



**International Graduate Course
on
Production and Use of Food Composition Data
in Nutrition**

FoodComp Asia 2002

6 - 24 May, 2002

Organised by

**Institute of Nutrition, Mahidol University (INMU), THAILAND
(ASEANFOODS Regional Centre and INFOODS Regional
Database Centre)**

in cooperation with

**Food and Agriculture Organisation of the United Nations
(Food Policy and Nutrition Division)**

International Life Sciences Institute (ILSI)

International Network of Food Data System (INFOODS)

**United Nations University (UNU)
(Food and Nutrition Programme for Human and Social Development)**

and

VLAG

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- FAO and ILSI for the financial support. Without their generous assistance the FoodComp Asia 2002 course would not have been possible
- FAO for providing most of the documents used in this course
- Lecturers from different regions: Dr. Heather Greenfield from Australia, Dr. Gary Beecher from USA, Dr. Barbara Burlingame from Europe, Dr. Jehangir Khan Khalil from Asia, Dr. Tee E Siong and Dr. Julia Kantasubrata from ASEAN and many lecturers and staff from INMU for their contribution of expertise and valuable information. Without them this course would never been achieved.
- The Advisory Board for their contribution and suggestion on the content of the course. Special thanks are given to Dr. Clive West and Mrs. Lous Duym (the secretary of the FoodComp Course at the University of Wageningen, the Netherlands) for their encouragement and supply of technical documents.
- Prof. Dr. Scrimshaw, Prof. Dr. Kraisd Tontisirin, and Mrs. Yeong Boon Yee for their encouragement, understanding and moral support.
- All participants of the FoodComp Course for their enthusiastic participation. Their willingness to learn and share their experiences made the course lively and a great success.

We hope to continue the professional linkage with advisory team, lecturers, participants, FAO and ILSI in order to make the activities on food composition data system successful.

The Organising Team
FoodComp Asia 2002
Institute of Nutrition, Mahidol University at Salaya
Thailand
19 June 2002

REPORT SUBMITTED TO FAO AND ILSI

International Graduate Course on Production and Use of Food Composition Data in Nutrition FoodComp Asia 2002, 6 - 24 May, 2002

Background

Food composition database (FCD) provides essential information on the nutritive values of foods. They have wide applications, namely for calculating the nutrient intake, formulating nutritionally adequate diets, quantitatively assessing diets for individuals or groups of population. They are also valuable for health personnel in diet therapy and management as well as for development of food-based dietary guidelines. For food manufacturers, they can be used in screening of raw materials, recipe formulation and product research and development. In addition, food composition database can serve as a guideline for food analysts in estimating nutrient levels of foods prior to actual analysis, which is especially useful in nutrition labelling preparation. Food composition database could also indicate nutritious traditional food sources, which can be promoted by the agricultural sector. To obtain good quality food composition data, good sampling to get representative samples, proper sample preparation and a laboratory with quality assurance must be set up. The data obtained from analytical work must be systematically compiled to develop good quality national or regional FCDs. At the time when the FCD is available, its effective use requires a user-friendly application programme. An international graduate course, aimed for training of the trainers on these three areas were organised by the FLAIR Eurofoods-Enfant Project of the European Union in 1992 and by VLAG, UNU, FAO and IUNS in 1994 who were joined by COST in 1996. Regional courses were organised in Santiago de Chile in 1995, Cape Town (South Africa) in 1997, Mexico in 1998 and Jamaica in 2001.

Following the recommendation derived from the 3rd International Food Data Conference (3IFDC), a Regional FoodComp Asia 2002 course was organised by the Institute of Nutrition, Mahidol University, Thailand for three weeks during 6 to 24 May 2002. This course was organised in collaboration with FAO, ILSI, UNU/INFOODS and VLAG, University of Wageningen, the Netherlands.

