



Latest-FEL - 4th edition food exchange list a tool use to develop meal planning

Nursing (World Citi College)



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4th Edition

Food Exchange Lists for Meal Planning



Department of Science and Technology
Food and Nutrition Research Institute

FOOD EXCHANGE LISTS FOR MEAL PLANNING

Fourth Edition



**Department of Science and Technology
Food and Nutrition Research Institute**

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LIST OF ABBREVIATIONS

btl	bottle
ckd	cooked
cm	centimeter
cnd	canned
g	gram
kg	kilogram
kcal	kilocalories
lbs	pounds
mbs	matchbox size
mL	milliliter
n/a	not applicable
pc/pcs	piece/pieces
prep	prepared
Tbsp	Tablespoon
tsp	teaspoon
ttb	tetrabrick
ttf	tetrafoil
w/	with
w/o	without

LIST OF ACRONYMS

AMDR	Acceptable Macronutrient Distribution Range
AP	As Purchased
ASEAN	Association of Southeast Asian Nations
BMI	Body Mass Index
BMR	Basal Metabolic Rate
CAP	Cooked As Purchased
CEP	Cooked Edible Portion
DBW	Desirable Body Weight
DOST	Department of Science and Technology
FCT	Food Composition Tables
FEL	Food Exchange Lists
FGDs	Focus Group Discussions
FNRI	Food and Nutrition Research Institute
EP	Edible Portion
HDL	High-density Lipoprotein
HFM	High Fat Meat
LDL	Low-density Lipoprotein
LFM	Low Fat Meat
MCT	Medium Chain Triglycerides
MFM	Medium Fat Meat
NNS	National Nutrition Survey
PAL	Physical Activity Level
PDRI	Philippine Dietary Reference Intakes
REE	Resting Energy Expenditure
RMR	Resting Metabolic Rate
RNDs	Registered Nutritionist-Dietitians
TER	Total Energy Requirement
USDA	United States Department of Agriculture
WHO	World Health Organization

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Sample Meal Menu:

- Full cream milk
- Beef menuillo
- Boiled rice
- Banana, lacatan

INTRODUCTION

The Food Exchange Lists (FEL) is based on the principle that good nutrition is applicable to everyone. It is composed of seven (7) food groups containing approximately the same amounts of carbohydrate, protein and fat within the group. The unit of measure for FEL is referred to as an “exchange” wherein each food within the list can be traded or substituted with another food for the same energy and macronutrient contents.

The FEL is primarily used by RNDs for dietary counseling and nutrition education and by other health professionals as a guide in medical nutrition therapy, and as a reference material in clinics, hospitals, fitness centers and other health care facilities, food service, and academic institutions.

The first FEL in the Philippines was published by Corpuz in 1953 which was designed primarily for the calculation of diabetic diets. It was revised in 1965 by Madlangsakay for use in both normal and therapeutic diets. The third update of the FEL was done at DOST-FNRI by Tanchoco et al., in 1994. The need for an updated FEL emerged with the appearance of novel foods and products that can influence the lifestyle and eating habits of individuals and consequently, the health of the population.

Inclusion of representative food items in this 4th edition of FEL was based on: (a) the updates of the Food Composition Tables (FCTs), (b) new food/food products available in the market, (c) commonly consumed food items from the 2013 National Nutrition Survey (FNRI-DOST, 2015), (d) users' suggestions obtained through

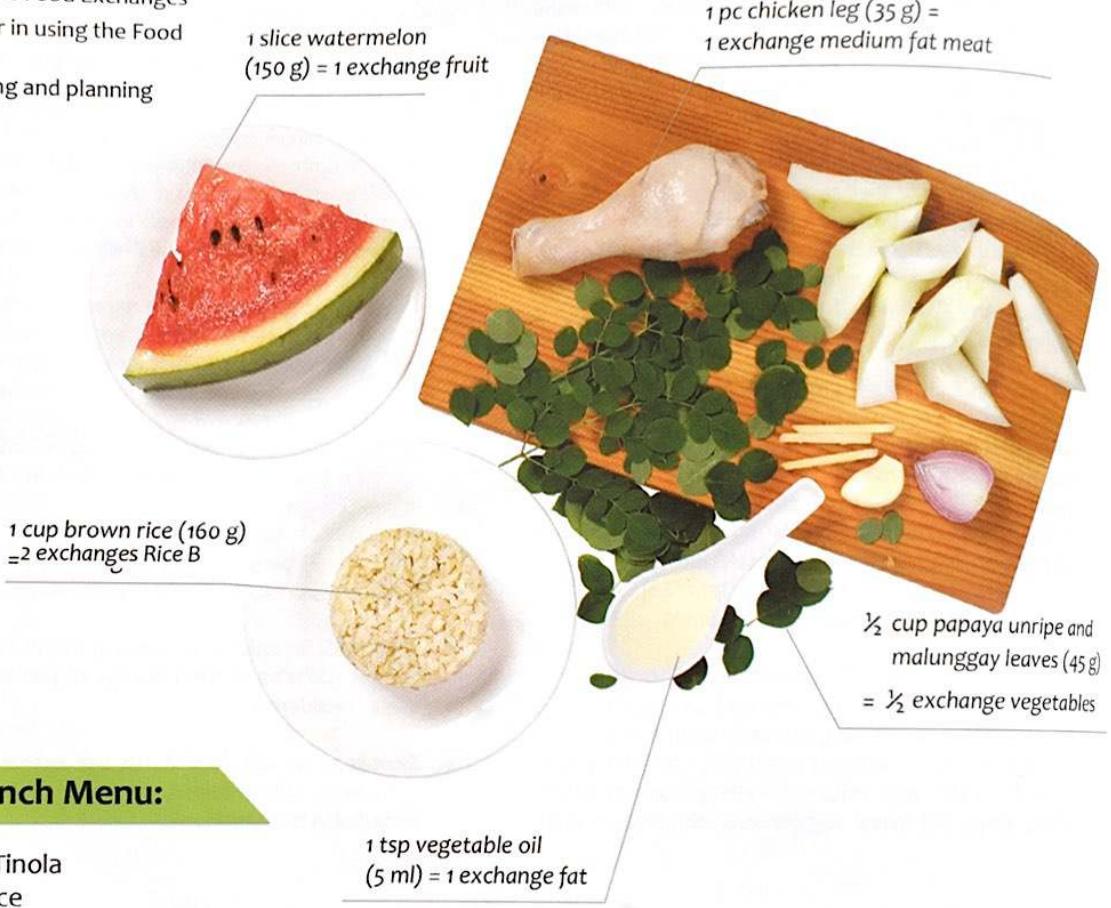
FGD and survey, and (e) suggestions from stakeholder-consultants from nutrition and medical/health organizations.

The changes incorporated in this 4th edition include:

1. Macronutrient values were primarily based on the newly-updated FCTs (DOST-FNRI, 2016). FCTs of other countries like Australia, United States, Korea, Association of Southeast Asian Nation (ASEAN) and Japan were also used in food items without macronutrient values in the Philippine FCTs.
2. Food exchange groups were regrouped and renamed based on updated macronutrient contents.
 - Vegetable exchange list included only vegetables with considerable amounts of carbohydrate and protein
 - Rice exchange list was grouped into Rice A, Rice B and Rice C based on protein content per exchange; and,
 - Lists of foods were alphabetically arranged with Filipino or common names and their corresponding English names based on FCTs.
3. Additional equations for deriving the desirable body weight (DBW) and total energy requirement (TER) were considered.
4. Photos of sample food items per exchange, list of acronyms, abbreviations, glossary of terms were included in the handbook.

PART 1: INTRODUCTION TO THE FOOD EXCHANGE LISTS

Composition of the Food Exchanges
Points to consider in using the Food Exchange Lists
Steps in calculating and planning diets



Sample Lunch Menu:

- Chicken Tinola
- Boiled Rice
- Watermelon

Composition of the Food Exchanges

The FEL includes seven (7) food groups, namely: vegetable, fruit, milk, rice, meat, fat and sugar. Food items in the same list/group contain similar amounts of energy and macronutrients (carbohydrate, protein and fat).

Points to Consider in Using the Food Exchange Lists

1. Macronutrient values per exchange are average values which may differ from that of the computed values using the FCTs.
2. The exchange lists may be used in estimating the carbohydrate, protein, fat and energy values of a meal. However, it may not provide a precise estimate on the level/content of food intake for research or similar purposes (diets, metabolic studies) since the nutrient contents of foods are average values. Thus, the traditional long method of dietary calculation or chemical analysis of duplicate meals is recommended, depending on the degree of precision required.
3. In most cases, an exchange portion is different from a serving portion. A serving portion indicates the amount of food that can be usually consumed by an individual at one time or one meal. For example, one medium-size banana, *lakatan* (14 cm), would generally be considered as one serving of fruit, but it is actually equivalent to

two (2) exchanges of fruit. Moreover, a serving of meat or fish may consist of two to three pieces, with each portion size being approximately the size of one matchbox, but would be considered as equivalent to two to three meat exchanges depending on the institution such as hotels, hospitals and restaurants.

4. For all fried and sautéed foods, one exchange of fat is considered in calculating fat and energy contents. For example, $\frac{1}{2}$ cup sautéed squash should include one teaspoon oil (equivalent to one exchange of fat) in calculating fat and energy contents of the diet.
5. Nutrient contents of some food products are being modified or reformulated to suit consumers' taste and conform to new standards. This may alter the nutritional content or the weight per exchange portion of the food. It is advisable to check the nutrition facts on food label and make necessary adjustments if significant deviation from the FEL exists.

STEPS IN CALCULATING AND PLANNING DIETS

1. DETERMINE THE DESIRABLE BODY WEIGHT

There is no consensus about the definition of “ideal” or “desirable” body weight. To date, no single method of desirable body weight (DBW) estimation is most accurate or valid for all population groups (Charney & Malone, 2016), but some commonly used methods are explained below:

1.1. DBW using Tannhauser Method (Broca's Index)

Equation:

$$DBW = (\text{height} - 100) - [10\%(\text{height} - 100)]$$

Example:

Calculate the DBW of an adult female who stands 5'1" tall.

a. Convert height to centimeter as follows:

$$\begin{aligned}5'1" &= (5 \text{ feet} \times 12 \text{ inches/foot}) + 1 \text{ inch} \\&= 61 \text{ inches} \times 2.54 \text{ cm/inch} \\&= 154.94 \text{ cm}\end{aligned}$$

b. Deduct from the height the factor 100

$$\begin{aligned}DBW (\text{kg}) &= (154.94 - 100) \\&= 54.94\end{aligned}$$

c. To adjust body frame for Filipinos, deduct additional 10%.

$$\begin{aligned}DBW (\text{kg}) &= 54.94 - (10\% \text{ of } 54.94) \\&= 54.94 - 5.494 \\&= 49.446 \text{ or } 50\end{aligned}$$

1.2. DBW using the Hamwi formula

Equation for Males:

DBW (lbs) = 106 lbs for the first 5 feet, then add or deduct 6 lbs for every inch above or below 5 feet

Example:

An adult male who stands 5'3" tall

$$\begin{aligned}DBW (\text{lbs}) &= 106 \text{ lbs} + (3 \times 6 \text{ lbs}) \\&= 106 \text{ lbs} + 18 \text{ lbs} \\&= 124 \text{ lbs}\end{aligned}$$

Equation for Females:

DBW (lbs) = 100 lbs for the first 5 feet then add or deduct 5 lbs for every inch above or below 5 feet

Example:

An adult female who stands 5'1" tall

$$\begin{aligned}DBW (\text{lbs}) &= 100 \text{ lbs} + (1 \times 5 \text{ lbs}) \\&= 100 \text{ lbs} + 5 \text{ lbs} \\&= 105 \text{ lbs}\end{aligned}$$

Note: 10% can be added or subtracted to the computed value to adjust for body frame size.

1.3 DBW using Body Mass Index (BMI)

Equation:

$$\text{DBW (kg)} = \text{Height (m}^2\text{)} \times 22$$

Example:

Calculate the DBW of an adult female who stands 5'1" tall.

a. Convert height to meter

$$\begin{aligned} 5'1" &= (5 \text{ feet} \times 12 \text{ inches/foot}) + 1 \text{ inch} = 61 \text{ inches} \\ &= 61 \text{ inches} \times 0.0254 \text{ m/inch} \\ &= 1.549 \text{ m} \end{aligned}$$

b. Multiply the height in m^2 by factor 22

$$\begin{aligned} \text{DBW} &= (1.549 \text{ m})^2 \times 22 \\ &= 2.399 \times 22 \\ &= 52.778 \text{ or } 53 \text{ kg} \end{aligned}$$

To get the lower and upper ends of normal BMI range (18.5 - 24.9), use the equations below:

$$\text{Lower end of weight range (kg)} = 18.5 \times \text{Height (m}^2\text{)}$$

$$\text{Upper end of weight range (kg)} = 24.9 \times \text{Height (m}^2\text{)}$$

Note: A range of 18.5 to 24.9 kg/m^2 is considered normal BMI (WHO Classification) (See Appendix G). A BMI of $<23 \text{ kg}/\text{m}^2$ is associated with the lowest risk of mortality in many Asian populations (WHO, 2004). BMI of 22 was the value used by the Philippine Dietary Reference Intakes (PDRI) Technical Working Group to derive the DBW in calculating nutrient recommendations.

The use of BMI alone may misclassify persons with high muscularity such as athletes or fitness enthusiasts, thus, waist circumference should be taken as additional measure of adiposity (Cashin & Oot, 2018). For pediatric cases, use the values indicated in the WHO 2007 Reference Tables for BMI classification of healthy children; otherwise, other classification methods can be used for clinical cases (WHO, 2007).

Note: While any of the above methods may be applied, health professionals have the option to use the method that is more practical for them.

