Slide 1

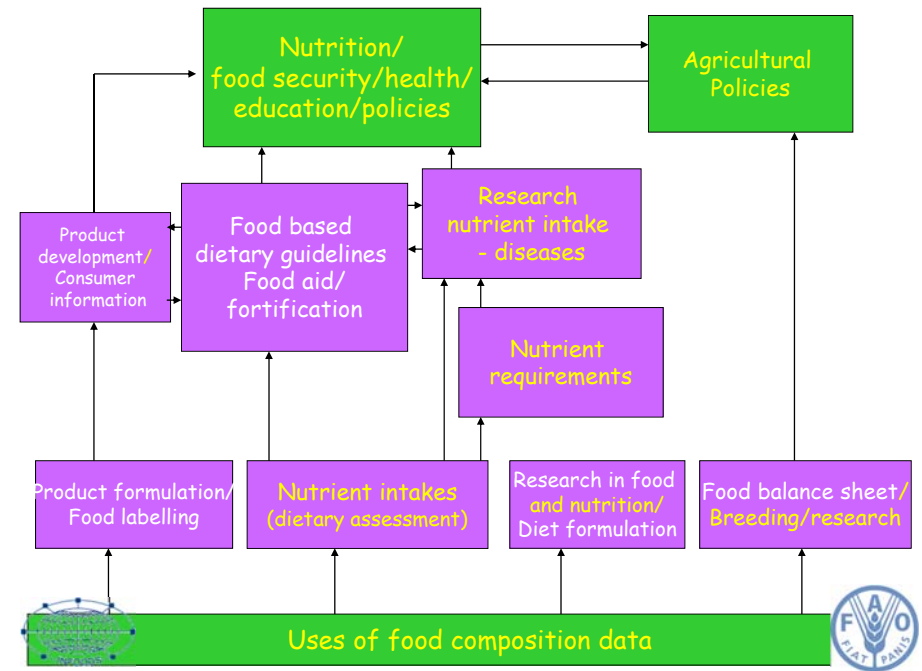**Roundtable Discussion on Food Composition Database**
December 17-18, 2015

"Development of food composition database with good quality in ASEAN"

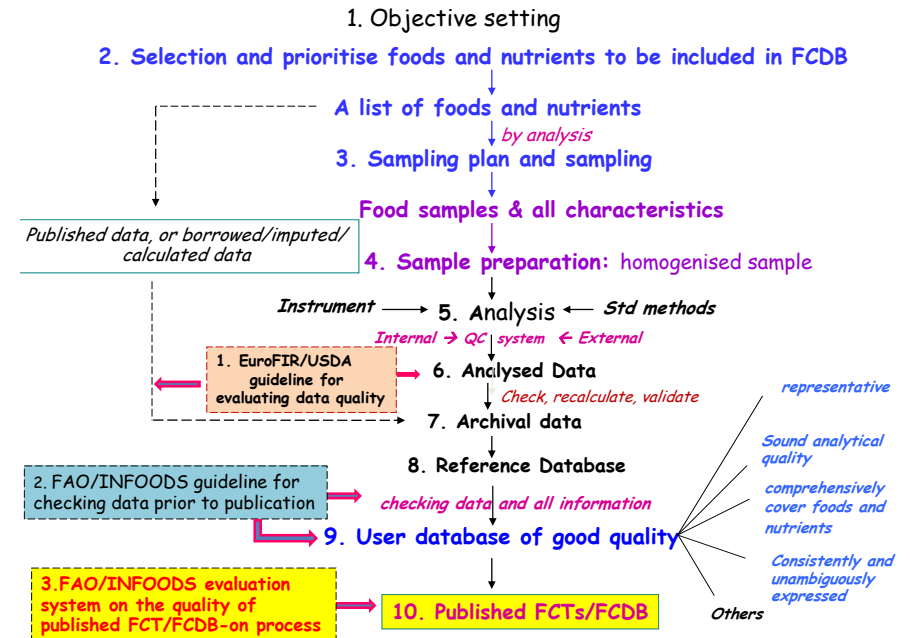> Guidelines for quality evaluation and for checking of FCDB/FCTs throughout their development process

