

FOOD COMPOSITION DATABASE IN MACEDONIA- NEED AND IMPORTANCE

Dushica Santa, Sonja Srbinovska

Faculty of Agricultural Sciences and Food - Skopje, University Ss. "Cyril and Methodius" in Skopje,
Republic of Macedonia

Corresponding author: dusicasanta@gmail.com

Abstract

Food Composition Databases (FCDBs) represent fundamental information resources for nutrition science. The information is used for wide spectrum of purposes i.e. for food labelling, product development and innovation, dietary treatment, consumer information and research. Thus, high quality food composition data are fundamental to most issues related to nutrition and health and their importance is increasingly being recognized for agriculture, trade and economics. INFOODS is the International Network of Food Data Systems. It is a worldwide network of food composition experts aiming to improve the quality, availability, reliability and use of food composition data. Twenty-Eight European countries has developed the Food Composition Databases. The development of Food composition databases depends on the combination of the expertise of a diversity of specialists with professional background from agronomy, analytical and food chemistry, food technology, dietetics and nutrition to database and quality management and information technology. To support this European Food Information Resource (EuroFIR) has developed various training tools for the production and use of food composition data. However, many countries in Balkan region do not have any form of national food composition data or have been using borrowed information. This is a problem because people need essential information on food composition as well as an access to the information in order they can influence their own dietary patterns. Republic of Macedonia needs to move forward and improve the contribution to development of the FCDB and share it with different stakeholders. There is a need to prepare and implement measures like: increasing capacity development in generating and compiling food composition data; strengthen collaboration with other national and international bodies, organizations and projects working on food composition issues; incorporation of food composition into formal education curricula of schools and universities in nutrition, food science, dietetics and grants to various training and capacity building activities.

Keywords: food composition data, capacity development.

Introduction

Food composition is the determination of what is in the foods we eat and is the critical bridge between nutrition, health promotion, disease prevention, and food production. (Pehrsson and Haytowitz, 2016). Food composition databases (FCDBs) play an important role in various professional domains including food labelling, dietary guidelines, assessment of nutrient intake, formation of specific diet models, epidemiological studies, consumer choices, identifying allergens in restaurants, etc. (Porubska, 2014). Thus, high quality food composition data are fundamental to most issues related to nutrition and health and their importance is increasingly being recognized for agriculture, trade and economics. In developing countries, there are still many professionals lacking the required knowledge and skills and who need to be trained in food composition in a more cost-effective manner. Such training could be offered through distance-learning courses and by incorporating food composition into the curricula of future professionals (Charrondiere R., 2010). Macedonia as many other countries in Balkan region do not have online national food composition data base (EuroFIR, web site). The people need essential information on food composition as well as an access to the information in order they can influence their own dietary patterns, therefore it

important the country to establish the database. The information is needed also for nutritional labelling, and for the monitoring of the quality, safety and authenticity of foods on the market. Users of data collected in food composition tables and databases are very diverse, and include researchers, clinical dieticians, public health officers, nutritional policy makers, the food industry, and educational facilities (Korošec, 2013). Republic of Macedonia needs to move forward and improve the contribution to development of the FCDB and share it with different stakeholders. This could be realized with cooperation with international organization, communication and collaboration with all stakeholders in the country.

International organizations

FAO is leading global food composition activities since its beginning and has published several regional food composition tables. Since 1999, FAO is operating its food composition activities through INFOODS, the International Network of Food Data Systems, aiming to improve the quality, availability, reliability and use of food composition data. As a result of this cooperation many instrumental standards, tools, databases and publications in the field of food composition, and more recently also on biodiversity. These public goods assist countries to generate, manage and use food composition data for different purposes. In collaboration with the Commission on Genetic Resources for Food and Agriculture (CGRFA) several documents on biodiversity and nutrition were elaborated. FAO and INFOODS decided in 2006 to develop a distance-learning tool because no comprehensive distance, e-learning or on-line training was publicly available covering all aspects of food composition, and because the demand for well-trained professionals in food composition by far exceeds the supply through the existing lecture-based postgraduate training courses. Within the European Food Information Resource project “Network of Excellence” (EuroFIR NOE, 2005–2010) complex set of rules, guidelines, and recommendations, such as requirements for FCDBs, a system of controlled vocabularies (thesauri) for FCD description and identification, standard operating procedures for data compilation, quality framework for analytical laboratories and FCDBs, communication tools and centralized web platforms for FCD, have already been created (Porubská, 2014). Books were published in the areas of nomenclature and food descriptions to facilitate data interchange among member countries. Since food composition as an academic discipline is not usually covered in detail, a number of training courses were held in the Netherlands and in other locations. Much of the information contained in these courses has been incorporated into an e-learning course available on the Internet.