2. ESTIMATE THE TOTAL ENERGY REQUIREMENT

2.1 TER based on estimate of energy expenditure according to physical activity level (PAL)

Equation:

$$TER \text{ (kcal)} = DBW \times PAL$$

Example:

A 50 kg adult person with sedentary activity

$$TER = 50 \text{ kg DBW} \times 30 \text{ kcal/kg DBW/day}$$

$$TER = 1500 \text{ kcal}$$

Table 1.1 Physical Activity Levels and Values (kcal/kg body weight) by Occupational Work Intensity

Activity Level Category/Work Intensity	Sample occupational activities ¹	kcal/kg body weight ²
Sedentary	Mostly resting with little or no activity	30
Light	Occupations that require minimal movement, mostly sitting/desk work or standing for long hours and/or with occasional walking (professional, clerical, technical workers, administrative and managerial staff, driving light vehicles (cars, jeepney). Housewives with light housework (dishwashing, preparing food)	35
Moderate	Occupations that require extended periods of walking, pushing or pulling or lifting or carrying heavy objects (cleaning/domestic services, waiting table, homebuilding task, farming, patient care)	40
Very Active or Vigorous	Occupations that require extensive periods of running, rapid movement, pushing or pulling heavy objects or tasks frequently requiring strenuous effort and extensive total body movements (teaching a class or skill requiring active and strenuous participation, such as aerobics or physical education instructor; firefighting; masonry and heavy construction work; coal mining; manually shoveling, using heavy non-powered tools)	45

2018 Physical Activity Guidelines Advisory Committee. 2018 Physical Activity Guidelines Advisory Committee Scientific Report. Washington, DC: U.S. Department of Health and Human Services, 2018.

¹Bender, 2014

²Krause Method

2.2. Using Basal/Resting Metabolic Rate (BMR/RMR) predictive equations

2.2.1 Compute BMR/RMR/REE using any of the equations below:

a. Harris-Benedict Equation

The Harris-Benedict equations were some of the widely used equations to estimate resting energy expenditure (REE) among normal and ill and injured individuals. The Harris-Benedict formulas have been found to overestimate REE in normal and obese individuals by 7% and 27% (Frankenfield et al., 2003 c.f. Krause, 14th ed.).

Equations for Males:

$$\text{BMR (kcal/day)} = 66.47 + (13.75 \times W) + (5.003 \times H) - (6.755 \times A)$$

Equations for Females:

$$\text{BMR (kcal/day)} = 655.1 + (9.563 \times W) + (1.850 \times H) - (4.676 \times A)$$

Where: W is weight in kg; A is age in years; H is height in centimeter

Note: For weight, the use of actual or ideal weight is determined by health professionals

b. Mifflin-St Jeor Equation

The equation of Mifflin-St Jeor is used to estimate BMR for normal, overweight and obese people in the United States. BMR using Mifflin-St Jeor was close to the value obtained from indirect calorimetry among selected young Filipino adults (Orense, et al., 2013).

Equations for Males:

$$\text{RMR (kcal/day)} = 9.99 \times W (\text{actual}) + 6.25 \times H - 4.92 \times A + 5$$

Equations for Females:

$$\text{RMR (kcal/day)} = 9.99 \times W (\text{actual}) + 6.25 \times H - 4.92 \times A - 161$$

c. Oxford Equations

Oxford equations were derived from a large database including persons from tropical areas (Henry, 2005). The equations were used in the calculation of BMR in the 2015 PDRI (DOST-FNRI, 2017).

Table 1.2 Basal Metabolic Rate using Oxford predictive equations

Age, years	BMR Equations (kcal/day)	
	Male	Female
18 - 30	16.0W + 545	13.1W + 558
30 - 60	14.2W + 593	9.74W + 694
60 - 69	13.0W + 567	10.2W + 572
70 +	13.7W + 481	10.0W + 577

Sample BMR Equations using the three equations:

Given:

For Male: Weight (W) = 50 kg, Height (H) = 155 cm, age (A) = 30 years old

For Female: Weight (W) = 50 kg, Height (H) = 155 cm, age (A) = 30 years old

Harris-Benedict Equation

Male:

$$\begin{aligned} \text{BMR} &= 66.47 + (13.75 \times W) + (5.003 \times H) - (6.755 \times A) \\ &= 66.47 + (13.75 \times 50) + (5.003 \times 155) - (6.755 \times 30) \\ &= 66.47 + 687.50 + 775.465 - 202.65 \\ &= 1326.78 \text{ or } 1350 \text{ kcal} \end{aligned}$$

Female:

$$\begin{aligned} \text{BMR} &= 655.1 + (9.563 \times W) + (1.850 \times H) - (4.676 \times A) \\ &= 655.1 + (9.563 \times 50) + (1.850 \times 155) - (4.676 \times 30) \\ &= 655.1 + 478.15 + 286.75 - 140.28 \\ &= 1279.72 \text{ or } 1300 \text{ kcal} \end{aligned}$$

Mifflin-St Jeor Equation

Male:

$$\begin{aligned} \text{BMR} &= (9.99 \times W) + (6.25 \times H) - (4.92 \times A) + 5 \\ &= (9.99 \times 50) + (6.25 \times 155) - (4.92 \times 30) + 5 \\ &= 499.5 + 968.75 - 147.6 + 5 \\ &= 1325.65 \text{ or } 1350 \text{ kcal} \end{aligned}$$

Female:

$$\begin{aligned} \text{BMR} &= (9.99 \times W) + (6.25 \times H) - (4.92 \times A) - 161 \\ &= (9.99 \times 50) + (6.25 \times 155) - (4.92 \times 30) - 161 \\ &= 499.5 + 968.75 - 147.6 - 161 \\ &= 1159.65 \text{ or } 1150 \text{ kcal} \end{aligned}$$

Oxford Equation (Henry, 2005)

Male:

$$\begin{aligned} \text{BMR} &= (16.0 \times W) + 545 \\ &= (16.0 \times 50) + 545 \\ &= 800 + 545 \\ &= 1345 \text{ or } 1350 \text{ kcal} \end{aligned}$$

Female:

$$\begin{aligned} \text{BMR} &= (13.1 \times W) + 558 \\ &= (13.1 \times 50) + 558 \\ &= 655 + 558 \\ &= 1213 \text{ or } 1200 \text{ kcal} \end{aligned}$$

Round off kcal values to the nearest 50.

2.2.2 Multiply BMR by Physical Activity Level (PAL) factor

The PAL is the ratio of total energy expenditure to BMR. It accounts for the totality of activities during the whole day, therefore, provides a useful means of estimating energy requirement based on a certain level of PAL taking into account differences in body size as represented by BMR.

Table 1.3 Physical Activity (PA) Categories and Values¹

Activity Level Category	Physical Activity Values (kcal/day)	
	Male	Female
Sedentary ²	1.30	1.30
Lightly active	1.58	1.45
Moderately active	1.67	1.55
Heavy	1.88	1.75

¹DOST-FNRI, 2017

²Width and Reinhard, 2009

Note: PAL values of 1.2 and 1.3 may be used for an individual confined to bed or for an ambulatory person, respectively.

Example:

Male with weight 50 kg; Height of 155 cm; PAL = moderately active (1.67 kcal/kg) and BMR using Mifflin-St Jeor equation

$$\begin{aligned}
 \text{BMR} &= (9.99 \times W) + (6.25 \times H) - (4.92 \times A) + 5 \\
 &= (9.99 \times 50) + (6.25 \times 155) - (4.92 \times 30) + 5 \\
 &= 499.5 + 968.75 - 147.6 + 5 \\
 &= 1325.65 \text{ or } 1350 \text{ kcal}
 \end{aligned}$$

$$\begin{aligned}
 \text{TER} &= \text{BMR} \times \text{PAL} \\
 &= 1350 \times 1.67 \\
 &= 2254.5 \text{ or } 2250 \text{ kcal}
 \end{aligned}$$

3. DETERMINE THE AMOUNT OF MACRONUTRIENTS FOR DIET PRESCRIPTION

- 3.1 Determining the carbohydrate, protein and fat requirement based on Acceptable Macronutrient Distribution Range (AMDR) as suggested in the 2015 PDRI.**

Table 1.4 Acceptable Macronutrient Distribution Range¹

Nutrients	% of TER
Carbohydrate	55 – 75
Protein	10 – 15
Fat	15 – 30

¹DOST-FNRI, 2017

Note: For clinical conditions, and for children and other age or physiological groups, modifications in the distribution of carbohydrate, protein and fat must be made accordingly.

Example:

For a regular diet:

- a. Allot 65% of the TER for carbohydrates, 15% protein and 20% for fat as shown in the example:

$$\text{Carbohydrate} : 1500 \text{ kcal} \times 0.65 = 975 \text{ kcal}$$

$$\text{Protein} : 1500 \text{ kcal} \times 0.15 = 225 \text{ kcal}$$

$$\text{Fat} : 1500 \text{ kcal} \times 0.20 = 300 \text{ kcal}$$

- b. Calculate the number of grams of carbohydrate, protein and fat by dividing the kcal for each nutrient by the corresponding physiological fuel value (4 kcal for carbohydrate, 4 kcal for protein, and 9 kcal for fat per gram).

$$\text{Carbohydrates} : 975 \text{ kcal} \div 4 \text{ kcal/g} = 243.75 \sim 245 \text{ g}$$

$$\text{Protein} : 225 \text{ kcal} \div 4 \text{ kcal/g} = 56.25 \sim 55 \text{ g}$$

$$\text{Fat} : 300 \text{ kcal} \div 9 \text{ kcal/g} = 33.33 \sim 35 \text{ g}$$

- c. Round off total calories to the nearest 50, and for carbohydrates, proteins and fats, to the nearest 5 grams.

Thus:

Diet Prescription: 1500 kcal Carbohydrate 245 g Protein 55 g Fat 35 g

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Tables 1.5 and
Prescription: 15

4. TRANSLATE THE DIET PRESCRIPTION INTO EXCHANGES

For example, using the diet prescription of 1500 kcal Carbohydrate 245 g Protein 55 g Fat 35 g (See Table 1.5)

4.1. List all the foods furnishing carbohydrates starting with vegetables, fruit, milk and sugar.

- a. Allow 3-5 exchanges of vegetables per day.
- b. Allow 3-5 exchanges of fruits per day unless there is need for a drastic restriction of simple carbohydrates.
- c. Allow at least one exchange of milk, if tolerated. The amount and type of milk depends upon the client's need or health condition.
- d. Allow 3-6 exchanges of sugar per day unless contraindicated.

4.2. Determine rice exchanges.

- a. Add the amount of carbohydrates from vegetables, fruit, milk and sugar.
- b. Subtract the partial sum from the prescribed amount of carbohydrates.
- c. Divide the difference by 23 g. This is the amount of carbohydrate per exchange of rice.
(Note: Adjust protein content depending on the Rice Group used)
- d. The result is the number of rice exchanges allowed.

4.3. Determine meat exchanges:

- a. Add the amount of protein from the food lists.
- b. Subtract the partial sum from the prescribed protein.
- c. Divide the difference by 8 g. This is the amount of protein for the meat exchange.
(Note: Adjust fat allowance depending on the fat content of meat)
- e. The result is the number of meat exchanges allowed.

4.4. For the fat exchange, follow the same steps in deriving the allowances for carbohydrate and protein; use five (5) as the divisor since one fat exchange contains 5 g of fat.

4.5. Distribute the exchange units into breakfast, lunch, supper and snacks, depending on the individual's eating habits.

Tables 1.5 and 1.6 show sample computations and distribution of exchange units by food groups for the Diet Prescription: 1500 kcal, Carbohydrate 245 g, Protein 55 g, Fat 35 g.

Table 1.5 Sample computation and distribution (1500 kcal, Carbohydrate 245 g, Protein 55 g, Fat 35 g)

List	Food	No. of Exchanges	Carbohydrate (g)	Protein (g)	Fat (g)	Energy (kcal)
I	Vegetable	3	9	3	-	48
II	Fruit	5	50	-	-	200
III	Milk	1	12	8	10	170
VII	Sugar	3	15	-	-	60
Carbohydrate partial sum = 86						
245 (prescribed carbohydrate)						
- 86 (partial sum carbohydrate)						
$= 159 (159 \div 23 = 6.91 \text{ or } 7 \text{ rice exchanges})$						
Protein partial sum = 25						
55 (prescribed protein)						
- 25 (partial sum)						
$= 30 (30 \div 8 = 3.75 \text{ or } 4 \text{ meat exchanges})$						
Fat partial sum = 24						
35 (prescribed fat)						
- 24 (partial sum)						
$= 11 (11 \div 5 = 2.2 \text{ or } 2 \text{ fat exchanges})$						
VI	Fat	2	-	-	10	90
TOTAL						
			247	57	34	1522

Sample meal plan

Diet Prescription: 1500 kcal, Carbohydrate 245 g, Protein 55 g, Fat 35 g

Table 1.6 Distribution of exchanges per meal

Food Groups		Number of Exchanges	Breakfast	Morning Snack	Lunch	Afternoon Snack	Supper
Vegetable		3	1		½		1 ½
Fruit		5	1	1	1		2
Rice	A - Low protein	1				1	
	B - Medium protein	5		1	2		2
	C - High protein	1	1				
Milk		1	1				
Meat	Low Fat	2	2				1
	Medium Fat	2			1		
Fat		2	1		1		
Sugar		3	1			2	

Table 1.7 Sample One-day Menu

Meal	Food Group List	No. of Exchange	Sample Menu	Household Measure
BREAKFAST	Fruit	1	Mango, kalabaw, ripe Vegetable omelet	1 slice
	MF Meat	1	Egg Mushroom	1 pc
	Vegetable	1	Bell pepper	½ cup
			Onion	
	Fat	1	Oil, coconut	1 tsp
	Rice C	1	Pan de sal	1 ½ pcs
	Milk	1	Milk, powder, full cream	5 Tbsp
	Sugar	1	Sugar, brown	1 tsp
	Rice B	1	Puto puti	1 slice
AM SNACK	Fruit	1	Coconut water	1 glass
LUNCH			Chicken Tinola	
	MF Meat	1	Chicken leg	1 pc
	Vegetable	½	Malunggay leaves	1 cup
			Papaya fruit, unripe	
	Fat	1	Oil, coconut	1 tsp
	Rice B	2	Boiled Rice	1 cup
PM SNACK	Fruit	1	Pakwan	1 cup
			Boiled sweet potato with sugar	
	Rice A	1	Sweet potato, boiled	1 pc
SUPPER	Sugar	2	Sugar, brown	2 tsp
			Broiled Bangus	
	LF Meat	1	Bangus, sliced	1 slice
	Vegetable	1 ½	Bulanglang	
			Stringbeans	
			Squash	
			Tomato	
			Eggplant	1 cup
	Rice B	2	Boiled Rice	1 cup
	Fruit	2	Banana, Lacatan	1 pc

PART 2: THE FOOD EXCHANGE LISTS

Macronutrient Composition
of Food Exchanges

Vegetable Exchange

Fruit Exchange

Milk Exchange

Rice Exchange

Meat Exchange

Fat Exchange

Sugar Exchange



MACRONUTRIENT COMPOSITION OF FOOD EXCHANGE LISTS

The FEL includes seven (7) food groups namely: vegetable, fruit, milk, rice, meat, fat and sugar. Food items in the same list/group contain similar amounts of energy and macronutrients (carbohydrate, protein, and fat). The macronutrient composition of each food group per exchange unit is summarized in Table 2.1.

