MISCELLANEOUS FOODS

Supplement to McCance & Widdowson's The Composition of Foods

W. Chan, J. Brown and D.H. Buss

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Fourth supplement to the Fifth Edition of

McCance and Widdowson's

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CONTENTS

INTRODUCTION

This is the seventh detailed reference book on the nutrients in food, in a series replacing and extending the information in McCance and Widdowson's *The Composition of Foods*. It shows the nutrients in a wide range of foods including fats and oils; sugars, syrups and preserves; chocolate and sugar confectionery; savoury snacks; coffee and tea; soft drinks; alcoholic drinks, soups, sauces and pickles; baby foods; and a number of other miscellaneous foods and ingredients.

There has been a considerable increase in the number and variety of these foods in the United Kingdom in recent years, so this book includes information on 418 items – more than twice the number of such foods in the fifth edition of *The Composition of Foods* (Holland *et al.*, 1991b). There is also an increase in the number of nutrients shown. All the data for the foods included in the fifth edition have been thoroughly reviewed and most have been updated, while the data for the additional foods has been obtained from new analyses specifically for this book, or, where appropriate, from recent information from manufacturers.

These tables are part of a continuing series produced by the Royal Society of Chemistry (RSC) and the Ministry of Agriculture, Fisheries and Food (MAFF), who have been collaborating since 1987 on the development of a comprehensive and up-to-date database on nutrients in the wide range of foods now available in Britain. Other current supplements cover *Cereals and Cereal Products* (Holland *et al.*,1988), *Milk Products and Eggs* (Holland *et al.*,1989), *Vegetables, Herbs and Spices* (Holland *et al.*, 1991a), *Fruit and Nuts* (Holland *et al.*, 1992a), *Vegetable Dishes* (Holland *et al.*, 1992b), and *Fish and Fish Products* (Holland *et al.*, 1993). Computerised versions are also available, details of which can be obtained from the Royal Society of Chemistry.

Methods

The selection of foods and of nutrient values has followed the general principles used in the preparation of previous books in *The Composition of Foods* series. The foods are as far as possible those most widely available and nutritionally important in Britain at the present time, and the nutrient values are a mixture of direct analyses and appropriate values from the scientific literature and from manufacturers. Only the most recent analytical values have been included for those manufactured foods whose formulation and composition are changed from time to time. Many more values from manufacturers have been included in this book than in previous ones, partly because most of the foods in this supplement are manufactured foods but also because the range of foods now analysed by manufacturers has increased. There is comparatively little information on these items in the scientific literature, but some values have been included from food composition tables from other countries where the foods are known to be the same as in those countries.

Manufacturers' and literature values

Manufacturers' and literature information was only included where full details of the samples were known and where the samples were representative of the foods now available; where suitable methods of analysis had been used; and where the results were available in sufficient detail. There were nevertheless many gaps, and for these a large number of new analyses were commissioned.

Analyses

Where little or nothing was known of the nutrients in an important food, arrangements were made for its direct analysis in one of three laboratories. Detailed sampling and analytical protocols were devised for each item. Most of the foods were bought from a wide variety of shops in or near London. The samples were not normally analysed individually but, as for previous supplements, pooled according to market share before analysis.

The analytical methods for the major nutrients were as described in the fifth edition of *The Composition of Foods* (Holland *et al.*, 1991b), while those for the nutrients not included in that book are given in the supplements on *Milk Products and Eggs* or on *Vegetables, Herbs and Spices*. Individual fatty acids were determined as their methyl esters by capillary gas chromatography. Further details of each determination can be provided on request.

Arrangement of the tables

Food groups

For ease of reference, the values have been brought together in nine broad groups, and then further subdivided within those. Although the foods have been listed alphabetically within each section, the first set of values for each is generally for the product as bought, followed by values for the food after dilution or after any other preparation that may be needed before it can be eaten.

Numbering system

As in previous supplements, the foods have been numbered in sequence (from 1 to 418) with a unique two digit prefix. For this supplement, the prefix is '17'. The full code numbers for butteroil and dried sweetcorn, the first and last foods in this supplement, are thus 17-001 and 17-418, and these are the numbers that will be used in nutrient databank applications.

Description and number of samples

The information given under this heading includes examples of the products and selected trade names where this would be helpful, as well as the number and nature of samples taken for analysis. Some additional values for related foods were calculated from the analytical values, usually after the addition of water, and this is indicated under this heading, as are the major sources of values that were based on information from manufacturers and the scientific literature.

Nutrients

As in most previous books in this series, the nutrient values for each food are shown on four consecutive pages. The presentation of most of the nutrients follows the established pattern, but the information on the second page in the fats

and oils section is different so that the information most appropriate to all the diverse types of food in this supplement can be covered in the four pages.

All nutrient values are given per 100 grams of the edible portion of the food, except for alcoholic beverages where the values are given per 100 ml.

Proximates: – The first page for each food shows the amounts of water, alcohol (for alcoholic beverages only), total nitrogen, protein, fat, and available carbohydrate expressed as its monosaccharide equivalent. These values are in grams, and then the foods energy value is given in kilocalories and in kilojoules. All values are per 100 g of edible matter, but in this supplement there is no indication of the proportion of edible matter in each food since it is always 1.00.

