In order to apply food composition data correctly, reliable and high quality food composition data are needed as well as professionals able to use these data correctly. In recent years, most efforts on capacity building in food composition were placed on the 19 training courses on the ‘production and use of food composition data in nutrition’ in which about 500 professionals have been trained. These courses do not efficiently reach all sectors or professionals in need of knowledge in food composition. Therefore, food composition needs to be integrated into formal training of nutritionists and dietitians, and distance learning tools have to be developed. FAO and INFOODS have developed such a tool: the “Food Composition Study Guide” with questions, exercises and answers covering all aspects of food composition. It is mainly aimed at compilers, professional users and data generators of nutrient (and contaminant) databases. It can also be useful for the preparation and evaluation of lectures on food composition in food composition courses or in formal training, e.g. university programmes in food/nutrition science or dietetics. The University of Vienna is one of few who have introduced into the formal training of nutritional sciences (master, diploma and PhD) a course on “Correct use of food composition data.”

The presentation will report on the development of the distance learning tool including the peer review and evaluation process through courses and self-learning students. It will also present the experiences gained from the course “Correct use of food composition tables” and report the results of a study on the coverage of food composition in nutritional sciences and dietetics in formal training in Europe (and probably other countries).

Keywords: Food composition; Distance learning; Formal training; Food Composition Study Guide; INFOODS/FAO

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EuroFIR’s Digital Learning Material (E-Learning) for Education in Food Composition Data

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Persons involved in food composition data work have very diverse backgrounds: database compilers and managers, food analysts, but also users of food composition data such as dieticians, epidemiologists, nutritionists, and medical doctors. This diverse background of persons involved in food composition data work is challenging in their education in proper use of the data. As an example, it is difficult to explain nutrient analysis to users who have no chemical background. Interactive digital learning materials (also called E-learning modules) are excellent educational tools for such target groups heterogeneous with respect to prior knowledge. These digital materials are based on educational principles that aim at active and personalized learning. Within EuroFIR, we have developed an E-learning module on “Nutrient Analysis for Non-chemists”. This module uses animations and visuals to assist students in understanding nutrient analysis. It deals with four cases on nutrient analysis: fats and fatty acids, proteins and amino acids, carbohydrates and fiber, and minerals and trace elements. Interactive exercises activate the students individually, and help them to digest the information presented. After studying this module, a student should be able to understand the chemical/technical principles, strengths and limitations of macronutrient analyses, to interpret laboratory results and to evaluate their quality, and to critically communicate with laboratory technicians about analytical methods and results. Preferably, these E-learning modules should be an integral part of a general course on the application of food composition data, and definitely should not replace it. Because the module helps the participant to master the core knowledge, a teacher now can focus on more advanced topics, and on discussions with individual participants. It is our experience that person to person discussions between teacher and participants are an essential part of the learning process in this field. However, the modules can also be studied outside the context of a specific course to repair specific knowledge deficiencies or to refresh knowledge.

Keywords: Food composition; Nutrient analysis; E-Learning; Distance learning; Training

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Compilation Tool for Food Composition in Excel Format for Use in the Absence of a Food Composition Database Management System

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Rationale and Objective: The need for a food composition database management system (FCDBMS) has been recognized since the beginning of food composition databases. Several attempts were made in the past to develop a FCDBMS for international use, without success so far. Several FCDBMS have been developed, e.g. by national or regional compilers, or commercially for different uses, or for certain projects. Many countries, especially developing countries, do often not have the financial means to develop their own FCDBMS software.

Results: Therefore, a simple compilation tool in Excel was developed by FAO and INFOODS which follows international recommendations, e.g. INFOODS component identifiers; separation of archival, reference and user database; possibility to document data following the INFOODS interchange guidelines of 2003 (methods, values, references, sampling); and a recipe calculation system. The recipe calculation system can be used to calculate nutrient values of cooked foods or recipes with two methods (application of nutrient retention factors at ingredients or recipe level and yield factor at recipe level) and any set of nutrient retention factors. It is the first compilation tool which is freely available (http://www.fao.org/infoods/software_en.stm) and which can be tailored to individual needs.

Discussion and Conclusion: However, the use of spreadsheets is more prone to errors as compared to relational databases. It is desired that this simple tool will enable users with different needs to compile food composition databases with a comprehensive documentation. In the future, it is hoped that sql or Access relational databases could be developed following this model and disseminated.

Keywords: Food composition; Compilation tool; Standardized documentation; Recipe calculation; INFOODS

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“What do you do when CRMs are not available”? The Development of Food Matrix Reference Materials in the Asia Pacific Region

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Reference materials are generally recognised as essential tools in the development of new analytical methods or the verification of validation parameters of standard methods as well as in analytical performance evaluation to ensure reliability and quality of the data. The diversity of foods as well as the array of components, nutrients, toxins and contaminants analysts may be required to quantify however provides an on-going challenge for commercial CRM providers.

Food analysts are also continually challenged to develop more sensitive and reliable analytical methods to safeguard public health and consumer confidence against food contaminants and fraud. Whilst intentional adulteration and extension of high value foods with cheaper components has been practiced for centuries, the application of the microscope in the mid 19th century provided a more exact scientific tool enabling analysts to establish foods purity by identifying the presence of physical contaminants often using microscopic comparison with a reference or authentic food.

Due to the vast array of natural and contaminant analytes in foods, the development of suitable reference foods is often difficult and costly. Due to the comparative high cost, tyranny of distance and communication difficulties, the take-up and use of CRMs and other commercially available RMs by developing country laboratories has been tardy. Alternative QA procedures such as analyte recovery of spiked samples or use of alternative reference methods to establish method reliability is often not applicable to food composition analysis.

Through graduate training programs and regional networks such as the Asia Pacific Food Analysis Network (APFAN) and OCEANIAFOODS, food scientists from the Australasian region have provided technical and limited financial support to food analysts from the Asia-Pacific region via targeted training programs on methods of analysis, analytical quality control, development of reference foods and their uses for laboratory proficiency (PT) studies. A number of these scientists have adopted leadership roles in their own countries by developing national networks, PT programs and the development of cost-effective food-based reference materials. At a different level, Australia through the National Measurement Institute has developed a centre of excellence for reference materials for drugs in sport and is increasingly extending this to food-based CRMs for food additives and contaminant residues of interest to trade.

Keywords: Food reference materials; OCEANIAFOODS, Asia Pacific Food Analysis Network; Asia Pacific Region, Quality control

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