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Slide 2

Nutrition/ food security/health/ education/policies

Agricultural Policies

Product development/ Consumer information

Food based dietary guidelines Food aid/ fortification

Research nutrient intake - diseases

Nutrient requirements

Product formulation/ Food labelling

Nutrient intakes (dietary assessment)

Research in food and nutrition/ Diet formulation

Food balance sheet/ Breeding/research

Uses of food composition data

Slide 3

Criteria for quality FCDB/FCTs

FCDB/FCTs should be:

- Representative: *represent the composition of commonly consumed foods. variability in the composition of the food should be given.*
- Of sound analytical quality
- Comprehensive coverage of foods
- Comprehensive coverage of nutrients
- Clear food descriptions: *name and description*
- Consistent and unambiguous expressed; *units, calculation, rounding*
- Documentation at nutrient value level: *sources of data, methods, data quality, statistics (data points, min, max…)*
- Tables/databases clear and easy to use
- Content compatible and conform to international & regional standards
- Few missing data

Ref: Greenfield H, Southgate DAT: Food composition data. Production, Management and Use, Second edition. Food and Agriculture Organization of the United Nations, Rome, 2003. http://www.fao.org/fileadmin/templates/food_composition/images/FCD.pdf

Slide 4

Steps in establishing food composition database of good quality

1. Objective setting
2. **Selection and prioritise foods and nutrients to be included in FCDB**

   A list of foods and nutrients
   by analysis

3. **Sampling plan and sampling**

   Food samples & all characteristics

   Published data, or borrowed/imputed/ calculated data

4. **Sample preparation:** homogenised sample

   Instrument → 5. Analysis ← Std methods
   Internal → QC system ← External

   1. EuroFIR/USDA guideline for evaluating data quality →

6. **Analysed Data**
   Check, recalculate, validate

7. **Archival data**

8. **Reference Database**

   2. FAO/INFOODS guideline for checking data prior to publication →
   checking data and all information

9. **User database of good quality**

   3. FAO/INFOODS evaluation system on the quality of published FCT/FCDB-on process →

10. **Published FCTs/FCDB**

   representative
   Sound analytical quality
   comprehensively cover foods and nutrients
   Consistently and unambiguously expressed
   Others

Slide 1

EuroFIR

1. EuroFIR and USDA systems for quality assessment of FCD

EuroFIR System	USDA System
For use in different countries Modified for compatibility with US system	For use in the U.S.
Designed for data from scientific literature, analytical reports and similar	Designed for data to be included in USDA database
Designed for all foods and nutrients	Designed for assessment of Fe, Se, carotenoids. Modified to include flavanoids, vit B2, vit K
7 assessment categories Food description and component identification are important for data exchange	5 assessment categories More focus on sampling and analytical methods
Analytical assessments designed to be used by non-expert users/compilers (with guidelines) with varying knowledge and skills	Designed by experts in particular nutrients

Ref: Mark Roe: presentation at FoodComp 2015, Wageningen, the Netherland

Slide 2

Categories of quality assessment: EuroFIR and USDA

EuroFIR quality assessment of data	USDA quality assessment of data
Categories assessed (7 components)	Categories assessed (5 categories)

1. Food description:
   - for all type of foods: 12 criteria
   - for manufactured food: 5 criteria	

2. Component identification: 3 criteria	
3. Sampling plan: 6 criteria	• Sampling Plan: 6 criteria

4. Number of analytical samples:
   5 criteria
	• Number of analysed samples:
	   1 criteria

5. Sample handling: 2 criteria	• Sample Handling: 7 criteria
6. Analytical method 2 criteria	• Analytical methods: 7 criteria, special nutrient analysis
7. Analytical quality control: 3 criteria	• Analytical quality control: 6 criteria

