.0
18702010	Curry or casserole, homemade, beef & rice, not further defined	0.4
18702016	Stir-fry, homemade, beef, with rice or noodles	0.3
18702018	Stir-fry, homemade, beef & vegetable, with rice	0.4
18702019	Stir-fry, homemade, beef, vegetable & egg, with rice or noodles	0.2
18702020	Casserole or curry, homemade, beef & vegetable, homemade gravy, with rice or pasta	0.4
18702021	Stir-fry, homemade, beef & vegetable, with rice	0.5
18706	Lamb or mutton dishes, added pasta, noodles or rice	
18706001	Casserole, homemade, lamb & vegetable, tomato based sauce, with rice or pasta	0.3
18706002	Curry, homemade, lamb & rice	0.5
18706003	Curry, homemade, lamb & vegetable, homemade dairy based sauce, with rice or noodles	0.3
18706004	Roast dinner, commercial or homemade, lamb, vegetables, gravy & grains	0.4
18706005	Stir-fry, homemade, lamb & vegetable, with rice or noodles	0.3
18709	Pork dishes, added pasta, noodles or rice	
18709002	Mixed dish, homemade, pork & rice, not further defined	0.4
18709004	Stir-fry, homemade, pork & vegetable, with rice or noodles	0.3
18711	Mammalian game meat, mixed dishes	
18711005	Curry, homemade, goat, homemade sauce, with rice or noodles	0.3
188	Mixed dishes where sausage, bacon, ham or other processed meat is the major component	
18802	Sausage dishes with gravy, sauce or vegetables, added pasta, noodles or rice	
18802001	Casserole, homemade, sausage & vegetable, homemade sauce, with rice or pasta	0.3
189	Mixed dishes where poultry or feathered game is the major component	
18902	Poultry dishes, with gravy, sauce or vegetables, added pasta, noodles or rice	
18902001	Casserole, commercial, chicken & vegetable, with rice or pasta	0.4

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
18902002	Casserole, homemade, chicken & vegetable, homemade gravy, with rice or pasta	0.3
18902003	Casserole, homemade, chicken & vegetable, homemade cream based sauce, with rice or pasta	0.3
18902004	Casserole, homemade, chicken & vegetable, homemade fruit sauce, with rice or pasta	0.4
18902005	Casserole, homemade, chicken & vegetable, homemade tomato based sauce, with rice or pasta	0.4
18902007	Curry, homemade, chicken, commercial sauce, with rice or noodles	0.3
18902008	Curry, homemade, chicken, homemade coconut milk sauce, with rice or noodles	0.3
18902009	Curry, homemade, chicken & rice	0.5
18902010	Curry, homemade, chicken & vegetable, commercial sauce, with rice or noodles	0.3
18902011	Curry, homemade, chicken & vegetable, homemade coconut milk sauce, with rice or noodles	0.3
18902012	Curry, homemade, chicken & vegetable, homemade dairy based sauce, with rice or noodles	0.3
18902013	Curry, homemade, chicken & vegetable, homemade tomato based sauce, with rice or noodles	0.3
18902014	Curry, homemade, chicken, vegetable & legume, homemade sauce, with rice or noodles	0.3
18902020	Stir-fry, commercial, chicken, with rice or noodles	0.3
18902022	Stir-fry, homemade, chicken, with rice or noodles	0.2
18902023	Stir-fry, homemade, chicken & vegetable, commercial or homemade satay sauce, with rice or noodles	0.3
18902025	Stir-fry, homemade, chicken & vegetable, with rice	0.4
18902026	Casserole or curry, homemade, chicken & vegetable, homemade gravy, with rice or pasta	0.4
19	MILK PRODUCTS AND DISHES	
192	Yoghurt	
19206	Yoghurt, flavoured or added fruit with added cereal, full fat	
19206001	Yoghurt, apple & cinnamon flavoured, regular fat (~3%), added cereals	1.0
19206002	Yoghurt, banana & honey flavoured, regular fat (~3%), added cereals	1.0
19206003	Yoghurt, berry flavoured, regular fat (~3%), added cereals	1.1

