Summary Report 1

Roundtable discussion on Food Composition Database

Development of Good Quality FCT/FCDB in ASEAN

Organised by

ASEANFOODS and International Life Sciences Institute SEA Region

17-18 December 2015 at the Institute of Nutrition, Mahidol University

By Prapasri Puwastien, Kunchit Judprasong and E-Siong Tee

Activities during the two-day Roundtable discussion were as follows:

Day 1. 17 December 2015:

1. A presentation on *Guidelines for Quality Evaluation of FCD throughout the FCD Developing Process* was presented by the ASEANFOODS Coordinator, Dr. Prapasri Puwastien. The presentation can be downloaded at ASEANFOODS Website (http://www.inmu.mahidol.ac.th/aseanfoods/index.php).

2. *Development of draft system for quality evaluation of published national FCTs/FCDBs in ASEAN countries:* a preliminary evaluation model prepared by participants from Thailand was used for discussion. With input from all participants, a draft evaluating system was developed with a set of twelve criteria; each criteria comprised of several sub-criteria. Weighting and scoring system for each criteria and sub-criteria were set up. This draft *system for quality evaluation of published national FCTs/FCDBs in ASEAN countries was used for quality evaluation of published FCTs in ASEAN (see paragraph 3 of Day 2 of this report)* **(Summary Report 2)**

Day 2. 18 December 2015

1. As a sharing of a country experience, a presentation on *"Systematic Development of the National FCDB in Malaysia: A Case Study for ASEAN*" was presented by Prof. Amin Bin Ismail, one of the country representatives from Universiti Putra Malaysia (UPM). The presentation can be downloaded at ASEANFOODS Website (http://www.inmu.mahidol.ac.th/aseanfoods/index.php).

2. A summary report on ILSI SEA Region Status Review of FCTs in ASEAN countries was presented by Dr. Sofia Amarra, ILSI SEAR. The presentation can be downloaded at ASEANFOODS Website (http://www.inmu.mahidol.ac.th/aseanfoods/index.php).

3. Quality evaluation of the published FCTs in ASEAN:
The *draft system for quality evaluation of published national FCTs/FCDBs in ASEAN countries* developed by meeting participants was used for this evaluation. For a practical approach, within the limited working time, eight out of twelve developed criteria were selected by participants and applied to evaluate the available national FCTs in ASEAN (Indonesia, Malaysia, the Philippines, Thailand, and Vietnam). Several countries – Indonesia, Malaysia, the Philippines, and Thailand - evaluated both the old and new versions. From the outcome of the first evaluation, specific problems in each country and common problems to all countries were identified. After applying the draft system for quality evaluation to the national FCTs, the

outcome showed that the system needed some minor modification. Due to time limitation, the documentation of the modified quality evaluation system could not be completed.

After this meeting, the draft evaluation system was modified according to the comments from the roundtable discussion and sent to all participants for final consideration. The participants used the modified system to re-evaluate the national FCTs. After January 2015, the final draft system for quality evaluation of the published FCT/FCDB was documented and the quality status of the FCTs in ASEAN counties is summarised in **Summary Report 2.**

The draft system will be submitted to INFOODS as a proposed system by ASEANFOODS for consideration to be included in the INFOODS Guidelines.

4. *Roundtable discussion: action plan for future activities*

4.1 Recommendation of nutrients to be included in the national and regional FCTs/FCDBs

Based on the outcome of the evaluation of available of FCTs, the participants selected and prioritised the list of nutrients which are recommended to be included in the national FCDB. The selected nutrients and energy were ranked into first (energy and 29 nutrients), second (4 nutrients) and third priority (one nutrient and iodine in fresh and cooked foods) as follows.