Table 2.1 Energy and macronutrient composition of food exchanges

List	Food Exchange Group	Carbohydrate (g)	Protein (g)	Fat (g)	Energy (kcal)
I	Vegetable	3	1	-	16
II	Fruit	10	-	-	40
III	Milk	Whole	12	8	170
		Low Fat	12	8	125
		Non-fat/Skim/Fat-free	12	8	80
IV	Rice A	Low Protein	23	-	92
	Rice B	Medium Protein	23	2	100
	Rice C	High Protein	23	4	108
V	Meat	Low Fat	-	8	41
		Medium Fat	-	8	86
		High Fat	-	10	122
VI	Fat	-	-	5	45
VII	Sugar	5	-	-	20

VEGETABLE EXCHANGE

Vegetables are naturally low in calories, sodium and fat which can help maintain a healthy weight. Vegetables are nutrient-dense and are good sources of dietary fiber that facilitates the passage of food through the digestive tract and helps control blood cholesterol and blood glucose levels.

Dark green leafy and yellow vegetables are particularly rich in beta-carotene. Vegetables are good sources of vitamin A which is essential for night vision, cell growth,

development and immunity. For Filipinos, vegetable consumption of at least two to three servings per day is encouraged, one serving of which is a dark green leafy or yellow vegetable (DOST-FNRI, 2015).

Vegetables commonly used as garnish such as coriander, celery, leeks and onion leaves are not included in the list.

One vegetable exchange contains three (3) grams of carbohydrates, one (1) gram of protein and 16 calories.

Table 2.2 Vegetable: Energy and macronutrient content per exchange

List	Food Exchange Group	Amount/Measure	Carbohydrate (g)	Protein (g)	Fat (g)	Energy (kcal)
I	Vegetable	Fresh	½ cup raw (40 g)	3	1	- 16
		Processed	½ cup cooked (45 g) Varies			

The list of fresh and processed vegetables below contain three (3) grams of carbohydrate, one (1) gram of protein and 16 calories per exchange.

Fresh Vegetables

Filipino Name	English Name
Alagaw, dahon	Fragrant premma, leaves
Ampalaya, dahon	Bittermelon/gourd, leaves
Artichoke	Artichoke
Broccoli	Broccoli
Carrot	Carrot
Gabi, dahon	Taro, leaves
Himbaba-o, bulaklak	Himbaba-o, flower
Himbaba-o, dahon	Himbaba-o, leaves
Kabuti, sariwa	Mushroom, fresh
Kadyos, bunga	Pigeon pea pod
Kalabasa, bunga	Squash, fruit
Kalabasa, dahon	Squash, leaves
Kamansi, bunga	Breadnut fruit
Katuray, dahon	Sesbania, leaves
Langka, hilaw	Jackfruit, unripe

Filipino Name	English Name
Malunggay, dahon	Horseradish tree, leaves
Paayap, bunga	Cowpea, pod
Patani, bunga	Lima bean, pod
Remolacha	Beet/Sugar beet
Rimas, bunga	Breadfruit
Saluyot, dahon	Jute, leaves
Sibuyas, ulo (Bombay, Tagalog)	Onion bulb (Bombay, Tagalog)
Singkamas, bunga	Turnip, pod
Sitaw, bunga	String/yard long bean, pod
Sitsaro	Snow/Sugar pea, pod
Toge	Mung bean sprout
Ubod, niyog	Coconut shoot
Yacon	Yacon

Processed Vegetables

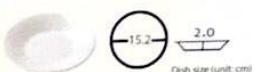
English Name	Filipino Name	Weight (g) EP	Household Measure
Asparagus, cnd	Asparagus, de lata	100	1 cup
Baby corn/young corn, cnd	Mais, mura, de lata	75	2 pcs (8 x 1.5 cm)
Chickpea, cnd	Garbanzos, de lata	15	1 Tbsp
Green peas (cnd, frozen)	Gisantes (de lata, frozen)	25	1 Tbsp
Mixed vegetables (carrot, peas and corn), frozen	Mixed vegetables (carrot, peas and corn), frozen	25	2 Tbsp
Mushroom (whole, sliced), cnd	Kabuti, de lata	110	¾ cup
Tomato, cnd	Kamatis, de lata	50	3 Tbsp
Tomato juice, cnd	Tomato juice, de lata	65	¼ cup
Water chestnut, cnd	Apulid, de lata	40	4 pcs (2 cm diameter)

The following list of vegetables contain negligible amount of calories. These can be included in the meal as much as desired.

Filipino Name	English Name	Filipino Name	English Name
Abitsuwelas, bunga	Snap bean, pod	Okra	Okra
Alfalfa sprouts	Alfalfa sprouts	Pako, dahon	Fiddlehead fern, leaves
Alugbati, dahon	Malabar nightshade, leaves	Papaya, bunga, hilaw	Papaya, fruit, unripe
Ampalaya, bunga	Bittermelon/gourd, fruit	Patola, bunga	Sponge gourd, fruit
Arugula	Arugula	Pechay Baguio	Chinese cabbage
Asparagus	Asparagus	Pechay, dahon	Pechay, leaves
Baby corn/young corn	Baby corn/young corn	Pipino	Cucumber
Bataw, bunga	Hyacinth bean, pod	Puso ng saging, butuan	Banana heart, butuan
Bok choy	Bok choy/Pak choi	Repolyo (berde, pula)	Cabbage (green, red)
Cauliflower	Cauliflower	Sayote, bunga	Chayote, fruit
Kalabasa, bulaklak	Squash, flower	Sayote, dahon	Chayote, leaves
Kale	Kale	Seaweed (balbalulang, kulot, lato, lukot, pokpoklo)	Seaweed (balbalulang, kulot, lato, lukot, pokpoklo)
Kamatis	Tomato	Sigarilyas, bunga	Winged bean, pod
Kamote, dahon	Sweet potato, leaves	Sili, lara	Pepper, sweet/bell
Kamoteng kahoy, dahon	Cassava, leaves	Singkamas, ugat	Turnip, tuber
Kangkong, dahon	Swamp cabbage , leaves	Sitaw, talbos	String/yard long beans, leaves
Katuray, bulaklak	Sesbania, flower	Spinach, dahon	Spinach, leaves
Labanos	Radish	Upo, bunga	Bottle gourd/white squash, fruit
Labong	Bamboo shoot	Talinum, dahon	Philippine spinach, leaves
Letsugas, dahon at tangkay	Lettuce, leaves and petioles	Talong	Eggplant
Malunggay, bunga	Horseradish tree, pod		
Mustasa, dahon	Mustard, leaves		



Figure 1. Selected Vegetable Exchanges



FRUIT EXCHANGE

Fruits are important sources of vitamins, minerals and fiber in the diet. Fresh or raw fruits are recommended than fruit juices because the latter have lower fiber content. It is recommended to include three servings of fruit daily, one serving of which is a vitamin C - rich fruit (FNRI-DOST, 2015).

The major source of energy in fruits is carbohydrate, which occurs mainly as sugar. Fruits may cause a temporary increase in blood glucose, thus, meal plans for persons with diabetes should allow not more than three

to five (3 - 5) exchanges per day. Whole fruits rather than juice are better for patients with diabetes because the latter have a greater glycemic effect.

The fruit exchange list includes fresh and processed fruits (e.g. canned, dried and fresh fruit juices). Buko water can also be considered as fruit juice. One glass of it is equivalent to one serving of fruit, thus it can raise the blood glucose level when not taken as part of a meal (Chavez et al., 2006). One fruit exchange contains 10 grams of carbohydrates and 40 calories.

Table 2.3 Fruit: Energy and macronutrient content per exchange

List	Food Exchange Group	Amount/Measure	Carbohydrate (g)	Protein (g)	Fat (g)	Energy (kcal)
II	Fruit	Varies	10	-	-	40

This list contains 10 grams of carbohydrate and 40 calories.

Fresh Fruits

Filipino Name	English Name	Weight (g)		Household Measure	Dimension (EP)
		AP	EP		
Alimuran	Rattan fruit	119	50	13 pcs	2.5 cm diameter each (AP)
Atis	Sugar apple/sweetsop	100	50	1 pc	5 cm diameter (AP)
Balimbing	Starfruit	182	160	4 ½ pcs	6.5 x 3.5 cm each (AP)
Bayabas, pula	Guava, red	61	60	2 pcs	3.5 cm diameter each (AP)
Bayabas, puti	Guava, white	81	80	3 pcs	3.5 cm diameter each (AP)
Bignay	Bignay	299	200	2 cups	n/a
Blueberries	Blueberries	84	80	½ cup	n/a
Camachili	Madras thorn	110	55	7 pods	10 cm each
Cherries, hinog	Cherries, sweet, ripe	76	70	7 pcs	3 cm diameter each
Chico	Sapodilla	54	45	1 pc	4 cm diameter (AP)
Dalandan, (Ladu/Szinkom)	Orange, (Ladu/Szinkom)	344	155	3 pcs	6 cm diameter each (AP)
Datiles/Aratiles	Jamaica cherry	61	50	¼ cup or 25 pcs	1.5 cm diameter each
Dragon fruit	Dragon fruit	119	75	½ cup or ¼ pc of	9 x 7.5 cm (AP)
Duhat	Black/Java plum	80	60	12 pcs	2 cm diameter each (AP)
Durian	Durian	150	30	2 segments	5.5 x 3.5 x 3 cm each
Granada	Pomegranate	182	80	½ pc of	8.5 cm diameter (AP)
Guyabano	Soursop	107	75	1 slice	8 x 6 x 2 cm (AP)
Kasuy, bunga	Cashew fruit	78	70	2 pcs	5.5 x 3 cm each
Kaymito, berde	Star apple, green	123	65	½ pc of	7.5 cm diameter (AP)
Kaymito, murado	Star apple, purple	103	65	½ pc of	7.5 cm diameter (AP)
Kiwifruit, berde	Kiwifruit, green	99	75	1 pc	5 x 6 cm (AP)
Langka, hinog	Jackfruit, ripe	118	40	1 ½ segments	5 x 3.5 cm
Lansones	Lanzon	118	80	5 pcs	3 x 3 cm each (AP)
Lechiyas/litchi	Lychee	77	50	4 pcs	3 cm diameter each (AP)
Longan	Longan	113	60	13 pcs	2.5 cm diameter each (AP)

Fresh Fruits [continued]

Filipino Name	English Name	Weight (g)		Household Measure	Dimension (EP)
		AP	EP		
Mabolo	Ebony	100	60	½ pc of	8 cm diameter (AP)
Makopa	Curacao apple	188	150	9 pcs	4.5 × 4 cm each (AP)
Mangga, Indiyan, hilaw	Mango, Indian, unripe	140	80	½ cup or 1 pc	6.5 cm diameter (AP)
Mangga, kalabaw, hilaw	Mango, Manila super, unripe	97	70	½ cup or 1 slice	12 × 6.5 cm
Mangga, kalabaw, manibalang	Mango, Manila super, medium ripe	97	70	½ cup or 1 slice	12 × 6.5 cm
Mangga, kalabaw, hinog	Mango, Manila super, ripe	104	70	½ cup or 1 slice	8 × 7 cm
Mangga, paho/pahutan, hilaw	Mango, paho, unripe	79	60	9 pcs	4 × 2.5 cm each (AP)
Mangga, piko, hilaw	Mango, piko, unripe	82	60	1 slice	9.5 × 6 cm
Mangga, piko, hinog	Mango, piko, ripe	103	60	1 slice	10 × 5.5 cm
Mangga, piko, manibalang	Mango, piko, medium ripe	85	60	1 slice	9.5 × 6 cm
Mangga, supsupin, hinog	Mango, supsupin, ripe	94	50	1 pc	8 × 4.5 cm (AP)
Mangosteen	Mangosteen	212	55	2 pcs	6 cm diameter each (AP)
Mansanas, berde	Apple, green	97	75	1 pc	6 cm diameter (AP)
Mansanas, pula	Apple, red	99	75	1 pc	6 cm diameter (AP)
Marang	Jahore oak	121	35	10 pcs	n/a
Milon, honey dew	Melon, honey dew	119	100	¾ cup or 1 slice	14 × 4.5 × 4 cm
Milon, Kastila	Melon, cantaloupe	317	200	1 ¼ cup or 1 slice	16 × 6.5 × 2 cm
Milon, Tagalog	Melon, musk	278	200	1 ¼ cup or 1 slice	16 × 6.5 × 2 cm
Orange, Florida	Orange, Florida	135	100	½ pc of	6.5 cm diameter (AP)
Orange, kiat kiat	Orange, kiat kiat	108	80	3 pcs	4.5 cm diameter each (AP)
Orange, ponkan	Orange, ponkan	108	80	1 pc	7 cm diameter (AP)
Pakwan	Watermelon	242	150	1 cup or 1 slice	11.5 × 2.5 × 9 cm
Papaya, hinog	Papaya, ripe	141	90	¾ cup or 1 slice	16 × 4.5 × 2 cm
Passion fruit	Passion fruit	125	65	½ cup or 2 pcs	6 cm diameter each (AP)

Fresh Fruits [continued]

