# THE AUSTRALIAN FOOD COMPOSITION PROGRAM

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## Summary

This paper details the national food composition activities undertaken within the Health portfolio over the past 50 years. In particular reference is made to the present program to update the national reference on the nutrient composition of Australian foods. The diverse products of this program are discussed and reference is made to its future outputs. The development of the current food analytical program is discussed in the context of the growing recognition of the major role of nutrition in health promotion and disease prevention.

## I. INTRODUCTION

In Australia, the national food composition program to determine the nutrients in the food supply has been the responsibility of the Health portfolio for some fifty years. In many other countries this responsibility is undertaken by the agriculture portfolio, national food institute or by an academic institution. The association in this country between health and food composition activities has resulted from the lead role that the Health portfolio has maintained nationally in nutrition. Since the 1930's, the Department of Health has provided support for the Australian food composition program in concert with its other nutrition activities.

## II. THE FIRST FOOD COMPOSITION TABLES

The 1930's were interesting times in nutrition. In the Summary of Activities of the Department of Health for 1936 issued by the then Minister for Health, the Right Honourable W M Hughes, it was noted that it was the Australian Government, through the Prime Minister, which had:

> 'brought to the attention of the League of Nations the fundamental importance of adequate nutrition of the people and of securing a more intelligent and effective distribution of the available foodstuffs of the world to those in need of them. The League of Nations took up this work very enthusiastically, and, in order that Australia might play its part in the inquiries which are now proceeding in a number of countries, a nutrition council has been appointed and is now actively at work making a survey of the diet of the Australian people' (Commonwealth Department of Health 1937).

The Nutrition Council noted in this report, was the national Advisory Council on Nutrition, which met between 1936 and 1939, and which commissioned the first Australian food composition program in 1937. This program was to analyse food consumption information from a 14-day dietary study of 3222 households, conducted in four states - New South Wales, South Australia, Queensland and Victoria. Australia's first food composition tables were completed in 1937, providing nutrient data on moisture, crude fibre, ash, protein, fat and carbohydrate for 1172 food items (Advisory Council on Nutrition, 1939).

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## III. NEED FOR A NATIONAL FOOD COMPOSITION PROGRAM

In commissioning these first food composition tables, my predecessor, Dr J H L Cumpston, Director-General, Commonwealth Department of Health, recognised the essential need for knowledge on the nutrient composition of our food supply to support nutrition activities in this country. For Government, food composition tables are an essential tool for monitoring the nutritional status of the population and the development of nutrition policy and programs and program evaluation. It is of interest that in the 1930's, the major concern of Government was undernutrition and monitoring the prevalence of deficiency diseases. Today the major concern is overnutrition with some 47.9% of Australian men and 33.5% of women overweight or obese (National Heart Foundation of Australia 1990). In the 1990's nutrition problems are linked with diseases of affluence - coronary heart disease, hypertension, stroke, some cancers and gall-bladder diseases.

For organisations other than Government, there is a need for up-to-date knowledge on the nutrient composition of foods. These organisations include professional bodies, the food industry, academics and consumer groups. Their needs include:

Planning of prescribed diets
Calculation of nutrient intakes from dietary information
Planning of food supplies
Nutrition education
Teaching and research.

The planning of prescribed diets is generally the responsibility of professionally trained dietitian-nutritionists, working in hospitals or health centres. Planning of food supplies is undertaken within institutions and may involve healthy populations such as in boarding schools or university residences or people with special needs as in nursing homes or hospitals. Knowledge of the nutrient composition of foods is essential for nutrition education programs. So there are many groups with a need for up-to-date food composition data to service a range of nutrition activities.

To meet its own national needs and the needs of other Australian bodies or individuals, the Commonwealth Department of Health and now the Department of Health, Housing and Community Services has continued over the last fifty years to update the national food composition reference.

## IV. THE ROLE OF THE NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL

Following the establishment of the National Health and Medical Research Council (NHMRC), the Advisory Council of Nutrition was disbanded in 1939 and the Nutrition (Standing) Committee of NHRMC together with the Nutrition Section of the Commonwealth Department of Health undertook the responsibility of developing food composition references in this country. The second report of the NHMRC (1946), was a Table of Composition of Australian Foods, compiled by Anita Osmond with specific nutrients analysed in the laboratories of the Australian Institute of Anatomy. Osmond (1946) provided additional data on calcium, iron, carotene, vitamin A, thiamin and vitamin C to the protein, fat, carbohydrate and energy values developed by Bourne in 1937. Throughout the fifties, sixties and seventies the Australian food composition tables continued to be published under the auspices of the NHMRC with a major revision undertaken in 1954 (Osmond and Wilson 1954) with reprints in 1961 and 1964.