Target nutrients and priority for ASEAN FCTs/FCDB development

Covered nutrients:	**Priority**
- Energy	First priority
- Moisture	First priority
- Protein	First priority
- Fat (Lipid)	First priority
- Ash	First priority
- Carbohydrate	First priority
- Dietary fibre	First priority
- Total sugars (sucrose, fructose, glucose, lactose, maltose)	First priority
- Starch	Second priority
- Calcium	First priority
- Phosphorus	First priority
- Magnesium	First priority
- Sodium	First priority
- Potassium	First priority
- Iodine	First priority for fortified foods. Third priority for fresh and cooked foods
- Iron	First priority
- Se	Second priority
- Zinc	First priority
- Vitamin B1	First priority
- Vitamin B2	First priority
- Niacin	First priority
- Vitamin B6	First priority
- Vitamin B12	First priority
- Vitamin C	First priority
- Folate	First priority
- β-carotene	First priority
- Other provitamin A, carotenoids (e.g., alpha carotene, cryptoxantene)	Third priority
- Vitamin A	First priority
- Vitamin D	First priority
- Vitamin E	First priority

Target nutrients and priority for ASEAN FCTs/FCDB development *(continued)*

Covered nutrients:	Priority
- Fatty acids (Saturated fat, MUFA, PUFA, TFA)	First priority
- Cholesterol	First priority
- Amino acids	Second priority
- Anti-nutrients (i.e., phytate, oxalate)	First priority
- Phytonutrients (antioxidant, flavonoids, carotenoids…etc)	Second priority

4.2 The participants also agreed on the preparation and documentation of the ASEAN FCDB. Completed FCDB or the master files of the user FCDB of national FCTs in ASEAN countries will be available in February or June 2016. It was noted that Thailand has already made available the printed FCTs in September 2015 (online FCDB is now available at <http://www.inmu.mahidol.ac.th/th/>. The plan for this study will be distributed to ASEANFOODS member countries and discussed at the ASEANFOODS Workshop in March 2016

4.3 A need for training on the systematic development of quality food composition database, data compilation and uses, especially for the new working group, was also mentioned by some participants.

The needs on FCDB activities will be discussed at the ASEANFOODS Workshop in March 2016.

5. *New ASEANFOODS Coordinator and vice-coordinator:*

Assoc. Prof. Dr. Prapasri Puwastien has been the Technical coordinator of ASEANFOODS since 1986 and was designated to be the ASEANFOODS coordinator by INFOODS since 1991. In 2011, she was requested by the ASEANFOODS members to continue being the coordinator of the ASEANFOODS. All together she has been in the position for about 29 years. The meeting participants expressed sincere appreciation to Dr Prapasri for her dedication and contribution in leading the Network activities for almost 3 decades.

At this roundtable discussion, a session to elect new ASEANFOODS coordinator and vice coordinator was conducted. The present vice-coordinator of ASEANFOODS, Assoc. Prof. Dr. Kunchit Judprasong, was nominated to be the new ASEANFOODS coordinator, together with Mr. Le Hong Dung from Vietnam as the vice-coordinator. The decision on these 2 appointments by the participants at the meeting was unanimous.

Tasks of Regional Data Centre coordinator, vice coordinator and tasks of National coordinators and partners written by FAO/INFOODS are presented in http://www.fao.org/infoods/infoods/structure-and-tasks-of-infoods/en/

The meeting recognised that the activities of the Roundtable Discussion on the FCDB have not yet been completed and there will be some official arrangement and approval of the new ASEANFOODS Coordinator and the vice coordinator from other ASEANFOODS members who were not present at this meeting ,as well as the official notification to INFOODS. As such, the meeting requested Dr. Prapasri Puwastien to continue as the co-chair of the Roundtable discussion on FCDB until the activities as planned are completed, which should be by January or early February 2016, and as interim ASEANFOODS Coordinator until March 2016.

