Food Chemistry 113 (2009) 842–845

Contents lists available at ScienceDirect

Food Chemistry

journal homepage: www.elsevier.com/locate/foodchem

Training aspects in the use and production of food composition databases. The EuroFIR experience

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ARTICLE INFO

Article history:
Received 5 December 2007
Received in revised form 26 May 2008
Accepted 28 July 2008

Keywords:
Food composition
Food composition databases
EuroFIR
Training
Internet
Courses
E-learning
Exchange program

ABSTRACT

An increasing number of national food databases have been published on the internet. However, these internet databases can only be searched individually, and the data have been compiled at a national level, resulting in incompatibilities. To resolve these problems, the Network of Excellence EuroFIR develops an internet based platform for online access to various national authoritative sources of food composition data in Europe. Training is essential for its use, and for the development of harmonised procedures of data production, evaluation, compilation, and retrieval. The training program developed within EuroFIR consists of individual training, supported by exchange grants, and a collection of workshops and training courses. Supportive E-learning modules are under construction. Procedures for the evaluation of each training activity have been made to measure its efficacy, and to learn about new training needs. Attention is given to special training needs of compilers in central and eastern European countries.

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1. Introduction

Throughout the world, many national food composition databases exist, of which a substantial number has already been published on the internet (Møller, Unwin, Becker, & Ireland, 2007; Møller, 2008). Internet access has greatly increased the possibilities of users of food composition data. However, these internet databases can only be searched individually, and the data have been compiled at a national level, resulting in incompatibilities. To resolve these problems, a Network of Excellence under Framework Programme 6 (FP6) has been established with about 46 European partners (26 countries) involved in the many aspects of food composition data (http://www.eurofir.net). Its major goal is to develop an internet based platform for online access to various national authoritative sources of food composition data in Europe.

Food composition databases could only be accomplished by combining the expertise of a diversity of specialists (Greenfield, & Southgate, 2003). The professional expertise needed ranges from agronomy, analytical and food chemistry, food technology, dietetics and nutrition to database and quality management, and information/communication technology (ICT). However, even the best food composition database is only of little value if it is used incorrectly because the user is not aware of the constraints and pitfalls upon its use. Therefore, it is of utmost importance that all professionals occupied with nutrient data of foods, users as well as producers, have the opportunity to improve their knowledge on the diverse professional background of food databases. In addition, a network offers a unique opportunity to develop common standards and procedures.

For that purpose, a work package on training has been established within the framework of EuroFIR. This work package develops and offers various training opportunities for all professionals within the framework occupied with nutrient data of foods. The training program aims to cover all aspects of food composition data: generation of data, evaluation, compilation, storage, database management, retrieval, and use. Two different types of training have been developed: individual training, and a range of courses and workshops. The individual training, an exchange program between partners, enables partners in the Network to visit each other in order to get practical on-site training or to perform a joint research project. The second types of training offered are workshops and training courses relevant for food composition databases. In these courses and workshops the knowledge accumulated in the EuroFIR network is disseminated, and where needed, external specialists are invited to share their experience. Training activities

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doi:10.1016/j.foodchem.2008.07.095

are facilitated by various EuroFIR bursaries for participants, whereas the organisation of special courses and workshops is financially supported by EuroFIR.

In this article we provide an overview of the training program developed, and try to evaluate its effectiveness in providing essential training in skills needed for food composition data.

2. Individual training

In a network such as EuroFIR, the expertise is unevenly distributed over the partners, and a major aim is to bridge the gaps in knowledge between the partners, and to improve the knowledge of all partners. The individual training program has been designed to meet very specific training needs of individual members. This program has been built on a system of bursaries and has the character of an exchange program. After an independent evaluation, these bursaries are allocated to projects allowing staff members and PhDs to visit another partner for on-site practical training. Bursaries are also given to members who want to visit a partner for joint research on a food composition topic. At the start of EuroFIR an inventory was made of potential topics for the exchange program (Table 1). In addition, a limited number of bursaries is available for participation in a scientific conference on food composition related research.