Food composition database, examples

There are a number of different types of food composition tables FCT and FCDBs available. Perhaps, the most common is a national database, which is developed for a specific country. When developing an FCDB/FCT, it is important to use good quality data. For example, the USDA has developed a data quality evaluation system to evaluate analytic data. It looks at five key attributes: (1) sampling plan, (2) sample handling, (3) number of samples, (4) analytic method, and (5) analytic quality control. Each of these attributes is scored and summed to yield a quality index for the nutrient in each food. For an FCDB/FCT compiler to properly evaluate the data, it is critical that this information be included in journal articles and various reports. (Pehrsson and Haytowitz, 2016). The preliminary FCDB in Slovenia was prepared following international recommendations and the instructions of Central and Eastern European Food Data Systems (CEECFOODS) initiative. Among the main tasks of the initiative were provision of a network of national data centres, generation of a repository of national FCDBs and promotion of national food composition programmes (Holcikova, 2000). First prepared was the Slovenian food composition tables on meat and meat products and later tables on food of plant origin. Korošec et al., 2013 in her paper emphasize the importance and purposes for establishing the FCDB. According the author it enables insight into the nutritional value of foods of domestic origin, along with the monitoring of their quality; it provides information on the compositions of traditional foods and dishes and of foods that are typical to Slovenia; and it

promotes the development of quality standards for products that will wish to carry EU quality distinctiveness labels (e.g. protected designation of origin (PDO), protected geographical indication (PGI), and traditional specialities guaranteed (TSG). The data included are also important for the Slovenian food industry for product labelling, and for more accurate results of dietary studies carried out in Slovenia and internationally. The 1st electronic format of FCDB in Serbia was created 1995. Also the web application has been used for the development of Serbian FCDB. This specific system was developed according to EuroFIR technical standards which contains all relevant technical information. The database is online and username and password is needed for accessing the database. As coordinating centre for the region, Institute for Medical Research in Serbia gained partnerships support from EuroFIR and UN System Standing Committee on Nutrition and United Nations University to set up 'Network for Capacity Development in Nutrition in Central and Eastern Europe' (NCDNCEE-CAPNUTRA) where Macedonia is also a member country. FCDM software Version II was created in 2010, with the updates that enabled inputs of food data from other CE/B countries: Croatia, Slovenia, R. of Macedonia and FB&H, aiming at establishment of a regional FCDB (Gurinovic, 2016).

Capacity development

Capacity development includes human resource development, organizational, institutional and legal framework development with the aim of enhancing knowledge and skills. Capacity development in food and nutrition is therefore much more than formal training and takes often place in parallel with such training (Pavlovic et al., 2009a). According the author capacity development is a long-term, continuing process, with policies, plans, and activities and should have national priority. Special attention should be given to the capacity development dimensions generated by global and European strategies. Capacity development networks would be important tools in addressing present and future needs in various countries. Author recommends that the EuroFIR training and exchange program is a valuable tool in achieving that goal. Capacity development networks can be useful tools in addressing needs in various countries and in streamlining regional involvement and collaboration, and can increase capacity to address food, health and nutritional challenges, including FCDB development (Pavlovic et al., 2009b).

Conclusions

For establishing the FCDB the collaboration among data generators, compilers, and users is essential. Many results which are published in scientific literature like journals, dissertations and laboratory reports by the Universities and institutions that work in the field of food could be used for the establishing national FCDB. FCDB should be developed and realized mainly with the projects, grants and with the support by the national authorities and international institutions which deal with this subject as well as other institutions in the region. There is a need to prepare and implement measures like: increasing capacity development in generating and compiling food composition data; incorporation of food composition into formal education curricula of schools and universities in nutrition, food science, dietetics; and grants to various trainings.

References

1. Charrondiere R. (2010). Development, evaluation and impact assessment of the Food Composition Study Guide, Dissertation University of Vienna.
2. Gurinovic, M., Milešević J., Kadvan, A., Djekic -Ivankovic, M., Debeljak-Martacic, J., Takic M., Nikolic, M., Rankovic, S., Finglas, P., Glibetic, M. (2016). Establishment and advances in the online Serbian food and recipe data base harmonized with EuroFIRTM standards. *Food Chemistry* 193. 30–38.
3. Holcikova, K. (2000). CEECFOODS – Network on food composition for central and eastern European countries. *Journal of Food Composition and Analysis*, 13, 705–707.
4. Korošec, M., Golob, T., Bertoneclj, J., Stibilj, V., Seljak, BK. (2013). The Slovenian food

composition database. *Food Chem.* 140(3):495-9.

5. Pavlovic, M., Pepping, F., Michal, D., Biro, L., Szabolcs, P., & Dimitrovska, Z., et al. (2009a). Turning Dilemmas into opportunities: A UNU/SCN capacity development network in public nutrition in Central and Eastern Europe. *Journal of Nutrition Public Health Nutrition*: 12(8), 1046–1051.

6. Pavlovic, M., Witthöft, C.M. Hollman P., Hulshof P.J.M., Glibetic, M., Porubska J., Pepping, F., Oshaug A. (2009b). Training and capacity building in central and eastern Europe through the EuroFIR and CEE networks. *Food Chemistry* 113 (2009) 846–850.

7. Pehrsson, P.R., Haytowitz, D.B. (2016). Food Composition Databases. Reference Module in Food Science. *Encyclopedia of Food and Health*, 16–21.

8. Porubska, J., Giertlova, A., Morochovicova, M., Kovacikova E., Porubsky, O. (2014). The Slovak national food composition database: New management system DaRiS. *Journal of Food Composition and Analysis*, 34:26–38.

9. <http://www.eurofir.org/food-information/food-composition-databases-2/>