Filipino Name	English Name	Weight (g)		Household Measure	Dimension (EP)
		AP	EP		
Peras	Pear	130	95	¼ cup or ½ pc of	7.5 cm diameter (AP)
Persimon	Persimmon	105	60	½ pc of	8 × 7.5 × 5.5 cm (AP)
Pinya	Pineapple	138	80	½ cup or 1 slice	14.5 × 2.5 × 4.5 cm
Rambutan	Rambutan	153	55	5 pcs	3.5 cm diameter × 4.5 cm each (AP)
Saging, bungulan	Banana, bungulan	60	40	½ pc of	15 × 3 cm (AP)
Saging, cavendish, hinog	Banana, cavendish, ripe	63	40	½ pc of	15 × 3 cm (AP)
Saging, gloria	Banana, gloria	65	40	½ pc of	13.5 × 4 cm (AP)
Saging, lakatan	Banana, lacatan	58	40	½ pc of	14 × 3.5 cm (AP)
Saging, latundan	Banana, latundan	55	40	½ pc of	12.5 × 3 cm (AP)
Saging, murado	Banana, violet	60	40	½ pc of	14 × 4 cm (AP)
Saging, saba	Banana, saba	70	40	½ pc of	12 × 4.5 cm (AP)
Sampalok, hinog	Tamarind, ripe	34	15	12 segments	n/a
Santol	Santol	110	65	1 pc	6 cm diameter (AP)
Singkamas, ugat	Turnip, tuber	230	200	1 cup or 1 ½ pcs	7 cm diameter (AP)
Siniguwelas	Spanish plum	78	50	4 pcs	3 cm diameter each (AP)
Strawberry	Strawberry	168	165	1 ¼ cups	n/a
Suha	Pomelo	156	100	2 segments	9.5 × 2.5 × 4 cm each
Tiesa	Carristel	41	30	¼ pc of or 1 slice	11.5 × 5.5 cm (AP) 10.5 × 4 × 1.5 cm
Ubas	Grapes	69	55	5 pcs 12 pcs	2.5 cm diameter each 2 cm diameter each
Others (Fresh Juices):					
Lemon juice	Lemon juice	130	½ cup	n/a	
Niyog, tubig	Coconut water	240	1 cup	n/a	
Orange juice	Orange juice	90	⅓ cup	n/a	
Passion fruit juice	Passion fruit juice	65	¼ cup	n/a	

Processed Fruits

Food Item	Weight (g) EP	Household Measure	Dimension (EP)
Canned:			
Apple sauce, sweetened	60	4 Tbsp	n/a
Apple sauce, unsweetened	100	½ cup	n/a
Blackberries, heavy syrup, solids and liquids	45	¼ cup or 9 pcs	2.5 x 2 x 2 cm each
Blueberries, light syrup, drained	45	¼ cup or 29 pcs	n/a
Fruit cocktail, tropical, in syrup	45	¼ cup	n/a
Lychee in syrup	45	4 pcs	2.5 cm diameter
Peach halves in heavy syrup	65	1 pc	6 cm diameter
Pineapple crushed/tidbits/chunks	50	⅓ cup	n/a
Pineapple slice	40	1 ring	n/a
Strawberries, frozen, unsweetened	130	¼ cup or 26 pcs	2 x 2 cm each
Strawberries, heavy syrup, solids and liquids	45	¼ cup or 7 pcs	2.5 x 2.5 x 2 cm each
Dried:			
Chamoy	10	2 pcs	2 x 2 cm each
Dates	15	2 pcs	2 x 2.5 cm
Dikyam	15	2 pcs	3 x 3 x 1 cm
Mango chips	10	2 pcs	6 x 2.5 x 1 cm each
Prunes	15	1 pc	3 x 2.5 cm
Raisins	15	2 Tbsp	n/a

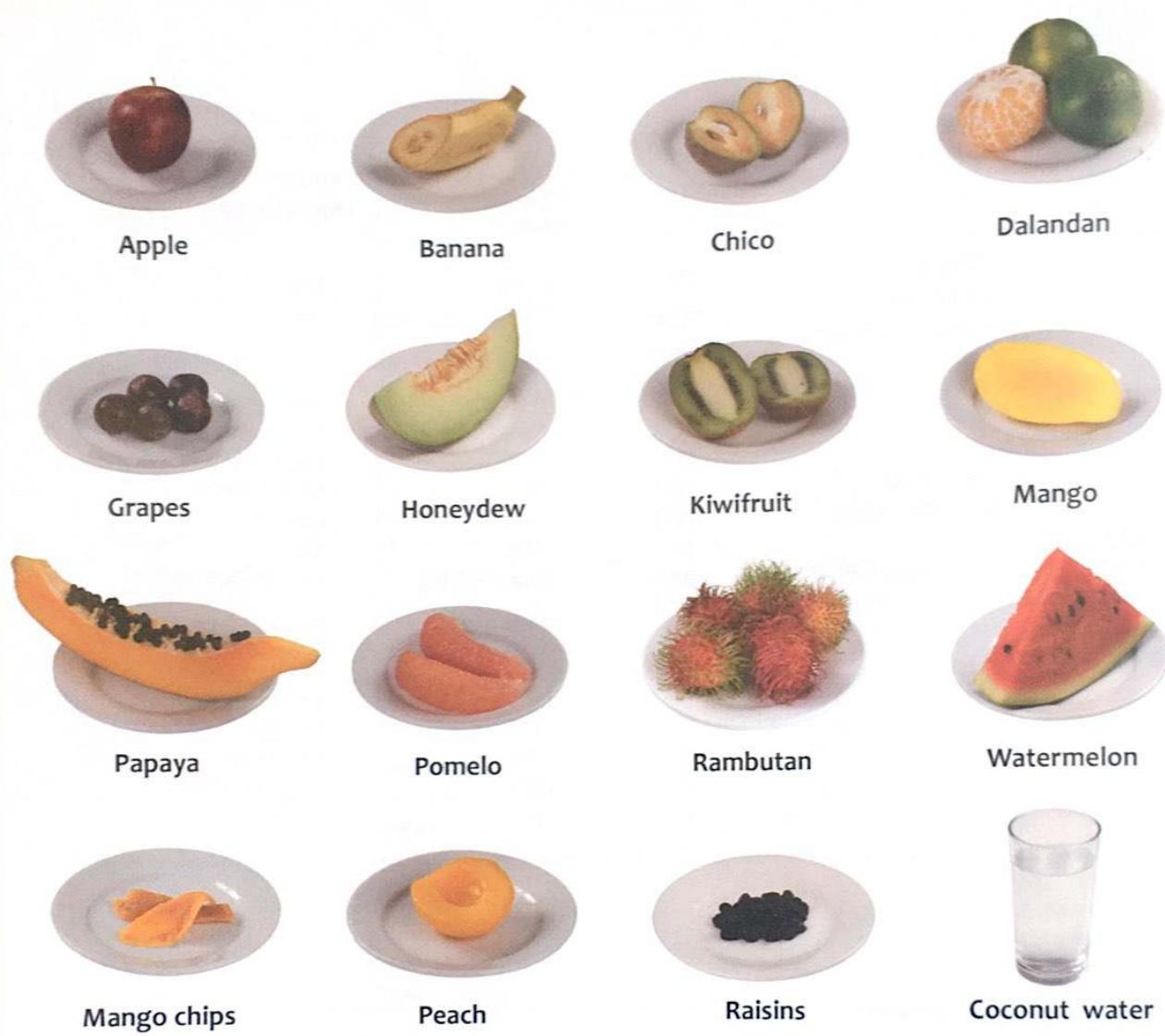


Figure 2. Selected Fruit Exchanges



MILK EXCHANGE

Milk is often regarded as nature's most complete food. The protein in milk is a complete protein that provides all of the essential amino acids. Milk also provides many nutrients such as calcium, phosphorus, and vitamins A, B and D.

The term "milk" should refer to the liquid secretion of the mammary glands of healthy animals such as cow, carabao and goats. Yogurt is a fermented, slightly acidic, semi-solid food made of milk to which culture of bacteria, *Lactobacillus bulgaricus* and *Streptococcus thermophilis*,

has been added. Variations depend on the kind of milk used (whole, skim or partly skimmed), kind of chopped fruit added (berries, banana, peach, mango, etc.), and sweetener (sweetened with sugar or sugar substitutes).

Milk exchange list includes whole milk, low fat/reduced fat and non-fat/skim/fat-free milk. Whole milk contains 3.25% milk fat. Low-fat milk have some of the fat removed so that milk fat levels are decreased to 1-2%. Fat-free or non-fat milk/skim milk should contain no more than 0.5% milk fat (Brown, 2011).

Table 2.4 Milk: Energy and macronutrient contents per exchange

List	Food Exchange Group	Amount/Measure	Carbohydrate (g)	Protein (g)	Fat (g)	Energy (kcal)
Milk						
III	Whole	varies	12	8	10	170
	Low fat	varies	12	8	5	125
	Non-fat/Skim/Fat-free	varies	12	8	-	80

Filipino Name	English Name	Amount (mL)	Household measure
Whole			
Gatas, kalabaw ¹	Milk, carabao ¹	200	¾ cup
Gatas, baka	Milk, cow	250	1 cup
Gatas, evaporada	Milk, evaporated	125	½ cup
Gatas, evaporada, filled	Milk, evaporated, filled	125	½ cup
Gatas, kambing	Milk, goat	250	1 cup
Gatas, recombined	Milk, recombined	200	¾ cup
Gatas, pulbos, filled, instant	Milk, powder, filled, instant	35	5 Tbsp, level
Gatas, pulbos, full cream	Milk, powder, full cream	35	5 Tbsp, level
Low Fat (1-2%)			
Gatas, low fat	Milk, low fat	250	1 cup
Yogurt	Yogurt	150	½ cup
Non-fat/Skim/ Fat-free (<1%)			
Buttermilk	Buttermilk	180	¾ cup
Gatas, skim	Milk, skim	250	1 cup
Gatas, pulbos, skim	Milk, powder, skim	25	4 Tbsp, level
Gatas, pulbos, non-fat, instant	Milk, powder, non-fat, instant	25	4 Tbsp, level
Yogurt, plain, skim	Yogurt, plain, skim	150	½ cup

¹Equivalent to 1 cup cow's milk plus 2 exchanges of fat

- 1 Whole milk
- 2 Buttermilk
- 3 Non-fat milk powder
- 4 Full cream milk powder
- 5 Evaporated milk
- 6 Yogurt



Figure 3. Selected Milk Exchanges

RICE EXCHANGE

Cereals such as rice, corn and wheat are the major sources of carbohydrates. Whole grain products are better sources of dietary fiber compared to refined grain products. Dietary fiber is associated with healthy weight, lower cholesterol and blood glucose level, in addition to maintenance of bowel health.

Intake of rice and its equivalent can temporarily increase blood glucose if taken in large amounts in one sitting; hence, an individualized meal plan should be prepared for persons with diabetes. There is a misconception that rice is to be avoided by persons with diabetes because it

has high sugar content. The fact is that other foods also contain energy from carbohydrate and sugars that may increase blood glucose level. The key is to know how much to eat from the food groups so as to keep blood glucose levels in a safe range.

Rice exchange list is classified into three groups based on protein content – Low Protein (Rice A), Medium Protein (Rice B), and High Protein (Rice C). The energy and macronutrient composition per exchange portion is presented in Table 2.5.

Table 2.5 Rice: Energy and macronutrient content per exchange

List	Food Exchange Group	Amount/Measure	Carbohydrate (g)	Protein (g)	Fat (g)	Energy (kcal)
IV	Rice A – Low Protein	Varies	23	-	-	92
	Rice B – Medium Protein	Varies	23	2	-	100
	Rice C – High Protein	Varies	23	4	-	108

Rice A: Low Protein – contains 23 grams of carbohydrate and zero or negligible protein content.

Filipino Name	English Name	Weight (g) EP	Household Measure	Dimension (EP)
Rice and Rice Products				
Kanin, “protein-reduced”	Rice, “protein-reduced”	55	1/3 cup	n/a
Ampaw, pinipig	Ampaw, pinipig	25	2 pcs	7 x 4 x 1.5 cm each
Biko	Rice cake (glutinous), biko	40	1 slice	5 x 3.5 x 2 cm
Cuchinta	Rice cake, cuchinta	60	2 pcs 6 pcs	5 cm diameter x 1.5 cm each 3 cm diameter x 1.5 cm each
Sapin-sapin	Rice prep (glutinous), sapin-sapin	75	1 slice	7 x 4 x 2 cm
Corn and Corn Products				
Cornstarch	Cornstarch	25	1/4 cup	n/a
Maja blanca	Corn pudding, maja blanca	65	1/2 slice	4.5 x 4 x 3.5 cm
Maja mais	Corn pudding, maja mais, yellow	75	1 slice	6 x 4 x 2.5 cm
Noodles and Pasta				
Bihon	Noodles, rice			
Misua	Noodles, wheat, thin			
Sotanghon	Noodles, mungbean starch	100	1 cup	n/a
Sweet potato noodles	Noodles, sweet potato			
Rootcrops and Products				
Gabi	Taro	100	3/4 cup, cubed	n/a
Kamote (dilaw, murado, puti)	Sweet potato (yellow, purple, white)	85	1 pc or 3/4 cup, cubed	4 cm diameter x 9 cm long
Kamoteng kahoy/balinghoy	Cassava	85	1 slice or 3/4 cup, cubed	6 x 5 cm
Kamoteng kahoy, bibingka	Cassava cake, bibingka	55	1 slice	3.5 x 4.5 x 3.5 cm
Kamoteng kahoy, linupak	Cassava, mashed, w/sugar and margarine	55	1 pc	7 x 3 x 3.5 cm
Kamoteng kahoy, pichi-pichi	Cassava, pichi-pichi	45	1 pc	5 cm diameter
Kamoteng kahoy, suman	Cassava, suman	45	1 pc	8.5 x 3 x 2 cm
Tugi	Yam, spiny	150	1 pc or 1 1/4 cups, cubed	11.5 x 4.5 cm
Ubi	Yam, purple	130	1 cup, cubed	n/a
Others				
Saging, saba, nilaga	Banana, saba, boiled	65	1 pc	9.5 x 3.5 x 3.5 cm
Sago, nilaga	Palm starch ball, boiled	120	1/2 cup	n/a
Sago, tapioca	Tapioca pearls	160	3/4 cup	n/a

Rice B: Medium Protein – contains 23 grams of carbohydrate and two (2) grams of protein.