Still under the auspices of the NHMRC, the next edition of the Tables was a complete revision undertaken by Thomas and Corden (1970). This revision was based mainly on data derived from overseas food composition tables. The publication Tables of composition of Australian foods was released in 1970 and then in a metric edition in 1977 (Thomas and Corden 1977). As an indicator of the need for and wide use of food tables, it is interesting to note that this publication, marketed through the Australian Government Publishing Service until the recent release of its popular replacement Nutritional values of Australian foods (Commonwealth Department of Community Services and Health (CDCS&H) 1991) has been the best seller for the Service.

## V. THE PRESENT FOOD COMPOSITION PROGRAM

I am particularly pleased to be given the opportunity to discuss the present food composition program administered by the Health Department up to this year, as I have had a role in the last two years in making decisions to expedite this work.

By the end of the 1970's, there was a growing appreciation of the importance of nutrition in health promotion and disease prevention and of the need for national food composition tables based on analyses of Australian foods. There was considerable input from professional groups, particularly the Dietitians Association of Australia for a truly Australian set of food composition tables. Through the NHMRC, the Health portfolio established a Working Party on Food Composition in 1979 to advise on such a food composition program. The present revision program was initially undertaken by the Nutrition Section of the Department and from 1989 it has been the responsibility of a specially created Working Group and then Section on Food Composition. As from 13 May 1991, this responsibility has been transferred to the Interim National Food Authority.

For the present program, food analyses commenced in 1981. Since then, analytical programs have been commissioned annually on a specified range of foods and nutrients. These programs have been undertaken by a number of laboratories, in particular the Department of Food Science and Technology (the University of New South Wales), the Australian Government Analytical Laboratories (South Australian, New South Wales and Victorian Divisions), the Human Nutrition Unit (the University of Sydney) and the Department of Human Nutrition (Deakin University). Initially, funds for the food analyses were provided through the structure of the NHMRC Public Health Research Grant program. Since 1985, the Department has taken a more direct role, providing the funding source through a program grant for food analyses to be undertaken primarily by the Australian Government Analytical Laboratories.

The priorities established by Departmental officers for food selection for analysis include:

. Foods that made a significant contribution to the national diet. These foods are initially determined from the annual series Apparent consumption of foodstuffs and nutrients, Australia published by the Australian Bureau of Statistics (1990).

. Foods for which only limited data are available or for which available data are inappropriate to the current Australian food supply, e.g. meat, fish.

. Basic primary food products and commonly used processed food products.

. Foods about which consumers and health professionals are requesting information, e.g. take-away foods, snack foods and beverages.

Then because of budgetary restrictions and the cost of analyses (now some $2500 per food), a ceiling is placed on the number of foods that can be analysed within each major program. A priority listing of specific foods is then developed within the available budget. The foods

analysed are sampled as representative of foods available in the market-place to Australian consumers. Following the actual food analyses, which involve considerable liaison between analytical chemists and nutritionists in the Department, the reported analytical data undergo a stringent validation process within the Department prior to approval for release.

Industry groups have contributed to the national food composition program, by both providing data from their own laboratories (e.g. the Bread Research Institute of Australia and the Australian Dairy Corporation) or commissioning analyses of their products through a laboratory included in the Department's program (e.g. Canned Food Information Service, Australian Pork Corporation, Australian Meat and Livestock Corporation and McDonalds, Kentucky Fried and Pizza Hut).

## VI. THE PROGRAM'S OUTCOME

Food composition data from the present program have now been released in several formats.

### (a) Composition of foods, Australia series

The major reference is the Composition of foods, Australia (COFA) series which provides the detailed reference on nutrient values, listing sampling details as well as compositional data on 25 nutrients in the main tables. The series include data appendices on values for fatty acids, carbohydrate components, organic acids and amino acids and general appendices on food groupings, analytical methods etc. In 1989 and 1990, the following volumes in the COFA series were published:

Volume 1 - Meats, vegetables, fruit, take-away and snack foods (CDCS&H 1989)
Volume 2 - Cereal and cereal products (CDCS&H 1990a)
Volume 3 - Milk and milk products, fish and eggs (CDCS&H 1990b)
Volume 4 - Fats and oils, processed meat, fruit and vegetables (CDCS&H 1990c)
Volume 5 - Legumes and nuts, beverages and miscellaneous foods (CDCS&H 1990d).

Volume 6 on infant foods is scheduled for release in late 1991 and volume 7 on ethnic foods in early 1992.

### (b) The NUTTAB series

To meet the demand for a computerised format of the food composition data, the Department has packaged Nutrient data table for use in Australia (NUTTAB) a data base on diskette (CDCS&H 1991). NUTTAB, first commercially released in 1989, is updated annually to include data from the COFA series. The first NUTTAB data base was developed within the Department to analyse the national dietary surveys and was modified from the British food composition tables (Paul and Southgate 1978). Successive editions of NUTTAB have included additional Australian values, as data became available from the food composition program. The 1991-92 edition now contains some 90% Australian data.