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
20	DAIRY & MEAT SUBSTITUTES	
201	Dairy milk substitutes, unflavoured	
20106	Cereal- or nut-based milk substitute	
20106002	Milk, oat, fluid, unfortified	12.0
20106003	Milk, oat, fluid, added calcium	11.8
20106004	Milk, rice, fluid, added calcium	13.0
20106005	Milk, rice, fluid, protein enriched, added calcium	11.0
21	SOUP	
211	Soup, homemade from basic ingredients	
21101	Soup containing meat, poultry or seafood	
21101002	Soup, beef & vegetable, with pasta or grains, prepared with stock or water, homemade from basic ingredients	0.1
21101004	Soup, beef, vegetable & legume, with pasta or grains, prepared with stock or water, homemade	0.1
21101008	Soup, chicken & vegetable, with grains or pasta, prepared with stock or water, homemade from basic ingredients	0.3
21101010	Soup, chicken, vegetable & legume, with grains or pasta, prepared with stock or water, homemade	0.1
21101011	Soup, fish, prepared with stock or water, homemade from basic ingredients	0.2
21101013	Soup, ham & vegetable, with pasta or grains, prepared with stock or water, homemade from basic ingredients	0.1
21101015	Soup, lamb & vegetable, with grains or pasta, prepared with stock or water, homemade from basic ingredients	0.1
21101021	Soup, pork & vegetable, with grains or pasta, prepared with stock or water, homemade from basic ingredients	0.1
21101023	Soup, seaweed, with or without meat, vegetables & grains or pasta	0.2
21102	Soup, vegetable only	
21102008	Soup, mixed vegetable & legume, with pasta or grains, prepared with stock or water, homemade from basic ingredients	0.1
21102009	Soup, mixed vegetable & pasta or grains, prepared with stock or water, homemade from basic ingredients	0.1
215	Soup, commercially sterile, prepared from condensed or sold ready to eat	
21501	Soup containing meat, poultry or seafood	

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
21501001	Soup, chicken & noodle, ready to eat, canned	0.2
21502	Soup, vegetable only	
21502007	Soup, vegetable, ready to eat, canned	0.2
23	SAVOURY SAUCES AND CONDIMENTS	
235	Dips	
23501	Dairy based dips	
23501010	Dip, tomato &/or capsicum, homemade	1.0
24	VEGETABLE PRODUCTS AND DISHES	
249	Dishes where vegetable is the major component	
24901	Vegetables and sauce	
24901006	Curry, homemade, okra, with rice or noodles	0.4
24901016	Curry, homemade, vegetable, homemade sauce, with rice or noodles	0.3
24901019	Stir-fry, homemade, egg & vegetable, with rice or noodles	0.3
24901024	Stir-fry, homemade, vegetable, with rice	0.4
24901026	Stir-fry, homemade, vegetable & nut or legume, with rice or noodles	0.3
24904	Salads, vegetable based	
24904016	Salad, garden, added grains, no added dressing	0.1
24904030	Salad, tabouleh, commercial	10.4
24904031	Salad, tabouleh, homemade from basic ingredients	9.7
25	LEGUME AND PULSE PRODUCTS AND DISHES	
252	Mature legume and pulse products and dishes	
25202	Dishes where mature legumes are the major component	

Food group code/ identification^a	Food group name	Whole grain (g) per 100g
25202004	Casserole, homemade, vegetable & tofu, homemade tomato based sauce, with rice or pasta	0.3
25202005	Curry, homemade, chick pea & vegetable, homemade sauce, with rice or noodles	0.3
25202010	Rissole or patty, vegetable or lentil, commercial, baked, fried, grilled or BBQ'd, no added fat	1.9
25202011	Rissole or patty, vegetable or lentil, commercial, baked, fried, grilled or BBQ'd, fat not further defined	1.8
25202012	Rissole or patty, vegetable or lentil, homemade, baked, fried, grilled or BBQ'd, no added fat	1.9
25202013	Rissole or patty, vegetable or lentil, homemade, baked, fried, grilled or BBQ'd, fat not further defined	1.8
26	SNACK FOODS	
262	Corn snacks	
26201	Corn chips	
26201001	Corn chips, cheese flavoured, salted	30.0
26201002	Corn chips, other flavours, salted	30.0
26201003	Corn chips, plain toasted, no added salt	30.0
26201004	Corn chips, plain toasted, salted	30.0
26201006	Corn chips, not further defined	30.0
26202	Popcorn	
26202001	Popcorn, air-popped, no added fat or salt	100.0
26202002	Popcorn, commercial, butter flavoured, salted	78.0
26202003	Popcorn, microwaved, butter flavoured, salted	78.0
26202004	Popcorn, regular, unflavoured, salted, vegetable oil	72.0
26202005	Popcorn, regular, unflavoured, unsalted, vegetable oil	73.0
26202006	Popcorn, commercial, sugar coating	33.0
263	Extruded or reformed snacks	
26301	Extruded snacks	
26301004	Grain waves wheat snack, plain, original	66.0