Filipino Name	English Name	Weight (g) EP	Household Measure	Dimension (EP)
Rice and rice products				
Bigas, maputi, sinaing	Rice, well-milled, boiled	80	½ cup	n/a
Bigas, mapula, sinaing	Rice, undermilled, red, boiled	80	½ cup	n/a
Pinawa, sinaing	Rice (undermilled/brown rice), boiled	80	½ cup	n/a
Lugaw:	Rice gruel			
Thin consistency (½ cup cooked rice + 5 cups water)	705	4 ½ cups	n/a	
Medium consistency (½ cup cooked rice + 3 cups water)	435	3 cups	n/a	
Thick consistency (½ cup cooked rice + 2 cups water)	250	1 ½ cups	n/a	
Ampaw, rice	Ampaw, rice	25	2 pcs	7 × 4 × 1.5 cm each
Bibingka, galapong	Rice cake, bibingka	45	½ slice	7 cm diameter × 3 cm
Bibingka, malagkit	Rice cake (glutinous), bibingka	40	½ slice	5 × 3 × 2 cm
Bibingka, pinipig	Rice cake (glutinous), pinipig	50	1 slice	5 × 4 × 2 cm
Espasol	Rice prep, espasol	35	1 slice	2.5 cm diameter × 4 cm
Kalamay, may latik	Rice prep (glutinous), kalamay, with coconut curd topping	50	1 slice	5 × 5 × 1.5 cm
Kalamay, ube	Rice prep (glutinous), with yam	60	1 slice	4.5 × 4.5 × 2 cm
Palitaw, walang niyog	Rice prep (glutinous), palitaw	50	3 pcs	6.5 × 3.5 × 0.5 cm each
Puto, brown	Rice cake, brown	50	½ slice of	9 × 5 × 4 cm
Puto bumbong	Rice cake, puto bumbong, purple	40	2 pcs	10 × 1.5 × 1 cm each
Puto maya	Rice cake, maya	60	½ of 1 slice	9 × 10 × 2.5 cm 4.5 × 3.5 × 5.5 cm
Puto, puti/Puto, Calasiao	Rice cake, puto white	50	3 – 4 pcs	4 cm diameter × 2 cm each
Puto seko	Rice-bread prep, toasted, puto seko	25	4 pcs	3 cm diameter × 1.5 cm each
Puto seko, may niyog	Rice-bread prep, toasted, puto seko with grated coconut	25	7 pcs	2.5 cm × 2 cm each

Rice B: Medium Protein [continued]

Filipino Name	English Name	Weight (g) EP	Household Measure	Dimension (EP)
Rice and rice products				
Suman marwekos, may niyog	Rice prep (glutinous), with grated coconut topping	50	1 pc	13 x 4 x 1.5 cm
Suman sa ibos	Rice prep (glutinous), ibos	60	1 pc	11 x 2.5 x 2.5 cm
Suman sa lihiya	Rice prep (glutinous), lye-treated	55	½ of	11 x 5.5 x 1.5 cm
Tamales	Rice flour prep, tamales	100	2 pcs ½ pc of	6.5 x 4.5 x 3 cm each 9.5 x 7 x 5 cm
Tikoy	Rice cake (glutinous), Chinese tikoy	40	1 slice	8.5 x 3 x 1.5 cm
Tupig	Rice prep (glutinous), tupig	35	1 pc	10.5 x 2.5 x 1.5 cm
Bakery Products				
Apas	Cookies, apas	25	7 pcs	7.5 x 3 cm each
Brohas	Cookies, lady finger	25	5 pcs	11 x 3.5 cm each
Cake, mamon, tostado	Cake, mamon, toasted	25	2 ½ pcs 3 pcs	7 x 3 x 2 cm 5 cm diameter x 1 cm
Cuapao	Steamed bun	35	½ of	5.5 x 6.5 x 3.5 cm
Hopyang hapon	Hopyang hapon	30	1 pc	5.5 cm diameter x 1.5 cm
Marie	Cookies, marie	25	8 pcs	6 cm diameter x 0.5 cm each
Pasencia	Cookies, pasencia	25	7 pcs	4 x 4 x 0.5 cm each
Pianono	Cake, jelly roll	35	1 slice	8.5 x 7.5 x 2 cm
Sponge cake	Cake, sponge	35	1 slice	7.5 x 4 x 4 cm
Corn and corn products				
Binatog	Hominy	90	½ cup	n/a
Corn flakes	Corn flakes	25	½ cup	n/a
Mais butil, de lata	Corn, whole kernel, cnd	160	1 cup	n/a
Mais, cream style, de lata	Corn, cream style, cnd	130	½ cup	n/a
Mais, durog (dilaw, puti)	Corn grits (yellow, white)	120	1 cup	n/a
Mais sa busal (dilaw, puti)	Corn on cob (yellow, white)	65	½ pc of	12.5 x 4 cm (AP)

Rice B: Medium Protein [continued]

Filipino Name	English Name	Weight (g) EP	Household Measure	Dimension (EP)
Rootcrop				
Patatas	Potato	170	1 pc or 1 ¼ cup, cubed	6 cm diameter × 8 cm
Others				
Kastanyas, binusa	Chestnut, roasted	40	8 pcs	3 cm diameter
Plantains	Plantains	80	1 pc	12.5 × 3 × 3 cm

Rice C: High Protein – contains 23 g of carbohydrate and four (4) grams of protein

Filipino Name	English Name	Weight (g) EP	Household Measure	Dimension (EP)
Bakery products				
Bread, wheat	Bread, wheat	40	1½ pcs	10 × 9.5 × 1.5 cm
Ensaymada	Bread, sweet roll	35	1 pc ½ pc	6.5 cm diameter × 4 cm 11.5 cm diameter × 3.5 cm
Hamburger bun	Bread, hamburger bun	35	1 pc	13 × 5.5 × 3 cm
Hotdog roll	Bread, hotdog roll	35	1 pc	8 cm diameter × 4.5 cm
Loaf bread/Pan Amerikano	Bread, white, loaf	35	2 pcs 1½ pcs	7.5 × 6.5 × 1.5 cm each 10 × 9.5 × 1.5 cm
Pan de bonete	Bread, pan de bonete	35	1½ pcs	4 cm diameter × 4 cm
Pan de leche	Bread, pan de leche	35	½ pc	8 × 3 × 6.5 cm
Pan de limon	Bread, pan de limon	35	1 pc	6 × 5 × 4.5 cm
Pan de monay	Bread, pan de monay	35	½ pc	8.5 × 8 × 6.5 cm
Pan de sal	Bread, pan de sal	35	1½ pcs	7 × 6 × 3.5 cm
Pinagong	Bread, pinagong	35	½ pc of	10 × 6.5 × 4 cm
Pita bread, white (enriched/ unenriched)	Bread, pita, white (enriched/ unenriched)	40	½ pc	16 cm diameter × 1 cm
Pita bread, whole wheat	Bread, pita, whole wheat	40	½ pc	16 cm diameter × 1 cm
Tinapay, tostado	Bread, toast/toasted	30	5 pcs 1½ pc	4.5 × 3.5 × 1 cm each 9 × 9 × 1 cm
Noodles and Pasta				
Couscous	Couscous	100	1 cup	n/a
Pasta (enriched/ unenriched)	Pasta (enriched/unenriched)	70	½ cup	n/a
Udon	Udon	100	1 cup	n/a
Others				
Balat ng lumpia	Spring roll wrapper, plain	35	7 pcs	16.5 cm diameter each
Langka, buto	Jackfruit, seed	75	14 pcs	n/a
Quinoa	Quinoa	95	1 cup	n/a



Figure 4. Selected Rice Exchanges



MEAT EXCHANGES

Foods under the meat exchange include meat, fish, seafood, eggs, poultry and legumes. Lean meats and poultry are a good source of protein, iron, thiamin, riboflavin and niacin, as well as other B-complex vitamins. Seafood is an important source of minerals such as iron, zinc, copper and calcium. Marine fishes (such as grouper, round scad, salmon, red snapper, mackerel and tuna) and shellfishes (such as mussels, oysters and clam) are good sources of iodine.

Legumes, nuts and seeds are good sources of protein, iron and zinc. Legumes are also good sources of carbohydrate, dietary fiber and other nutrients. These can be a healthy substitute for meat.

Lean meats, chicken without skin and fish should be used when planning a diet low in saturated fat and cholesterol. The use of medium fat meat exchanges should be limited when the patient's fat allowance is less than 30 grams and foods in the high fat meat should be avoided (FNRI-DOST, 1994).

Meat exchange list is categorized as low fat, medium fat and high fat. Each exchange of meat on this list contains about 8 grams of protein. The amount of fat and calories varies depending on the amount of fat in meat. One exchange of meat when fried will absorb approximately one exchange of fat.

Table 2.6 Meat: Energy and macronutrient content per exchange

List	Food Exchange Group	Amount/Measure	Carbohydrates (g)	Protein (g)	Fat (g)	Energy (kcal)
V	Low Fat Meat	varies	-	8	1	41
	Medium Fat Meat	varies	-	8	6	86
	High Fat Meat	varies	-	8	10	122

Low Fat Meat – contains eight (8) grams of protein and one (1) gram of fat.

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Lean Meat				
Beef				
Kenchi	Shank	35		
Laman	Lean meat	35		
Pierna corta at pierna larga	Round	35	1 slice, mbs	5 × 3.5 × 2 cm
Solomilyo	Tenderloin	35		
Tagiliran, gitna	Porterhouse steak	35		
Tagiliran, hulihan	Sirloin	35		
Carabeef				
Hita	Round	35		
Kenchi	Shank	35		
Laman, bahagyang taba	Lean meat with little fat	35		
Laman, katamtamang taba	Lean meat with medium fat	35	1 slice, mbs	5 × 3.5 × 2 cm
Paypay	Chuck	35		
Pierna corta at pierna larga	Round steak	35		
Tapadera	Rump	35		
Pork				
Lomo	Tenderloin	35	1 slice, mbs	5 × 3.5 × 2 cm
Goat (Chevon)				
Balikat	Shoulder	40	1 slice	8 × 2 × 2.5 cm
Binti	Leg	40	1 slice	8 × 2 × 2.5 cm
Biyas	Shank	40	1 slice	8 × 2 × 2.5 cm
Dibdib	Breast	35	1 slice, mbs	5 × 3.5 × 2 cm
Leeg	Neck	40	1 slice	8 × 2 × 2.5 cm
Likod	Back	40	1 slice	8 × 2 × 2.5 cm
Lomo	Loin	35	1 slice, mbs	5 × 3.5 × 2 cm
Tadyang	Rib	40	1 slice	8 × 2 × 2.5 cm

Low Fat Meat [continued]

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Chicken				
Laman	White meat	30	1 slice	5 x 3 x 1.5 cm
Pitso	Breast	30	1 slice	5 x 3 x 1.5 cm
Duck				
Pakpak	Wing	30	1 pc	n/a
Others				
Palaka, laman	Frog, meat	30	1 pc, big or 2 pcs, small	22 x 3 x 3 cm or 18 x 2.5 x 2.5 cm
Variety meats/ Internal organs				
Atay	Liver (pork, beef, carabeef, chicken)	30	¼ cup or 1 pc	n/a
Baga	Lungs (pork, beef, carabeef)	35	¼ cup	n/a
Balun-balunan	Gizzard (chicken, duck)	25	¼ cup or 4 pcs	5 x 2.5 x 1.5 cm each
Bato	Kidney (pork, beef, carabeef)	45	½ cup	n/a
Bitukang maliit	Small intestine (pork, beef)	30	¼ cup	n/a
Bituka, manok, barbecue	Chicken intestine, barbecue	20	2 sticks	11 x 2 x 0.5 cm each
Dugo	Blood (pork, beef, chicken)	35	¼ cup	n/a
Lapay	Spleen (pork, beef, carabeef)	45	½ cup	n/a
Libriyo	Omasum (beef, carabeef)	50	½ cup	n/a
Litid	Tendon (beef)	30	1 slice, mbs	5 x 3.5 x 1.5 cm
Puso	Heart (pork, beef, carabeef)	25	¼ cup	n/a
Fish				
Alumahan	Mackerel, striped	35	½ pc of	17 x 4 cm
Bakokong moro	Porgy, fresh water	40	½ slice of	9 x 3 x 4 cm
Bangus	Milkfish	35	1 slice	4.5 x 6 x 1.5 cm
Dalag	Mudfish/Murrel, striated	40	½ slice of	9 x 3 x 4 cm
Dalagang bukid	Caesio/Fusilier, golden	35	½ pc of	11 x 4 cm
Dilis, buo	Anchovy, long - jawed, whole	35	1/3 cup	n/a
Dilis, walang ulo	Anchovy, long - jawed, w/o head	25	¼ cup	n/a

Low Fat Meat [continued]

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Dulong	Anchovy fry	50	½ cup	n/a
Galunggong	Scad, round	35	1 pc	13 × 3 cm
Hasa-hasa	Mackerel, short-bodied	35	1 pc	16 × 5 cm
Hito	Catfish, freshwater	35	1 slice	6 × 3 × 2.5 cm
Labahita	Surgeon fish, blue-lined	40	½ slice of	9 × 3 × 4 cm
Lapu-lapu	Grouper, spotted	40	½ slice of	9 × 3 × 4 cm
Matang baka	Scad, big-eyed	35	1 pc	15 × 4 cm
Sapsap	Slipmouth, common	35	2 pcs	8.5 × 3.5 cm each
Saramulyete	Goatfish, yellow-striped	35	1 pc	13.5 × 3 × 2.5 cm
Tambakol	Tuna, yellow-fin	35	½ slice of	9 × 6 × 1.5 cm
Tamban	Sardine, Indian	35	1 ½ pcs	15 × 3.5 cm
Tawilis	Sardine, bombon	30	2 pcs	12.5 × 3 cm each
Tilapia	Tilapia	35	½ slice of	15.5 × 6 cm
Tulingan	Tuna, frigate/bullet	35	½ slice of	9 × 6 × 1.5 cm
Other Seafoods				
Alimango, alige	Crab, mud/mangrove, fat	15	1 Tbsp	n/a
Alimango, laman	Crab, mud/mangrove, meat	50	⅓ cup or ½ pc of	10.5 × 7 × 4 cm (AP)
Alimasag, alige	Crab, blue swimming, fat	25	2 ½ Tbsp	n/a
Alimasag, laman	Crab, blue swimming, meat	40	⅓ cup or 1 pc	9 × 5 cm
Balatan	Sea cucumber	120	6 pcs	8 × 5.5 × 0.5 cm each
Pugita	Octopus	40		
Pusit	Squid	50	2 pcs	11 × 3 cm each
Talangka	Crab, shore	25	6 pcs	3 × 3 cm each (AP)
Hipon/Shrimp:				
Hipon, alamang	Shrimp, sergestid	40	⅓ cup	n/a
Hipon, sugpo	Shrimp, giant tiger prawn	40	½ pc of	23 × 2.5 × 3.5 cm (AP)
Hipon, suwahe	Shrimp, greasy back	40	4 pcs	16 cm each (AP)
Hipon, tagunton	Shrimp, freshwater (small)	40		
Hipon, ulang	Shrimp, freshwater	40		