Objectives of the course

The aim of FoodComp Asia 2002 was to show how those involved in the production of analytical data for nutrients in foods and the compilation of the data contribute to the quality and usefulness of FCD in nutrition. The course was based on the philosophy that the preparation of nutritional databases requires close understanding of the needs of the users by both compilers and producers of analytical data. The course showed how this understanding can be achieved and the benefits that flow from collaboration of users, analysts and compilers.

Participants

Fifteen participants from 11 countries: three from SAARCFOODS (one each from Bangladesh, Nepal and Pakistan), two from MASIAFOODS (one each from China and Mongolia), and 10 from ASEANFOODS (one from Brunei Darassalam, one from Indonesia, two from Malaysia, one from Philippines, two from Vietnam, three from Thailand) attended the course. List of participants their characteristics, and addresses of contact are shown in **Table 1**. Majorities of the participants, twelve of them, are food composition data generators. Among all, only one is data user, one is data generator and compiler and one is data generator and user.

Course structure

FoodComp 2002 was structured around the Guidelines for the Production and Use of Food Composition Data', compiled by Dr. H. Greenfield and Professor DAT Southgate under the initial auspices of INFOODS and later the FLAIR Eurofoods-Enfant Project. Ways in which nutritional databases are used and how these determine the range of nutrients for which values are required and the foods for which values are needed, were covered. The choice and validation of analytical methods to give nutritionally relevant values were discussed. The stages in the production of a nutrient database were presented. Participants become familiar with computer software for constructing a computerised database and using nutritional data. Participants had a real experience of peer reviewing scientific papers and writing a proposal to be submitted to an international agency.

Course content

The course was divided into 3 main areas: food composition data generation, compilation and use. The major elements of the course comprised lectures, laboratory practices, group working and presentation. The aspects included were as follows. The three-week schedule is attached in **Appendix 1**.

- Overview of food composition data system
- Food composition activities: international, regional and national level
- Food composition data generation:
 - sampling, sample handling and sample preparation
 - method of food analysis, critical control points
 - selection of methods, method validation and verification
 - quality assurance programme: internal and external assessment
 - data quality assessment
 - peer reviewing scientific paper
 - research on food composition: nutrient bioavailability, effects of processing on nutrients
 - group assignment: using the knowledge gained during the course to write a research proposal for international support. IFS application form was used.
- Food composition data compilation:
 - sources and types of FCD
 - format, modes of expression and INFOODS tagnames
 - food nomenclature and coding
 - assembling of FCD
 - data integrity/scrutinisation
 - data source and missing data management
 - data dissemination and maintenance
- Data users:
 - use and users of FCD: international and national level
 - available FCD: FCTs and web-based resources
 - issues and problems in using FCD
 - ideal FCD
 - guidelines for the use of FCD
 - FCD application software: its use in nutrition
- Individual group discussion: data generator, data compilers, data users

Financial Support

Financial support for the FoodComp Asia 2002 was provided by FAO and International Life Science Institute (ILSI). With this financial support we were able to waive the course fee which included registration, tuition fee, course materials and documents, hotel, lunch and break for all participants. Donor agencies in each country provided support for the airfare and minimal daily expenses for their participants.

Advisory Board

Dr. B. Burlingame, Food and Agriculture Organisation of the United Nations, Rome, Italy
Prof. C. West, Wageningen Agricultural University, Wageningen, The Netherlands
Dr. H. Greenfield, University of New South Wales, Australia
Ms. J. Holden, United States Department of Agriculture, Beltsville, MD, USA
Ms. I. Mazar, Food and Agriculture Organisation of the United Nations, Rome, Italy
Dr. Pualine Samuda, Caribbean Food and Nutrition Institute, Jamaica

Course Directors

Assoc. Prof. Dr. Songsak Srianjata, Director, Institute of Nutrition, Mahidol University (INMU), Thailand
Asst. Prof. Dr. Prapasri Puwastien, INMU, Thailand
Dr. Barbara. Burlingame, Food and Agriculture Organisation of the United Nations, Rome, Italy