7 categories, 33 – 38 criteria   5 categories, 27 criteria

Slide 3

Data quality assessment: based on EuroFIR Guideline

Categories of data quality for consideration	Yes	NO	N/A	QI
FOOD DESCRIPTION				
FOR ALL FOODS				
Is the food group known? *(e.g. beverage, dessert, pasta dish)*				
Was the food source of the food or of the main ingredient clearly provided?				
Was the part of plant or part of animal clearly indicated?				
If relevent, was the analyzed portion described and is it stated explicitly if the food was analsed whole or part?				
If relevent, was the extent of heat treatment provided?				
If the food was cooked, were satisfactory cooking method details provided?				
Was relevent information on treatment applied provided?				
Was information on preservation method provided?				
Was information on packing medium provided?				
Was information about the origin of food provided?				
If relevent, was the month or season of production indicated?				
Was the moisture content of the sample measured and the result given?				
Food Description QI (Quality Index score)				
COMPONENT IDENTIFICATION				
Is the component described unambiguously?				
Is the unit unequivocal?				
Is the matrix unit unequivocal?				
Component Identification QI (Quality Index score)				

EuroFIR Guideline

7 categories

1. Food description
2. Component identification
3. Sampling plan
4. Number of analytical samples
5. Sample handling
6. Analytical method
7. Analytical performance

Slide 4

EVALUATION PROCESS

• In each category <u>CRITERIA</u> will be used to assess the level of quality

• For each criterion, a compiler will give one answer: YES, NO, or NOT APPLICABLE (N/A)

"NOT APPLICABLE": the considered criterion is not relevant for the food and nutrient considered

• Then a quality score (Quality index, QI) for each quality category will be assigned.

EuroFIR Workpackage 1.3, Task Group 4 Guidelines for Quality Index Attribution to Original Data from Scientific Literature or Reports for EuroFIR Data Interchange.
http://www.eurofir.net/sites/default/files/Deliverables/EuroFIR_Quality_Index_Guidelines.pdf

SCORING OF EACH CATEGORY

- Based on answers to all criteria (yes/no) within a category, the compiler will assign a score (1-5) to the category

- Criteria for calculation/assignment of the quality score (QI) is specific for each category depending on number and nature of considered criteria

- Criteria that are "NOT APPLICABLE" are not counted in the quality score

Interpretation of quality scores (quality index) of each category:

5 = high quality

4 = less than high quality but better than intermediate

3 = intermediate

2 = better than low quality but less than intermediate

1 = low quality

QUALITY INDEX – QI

Overall Quality Index = Sum of assigned quality score for 7 categories

Categories of quality for consideration	Yes	NO	N/A	QI
1. FOOD DESCRIPTION 13 criteria				
FOR ALL FOODS				
Is the food group known?				
Was the food source of the food or of the main ingredient clearly provided?				
Was the part of plant or part of animal clearly indicated?				
If relevent, was the analyzed portion described and is it stated explicitly if the food was analsed with or without the inedible part?				
If relevent, was the extent of heat treatment provided?				
If the food was cooked, were satisfactory cooking method details provided?				
Was relevent information on treatment applied provided?				
Was information on preservation method provided?				
Was information on packing medium provided?				
Was information about the origin of food provided?				
If relevent, was the month or season of production indicated?				
Was the moisture content of the sample measured and the result given?				
Food Description QI				
2. COMPONENT IDENTIFICATION: 3 criteria				
Is the component described unambiguously?				
Is the unit unequivocal?				
Is the matrix unit unequivocal?				
Component Identification QI				

QI 1 → Food Description QI

QI 2 → Component Identification QI

Total (overall) Quality index = QI 1+QI 2+QI 3+….+QI 7

Total Quality Index of a nutrient data will range from 7 (low quality) to 35 (high quality.