Summary Report 2

Roundtable discussion on Food Composition Database

Development of Good Quality FCT/FCDB in ASEAN

Organised by

ASEANFOODS and International Life Sciences Institute SEA Region

17-18 December 2015 at the Institute of Nutrition, Mahidol University

By Kunchit Judprasong and Prapasri Puwastien

Quality evaluation of published FCTs in ASEAN

The development of a draft system for quality evaluation of the available FCTs in ASEAN was the main activity of the Roundtable discussion. A draft evaluation system was developed composing of a set of twelve criteria, with several sub-criteria under each criterion, and a weighting and scoring system. After applying the system to evaluate the available FCTs in Indonesia, Malaysia, Philippines, Thailand and Vietnam, the draft system was revised and the final system is shown in **Table 1.**

The quality status of the national FCTs in ASEAN, evaluated by the revised quality evaluation system, are summarised in **Table 2.**

Table 1. Draft system for quality evaluation of published food composition tables and databases: proposed by ASEANFOODS from Roundtable Discussion (17-18 December 2015)

National FCT/FCDB: ..... **Evaluator:** .....

Date of evaluation: .....

Instruction: Please evaluate the national FCT/FCDB according to the following criteria and sub-criteria by assigning the quality score in the table

Weighted score for criteria and ranking score for criteria
5 = most important (most complying with the criteria/sub-criteria)
4 = less than most important but better than moderate
3 = moderate important
2 = better than less important but more than moderate
1 = less important (not meet the criteria)

Weighted score for sub-criteria
5 = most complied with the sub-criteria
4 = less than most comply but better than moderate
3 = moderate complied
2 = better than not complied but more than moderate
1 = not complied with the sub-criteria

N/A = Not Applicable means that the criterion considered is not relevant for the food and nutrient considered, it does not mean that the information is missing in the FCT/FCDB

Proposed FCT/FCDB evaluation system for assessment of published FCT/FCDB

Criteria/sub-criteria	Weighting score		Ranking score of criteria	Maximum quality score (weighted score of criteria x maximum ranking score of the criterion)	Assigned score of individual evaluated criterion	Total quality score (Weighted score of criteria x assigned score of individual evaluated criterion)
	criteria	sub-criteria				
1. Year of publication (specify: …….):	1					
- ≥ 20 year			1	1 x 5 = **5.0**		**0**
- > 15-20 years ago			2			
- > 10-15 years ago			3			
- > 5-10 years ago			4			
- ≤ 5 years			5			
2. Percentage number of new food items in the updated version FCTs compared to the previous version	4					
- < 10%			1	4 x 5 = **20.0**		**0**
- 11-20%			2			
- 30-40%			3			
- 40-50%			4			
- ≥ 50%			5			
3. Documentation in the FCTs - information to the users - on the followings	4					
- food sampling		4		4 x 3.9 = **15.7**		**#DIV/0!**
- sample preparation		4				
- sample handling		4				
- covered food group		4				
- covered nutrients and other components		4				
- unit of expression for each nutrient		4				
- methods of analysis		4				
- conversion factors (energy, protein, CHO, vitamin A,...etc)		4				
- methods for calculation e.g. energy, CHO, Prtotein, Vit A_RAE,….)		4				
- data source (references, name of laboratory)		4				
- quality control system		4				
- data checking before publication		4				
- INFOODS Tagnames		3				
- rounding rules of figure		4				
- number of decimal places for each nutrient		4				
- data variability, e.g. SD or SE, min, max		4				
Average scores of sub-criteria		**3.9**			#DIV/0!	
4. Food description:	4					
4.1 Raw and cooked single foods						
- Local name		4		4 x 4 = **15.9**		**#DIV/0!**
- English name		4				
- Scientific name		4				
- Food code number		4				
- Food source		4				
- part of plant/animal for analysis		4				
- age or maturity of the collected food		4				
- physical state, shape, size or form		4				
- cooking method and condition		4				
- edible portion		4				
- density, specific gravity		4				
4.2 For home made dishes, or foods sold in restaurant						
- complete name		4				
- recipe in mixed dish		4				
- serving size		4				

