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DEPARTMENT OF SCIENCE AND TECHNOLOGY

# The Philippine Food Composition Tables

## Current Status and Needs

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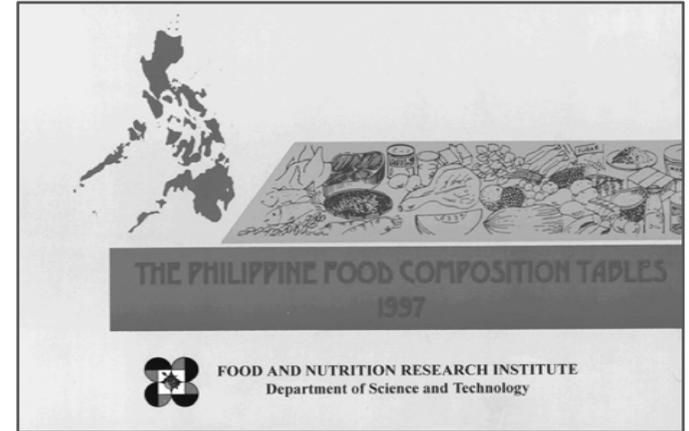
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# The Philippine Food Composition Tables

- latest edition printed in 1997
- contains 1541 food items
- includes 17 food components



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# The format of the 1997 Philippine FCT

FOOD COMPOSITION PER 100 GRAMS EDIBLE PORTION  
A. Cereals and Products

Food ID	Food and Description	Alternate Name	E.P. %	Water g	Energy kcal	Protein g	Fat g	Carbohydrate g	Crude Fiber (Gst. Fiber) g	Ash g	Calcium mg	Phosphorus mg	Iron mg	Riboflavin mg	Niacin mg	Ascorbic acid mg			
A013	Rice, milled, glutinous, wet, milled	Risap, mangit galapang	100	47.4	292	8.4	0.1	67.9	75	0.2	14	40	1.5	0	0	71	0.16	0.0	
A014	Rice, unrefined	Risap, unrefined	100	11.7	358	8.4	2.0	76.7	0.8	1.2	32	283	1.3	0	0	0	0.32	0.06	5.5
A015	Rice, unrefined, glutinous, purple	Risap, mangit pinatung	100	11.5	358	8.7	2.0	76.3	(4.0)	1.5	32	276	4.0	0	(0.0)	0	0.30	0.16	6.6
A016	Rice, unrefined, glutinous, purple, boiled	Risap, mangit pinatung, sinang	100	68.8	124	2.4	0.4	27.8	0.6	0.6	7	107	1.5	0	0	0	0.10	0.04	1.7
A017	Rice, unrefined, red	Risap, magpat	100	10.4	358	7.5	0.9	80.0	(7.0)	1.2	12	106	0.6	0	0	0	0.36	0.06	4.0
A018	Rice, unrefined (brown rice)	Pinawa	100	9.1	371	10.0	2.8	76.5	(3.7)	1.6	36	259	0.7	0	0	0	0.42	0.04	7.0
A019	Rice, wet-milled	Risap, magpat	100	11.1	356	7.4	0.5	80.4	(7.0)	0.6	27	106	1.0	0	0	0	0.10	0.05	2.9*
A020	Rice, wet-milled, boiled	Risap, magpat, sinang	100	67.6	129	2.1	0.2	29.7	(6.0)	0.4	11	36	0.6	0	0	0	0.02	0.02	0.5
A021	Rice, wet-milled, fried	Risap, magpat, sinangay	100	57.4	197	2.0	4.0	30.2	(7.0)	0.8	3	36	1.1	0	0	0	0.02	0.04	0.4
A022	Rice-cook mixture (1:1)	Risap-mait pinatung (1:1)	100	9.2	368	7.5	1.0	81.8	0.7	0.5	112	85	1.1	0	0	1	0.06	0.02	3.5
A023	Rice-cook mixture (1:1), boiled	Risap-mait pinatung (1:1), sinang	100	70.4	96	2.2	0.3	21.0	0.5	0.1	31	16	1.3	0	0	0	0.01	0.01	0.2
A024	Sorghum (Andropogon sorghum)	Basal, bulal	100	8.1	382	9.5	3.8	77.1	(4.7)	1.4	42	172	5.0	0	15	2	0.28	0.10	4.2



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Table 1. Food components, modes of expression, method of analysis