Protein was derived from the nitrogen values by multiplying them by 6.25 after subtracting any non-protein nitrogen, and the energy values were derived by multiplying the amounts of protein, fat, carbohydrate and (where appropriate) alcohol by the factors in **Table 1**. Where oligosaccharides, organic acids or polyols were present (for example the acetic acid in pickles, citric and malic acids in soft drinks and sorbitol in diabetic foods), their energy contribution was also included using the values in the Appendix on page 170. A few of the carbohydrate values from manufacturers and the literature have been estimated by subtracting the other proximates from 100 rather than by analysis; these and the corresponding energy values have been presented as quoted, but in italics to distinguish them from analytical values.

Table 1: – Energy conversion factors

	kcal/g	*kJ/g*
Protein	4	17
Fat	9	37
Available carbohydrate expressed as monosaccharide	3.75	16
Alcohol	7	29

Carbohydrates and 'fibre': – For most foods, the second page gives more details of the individual carbohydrates, fibre fractions and fat constituents. The value for total sugars is the sum of the glucose, fructose, sucrose, maltose and lactose in the food, but does not include the oligosaccharides that are present in significant quantities in a number of foods where glucose syrups or maltodextrins have been used. These oligosaccharides have, however, been included in the total carbohydrate on the preceding page wherever possible, and this value will then be greater than the sum of the starch and the sugars alone. As in the previous UK tables, the amounts of sugars, starch and available carbohydrate are shown after conversion to their monosaccharide equivalents, while all fibre values are the actual amounts of each component. The relationships between the various forms and fractions of fibre are shown in Table 2.

Table 2: – Relationships between the dietary fibre fractions

Cellulose	Insoluble fibre	Englyst fibre (non-starch polysaccharides)	Southgate fibre[a] (unavailable carbohydrate)
Insoluble non-cellulosic polysaccharides			
Soluble non-cellulosic polysaccharides	Soluble fibre		
'Lignin'			

[a] The Southgate values are generally higher than NSP values because they include substances measuring as lignin and also because the enzymic preparation used leaves some enzymatically resistant starch in the dietary fibre residue. A resistant starch value can be obtained from the NSP procedures, but because this uses different conditions and enzymes this may or may not be the same as the enzymatically resistant starch in the Southgate method.

Fats: - Values are given for the total saturated, monounsaturated and polyunsaturated fatty acids in each food. The unsaturated acids include both *cis* and *trans* isomers, but for the fats and oils there is an additional column showing the total amount of *trans* fatty acids in each food. Cholesterol is shown for all foods, but for the fats and oils the total amount of phytosterols (plant sterols) is also given. Further details of the individual fatty acids and phytosterols in selected foods are presented in the Appendixes on pages 154 and 166.

Minerals and vitamins: - The range of minerals and vitamins shown is the same as in previous books. The values for total carotene and for vitamin E have been corrected for the relative activities of the different fractions using the factors given in the fifth edition of *The Composition of Foods* (Holland *et al.*, 1991b). An Appendix on page 163 shows further details of the individual vitamin E fractions where they are known.

Appendices

This supplement contains a number of appendices. The first gives the individual fatty acids in selected fats and oils, and is followed by appendices showing the amounts of vitamin E fractions and the main phytosterols in selected foods. Further appendices give the proximates and energy value for a number of miscellaneous food ingredients and additives, and the percentage of alcohol (and typical ranges) *by volume* in different beers. These are followed by details of the recipes used in this supplement.

Nutrient variability

Almost all foods vary somewhat in composition, and this is equally true for most of the manufactured foods included in this supplement. This is partly because there will be natural variations in the composition and proportions of their ingredients, but it is also important to remember that the ingredients used, or the

proportions of the ingredients, in many of them can suddenly be substantially altered with no change in the product name or description. This may reflect changing raw material prices, but there can also be changes in, for example, the amounts of salt, sugar, fats, water and micronutrients added in order to meet changing health considerations. The proportions of the ingredients, and therefore the nutritional value, may also change if the product size is changed. It should further be borne in mind that the values for a number of foods in this book are averages based on a number of similar foods, but the nutritional value of any one of the component samples may be significantly different from this average. It therefore remains important when using the values in these tables to ensure that the product is as similar as possible to that described here.

A further point to bear in mind is that for some related foods, including a number of the beverages, snacks and baby foods in these tables, the apparent (but usually small) differences in composition may reflect analytical variations as much as real differences in composition.

The introduction to the fifth edition of *The Composition of Foods* contains a more detailed description of these and many other factors that should be taken into account in the proper use of food composition tables. Users of the present supplement are advised to read them and take them to heart.