Criteria/sub-criteria	Weighting score		Ranking score of criteria	Maximum quality score (weighted score of criteria x maximum ranking score of the criterion)	Assigned score of individual evaluated criterion	Total quality score (Weighted score of criteria x assigned score of individual evaluated criterion)
	criteria	sub-criteria				
4.3 For manufactured prepacked food only		4				
- generic name		4				
- commercial name		4				
- brand name		4				
- Nutrition Information		4				
- recipes		4				
- packing medium e.g. brine, oil, syrup		4				
- fortified foods		4				
- container/package (can, pouch, bag, sachet)		4				
Average scores of sub-criteria		4.0			#DIV/0!	
5. Per cent contribution of analysed data from laboratories within country	**5**					
- < 20%			1	5 x 5 = **25.0**		**0.0**
- 21-40%			2			
- 40-60%			3			
- 60-80%			4			
- ≥ 80%			5			
6. Number of individual data sets where n≥3 for preparation of user database	5					
- < 20%			1	5 x 5 = **25.0**		**0.0**
- 21-40%			2			
- 41-60%			3			
- 61-80%			4			
- ≥ 80%			5			
7. For FCD derived from computed data or borrowed data including recipe calculation, information given are:	3					
- yield factors			3	3 x 3 = **9.0**		**#DIV/0!**
- nutrient retention factor			3			
- source of data			3			
- method of verification			3			
- method for imputed data (e.g. correct moisture content)			3			
Average scores of sub-criteria			3		#DIV/0!	
8. Covered nutrients:	5					
- Energy		5		5 x 4.8 = **24.1**		**#DIV/0!**
- Moisture		5				
- Protein		5				
- Fat (Lipid)		5				
- Ash		5				
- Carbohydrate		5				
- Dietary fibre		5				
- Total sugars (Sucrose, fructose, glucose, lactose, maltose)		5				
- Starch		4				
- Calcium		5				
- Phosphorus		5				
- Magnesium		5				
- Sodium		5				
- Potassium		5				
- Iodine		3				
- Iron		5				
- Se		5				
- Zinc		5				
- Vitamin B1		5				
- Vitamin B2		5				
- Niacin		5				
- Vitamin B6		5				
- Vitamin B12		5				
- Vitamin C		5				
- Folate		5				
- β-carotene		5				
- Other provitamin A carotenoids (e.g. alpha carotein, cryptoxantein)		5				
- Vitamin A		5				
- Vitamin D		5				
- Vitamin E		5				
- Fatty acids (Saturated fat, MUFA, PUFA, TFA)		5				
- Cholesterol		5				
- Amino acids		5				
- Anti-nutrients (i.e.,. phytate, oxalate)		3				
- Phytonutrients (antioxidant, flavonoids, carotenoids…etc)		4				
Average scores of sub-criteria		4.8			#DIV/0!	
9. Missing nutrient data in the FCTs/FCDB	3					
≥ 80%			1			

Criteria/sub-criteria	Weighting score		Ranking score of criteria	Maximum quality score (weighted score of criteria x maximum ranking score of the criterion)	Assigned score of individual evaluated criterion	Total quality score (Weighted score of criteria x assigned score of individual evaluated criterion)
	criteria	sub-criteria				
60-80%			2	3 x 5 = 15 **15.0**		**0.0**
40-60%			3			
21-40%			4			
≤ 20%			5			
10. Quality control for lab analysis: self assessment	5					
- accredited ISO/IEC 17025		5		5 x 5 = **25.0**		**#DIV/0!**
- use standard analytical methods (AOAC, AACC, ISO,...)		5				
- internal QC system (replicate analysis, QC sample, RM)		5				
- external QC system (participate in PT)		5				
Average scores of sub-criteria		5			#DIV/0!	
11. Compilation tool used for establishing and updating FCT/FCDB:	4					
- International standards compilation toll (INFOODS compilation tool, EuroFIR, USDA)		4		4 x 3 = **12.0**		**#DIV/0!**
- self-developed compilation tool		3				
- commercial FCD compilation system		2				
Average scores of sub-criteria		3.0			#DIV/0!	
12 Access of FCT/FCDB:	5					
- Printed version		3		5 x 4 = **20.0**		**#DIV/0!**
- available on website - pdf		4				
- available on website - Excel		5				
- available on website - searchable		4				
Average scores of sub-criteria		4.0			#DIV/0!	