No confidence code has been assigned to the EuroFIR quality assessment process (2008)

CONFIDENCE CODES (CC) (given in some systems)

Confidence codes (CC) is an expression of the overall trust of the compiler to the particular data.

Total quality index (QI) of all categories range: 7-35

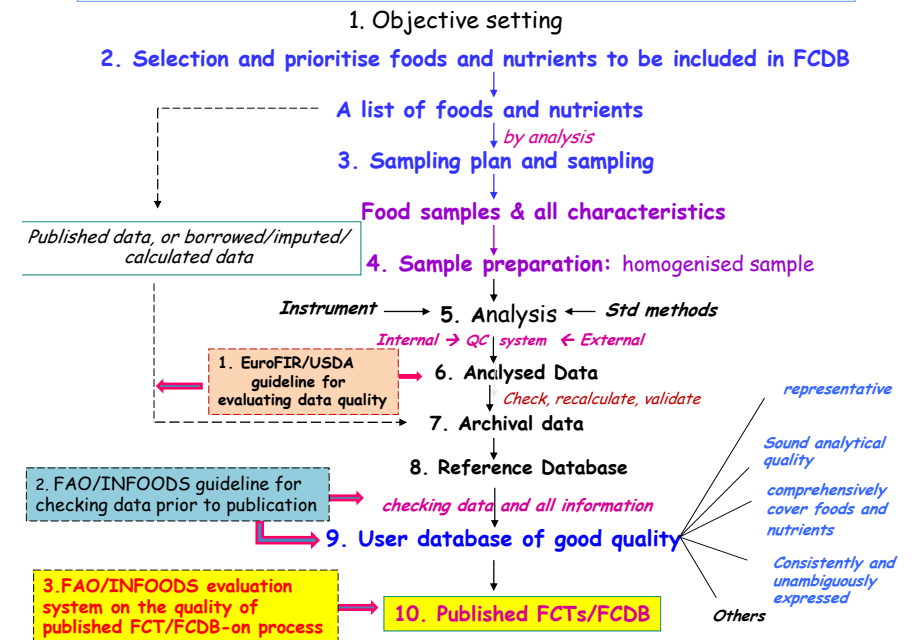Confidence code (CC) range: A (high quality) – D (low quality)

CC	Degree of confidence	Total QI
A	high quality	35-30
B	some confidence but with limitations	<30-20
C	low confidence but with best estimates	<20-12
D	no confidence in the data	<12-7

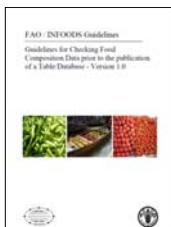**CCs can guide the FCT/FCDB users on the quality of the food data**

A = Data can be used with more confidence

D = Low quality data may still be useful – it may be the only value!

Steps in establishing food composition database of good quality

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Instrument → 5. Analysis ← Std methods

Internal → QC system ← External

1. EuroFIR/USDA guideline for evaluating data quality → 6. Analysed Data

Check, recalculate, validate

7. Archival data

8. Reference Database

2. FAO/INFOODS guideline for checking data prior to publication

checking data and all information

9. User database of good quality

3.FAO/INFOODS evaluation system on the quality of published FCT/FCDB-on process → 10. Published FCTs/FCDB

representative

Sound analytical quality

comprehensively cover foods and nutrients

Consistently and unambiguously expressed

Others

The second guideline for checking FCD in the developing process

2. FAO/INFOODS (2012)
   FAO/INFOODS Guidelines for Checking Food Composition Data prior to the Publication of a User Table/Database-Version 1.0, FAO, Rome. 38 pages.

   http://www.fao.org/infoods/infoods/standards-guidelines/en/

- The Guidelines help in checking and standardising the detailed information in FCT/FCDB → increase quality of FCDBs.