Food Component	Unit of Expression	Definition
Edible Portion, EP	Per cent, %	Part usually eaten, calculated as $\% EP = \frac{\text{Edible Weight}}{\text{As Purchased weight}} \times 100$
Water	gram, g	Water and volatile substances lost by drying (AOAC 1980)
Energy	Kilocalorie, kcal	Metabolizable, computed using Atwater factors, 4Protein + 9Fat + 4 CHO
Protein	gram, g	Nitrogen analysis (AOAC 1980) multiplied with specific protein factor*
Fat	gram, g	True fats and lipids such as fatty acids, lecithin and pigments extracted by Soxhlet using pet ether (AOAC, 1980)
Crude Fiber Dietary Fiber	gram, g	Treatment with acid/alkali (AOAC, 1980) Local/foreign values, Prosky (1984), Southgate (1978), Englyst (1987)
Carbohydrate	gram, g	Total carbohydrate calculated by difference $= 100 - \%[\text{Water} + \text{Protein} + \text{Fat} + \text{Ash}]$ Zero (0) if subtrahend is > 100



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Table 1. Continuation

Food Component	Unit of Expression	Definition
Ash	Gram, g	Mineral residue after incineration at 500-550°C (AOAC, 1980)
Calcium, phosphorus, iron	milligram, mg	Ca – titrimetry, precipitation of oxalate, (AOAC 1980) Phosphorus – Fiske and Subbarow colorimetric method, 1946 Iron – Hahn colorimetric method, 1945
Vitamin A	microgram, ug	Carr Price (AOAC, 1980) 1RE = 1 ug retinol = 6 ug $\beta$ -carotene = 3.33 IU = 10 IU from $\beta$ -carotene
$\beta$ -carotene	microgram, ug	Moore chromatographic (1943) modified by Wall and Kelly(1943)
Thiamin	milligram, mg	Analyzed using thiochrome method (AOAC, 1980) is the sum of free thiamin and thiamin from phosphate esters



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Table 1. Continuation

Food Component	Unit of Expression	Definition
Riboflavin	milligram, mg	Analyzed using fluorometric (AOAC, 1980), is the sum of free-riboflavin and protein-bound riboflavin
Niacin	milligram, mg	Analyzed by microbiological method (AOAC, 1980), pre-formed niacin includes nicotinic acid and nicotineamide. Also derived from tryptophan. Niacin equivalent, NE = preformed + from tryptophan 1NE = 1 mg niacin = 60 mg tryptophan mg NE = mg niacin + <u>mg tryptophan</u> 60
Ascorbic Acid	milligram, mg	Analyzed by DNPH colorimetric method (Roe and Kuether, 1943), is the sum of reduced ascorbic acid and the dehydroascorbic acid and 2,3 diketogulonic acid)



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Table 2. Protein factors for specific foods

Food Item	Factor	Food Item	Factor
Meat and Fish	6.25	Embryo	5.80
Gelatin	5.55	Endosperm	5.70
Milk & Products	6.38	Rice/Rice flour	5.95
Casein	6.40	Barley,oat, rye & flour	5.83
Human milk	6.37	Millet	6.31
Egg		Corn, Maize, Beans	6.25
Whole	6.25	Soybeans	5.71
Albumin	6.32	Castor bean	5.30
Vitellin	6.12	Peanuts, Brazil, ground nuts	5.46
Wheat, whole	5.83	Coconuts, cashew, sesame, seeds	5.30
Bran	6.31	All other foods	6.25

FAO/WHO 1973



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### Code System:

Alpha-numeric where:

- Alpha code refers to the Main food group, excluding the letters I, O and L to prevent confusion with the numerals 0 and 1
- Numeric code refers to the chronological order within the group, wherein food items are alphabetically listed

### Sources of data

- Most of the food items were analyzed in the FNRI laboratory
- Values for food components not analyzed but known to be present in significant amounts were borrowed from local studies or foreign FCTs with clear descriptors, specified methods and detailed results.



## Other features of the Philippine FCT 1997

- Harmonized with ASEANFOODS
  - Based on ASEANFOODS Sampling Guidelines
    - a. Sampling - 100 to 300g for dry, and 500-1000g for fresh foods
    - b. 10 outlets - north & south, east & west of Metro Manila
  - Zero (0) values assigned to:
    - a. crude fiber, single animal foods,
    - b. retinol, single plant foods,
    - c. beta-carotene, white or light colored foods
    - d. Vitamin C, single, raw, processed animal foods, food combinations, dried beans etc



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## Other features of the Philippine FCT 1997

- The food groupings are based on the 18 ASEAN FCT Major Food Groupings
- The Philippine FCT retained 17 of the food groupings with some modifications to suit the local needs. Letters **I**, **L** and **O** were not used to avoid confusion with the numeric codes