	Total max. score	Sum of total quality scores	% Quality score =
Evaluation which includes all Criteria	**212**	**#DIV/0!**	**#DIV/0!**
Evaluation when criteria No. 7 is equal to N/A	**203**	**#DIV/0!**	**#DIV/0!**

Criteria for quality interpretation
% Quality score and interpretation
> 85% = high quality
>60-85 = some confidence but with limitations
>35-60 = low confidence but with best estimates
< 35% = no confidence in the data

Table 2. Summary results: quality status of available FCTs in ASEAN countries

National FCT/FCDB:	Malaysia new FCT	Malaysia (1997 version)	Indonesia	Philippine FCT 1997	Philippine_ Selected_Vegetables	Vietnam	Thai FCT 2015	Thailand (MOPH 2001)
Evaluator	Amin Ismail	E-Siong Tee	Fitrah Ernawati	KT Biona, RG Rodriguez	KT Biona, RG Rodriguez	Le Hong Dung	Kunchit Judprasong	Nuntaya Chongchaithet

Criteria	MY_New	MY 1997	INDO	PH_1997	PH_Veget	Vietnam FCT	Thai FCT 2015	Thai MOPH 2001	Total	Cut-off (70%)*
1. Year of publication:	5.0	2.0	4.0	2.0	5.0	4.0	5.0	3.0	5.0	3.5
2. Percentage number of new food items in the updated version FCTs compared to the previous version	16.0	20.0	8.0	8.0	4.0	4.0	20.0	16.0	20.0	14.0
3. Documentation in the FCTs on the followings:	15.3	14.5	10.0	12.8	15.3	13.0	15.7	12.3	15.7	11.0
4. Food description:	15.6	13.2	7.5	13.3	15.3	14.3	12.8	10.7	15.9	11.1
5. Per cent contribution of analysed data from laboratories within country	25.0	25.0	20.0	25.0	25.0	20.0	25.0	25.0	25.0	17.5
6. Number of individual data sets where n≥3 for preparation of user database	25.0	25.0	5.0	5.0	5.0	10.0	15.0	5.0	25.0	17.5
7. For FCD derived from computed data or borrowed data including recipe calculation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.0	6.3
8. Covered nutrients:	18.2	16.8	15.6	14.1	13.6	22.5	17.9	14.7	24.1	16.9
9. Missing nutrient data in the FCTs/FCDB	9.0	15.0	9.0	15.0	15.0	9.0	12.0	12.0	15.0	10.5
10. Quality control for lab analysis: self assessment	25.0	15.0	10.0	15.0	15.0	25.0	25.0	20.0	25.0	17.5
11. Compilation tool used for establishing and updating FCT/FCDB:	10.7	6.7	4.0	10.7	8.0	6.7	10.7	4.0	12.0	8.4
12 Access of FCT/FCDB:	13.8	11.3	7.5	11.3	7.5	11.3	20.0	11.3	20.0	14.0
Sum of total quality scores	**179**	**164**	**101**	**129**	**129**	**140**	**179**	**134**	**203**	**142**
% Quality score =	**88.1**	**81.1**	**49.6**	**65.1**	**63.3**	**68.9**	**88.4**	**66.0**	-	-

Criteria for interpretation

% Quality score and interpretation

> 85% = high quality
>60-85 = some confidence but with limitations
>35-60 = low confidence but with best estimates
< 35% = no confidence in the data

*Cut-off point for each criteria for quality evaluation, proposed by participants at Roundtable Discussion 17-18 Dec 2015