- It is recommended to be used by the data generators and compilers to check the user database prior to publishing a user table/database and by the users to check the quality of printed FCT/FCDB and to get detailed information related to the process on FCD development

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2. FAO / INFOODS Guidelines for Checking Food Composition Data prior to the publication of a Table/Database - Version 1.0, 2012

Contents of the book: 38 pages

1. Background and objectives
2. General food composition issues
   - food identification
   - component nomenclature, conventions and expression
   - recipes
   - documentation in the user tables/DB
   - food composition database management system
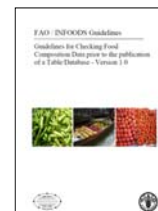
3. Checks

   3.1 Checks of food identification

   3.2 Checks on components

   3.3 Checks on recipes (if data derived from recipe calculation)

   3.4 Checks on data documentation
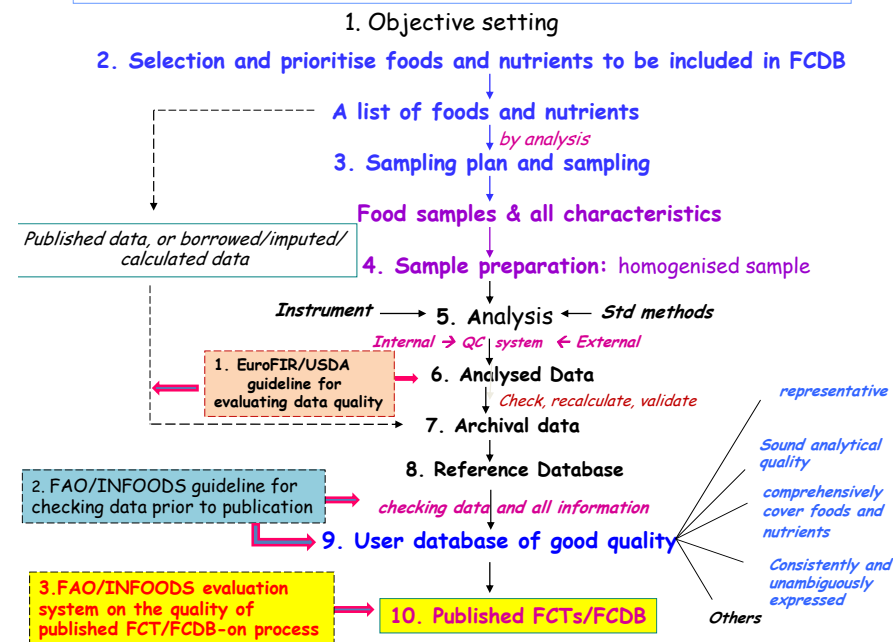
   + 3 Important Annexes

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2. FAO / INFOODS Guidelines for Checking Food Composition Data

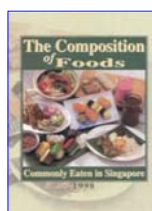| 3.	Checks of 4 sections	Example of components included
3.1	Checks of food identification	Food names and food description, Food group classification, food coding
3.2	Checks on components	Component name and expression, mathematical check, edible/inedible parts, specific checks for individual nutrients (e.g., INFOODS tagnames, forms, calculation, conversion factors, etc.) significant figures, rounding procedures
3.3	Checks on recipes	Special list of checks on recipes before, during and after recipe calculation, documentation of recipes.
3.4	Checks on data documentation	Introduction/general information (publication year, differences/changes compared to previous version), documentation in the user table, food index and reference list.