### (c) Nutritional values of Australian foods

This tabulated, condensed version of the nutrient content of the 1600 foods included in the COFA series is undoubtedly the Department's user-friendly publication from the food composition program. Nutritional values of Australian foods was launched by Mr Brian Howe, Minister for Health, Housing and Community Services, in May 1991. The first edition of this publication sold out within weeks of this launch. The particular contribution of this publication

is that it brings nutrient composition data together in a condensed, accessible and inexpensive form providing a much needed up-to-date scientific reference for teachers, nurses, home economists and students undertaking food science, nutrition and biology courses at secondary and tertiary level. It is a much overdue replacement for the 1970 Tables of composition of Australian foods.

## VII. THE AUSTRALIAN NUTRIENT DATA BANK

The outputs from the food composition program in 1989-91 have been largely possible because of the development in 1987 of the Australian nutrient data bank (ANDB) on the Department's mainframe computer.

The major functions of the ANDB are to:

- store nutrient data from analytical laboratories
- process analysis data into nutrient profiles for foods including the calculation of some values such as energy content
- report the data and associated descriptive information per reference quantity and/or serve size in a number of formats e.g. for the COFA and NUTTAB series. Within the last year, the Department has funded a series of enhancements to expand the flexibility and reporting capabilities of ANDB. One tangible example of these enhancements is the tabulated format of Nutritional values of Australian foods.

## VIII. CONTINUING FOOD COMPOSITION ACTIVITIES

New work in hand at present includes the commissioning of additional vitamins (vitamin B-6, biotin, pantothenic acid, vitamin B-12 and folates) and minerals (selenium, fluoride, sulphur and chloride) with the objective of providing these additional data on all foods in the COFA series. A consumer friendly, less detailed version of Nutritional values of Australian foods is planned for use by the public, providing nutrient data on common food measures or servings. Consideration needs to be given to the analysis of new foods entering the market-place. A recipe calculation facility has been built into the ANDB which should allow the development and publication of the nutrient composition of commonly used recipes. With the transfer of the food composition program to the National Food Authority, new work priorities may be considered. The nutrient composition data published in the COFA series and new data, available from the continuing food composition activities, will provide a valuable reference for the Authority in setting and developing national standards. The food composition program should also provide a valuable data reference for nutrition labelling of packaged foods.

## IX. THE BROADER NUTRITION SCENE

The development of the food analytical program through the eighties and into the nineties has been closely allied to more general activities in nutrition, occurring both within and without the Health portfolio. A milestone for nutrition in this country was the establishment of a Nutrition Taskforce to report to the Better Health Commission. The Commission was established in 1985 by the then Commonwealth Minister for Health, Dr Neal Blewett 'to enquire into the current health status of the Australian population and recommend national health goals, priorities and programs to achieve significant improvements in illness prevention and health awareness'. Nutrition was one of only three taskforces established by the Commission, indicating the

importance given to nutrition's role in health promotion and disease prevention. One major recommendation in the Taskforce's report and supported by the Commission in 1986 was that adequate electronically accessible national nutrition data bases should be established on the nutrient composition of Australian foods (Nutrition Taskforce of the Better Health Commission 1987). It was in this period that the Department initiated a funding program for food composition analysis.

In 1988, improved nutrition was included as one of the five priorities for national action, recommended in the report of the Health Targets and Implementation (Health for All) Committee (1988). This report, which was endorsed in principle by all Health Ministers in March 1988, recommended the establishment of the joint Commonwealth/State National Better Health Program. The National Better Health Program was funded on a four-year basis to develop programs in the five priority areas, recommended by the Health for All Committee. These are:

- Improved nutrition
- Hypertension
- Health of older people
- Injury prevention
- Preventable cancers.

The Nutrition Project Planning Team established to recommend priority projects for the Better Health Program emphasised the importance of national nutrition data bases, including up-to-date information on the nutrient composition of Australian foods. It was partly an appreciation of the urgency of the need for such data for nutrition policy and program development that the Department established a special Working Group in 1989 to expedite the analysis and release of food composition values.

Thus the food composition program has been developed and extended in line with the importance afforded within the Health portfolio to the role of nutrition in health promotion and disease prevention.

## X. CONCLUSION

There are many challenges ahead in the field of nutrition. One major concern of the Government and the Department continues to be the inequalities demonstrated between socio-economic status and nutrition, including the prevalence of overweight or obesity in those less educated, and in lower status occupations. Nutrition has been chosen with the other Better Health priorities because it presents such challenges, it is amenable to change and because some work, such as the national dietary surveys and the food composition program, has been undertaken in the area. The commitment of the Department to the food composition program is a recognition of the value of this national reference for the promotion of better health and as an essential tool for the ongoing monitoring of the nutritional quality of the food supply and of the nutritional status of the population.

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