Course Associate Directors

Dr. Anadi Nitithamyong, INMU, Thailand
Assoc. Prof. Dr. Prapaisri P Sirichakwal, INMU, Thailand

Instructors and Other Faculty (Table 2)

Dr. Heather Greenfield, University of New South Wales, Australia
Dr. Gary Beecher, USDA, USA
Dr. Barbara Burlingame, Food and Agriculture Organisation of the United Nations, Rome, Italy
Dr. Tee E Siong, Former Head of the Division of Human Nutrition of the Institute for Medical Research (IMR) in Kuala Lumpur and current President of the Nutrition Society of Malaysia
Professor Dr. Jehangir Khan Khalil, Faculty of Nutrition Sciences, NWFP Agricultural University of Peshawar, Pakistan
Dr. Julia Kantasubrata, LIPI, Bandung, Indonesia
Dr. Prapasri Puwastien, INMU, Thailand
Dr. Pongtorn Sungpuag, INMU, Thailand
Dr. Ratchanee Kongkachuichai, INMU, Thailand
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Ms. Amornrat Meetawee, INMU, Thailand

Course Evaluation

Three types of evaluation were performed: 1) **topics evaluation**: weekly by distribution of an evaluation form at the beginning of the week; 2) **verbal evaluation**: at the end of each main session (data generation, compilation and use); 3) **over-all course evaluation**: at the end of the course. Summary of each type of evaluation, including comments and suggestion from participants is presented in **Section 2. Course Evaluation**.

Conclusion

The FoodComp Asia 2002 was the first course organised in Asia. Although the content of the course followed mainly the same course in Wageningen, some new strategies were exercised in order for participants to have more practical experience. They were

- Topic: *Criteria used for data quality assessment.*
Exercise: group activity on peer reviewing scientific papers using papers in *Journal of Food Composition and Analysis*.
- Topic: *Quality control system for nutrient analysis*
Exercise: preparation of an in-house quality control sample and QC chart. The prepared samples are being checked for sample homogeneity. They were distributed among the participants. A laboratory performance study for moisture, protein, lipid and ash is being exercised. The results from each laboratory will be collected and evaluated. Participants requested to participate in the future interlaboratory study organised by ASEANFOODS.
- Topic: *Group assignment*
Exercise: three groups of participants were formed as research teams. Writing a proposal related to the development and use of the food composition data was assigned. The application form of International Foundation of Science (IFS) was used as a model.

The participants paid a lot of attention and worked hard on the above trials. The exercises were satisfied by the majority of the participants. The group assigned work, in particular, was evaluated as a way to create cooperation, sharing idea and making close relationship among the participants.

The most important issue raised by the participants is the need for more practical sessions. The participants believed that learning by doing will help them understanding most of the required subjects. Learning from experience of other courses organised in different regions of the world would help in setting up the practical classes and the proportion of the lecture and practices for the future course.

Although the organiser decided to waive the registration fee for all participants, the number of participants from overseas were less than expected. The main reason was due to lacking of financial support for airfare and some political problems of the participants' countries. Lack of communication, information of budget needed, late contact and confirmation from some participants resulted in insufficient time to arrange any assistance from the organiser.

Recommendation from Course Director

1. FoodComp course syllabus

Since 1992, the FoodComp course was organised several times in the Netherlands and in different regions of the world. For the most benefit of the participants and the standard quality of the FoodComp course, a meeting of the course directors and the main lecturers is strongly recommended. The objectives of the meeting are to exchange and share experience and information gained from each course, harmonise, standardise and develop a standard FoodComp course syllabus in details. This activity can be performed through electronic communication and a technical meeting can be organised for half a day or one day at the next International Food Composition Data Conference in the U.S.A. The evaluation of the course by participants should be taken into consideration in modification and improvement of the course. The developed syllabus should then be followed by all lecturers.