Low Fat Meat [continued]

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Shells:				
Batotoy	Mollusks, Sakhalin surf clam/cockles	60	1/3 cup or 4 pcs	2 x 4.5 x 4 cm each
Lapas/Kapinan	Abalone	30	2-3 pcs	5 x 4 x 2 cm each
Kuhol, ginto	Snail golden	45	1/3 cup or 12 pcs	n/a
Paros	Clam, rayed shell	60		
Tuway	Mollusks, hard clam	45	2 1/2 cup (with shells) or 1/4 cup (without shells) or 22 pcs	4 x 4 x 2.5 cm each
Processed Foods				
Cheese				
Cottage	Cottage	50	1/3 cup	n/a
Fish Products				
Canned				
Tuna flakes, in brine	Tuna flakes, in brine	45	1/4 cup	n/a
Daing/Dried				
Alakaak	Croaker, plain	25	8 pcs	8 x 4.5 cm each
Alumahan	Mackerel, striped	25	2 pcs	18 x 7 x 0.5 cm each
Bakalaw	Cod	25	1/3 pc of	21.5 x 6.5 x 2.5 cm
Bisugo	Nemipterid, ribbon-finned	25	1 pc	12 x 7.5 cm
Biyang puti	Goby, flat-headed	25	1 pc or 11 pcs small	14.5 x 9 x 0.5 cm or 9.5 x 4.5 x 0.5 cm each
Lapu-lapu	Grouper, spotted	25	1 pc	17 x 9 x 0.5 cm
Malasugi/Espada	Swordfish	20	3 1/2 pcs	29.5 x 5 cm each
Sapsap	Slipmouth, common	25	7 pcs	8 x 4 x 0.5 cm each
Tamban	Sardine, Indian	25	2 pcs	11 x 3.5 x 1 cm each
Tanigi/Tangigí	Mackerel, Spanish	25		
Tilapia	Tilapia	25	1 pc	9.5 x 8 cm

Low Fat Meat [continued]

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Tuyo/Dried				
Alamang	Shrimp, sergestid	15	½ cup	n/a
Ayungin	Theraponid, silvery	15		
Dilis	Anchovy, long-jawed	15	13 pcs	7 cm each
Hibe	Shrimp, small, marine	25	4 Tbsp	n/a
Pusit	Squid	15	2 pcs	7 × 6 cm each
Sapsap	Slipmouth, common	20	4 pcs	8 × 4 cm each
Tamban	Sardine, Indian	20	2 pcs	10.5 × 3 cm each
Tinapa/Smoked				
Galunggong	Scad, round	25	½ pc of	15.5 × 3.5 cm
Tamban	Sardine, Indian	25	3 pcs	10 × 3 cm each
Tunsoy	Sardine, fimbriated	25	3 pcs	10 × 3 cm each

Medium Fat Meat – contains eight (8) grams of protein and six (6) grams of fat.

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Beef				
Paypay, laman	Chuck, lean	35	1 slice, mbs	5 x 3.5 x 2 cm
Punta y pecho	Brisket	35	1 slice, mbs	5 x 3.5 x 2 cm
Pork				
Pata	Leg	35	1 slice, mbs	5 x 3.5 x 2 cm
Chicken				
Binti	Leg/drumstick	35	1 pc	11 x 4 cm
Hita	Thigh	35	1 pc	11.5 x 4 cm
Pakpak	Wing	35	1 pc	n/a
Ulo	Head	50	2 pcs	5.5 x 3 x 3 cm
Duck				
Hita	Thigh	35	1 pc	3.5 x 6.5 cm
Likod	Back	30	1 slice	5 x 3 x 1.5 cm
Pitso	Breast	35	1 slice, mbs	5 x 3.5 x 2 cm
Goat (Chevon)				
Tiyan	Flank	35	1 slice, mbs	5 x 3.5 x 2 cm
Variety meats/internal organs				
Bituka, maliit	Small intestine, carabeef	35	1/4 cup	n/a
Goto	Tripe, beef	85	3/4 cup	n/a
Utak	Brain (pork, beef, carabeef)	45	1/4 cup	n/a
Egg				
Manok, buo	Chicken, whole	55	1 pc medium	4.5 cm diameter x 5.5 cm
Pato, maalat	Duck, whole, salted	55	1 pc medium	4.5 cm diameter x 5.5 cm
Pugo	Quail	55	7 pcs small	n/a
Fish				
Karpa	Carp	35	1/2 pc of	10 x 4 x 2 cm

Medium Fat Meat – contains eight (8) grams of protein and six (6) grams of fat.

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Beef				
Paypay, laman	Chuck, lean	35	1 slice, mbs	5 x 3.5 x 2 cm
Punta y pecho	Brisket	35	1 slice, mbs	5 x 3.5 x 2 cm
Pork				
Pata	Leg	35	1 slice, mbs	5 x 3.5 x 2 cm
Chicken				
Binti	Leg/drumstick	35	1 pc	11 x 4 cm
Hita	Thigh	35	1 pc	11.5 x 4 cm
Pakpak	Wing	35	1 pc	n/a
Ulo	Head	50	2 pcs	5.5 x 3 x 3 cm
Duck				
Hita	Thigh	35	1 pc	3.5 x 6.5 cm
Likod	Back	30	1 slice	5 x 3 x 1.5 cm
Pitsa	Breast	35	1 slice, mbs	5 x 3.5 x 2 cm
Goat (Chevon)				
Tiyan	Flank	35	1 slice, mbs	5 x 3.5 x 2 cm
Variety meats/internal organs				
Bituka, malit	Small intestine, carabeef	35	1/4 cup	n/a
Goto	Tripe, beef	85	3/4 cup	n/a
Utak	Brain (pork, beef, carabeef)	45	1/4 cup	n/a
Egg				
Manok, buo	Chicken, whole	55	1 pc medium	4.5 cm diameter x 5.5 cm
Pato, maalat	Duck, whole, salted	55	1 pc medium	4.5 cm diameter x 5.5 cm
Pugo	Quail	55	7 pcs small	n/a
Fish				
Karpa	Carp	35	1/2 pc of	10 x 4 x 2 cm

Medium Fat Meat [continued]

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Processed Foods				
Cheese				
Cheddar, pasteurized, processed	Cheddar, pasteurized, processed	30	1 slice	5.5 × 2.5 × 2 cm
Fish Products				
Tinapa/Smoked				
Bangus	Milkfish	30	1 slice	
Canned				
Salmon sa mantika	Runner, two-finned, in oil	45	3 slices	5 × 3.5 × 2.5 cm
Sardinas sa tomato sauce	Sardines, in tomato sauce	80	2 pcs	5.5 × 3.5 cm each
Tuna spread	Tuna spread	25	2 Tbsp	n/a
Meat Products				
Karne norte, de lata	Corned beef, cnd	45	¼ cup	n/a
Sausage, ham	Sausage, ham	55	2 pcs	9 × 0.3 cm each
Nuts/Bean Products				
Tofu	Soy bean curd, tofu	100	½ cup	8.5 × 3.5 × 3 cm
Tokwa	Soy bean curd, tokwa	70	1 pc	5 × 5.5 × 2 cm
Others				
Chick, one-day-old, fried	Chick, one-day-old, fried	35	2 pcs	8.5 × 3 × 3 cm each
Manok paa, barbecue	Chicken feet, barbecue	35	4 pcs (CAP)	n/a
Manok ulo, barbecue	Chicken head, barbecue	35	3 pcs	5.5 × 3 × 3 cm each

High Fat Meat Exchange – contains eight (8) grams of protein and ten (10) grams of fat.

Filipino Name	English Name	Weight (g) EP Ckd	Household Measure	Dimension (EP)
Beef				
Camto	Flank	35	1 slice, mbs	5 x 3.5 x 2 cm
Tadyang	Plate	35	1 slice, mbs	5 x 3.5 x 2 cm
Pork				
Kasim	Picnic	35	1 slice, mbs	5 x 3.5 x 2 cm
Liempo, malaman	Belly, less fat	35	1 slice	6.5 x 3.5 x 1 cm
Pigi	Ham	35	1 slice	3.5 x 3.5 x 3 cm
Tadyang	Spare rib	35	1 slice	3.5 x 3.5 x 3 cm
Variety meats/Internal organ				
Dila (baboy, baka)	Tongue (pork, beef)	35	1 slice	5 x 3.5 x 2.5 cm
Isaw ng baboy, barbecue	Pork intestine, small, barbecue	35	¼ cup	n/a
Puso, manok	Chicken heart	35	7 pcs	5 cm diameter each
Tenga, baboy, barbecue	Pork ear, barbecue	35	1 slice	4.5 x 4 x 4 cm
Nuts/Bean				
Mani, may balok, binusa	Peanut w/ skin, roasted	20	2 Tbsp	n/a
Mani, walang balok, binusa	Peanut w/o skin, roasted	20	2 Tbsp	n/a
Egg				
Balut	Duck, fertilized	65	1 pc	5.5 x 4.5 cm
Penoy	Duck, unfertilized	65	1 pc	5.5 x 4.5 cm
Pato, buo	Duck, whole	65	1 pc	5.5 x 4.5 cm
Processed Foods				
Cheese				
Feta	Feta	50	⅓ cup	n/a
Gouda	Gouda	30	1 ½ slice	8.5 x 8.5 x 0.2 cm
Parmesan, grated	Parmesan, grated	30	¼ cup	n/a
Pimiento	Pimiento	35	2 ½ Tbsp	n/a
Keso de bola	Edam	35	1 slice	3 x 6 x 2.5 cm
Fish Products (canned)				
Sardinas, Spanish style	Sardines, in spiced oil	30	3 pcs	5.5 x 2 x 1.5 cm each
Tuna flakes in vegetable oil	Tuna flakes in vegetable oil	45	¼ cup	n/a
Meat Products				
Longanisa, chorizo	Sausage, chorizo	30	1 pc	2 cm diameter x 8 cm
Sausage, frankfurter	Sausage, frankfurter	60	1 ½ pc	2 cm diameter x 11 cm
Sausage, salami	Sausage, salami	50	2 pcs	10 x 10 x 0.2 cm each

This list contains five (5) grams of fat and 45 calories.

Filipino Name	English Name	Weight (g)	Household Measure
Monounsaturated Fats			
Avocado	Avocado	65	12.5 x 6.5 x 2 cm
Mantika/Langis (olive, peanut)	Oil (olive, peanut)	5	1 tsp
Nuts:			
Almond	Almond	8	7 pcs
Kasuy, binusa	Cashew nut, roasted	9	6 pcs, whole
Macadamia	Macadamia	7	5 pcs
Mixed nuts	Mixed nuts	7	1 Tbsp
Pili	Pili nut	7	5 pcs
Peanut butter	Peanut butter	10	½ Tbsp
Seeds:			
Sunflower	Sunflower	8	1 Tbsp
Patani	Lima beans/Pop beans	10	5 pcs
Shortening	Shortening	5	1 tsp
Polyunsaturated Fats			
Aseyte	Oil, marine	5	1 tsp
Fish oil, cod liver	Fish oil, cod liver	5	1 tsp
Mantika/Langis (canola, corn, flaxseed, sesame, soybean, sunflower)	Oil (canola, corn, flaxseed, sesame, soybean, sunflower)	5	1 tsp
Nuts:			
Walnut	Walnut	7	2 pcs
Seeds:			
Flaxseed	Flaxseed	8	2 ½ tsp
Kalabasa	Squash/Pumpkin	10	1 Tbsp
Linga	Sesame	8	1 Tbsp
Pakwan	Watermelon	10	1 ½ Tbsp

Filipino Name	English Name	Weight (g)	Household Measure
Saturated Fats			
Bacon	Bacon	10	1 strip
Cream cheese	Cream cheese	15	1 Tbsp
Cream, all purpose	Cream, all purpose	15	1 Tbsp
Cream, fluid, whipping (heavy, light)	Cream, fluid, whipping (heavy, light)	15	1 Tbsp
Cream, whipped	Cream, whipped	20	
Krema	Cream	20	4 tsp
Lard	Lard	5	1 tsp
Latik	Coconut, cream curd	10	2 tsp
Mantekilya	Butter	5	1 tsp
Mantekilya, light	Butter, light	10	2 tsp
Mantika/Langis, niyog	Oil, coconut	5	1 tsp
Mantika/Langis, niyog (MCT) ¹	Oil, coconut (MCT)	5	1 tsp
Mantika/Langis, niyog (virgin, extra virgin)	Oil, coconut (virgin, extra virgin)	5	1 tsp
Mantika, palm	Oil, palm	5	1 tsp
Margarine	Margarine	5	1 tsp
Mayonnaise	Mayonnaise	5	1 tsp
Mayonnaise, diet	Mayonnaise, diet	20	4 tsp
Mayonnaise, light	Mayonnaise, light	15	1 Tbsp
Niyog, kakang gata	Coconut cream	15	1 Tbsp
Niyog, magulang	Coconut meat, mature	20	4 tsp
Salad dressing	Salad dressing	10	2 tsp
Sandwich spread	Sandwich spread	15	1 Tbsp
Sitsaron baboy/Sitsarong balat	Pork crackling, skin	10	5 pcs (2 x 2 cm)
Sour cream	Sour cream	25	5 tsp
Beef tallow	Beef tallow	5	1 tsp