No scoring system in this guideline,
any error or mistake found, must do corrective action

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Instrument ⟶ 5. Analysis ⟵ Std methods

Internal → QC system ← External

1. EuroFIR/USDA guideline for evaluating data quality ⟶ 6. Analysed Data
↓ Check, recalculate, validate

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8. Reference Database

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9. User database of good quality

3. FAO/INFOODS evaluation system on the quality of published FCT/FCDB-on process ⟶ 10. Published FCTs/FCDB

representative

Sound analytical quality

comprehensively cover foods and nutrients

Consistently and unambiguously expressed

Others

Slide 1

3. FAO/INFOODS evaluation system on the quality of published FCT/FCDB:
initiated in February 2015,

Slide 2

Background

Many published food composition tables and databases (FCT/FCDB) are available and new ones are published regularly. There is no publicly available evaluation system for published FCT/FCDB. However, it would be useful for compilers as well as for users to be aware of the criteria on how to judge if a published FCT/FCDB fulfills a certain quality standard. Therefore, FAO/INFOODS has developed an evaluation system on the quality of published FCT/FCDB.

Source: Food Composition Discussion Group
[InFoods-Food-Comp-L@LISTSERV.FAO.ORG], February 2015

Slide 3

Objectives:

The objectives are the followings:

- To assist compilers in publishing FCT/FCDB which are user-friendly and include the necessary information and data to facilitate a range of different uses, e.g. consumers, researchers, agriculture, decision-makers for policies and programmes

- To provide an objective measurement tool to judge the quality of published FCT/FCDB

- To compare the quality of different FCT/FCDB

Source: Food Composition Discussion Group
[InFoods-Food-Comp-L@LISTSERV.FAO.ORG], February 2015

Slide 4

Objectives: (continued)

- To demonstrate areas of improvements to compilers for future editions

- To be able to demonstrate an improvement of the quality of FCT/FCDB editions over time

- To demonstrate to decision-makers and users the strengths or weaknesses of data in published FCT/FCDB and the uncertainty and risk they may introduce into the quality of their data, research result, policies and programmes when using the data of a specific FCT/FCDB

- To attract funding for FCT/FCDB of higher quality, or for those with lower quality with the objective to improve them

Source: Food Composition Discussion Group
[InFoods-Food-Comp-L@LISTSERV.FAO.ORG], February 2015

INFOODS' request to the INFOODS members

- Comments on the content – background and objectives of the FAO/INFOODS evaluation system

- Proposed idea/opinion on criteria, sub-criteria, and system for quality assessment of the published FCT/FCDB

Activities on FAO/INFOODS evaluation system on the quality of published FCT/FCDB will be continued shortly in 2016.

Roundtable Discussion on Food Composition Database
December 17-18, 2015

"Development of food composition database in ASEAN with good quality"

Objectives:

- Development of criteria for quality evaluation of published FCTs/FCDB
- Quality evaluation of current FCTs in ASEAN using the developed criteria and evaluating system
- Identification of discrepancies and discuss possibility to harmonize FCTs/FCDB development process and components
- Discussion on status of national FCTs in ASEAN, strength/weakness, problems/needs, and gaps
- Developing action plan of activities for quality improvement of the FCT/FCDB
- Developing action plan for succeeding workshops and future contributions and collaboration of ILSI and stake holders

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Developing quality system for evaluation of Published FCT/FCDB.

What do we need?

- Criteria

- Sub-criteria

- Weighted score for the criteria

- Ranking scoring of sub-criteria

- Scoring system to indicate the quality of the evaluated FCT/FCDB

Activities: Roundtable Discussion on Food Composition Database

Day 1. Development of draft criteria and system for FCT/FCDB quality evaluation

- Brain storming on preparation of the components of FCT/FCDB quality evaluating system: *criteria, sub-criteria, weighting and scoring system*

- Discussion and agreement on the proposed system for quality evaluation of the published FCTs/FCDB

- Documenting the proposed draft criteria and the FCT/FCDB evaluating system

Day 2. Quality evaluation of the current FCTs in ASEAN and development of future action plan

- Quality evaluation of country-specific FCTs using the evaluating system from Activity I

- Discussion on the over-all quality of the current FCTs in ASEAN

- Identifying common problems, collaboration opportunities, etc (as in the objectives)

- Developing action plan for subsequent activities (e.g. workshops and timelines), strengthening public-private partnership

- Discussion of possibility for developing ASEAN FCT/FCDB