

# EuroFIR Congress 2006: Food Information Databank Systems – everything you ever wanted to know

Claire S. Williamson and  
Judith L. Buttriss\*

British Nutrition Foundation, High Holborn House,  
52–54 High Holborn, London WC1V 6RQ,  
United Kingdom (Tel.: +44 207 404 6504;  
e-mail: [j.buttriss@nutrition.org.uk](mailto:j.buttriss@nutrition.org.uk))

This paper summarises the aims of the EU EuroFIR Network of Excellence (NoE) and sets the scene by providing background information on the history of food composition databases and their many uses. In this way, it acts as an introduction to the various papers presented at the first EuroFIR Congress, held in London in February 2006.

## Introduction

The first EuroFIR Congress, held in London in February 2006, brought together over 170 participants from 25 countries, including EuroFIR consortium members, other key stakeholders and users of food composition data from across Europe. The Congress aimed to provide an introduction to the aims and objectives of the EuroFIR project, to discuss how food composition databases FCDBs are used and to explain the fundamental importance of these in nutrition-related work. It formed part of the dissemination programme for EuroFIR.

\* Corresponding author.

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EuroFIR (short for ‘European Food Information Resource Network of Excellence’) is a 5-year project funded by the European Commission’s Research Directorate General under the ‘‘Food Quality and Safety Priority’’ (<http://www.cordis.lu/food/home.html>) of the Sixth Framework Programme for Research and Technological Development (<http://fp6.cordis.lu/fp6/home.cfm>).

One of the main objectives of EuroFIR is to develop an integrated, comprehensive and validated databank, or *food information resource*, that will provide online access to various national authoritative sources of food composition data in each European country for nutrients and newly emerging bioactive compounds with potential health benefits. This objective is an essential underpinning component of all food and health research in Europe, and will be a valuable tool for those engaged in FP6 and future FP7 funded research and the European Technology Platform on ‘‘Food for Health’’ (see <http://www.ciaa.be>).

EuroFIR is a partnership involving 46 universities, research institutes and small-to-medium sized enterprises (SMEs) from 26 European countries. The main goals of the project include:

- Strengthening the scientific and technological excellence in food databank systems and tools in Europe.
- Identifying and providing new information on missing data for nutrients and bioactive compounds for all food groups, including traditional and ethnic foods.
- Training a new generation of European scientists in the development, management and application of food databank systems.
- Communicating with all user and stakeholder groups to develop food databank systems for the benefit of European food and nutrition research.
- Disseminating and exploiting new scientific and technological knowledge to create a sustainable and durable collaborative framework.

The programme for the 2006 Congress included updates on the prototype internet portal being developed to allow access to online national food databases across Europe (Möller, 2007), the generation of new data on traditional foods (Trichopoulou & Vasilopoulou, 2007) and the specialised database on non-nutrient bioactive

compounds (EuroFIR BASIS) (Gry & Kiely, 2007). The EuroFIR bioactive compositional database has 4500 entries for 157 plant foods and provides data on 16 compound classes (e.g. flavonoids, glucosinolates and phytochemicals). It also provides information on the biological activity of these compounds. This represents a unique resource for industry, researchers and regulators across Europe.

Other topics addressed during the day included how EuroFIR will harmonise and standardise European food composition data (Möller, 2007), how such data can be used to encourage product innovation by industry and to provide accurate and up-to-date information for consumers (Roodenburg, 2007), the need to harmonise information to improve pan-European risk assessment of the food supply and the need for robust FCDBs in epidemiological research (Slimani, 2007).

One of the driving factors in establishing the EuroFIR NoE was the realisation that pan-European research, such as the European Prospective Investigation into Cancer and Nutrition (EPIC) study, was being hampered by the lack of harmonised food composition data across Europe (see later). Not only is EuroFIR working towards developing a one-stop-shop for food composition data in Europe, but it is also aiming to improve data quality, data completeness and data accessibility. Currently the focus is mainly Europe, although links already exist with networks such as INFOODS, which was established in 1984 under the auspices of the United Nations University (UNU) and has as its goal to stimulate and co-ordinate efforts to improve the quality and availability of food analysis data worldwide (Church, 2005). Since 1994, INFOODS has been co-sponsored by the Food and Agriculture Organization (FAO) of the United Nations (<http://www.fao.org/infoods>). It is hoped that, perhaps through FP7, it will be possible to work more closely with such networks, recognising the challenges of trying to compare food composition data globally. But first, what is the history of food composition databases?

### The history of food composition databases

The first European food composition tables were published in Germany by König in 1878 (König, 1878), followed by Atwater and Woods' American tables in 1896 (Atwater & Woods, 1896). These latter tables incorporated nearly 2600 analyses of a range of foods from the meat, cereals and fruit and vegetables groups, but also included processed foods for the first time, such as chocolate and sausages. Values were presented for the 'fuel value', water, protein, fat, carbohydrate (calculated by 'difference'), ash and 'refuse' content of foods.

The FAO published the first set of 'Food Composition Tables for International Use' in 1949, to help assess world food availability. Although it was recognised that national food composition tables were more accurate for this purpose, such tables did not exist for most countries at the

time. The FAO consequently expanded its work in the 1960s and 1970s to produce regional food composition tables for Asia, Africa and Latin America.

Many other European countries have pioneered the construction of food composition tables, a number of which publish country-specific food composition information on the internet. Many of these food composition tables have evolved over time to meet changing requirements. For example, the earliest analyses of common British foods were undertaken in response to concerns over First World War food shortages. McCance and Widdowson's tables, *The Composition of Foods*, were subsequently created, and have been updated regularly to include the direct determination of carbohydrate content and the inclusion of a wider range of foods (e.g. composite, processed and ethnic foods) and nutrients (e.g. amino acids and fatty acids). The most recent edition was the sixth edition, published in 2002 (Food Standards Agency, 2002) and there will be an integrated dataset published in early 2007.

A key development in the use of FCDBs in recent years has been the advent of computerised databases and nutritional analysis software, which allow easier access to and manipulation of food composition data. As international trade and scientific collaboration continually increase, there is a growing requirement for food composition data to be compatible at an international level. EuroFIR is currently leading the way in the harmonisation of standards for FCDBs in Europe and beyond.

### The different uses of food composition databases

Data on the composition of foods are essential for a variety of purposes in many different fields of work, for example, the assessment of energy and nutrient intake in individuals or groups. They are also necessary to assess the effects of diet on health and disease outcomes and therefore are an essential pre-requisite to epidemiological research. Ultimately, they help in the development of dietary guidelines for population groups and in planning menus for schools, hospitals, prisons and the armed forces. They have even been used to plan the food ration requirements for polar expeditions. The wide range of applications in a variety of other sectors include clinical dietetic practice, sports nutrition, the food industry (e.g. product development and food labelling), government food and health departments (e.g. target setting) and in nutrition education and health promotion.

Table 1 summarises the different uses of food composition data, within each of the main sectors of use. There are some general uses of food composition data which apply to most users, for example, estimating the nutrient content of foods, comparing different foods for their nutrient composition and identifying which foods are good sources of particular nutrients. However, some uses are unique to a particular sector, such as devising special diets for

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