¹MCT oil contains 7.7 kcal per gram

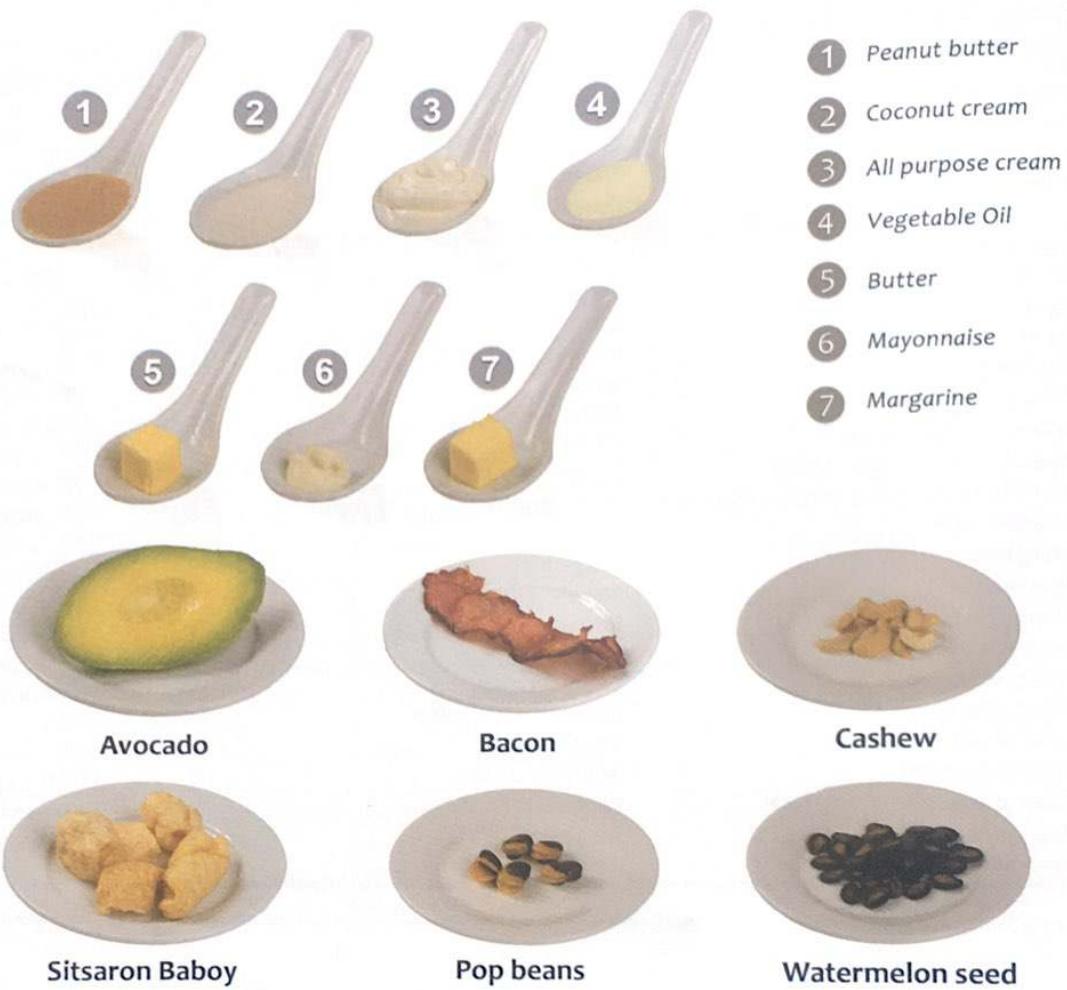
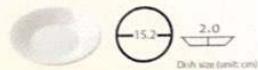


Figure 6. Selected Fat Exchanges



SUGAR EXCHANGE

Sugar usually refers to crystallized sucrose or table sugar that provides 4 calories per gram. Sugar provides essentially energy to the body. Therefore, foods containing large amounts of sugar are low in nutrients and may contribute to an unbalanced diet by displacing other important nutrients in the diet such as vitamins, minerals, fiber, and protein (Bennion & Scheule, 2015).

The most common sugars are sucrose, glucose, lactose and fructose. Sucrose, also called white sugar or table sugar, is the naturally-occurring sugar form of glucose and fructose. Lactose is the form of sugar found in dairy products. While fructose, the sweetest of all sugars, is found in fruits and honey (Brown, 2011).

Table 2.8 Sugar: Energy and macronutrient content per exchange

List	Food Exchange Group	Amount/Measure	Carbohydrates (g)	Protein (g)	Fat (g)	Energy (kcal)
VII	Sugar	varies	5	-	-	20

This list contains five (5) grams carbohydrate and 20 calories.

Filipino Name	English Name	Weight (g)	Household Measure
Arnibal	Syrup	5	1 tsp
Asukal (muscovado, pula, puti)	Sugar (muscovado, brown, white)	5	1 tsp
Banana chips	Banana chips	5	2 pc
Bukayo	Coconut meat, grated, sweetened	5	1 pc (2 cm diameter)
Candy (caramel, hard, toffee)	Candy (caramel, hard, toffee)	5	1 pc
Champoy	Champoy	5	1 pc (2 cm diameter)
Cherry, in syrup	Cherry, in syrup	20	5 pcs
Chewing gum, bubble gum	Chewing gum, bubble gum	5	1 - 2 pcs (2 x 2 x 0.5 cm)
Chocolate	Chocolate	5	2 pcs
Coco sugar	Sugar, coconut sap	5	1 tsp
Coco syrup	Syrup, coconut sap	5	1 tsp
Dates, pitted	Dates, pitted	5	1 pc (3 x 2 cm)
Dikyam	Dikyam	10	1 pc (3 x 3 x 1 cm)
Dried jackfruit	Dried jackfruit	5	1 pc (4 x 2.5 x 0.5 cm)
Dried kiwi	Dried kiwi	5	1 pc (4 x 3.5 x 0.5 cm)
Dried mango	Dried mango	5	1 pc (6 x 2.5 x 0.1 cm)
Dried papaya chunks	Dried papaya chunks	5	1 pc (4.5 x 2 x 0.5 cm)
Dried pineapple	Dried pineapple	5	2 pcs (2 x 2 x 0.5 cm each)
Dulce de Leche	Dulce de Leche	5	1 tsp
Gatas, sweetened, kondensada, filled	Milk, sweetened, condensed, filled	5	1 tsp
Gulaman, may lasang prutas	Carageenan gel, assorted fruit flavor	15	1 pcs (3 x 2 cm)
Jam at jellies	Jam and jellies	10	2 tsp
Kiamoy	Kiamoy	15	2 pcs (2 cm diameter each)
Leche flan	Crème custard	10	1 slice (3.5 x 2 x 1.5 cm)
Lokum	Lokum	5	1 pc (2.5 x 2 x 0.5 cm)
Marshmallow	Marshmallow	5	3 pcs (2 cm diameter each)

Filipino Name	English Name	Weight (g)	Household Measure
Matamis na bao	Coco honey	5	1 tsp
Nata de coco/nata de piña, sweetened	Nata de coco/nata de piña, sweetened	15	1 Tbsp
Pakaskas/Panocha	Sugar, crude (pakaskas, panocha)	5	1 tsp
Pasas	Raisins	5	1 tsp
Pastilyas (durian, gatas, langka)	Fudge (durian, milk, jackfruit)	5	1 pc
Prunes	Prunes	10	2 pcs
Pulot	Syrup, molasses, cane	10	2 tsp
Pulot-pukyutan	Honey	5	1 tsp
Sampalok, candied	Tamarind, candied	5	2 pcs (1.5 cm diameter each)
Taho may arnibal at sago	Soy bean curd/Gerlig's cheese w/ syrup and sago	40	¼ cup
Tira-tira	Candy, pulled	5	1 pc

Sugar exchange equivalents of selected sweets

Filipino Name	English Name	Weight (g)	Household Measure		Sugar Exchange
Ice candy	Ice candy	75	1 pc	(9 x 3 x 3 cm)	3
Ice drop	Ice drop	40	1 pc	(6 x 3.5 cm diameter)	1 ½
Kundol, candied	Wax gourd, candied	15	1 pc	(6 x 1.5 x 1.5 cm)	2
Polvoron	Polvoron	10	1 pc	(3.5 x 2.5 x 1 cm)	2
Rimas, candied	Breadfruit, candied	35	3 pcs	(8.5 x 3.5 x 0.5 cm)	6
Ubedol	Fudge, yam	20	1 pc		3
Yema	Candy, custard	25	1 pc	(2 x 2 x 7 cm)	4

- 1 White sugar
- 2 Brown sugar
- 3 Carageenan gel
- 4 Banana chips
- 5 Hard candy
- 6 Pastillas
- 7 Marshmallow
- 8 Tamarind candy
- 9 Chocolate candy
- 10 Strawberry jam
- 11 Honey
- 12 Condensed Milk
- 13 Nata de coco
- 14 Polvoron

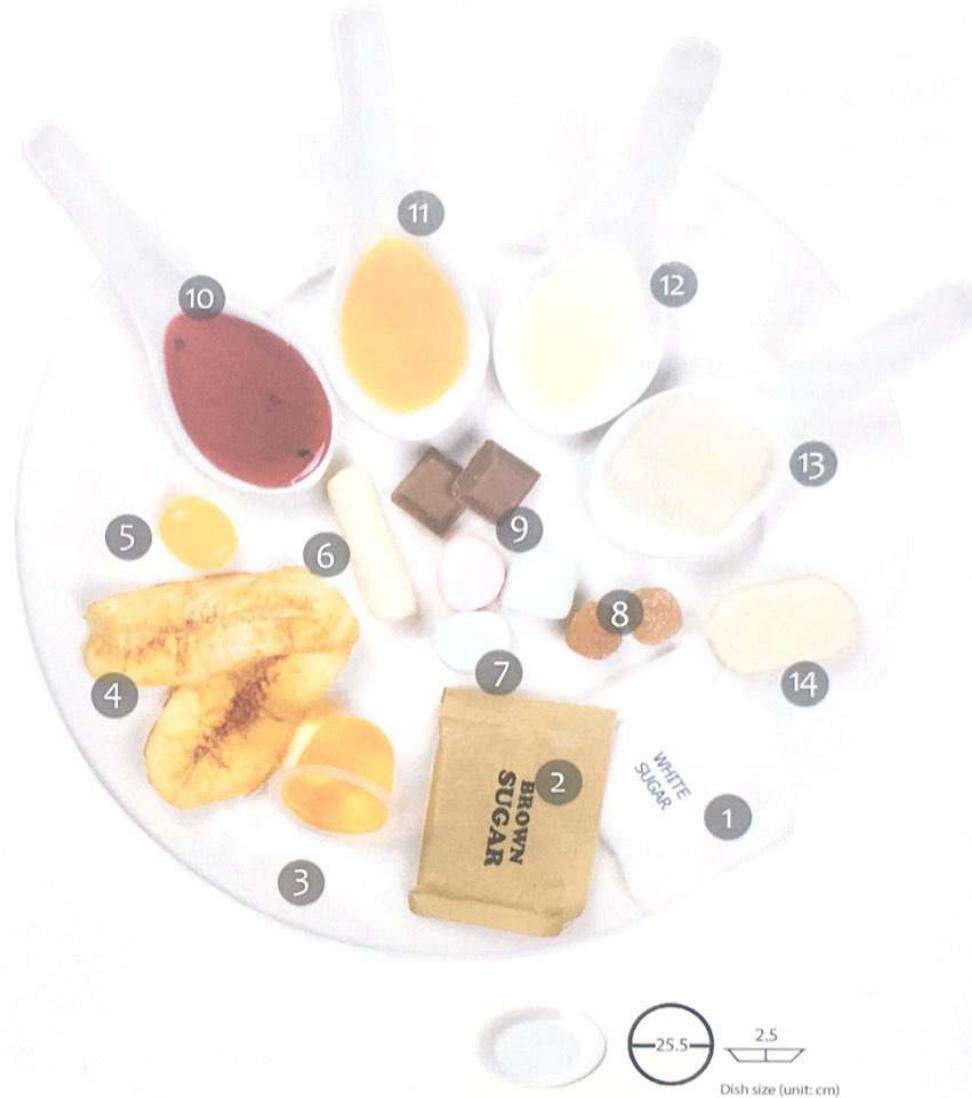


Figure 7. Selected Sugar Exchanges

PART 3: APPENDICES

Beverage List

Selected Food List

Free Food List

Alcoholic Drinks

Fatty Acid Content of
Common Fats and Oils

Estimation of Total Energy
Requirements for Healthy
Pediatric Group



Appendix A BEVERAGE LIST

The list gives the sugar equivalent of some commonly consumed beverages in amounts per single-serve containers.