An important prerequisite for a successful exchange program is awareness by partners of the expertise available in the EuroFIR network. As can be expected at the start, information on opportunities for exchanges was limited, and uptake of exchange grants was less than desirable. A database showing the expertise of partners in terms of equipment, analytical methods, database compilation and use, computer software (statistics and databases), and contact information was set up on the internal website to facilitate the generation of ideas for exchanges. In addition, the regular joint meetings within the network certainly contributed to increased insight in the specific expertise of each partner. As a result, more exchange projects were developed. In the first 3 years of EuroFIR, various topics were part of the exchanges (Table 2). This table also summarises the number of trainees, their country of origin, and the host country. It is apparent that most of the exchanges performed aimed at acquisition of skills in various fields. This obviously points to gaps in knowledge between partners, and fits with the diversity of the partnership. On the one hand, partners with very well developed databases participate in EuroFIR, while partners just starting with a national database are also involved in the network. Up to now, the exchanges mainly served to bridge these gaps. On-site training is particularly effective because the trainee acquires practical details of methods and procedures, while intensive discussions with the experts provide background knowledge. These personal contacts with colleagues are very useful in the development of branched personal networks within EuroFIR. Participation in the individual training program was a little unevenly distributed over all partners, with as expected, a higher number of partners from Eastern and Southern European countries receiving training grants (Table 2).

Table 1
Individual training needs

- Acquisition of **skills** (analytical skills, quality assurance)
- Development of new **analytical methods**
- Use of advanced **equipment** not available at own laboratory
- **Joint analyses** of samples in a standardised way
- Applying data sets to specific statistical or nutrient **database tools**
- Establishment of **on-line** version of an existing nutrient database
- Formulation of **standards** for methods and quality assessment
- Design of joint **protocols** for new integrated research activities
- Development of **e-learning modules**

Table 2
Individual Training performed in the first three years, number of trainees (15 total), country of origin and host country

- **Extension of a database** with sterols, tocopher(trien)ols,
  Trainee from Austria trained in Finland
- **Training** in folate analysis
  Trainee from Bulgaria trained in United Kingdom and Sweden
- **Training** in analysis of a range of carotenoids
  Trainee from Bulgaria trained in Austria
- **Training** in sample preparation for carotenoids analyses
  Trainee from Portugal trained in the Netherlands
- **Training** in anthocyanin analysis
  Trainee from Belgium trained in Austria
- **Training** in implementing quality assurance
  Trainees from Turkey and Greece trained in United Kingdom
- **Training** in website management
  Four trainees from United Kingdom(3) and the Netherlands trained in United Kingdom
- **Training** in management of food data bases
  Trainee from Austria trained in Belgium
- **Training** in ethnic food recipes calculation
  Trainee from Portugal trained in United Kingdom
- **Training** in recipe calculation
  Two trainees from United Kingdom trained in United Kingdom

Although the network already covers the major European food composition databases, it is important to keep track of new evolving databases that potentially can contribute to the EuroFIR database in the near future. Therefore, since 2007, a limited number of individual training grants is also available for official national compilers outside the present network, but mainly residing in Europe.

3. Courses and workshops

A diversity of courses and workshops has been organised (Table 3). A key training opportunity offered is a general course of 2 weeks on all aspects of the production and use of food composition data in nutrition, the "Food Comp Course". About 15 years ago, this course had been developed by the late Clive West of Wageningen University in close cooperation with the late David Southgate from UK. It is an international course following the principles of the production, management and use of food composition data laid down in the text book of Greenfield and Southgate (Greenfield, & Southgate, 2003). Since 1992, it has been organised in Europe every two years by Wageningen University in cooperation with FAO, United Nations University, and Nutrient Data Laboratory (USDA). Since 2005, EuroFIR facilitates this course by supplying a number of bursaries for EuroFIR partners. In addition, in 2006 a special EuroFIR edition was organised suited to the special requirements of EuroFIR partners.

The background of targeted participants in this course is quite diverse: database compilers and managers, food analysts, but also users of food composition databases such as dieticians, epidemiologists, medical doctors, and nutritionists. This once more underpins that nutrient values of foods are at the crossroad of food sciences and medical sciences. All stages in the production of food composition data are discussed in the course, thus covering all EuroFIR core activities. Topics addressed are: selection of foods and nutrients for inclusion in the database; sampling; choice of analytical methods; quality control, quality evaluation and quality management of the food data production chain; food description and classification; database management systems; recipe calculation and documentation; and data interchange issues. Lectures are given by experts in their respective fields. Apart from the lectures, active participation of participants is stimulated by assignments, project work on solving (own) practical problems, and excursions.

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