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## MAJOR FOOD GROUPINGS

### A. CEREALS & PRODUCTS



203 Food Items

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## MAJOR FOOD GROUPINGS

### B. STARCHY ROOTCROPS & TUBERS & PRODUCTS



41 Food Items

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# MAJOR FOOD GROUPINGS

## C. NUTS, DRIED BEANS AND SEEDS AND PRODUCTS



69 Food Items

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# MAJOR FOOD GROUPINGS

## E. FRUITS AND PRODUCTS



116 Food Items

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# MAJOR FOOD GROUPINGS

## D. VEGETABLES AND PRODUCTS



293 Food Items

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# MAJOR FOOD GROUPINGS

## F. MEATS AND OTHER ANIMALS AND PRODUCTS



263 Food Items

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# MAJOR FOOD GROUPINGS

## G. FINFISH, SHELLFISH AND OTHER AQUATIC ANIMALS AND PRODUCTS



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232 Food Items

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# MAJOR FOOD GROUPINGS

## H. EGGS AND PRODUCTS



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22 Food Items

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# MAJOR FOOD GROUPINGS

## J. MILK AND PRODUCTS



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26 Food Items

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# MAJOR FOOD GROUPINGS

## K. FATS AND OILS



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11 Food Items

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# MAJOR FOOD GROUPINGS

## M. SUGAR, SYRUP AND CONFECTIONERY



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50 Food Items

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# MAJOR FOOD GROUPINGS

## N. SPICES AND CONDIMENTS



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30 Food Items

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# MAJOR FOOD GROUPINGS

## P. ALCOHOLIC BEVERAGES



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5 Food Items

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# MAJOR FOOD GROUPINGS

## Q. NON-ALCOHOLIC BEVERAGES



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61 Food Items

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# MAJOR FOOD GROUPINGS

## R. COMBINATION/MIXED DISHES



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87 Food Items  
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# MAJOR FOOD GROUPINGS

## S. BABY FOODS (COMMERCIAL)



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21 Food Items  
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# MAJOR FOOD GROUPINGS

## T. MISCELLANEOUS (Foods that cannot be grouped in the previous groups)



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## Internal and external quality control systems for the 1997 FCT



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➤ Participation to Interlaboratory Proficiency Test Programs

➤ Results acceptance criteria

Precision Tests (using the Horwitz Achievable Coefficient of Variation)

$$\text{Horwitz ACV} = 2^{1-0.5 \log C}$$

where C = fraction concentration of the analyte

Analyses were repeated if the CV or %RSD of results is > than the Horwitz's ACV

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Due to transfer of our Institute to a new location and the temporary suspension of the FCT activities, we can no longer locate

- Records of method validation for the different analysis
- Photographs of the single food items, if there are any
- Details of the sample preparation
- Written descriptors e.g., physical dimensions, mode of transport, sample locations, etc.



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However there are records/photoalbums of some of the product labels of processed foods that were analyzed



## In 2006, FCT activities were revived.



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Objective: To update the 1997 FCT in terms of additional food items and health food components e.g., cholesterol, dietary fiber, fatty acid, iodine, potassium, sodium and zinc



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We started with four (4) food items identified from the priority list of the Philippine National Nutrition Survey of 2003 and boiled variant of two food items

1. Egg, chicken, whole
2. Egg, chicken, whole, boiled
3. Noodles, instant, chicken flv
4. Noodles, instant, chicken flv, cooked
5. Sardines in tomato sauce, cnd
6. Fertilized Egg, duck, boiled





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## Our qualification....



dti Philippine Accreditation Office

**APPROVED SIGNATORIES**

FOOD ANALYTICAL SERVICE LABORATORY  
FOOD AND NUTRITION RESEARCH INSTITUTE  
FNRRI Building, DOST Compound, Gen. Santos Ave., Alabang, Taguig City

Name	Program/Class of Test (Chemical Testing)
Yvesita R. Romagosa Julia G. Arandia Ercelita M. Sison Rosemarie J. Durong Dore P. Briones	2-26 Foods 01 Cereals products 02 Milk and milk products 03 Dairy products 04 Meat, poultry and derived products 05 Fish, crustaceans and mollusks and derived products 06 Sugar and sugar products 07 Confectionery 08 Fruits, jams and other fruit products 09 Vegetables and vegetables products 10 Soft drinks and syrups 11 Fruit juices, drinks and concentrates 12 Edible fats and oils 13 Alcohols 14 Beverages 15 Eggs and eggs products 16 Spices 21 Materials in foods 24 Flavor, spices and condiments 25 Novel food products 26 Herbal products 27 Cereals grains and by-products 28 Oil seeds and by-products 18 Other agricultural products
Yvesita R. Romagosa Julia G. Arandia Rosemarie J. Durong Dore P. Briones	3-24 Drugs and pharmaceuticals 02 Herbal products 3-32 Agricultural products and materials 01 Cereals grains and by-products 02 Oil seeds and by-products 18 Other agricultural products

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## Sample Documentation.....