2. Plan for organisation of FoodComp Course

An international technical committee or the International Advisory Board of the FoodComp course should be formed. A specific plan for organising the course in different regions should be set up and circulated to the funding agencies for their planing of the support.

3. Course materials

The main references and materials should be listed and have them available at the key organisation, i.e. FAO, Rome. The core course reference, H Greenfield and DAT Southgate: Food Composition Data: production, management and use, the new edition, should be provided by FAO to the participants of the FoodComp course when it is available.

Follow-up activities: requested by participants

1. A manual on food composition analysis should be developed by ASEANFOODS and distributed to all participants for future use.
2. There should be follow-up activities after the course, for example, a collaborative activity on laboratory performance study should be carried out to include all laboratories participated in this course.

Follow-up activities: response from the Course Director

.1. *Development of an ASEANFOODS manual on food composition analysis*

This activity could be carried out by ASEANFOODS member countries. There will be a workshop on ASEANFOODS in September 2002. This activity can be part of the workshop. The developed manual can then be published and distributed among the FoodComp Asia 2002 participants and the ASEANFOODS member countries for future use. A brief proposal of this activity is attached with the budget report in **Section 3**.

2. *Interlaboratory performance study on nutrient analysis*

Since 1989, four rounds of the study were carried out by INMU among ASEANFOODS member laboratories and laboratories in other regions of the world. However, without financial support, the study cannot perform regularly. An interlaboratory performance study on the analysis of some mandatory nutrients (cholesterol, sugars, dietary fibre, Na, Ca, Fe, vitamin A, vitamin B1, B2, and vitamin C) for nutrition labelling will be carried out in late 2002 with a minimum charge. Laboratories of the participants of the FoodComp Asia 2002 can participate in this coming study. An information of the study will be sent to all participants when it is ready.

List of references and materials: FoodComp Asia 2002

	References	Note
1	H Greenfield, DAT Southgate. Food composition data A: A user's perspective: Production, Management and Use", Elsevier Applied Science, London, 1992	A photocopy of the this version was used in this course. A book of new version will be provided by Dr Barbara Burlingame, FAO Rome.
2	William M Rand , Carol T Windham, Bomnita W Wyse, Vernon R Young. Food composition data: A user's perspective, UNU press (1987).	50 copies available at INMU
3	John C Klensin, <i>et al.</i> Identification of food components for INFOODS data interchange, UNU press (1989).	42 copies available at INMU
4	FAO Food and Nutrition Paper 66. Carbohydrates in human nutrition, FAO, Rome (1998).	
5	FAO Food and Nutrition Paper 57. Fats and Oils in human nutrition. Report of the joint expert consultation, FAO, Rome (1994).	
6	Journal of Food Composition and Analysis, volume 13, Number 6, December 2000;	
7	Journal of Food Composition and Analysis, volume 13, Number 5, October 2000	
8	Heather Greenfield. Quality and Accessibility of Food-Related Data: Proceedings of the First IFD Conference, AOAC International (1995).	
9	Heather Greenfield. Use and abuses of food Composition data (1990).	
10	CP Patrick Reid. Handbook for Preparing and Writing Research Proposals, IUFRO, Austria (2000).	
11	IFS Application form	
12	ASEAN Food Composition Tables, INMU (2000).	
13	Thai Food Composition Tables, INMU (1999).	
	References provided for information	
1	FAO Food and Nutrition Paper 14/7 (1986). Manuals of Food Quality Control: 7. Food Analysis: general techniques, additives, contaminants, and composition.	
2	John C Klensin (1992) INFOODS Food composition data interchange handbooks, UNU Press.	
	Course materials in CD-ROM	
1	Journal of Food Composition and Analysis – Volume 13, No 4, 2000	
2	INFOODS publications	
3	Nutrition Country Profiles	
4	FAOSTAT 2001	