References to introductory text

Holland, B., Unwin, I.D., and Buss, D.H. (1988) *Cereals and Cereal Products.* Third supplement to *McCance and Widdowson's The Composition of Foods*, Royal Society of Chemistry, Cambridge

Holland, B., Unwin, I.D., and Buss, D.H. (1989) *Milk Products and Eggs.* Fourth supplement to *McCance and Widdowson's The Composition of Foods*, Royal Society of Chemistry, Cambridge

Holland, B., Unwin, I.D., and Buss, D.H. (1991a) *Vegetables, Herbs and Spices.* Fifth supplement to *McCance and Widdowson's The Composition of Foods*, Royal Society of Chemistry, Cambridge

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Holland, B., Brown, J., and Buss, D.H. (1993) *Fish and Fish products.* Third supplement to 5th edition of *McCance and Widdowson's The Composition of Foods.* Royal Society of Chemistry, Cambridge

The Tables

Symbols and abbreviations used in the tables

Symbols

0	None of the nutrient is present
Tr	Trace
N	The nutrient is present in significant quantities but there is no reliable information on the amount
( )	Estimated value, or water values estimated by difference
Italic text	Carbohydrate estimated 'by difference', and energy values based upon these quantities

Abbreviations

Gluc	Glucose
Fruct	Fructose
Sucr	Sucrose
Malt	Maltose
Lact	Lactose
Satd	Saturated
Monounsatd	Monounsaturated
Polyunsatd	Polyunsaturated
Trypt	Tryptophan
equiv	equivalents

FATS AND OILS

This section includes entries for cooking fats, butter, different types of margarines, blends which contain mixtures of butter and vegetable fats, fat spreads based on vegetable oils only, and oils. Most of the values in the fifth edition of *The Composition of Foods* have been updated and many new fats have been included.

The layout of page 2 is slightly different from that in the other sections and in addition to the total amounts of saturated, monounsaturated and polyunsaturated fatty acids (which include any trans fatty acids) there is also a value for total trans fatty acids in each product. Cholesterol and total phytosterols are also shown, but there are no values for individual sugars or fibre. The amounts of individual phytosterols in selected margarines, blends, fat spreads and oils are given on page 166.

Manufacturers frequently vary the blend of oils and fats in cooking and spreading fats, which will alter the proportion of fatty acids. Users requiring fatty acids data for specific products may wish to contact the manufacturers directly.

The fatty acid profile for blended vegetable oil was calculated from the values for the main components (soya, rape and corn oils). Although the proportions will vary, this entry has been included for recipe calculation purposes and for dietary survey work where unspecified vegetable oil has been used or consumed.

More detailed fatty acid profiles of selected fats and oils are given in the Appendix on page 154. The fatty acid composition of oils represent those of crude oils, and should not change significantly during the refining process.

British regulations require margarines to contain the equivalent of 800–1000μg vitamin A and 7–9μg vitamin D per 100g. Similar additions are made to many but not all reduced fat spreads, and vitamin E may also be added. The values in these tables will reflect the proportion of the products within each category which are fortified. The amounts in specific brands may be obtained from the label or the manufacturer.

No. *17-*	Food	Description and main data sources	Water g	Total Nitrogen g	Protein g	Fat g	Carbo-hydrate g	Energy value kcal	Energy value kJ
	Cooking fats								
1	**Butteroil**, unsalted	Calculated from butter	0.5	0.10	0.6	99.3	Tr	896	3684
2	**Cocoa butter**	Analysis and literature sources	(0.5)	Tr	Tr	99.5	0	896	3682
3	**Cocoa butter alternative**	Analysis and literature sources; mixture of cocoa butter equivalent, replacer and substitute	(0.3)	Tr	Tr	99.7	0	897	3689
4	**Compound cooking fat**	10 samples of a mixture of Cookeen and White Cap	Tr	Tr	Tr	99.9	0	899	3696
5	polyunsaturated	10 samples of White Flora	Tr	Tr	Tr	99.9	Tr	899	3696
6	**Dripping**, beef	Analysed as purchased	1.0	Tr	Tr	99.0	Tr	891	3663
7	**Ghee**, butter	5 assorted samples	0.1	Tr	Tr	99.8	Tr	898	3693
8	palm	5 samples of the same brand	0.1	Tr	Tr	99.7	Tr	897	3689
9	vegetable	5 samples; different types	0.1	Tr	Tr	99.4	Tr	895	3678
10	**Lard**	6 samples; 3 brands	1.0	Tr	Tr	99.0	0	891	3663
11	**Suet**, shredded	6 samples of the same brand	1.5	Tr	Tr	86.7	12.1	826	3402
12	vegetable	10 samples; 5 brands	0.8	0.19	1.2	87.9	*10.1*	*836*	*3444*
	Spreading fats								
13	**Butter**	Analysis and literature sources	15.6[a]	0.08	0.5	81.7[a]	Tr	737	3031
14	spreadable	8 samples; different brands	15.5	0.08	0.5	82.5	Tr	745	3061
15	**Blended spread** (70-80% fat)	30 samples including Clover, Golden Crown and Willow	21.0	0.10	0.6	74.8	1.1	680	2795
16	(40% fat)	20 samples including Anchor half fat butter and Clover Extra Light	51.4	1.02	6.5	40.3	0.4	390	1608

[a] Unsalted butter contains 15.7g water and 82.7g fat per 100g