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## Our FCT Staff at work



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## Weighing and mixing the sample



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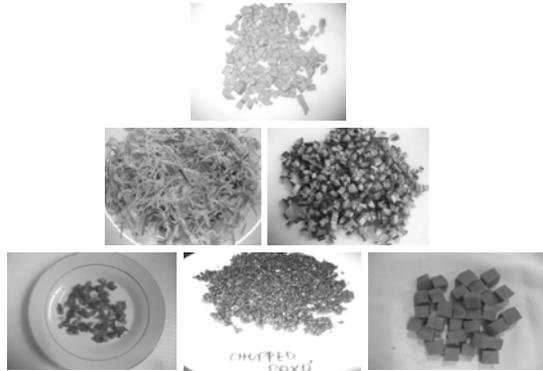


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## Practice makes perfect!



We perform trial runs ( for vegetable and fruit samples) to determine the best procedure for sample preparation.



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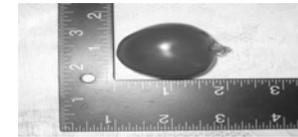


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Our initial attempts at getting the photos of the samples



Tomato



Squash



Chayote



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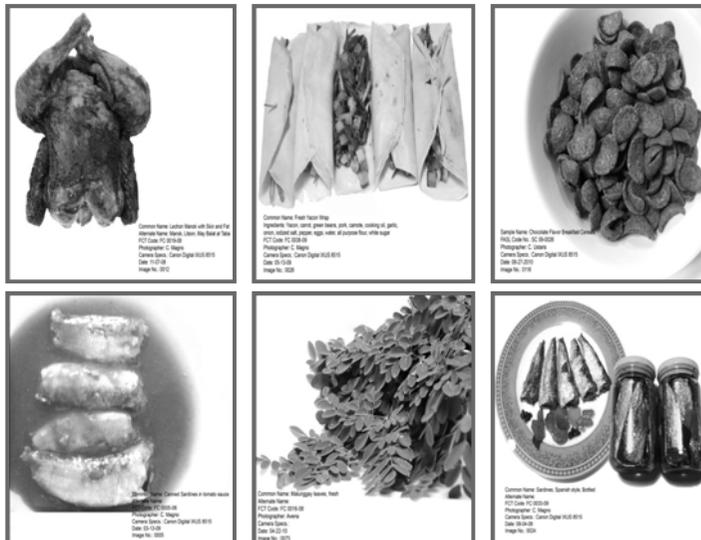


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## This is how we document pictures of our samples



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Presently, we have analyzed > 90 food samples categorized under:

- A. Cereals and Products – 5
- D. Vegetables and Other Products – 39
- E. Fruits and Products - 1
- F. Meat and Other Animals and Products – 21
- G. Finfish, Shellfish and Other Aquatic Animals and Products – 5
- H. Eggs and Products – 3
- J. Milk and Products – 1
- M. Sugar, Syrup and Confectioner – 1
- Q. Non-alcoholic Beverages – 3
- R. Combination Foods/Mixed Dishes - 15



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## Current status of the Philippine FCT

We are presently involved with the development of a handbook on the nutrient composition of selected Philippine vegetables which include some of the indigenous varieties



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## Current problems of the Project on FCT

- Very limited budget
- Limited number of food components
- Few staff involved in the generation of the data
- Sampling sites are limited to the metropolitan area
- No validated methods for some food components of interest (e.g. HPLC methods for iodine, vitamin C and folate)



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## Current needs of the Project on FCT

- Development of new analytical procedures
- Upgrade and replacement of existing laboratory facilities

## Recommendations for the FCT

- Sufficient funds to sustain the operation of the laboratory
- Validation of new methods of analysis
- Training/motivation for dedication, quality and skill in the production and management of FCT



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## Recommendations for the FCT

- Continuous improvement in the compilation of food composition data
- Government/management commitment and support for the success of the endeavor
- Course on food composition be introduced in the curricula of courses on food and nutrition
- Possible inclusion of the FCT as a textbook to increase the awareness and use/application of the food data



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## Recommendations for the FCT

- Nationwide marketing through education campaign as as guide to healthy food choices in addition to nutrient labels
- Make data available to homemakers and especially those involved in grass-root level activities

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## Recommendations for the FCT

- Make data presentation readily understandable for single foods like fruits, vegetables (especially the indigenous varieties), animals and other members of the flora and the fauna to;
  1. encourage conservation, and
  2. increase the cultivation
  3. develop local and sustainable recipes and food product
  4. save from extinction and
  5. support global efforts at food biodiversity and ensuring food security

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*Thank You !*

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