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
26301005	Grain waves wheat snack, cheese or sour cream & chives	61.0
26301006	Grain waves wheat snack, other flavours	62.0
264	Other snacks	
26401	Other snacks	
26401001	Cracker, with cheddar cheese	3.4
26401002	Cracker, with cheese not further defined	3.6
26401016	Snack pack, savoury, wholemeal wheat flour biscuit with processed cheese spread	13.0
28	CONFECTIONERY AND CEREAL/NUT/FRUIT/SEED BARS	
282	Fruit, nut and seed-bars	
28202	Nut and seed based confectionery	
28202002	Bar, muesli or snack, with caramel & sesame seeds	6.0
283	Muesli or cereal style bars	
28301	Muesli and cereal style bars, no fruit	
28301003	Bar, muesli or snack, made from breakfast cereal, with chocolate coating, added vitamins B1, B2, B3, B6 & folate, Ca, Fe & Zn	8.0
28302	Muesli and cereal style bars, with fruit and/or nuts	
28302001	Bar, muesli or snack, plain or with 10% dried fruit	46.3
28302002	Bar, muesli or snack, plain or with 10% dried fruit, added vitamins B1, B2, B3, folate & Fe	46.3
28302003	Bar, muesli or snack, plain or with 10% dried fruit, high fibre, added vitamins B1, B2, B3, B6, E, & folate, Fe & Zn	30.0
28302004	Bar, muesli or snack, with 10% dried fruit & 5% nuts	44.0
28302005	Bar, muesli or snack, with 10% dried fruit & 10% nuts	41.7
28302006	Bar, muesli or snack, with 10% dried fruit & 45% nuts, chocolate-coated	12.2
28302007	Bar, muesli or snack, with 10% dried fruit & 60% nuts	15.3
28302008	Bar, muesli or snack, with 10% dried fruit & 60% nuts, yoghurt-coated	12.5
28302009	Bar, muesli or snack, with 15% dried fruit & 25% nuts, added vitamins B1, B2, B3, C & folate, Fe, & Zn	2.5

Food group code/ identification ^a	Food group name	Whole grain (g) per 100g
28302010	Bar, muesli or snack, with 20% dried fruit & 5% nuts	58.9
28302011	Bar, muesli or snack, with 20% dried fruit & 20% nuts, chocolate base	20.9
28302012	Bar, muesli or snack, with 30% dried fruit & 30% nuts	23.2
28302013	Bar, muesli or snack, with 10% nuts	48.3
28302014	Bar, muesli or snack, with 10% nuts, added flaxseeds	40.0
28302017	Bar, muesli or snack, gluten free, with 20% dried fruit & 20% seeds	20.0
28302018	Bar, muesli or snack, made from breakfast cereal with dried fruit	9.6
28302019	Bar, muesli or snack, made from breakfast cereal with nuts	5.0
28302020	Bar, muesli or snack, made from breakfast cereal, with chocolate & nuts, added vitamins B1, B2, B3, C & folate, Fe & Zn	5.0
28302021	Bar, muesli or snack, not further defined	34.3
28303	Muesli and cereal style bars, added coatings or confectionery	
28303001	Bar, muesli or snack, plain or with 10% dried fruit, chocolate-coated	19.0
28303002	Bar, muesli or snack, plain or with 10% dried fruit, yoghurt-coated	32.8
28303003	Bar, muesli or snack, plain or with 10% dried fruit, yoghurt-coated, added vitamins B1, B2, B3, folate & Fe	19.0
28303004	Bar, muesli or snack, with 15% dried fruit & 15% nuts, yoghurt-coated	27.9
28303005	Bar, muesli or snack, with 30% dried fruit, yoghurt-coated, added vitamins B1, B2, B3, folate & Fe	16.0
28303006	Bar, muesli or snack, with 10% nuts, chocolate-coated	38.6
28303007	Bar, muesli or snack, with chocolate chips or coating	40.2

^a Food group code/ identification derived from the AUSNUT 2011-13 Food Nutrient Database,³¹ where two-digit codes indicate major food group, three-digit codes indicate sub-major food group, five-digit codes indicate minor food group, and eight-digit codes indicate food identification code.