Beverage	Weight (g)	Measure	Number of Sugar Exchanges	Energy (kcal)
Fruit - Flavored Drink				
Concentrate				
Calamansi	10	2 tsp	1	20
Grape	10	2 tsp	1	20
Grapefruit	10	2 tsp	1	20
Guyabano	20	4 tsp	1	20
Mango	35	5 tsp	1	20
Orange	10	2 tsp	1	20
Strawberry	10	2 tsp	1½	30
Powder (all flavors)	5	1 tsp	1	20
Tetrabrick/polyfoil/bottled				
Apple, Fruit-flavored tea, Grapes, Mango, Melon, Orange, Pineapple, Strawberry	235 250 350		5½ 6 9	110 120 180
Canned				
Apple	163	1 can	5	100
Orange	240	1 can	5½	110
Pineapple and Grapefruit	240	1 can	7	150
Pineapple	240	1 can	7	150
Soda/softdrinks				
Cola	250	1 bottle	5	100
Lemon-lime	250	1 bottle	5	100
Orange	250	1 bottle	6	120
Rootbeer	250	1 bottle	5	100

Beverage	Net Contents (g)	Measure	Carbohydrates (g)	Protein (g)	Fat (g)	Energy (kcal)
Flavored Milk Drink (ready to drink)						
Banana	200	1 ttb	22	5	5	153
Chocolate	250	1 ttb	29	8	5	193
Coffee, iced, mocha	250	1 can	29	4	2	150
Coffee, sweetened	250	1 can	32	5	3	175
Fruit-flavored yogurt drink	180	1 ttb	29	4	3	159
Strawberry	250	1 ttb	27	7	3	163
Fruit Flavored Yogurt						
Berries, Fruit salad, Mango bits	125	1/2 cup	15	5	4	116
Milk Alternatives						
Almond, sweetened, vanilla flavor	250	1 glass	15	1	3	91
Almond, unsweetened	250	1 glass	3	1	2	34
Almond, choco	250	1 glass	22	2	3	123
Rice Milk, unsweetened	250	1 glass	22	1	2	110
Soybean milk drink	330	1 bottle	25	9	3	163
Soybean milk drink, choc-flavor	330	1 bottle	51	7	1	241
Probiotic Drinks						
Regular	80	1 bottle	13	1	-	56
Light/non-fat	80	1 bottle	6	1	-	28
Powdered Drink						
Cocoa, powder (local, imported)	5	1 Tbsp	2	1	1	21
Choc-flavor food milk, powder	25	4 Tbsp	16	5	1	93
Choc-flavor, energy drink, fortified (granules, powder)	25	4 Tbsp	17	3	2	98
Coffee, creamer and sugar (3-in-1)	28	1 packet	26	1	-	108
Milk Tea	12	1 packet	11	1	-	48
Cereal Drink						
Chocolate, sweet corn, vanilla	250	1 bottle	31	8	4	192
	280	1 bottle	33	9	4	204
Sports Drink (ready to drink)						
	350	1 bottle	20	-	-	77

Appendix B SELECTED FOOD LIST

Food items in this group cannot be classified into any of the seven (7) major exchange lists because the macronutrient content do not fit into the criteria set for each food group. The food items may contain a combination of macronutrients that could be translated into two or more classification of exchanges. This list can be used for nutrition evaluation and as reference for determining composition of some commonly consumed and processed foods. Weights of the food items were either based on practical and recommended single-serve containers or amounts adjustable to one (1) exchange portion of the food item's major food group.

It is important to note that the values of the exchanges were derived according to the carbohydrate, protein and fat contents of the particular food and not according to the ingredients used. Note also that the allowance for sugar exchange in this food list does not represent sugar per se but it was used as a means to nearly approximate and account the calorie content of that particular food.

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Fruit					
Buko, malakanin	100	½ cup	n/a	1 Fruit, 1 Fat, ½ Sugar	95
Buko, malauhog	160	2/3 cup	n/a	1 Fruit, ½ Fat	63
Rice and Products					
Banana cake	50	1 slice	8.5 × 5.5 × 2 cm	1 Rice B, 1 Fat, 1 Sugar	165
Banana cue	65	1 pc	8.5 × 3 × 3 cm	1 Rice A, ½ Fat	115
Bicho-bicho	40	1 pc	11 × 4 × 2.5 cm	1 Rice C, 1 Fat	153
Biskotso	30	2 pcs	9.5 × 3 × 2 cm each	1 Rice C, ½ Sugar	118
Brownies	65	1 pc	8 × 4 × 2 cm	1 Rice C, 2 Fat, 3 ½ Sugar	268
Buko pie	100	1/8 of	22 cm diameter	2 Rice B, 1 ½ Fat	268
Butse, munggo	50	1 pc	5 cm diameter	1 Rice C, 1 Fat, ½ Sugar	163
Butter cookies	35	3 pcs	8 × 2.5 cm each	1 Rice B, 1 ½ Fat, ½ Sugar	178
Camachili	30	3 pcs	12 × 2 cm each	1 Rice B, ½ Fat, ½ Sugar	133
Cheese cupcake	30	1 pc	5.5 cm diameter × 3 cm	1 Rice B, ½ Fat	123

Selected Food List [continued]

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Cheese roll	50	2 pcs	10.5 × 4.5 × 3 cm each	1 Rice C, 1 Fat, 1 Sugar	173
Chocolate cake	40	1 slice	8.5 × 5 × 1.5 cm	1 Rice B, 1 Fat	145
Cinnamon roll	60	1 pc	8.5 × 4 cm	1 ½ Rice C, 1 ½ Fat	230
Cocohoney biscuit	30	8 pcs	8 × 3 × 0.5 cm each	1 Rice B, ½ Fat	123
Cookie, chocolate chip	35	3 pcs	5 cm diameter × 1 cm each	1 Rice B, 1 ½ Fat	168
Cookies, pili nut	40	6 pcs	5 × 1 cm each	1 Rice B, 2 Fat, 1 Sugar	210
Cookies, sandwich type, choco-filled	30	3 pcs	4.5 × 1 cm each	1 Rice B, 1 Fat	145
Cookies, sandwich type, cream-filled	30	3 pcs	4.5 × 1 cm each	1 Rice B, 1 Fat	145
Cookies, uraro	30	6 pcs	5.5 × 3 × 1 cm each	1 Rice B, ½ Fat	123
Corn chips, nacho cheese flvr	45	2 2/3 cups	n/a	1 Rice C, 2 ½ Fat, ½ Sugar	231
Cracker, plain	30	8 pcs	5 × 4 × 0.5 cm each	1 Rice B, 1 Fat	145
Cracker, salted	30	6 pcs	9 × 4 × 0.2 cm each	1 Rice B, 1 Fat	145
Cream puff	40	1 pc	5 cm diameter × 4 cm	1 Rice B, ½ Fat	123
Croissant, plain	70	1 pc	14 × 7.5 × 3.5 cm	1 Rice C, 3 Fat, 1 Sugar	263
Curls	20	1 1/3 cup	n/a	½ Rice B, 1 Fat	95
Doughnut, w/ sugar, fried	30	1 pc	7 cm diameter × 3 cm	½ Rice C, 1 ½ Fat, ½ Sugar	132
Éclair, cream filled	100	1 pc	12 × 4.5 cm	1 Rice C, 5 ½ Fat, ½ Sugar	366
Éclair, custard filled	100	1 pc	12 × 4.5 cm	1 Rice C, 3 Fat, 2 ½ Sugar	293
Egg pie	100	1/8 of	21 cm diameter × 2.5 cm	1 Rice C, 1 MF Meat, 1 ½ Sugar	224
Empanada (chicken, pork)	50	1 pc	10 × 5 × 3 cm	1 Rice C, 2 ½ Fat	221
Fish cracker	30	2 cups	n/a	1 Rice B, 1 Fat	145
French fries	65	¾ cup	n/a	1 Rice B, 2 Fat, ½ Sugar	200
Fruit cake	45	1 slice	7 × 5.5 × 1.5 cm	1 Rice B, 1 Fat, ½ Sugar	155
Galyetas de patatas	30	5 pcs	4 × 4 × 0.5 cm each	1 Rice C, ½ Fat	131
Granola, classic	50	½ cup	n/a	1 Rice C, 3 Fat, ½ Sugar	253

Selected Food List [continued]

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Gurgurya	40			1 Rice B, 2 Fat, $\frac{1}{2}$ Sugar	200
Hopya (baboy, munggo)	35	1 pc $1\frac{1}{2}$ pc	5 \times 1.5 cm or 3 \times 2.5 \times 2.5 cm each	1 Rice B, 1 Fat	145
Ice cream (caramel, mango, strawberry, or vanilla flvr)	100	$\frac{1}{2}$ c	n/a	1 Rice C, 2 Fat	198
Ice cream, chocolate flvr	100	$\frac{1}{2}$ c	n/a	1 Rice C, $1\frac{1}{2}$ Fat, $1\frac{1}{2}$ Sugar	206
Iced gem cookies	30	26 pcs	2 \times 1 cm each	1 Rice C, $\frac{1}{2}$ Fat	131
Jacobina	30	5 pcs	2.5 \times 2.5 \times 1.5 cm each	1 Rice B, $\frac{1}{2}$ Fat, $\frac{1}{2}$ Sugar	133
Kababayan	35	$1\frac{1}{2}$ pc	5 \times 5 \times 4 cm	1 Rice B, $\frac{1}{2}$ Fat	123
Kamote cue	60	2 slices	5.5 \times 7 \times 1 cm each	1 Rice A, 1 Fat	137
Karyoka	40	4 pcs	3.5 cm diameter each	1 Rice B, 1 Fat, $\frac{1}{2}$ Sugar	155
Kikyam, Chinese	100	1 pc	22 \times 3 \times 2 cm	1 Rice C, $\frac{1}{2}$ Fat	131
Kikyam, Fish preparation	90	11 pcs	n/a	1 Rice C, $\frac{1}{2}$ Fat	131
Kornik	30	$\frac{1}{2}$ cup	n/a	1 Rice B, 1 Fat	145
Kroepeck, fish/shrimp	30	2 cups or 15 pcs	4.5 \times 4 \times 0.5 cm	1 Rice B, 1 Fat	168
Mamon	35	2 pcs	6 \times 3 cm each	1 Rice B, $\frac{1}{2}$ Fat, $\frac{1}{2}$ Sugar	133
Maruya	55	$\frac{1}{2}$ of	12 \times 8.5 \times 2 cm	1 Rice A, $\frac{1}{2}$ Fat, $\frac{1}{2}$ Sugar	125
Mashed potato	100	$\frac{1}{2}$ cup	n/a	$\frac{1}{2}$ Rice C, 1 Fat	99
Muesli Cereal	30	$\frac{1}{4}$ cup	n/a	1 Rice C, $\frac{1}{2}$ Fat	131
Muffin, plain	75	1 pc	6.5 \times 5 cm	1 Rice C, 2 Fat, 3 Sugar	258
Munggo bread	50	2 slices	8.5 \times 7 \times 1.5 cm	1 Rice C, 1 Fat, $\frac{1}{2}$ Sugar	163
Noodles, canton	100	1 cup	n/a	1 Rice C, $1\frac{1}{2}$ Fat	176
Noodles, miki	100	1 cup	n/a	1 Rice B, $\frac{1}{2}$ Fat	123
Noodles, instant, w/ flvr, mami may sabaw	380	$1\frac{1}{2}$ cup	n/a	$\frac{1}{2}$ Rice C, $\frac{1}{2}$ Fat	77
Noodles, instant, w/ flvr, pancit canton	100	1 cup	n/a	1 Rice C, $1\frac{1}{2}$ Fat	176

Selected Food List [continued]

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Oatmeal, instant, raw Thick consistency (Oats, instant + 1 cup water)	30 180	5 Tbsp $\frac{3}{4}$ cup	n/a	1 Rice C, $\frac{1}{2}$ Fat	131 131
Thick consistency (Oats, instant + 1 $\frac{1}{2}$ cups water)	255	1 $\frac{1}{4}$ cups	n/a	1 Rice C, $\frac{1}{2}$ Fat	131
Oatmeal, rolled, raw Thick consistency (Oats, rolled + 4 cups water)	30 180	5 Tbsp $\frac{3}{4}$ cup	n/a	1 Rice C, $\frac{1}{2}$ Fat	131 131
Thin consistency (Oats, rolled + 5 $\frac{1}{2}$ cups water)	310	1 $\frac{2}{3}$ cup	n/a	1 Rice C, $\frac{1}{2}$ Fat	131
Ogoy-ogoy	30	6 pcs	$6 \times 2.5 \times 0.5$ cm each	1 Rice B, $\frac{1}{2}$ Fat, $\frac{1}{2}$ Sugar	133
Pan de coco	45	1 pc	$6.5 \times 5.5 \times 3.5$ cm	1 Rice C, $\frac{1}{2}$ Fat, 1 Sugar	151
Pancake	60	1 pc	10 cm diameter \times 1 cm	1 Rice C, 1 Fat	153
Pilipit	30	4 pcs	9×2 cm each	1 Rice B, 1 Fat	145
Pizza, meat topping	80	$\frac{1}{8}$ of	$14 \times 10 \times 2$ cm	1 Rice C, 1 HF meat, $\frac{1}{2}$ Sugar	240
Popcorn, salted	20	2 cups	n/a	$\frac{1}{2}$ Rice B, 1 Fat	95
Popcorn, sweetened	20	1 cup	n/a	$\frac{1}{2}$ Rice B, $\frac{1}{2}$ Fat, $\frac{1}{2}$ Sugar	83
Potato chips (cheese/ plain flavor)	45	2 cups	n/a	1 Rice B, 3 Fat, $\frac{1}{2}$ Sugar	245
Pretzel, chocolate coated	30	10 pcs	$4 \times 3 \times 1$ cm each	1 Rice B, 1 Fat	145
Pretzel, sweetened	30	10 pcs	9×1 cm each	1 Rice B, $\frac{1}{2}$ Fat, $\frac{1}{2}$ Sugar	133
Siopao, pork, regular	130	1 pc	9.5×4.5 cm	2 Rice B, 1 $\frac{1}{2}$ HF Meat	383
Siopao, pork, small	95	1 pc	7×4.5 cm	1 $\frac{1}{2}$ Rice B, 1 HF Meat	272
Spanish bread	45	1 pc	$13.5 \times 4 \times 3.5$ cm	1 Rice C, 1 Fat, $\frac{1}{2}$ Sugar	163
Tortilla (plain and whole wheat)	40	1 pc	16.5×0.2 cm	1 Rice B, $\frac{1}{2}$ Fat	123

Selected Food List [continued]

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Turon	50	1 pc	12 × 3 × 2 cm	1 Rice A, ½ Fat, ½ Sugar	125
Wafer	35	6 pcs	7 × 3 × 1 cm each	1 Rice B, 1 ½ Fat	168
Meat, Fish, Poultry and Products					
Pork:					
Pork chop	35	1 slice	5 × 4 × 1 cm	1 HF Meat, 1 Fat	167
Pork, back fat	40	1 slice	6.5 × 4.5 × 2.5 cm	1 HF Meat, 3 ½ Fat	280
Pork, buntot	35	1 slice	7.5 × 4 × 4 cm (AP)	1 HF Meat, 3 ½ Fat	280
Pork, liempo, mataba	60	1 slice	7.5 × 6.5 × 1 cm	1 HF Meat, 3 Fat	257
Pork, paypay	60	2 slices	8 × 2 × 2.5 cm each	1 HF Meat, 2 Fat	212
Pork, tagiliran, laman	40	1 slice	7 × 6 × 2.5 cm	1 HF Meat, 3 ½ Fat	280
Shrimp/Shells, cooked:					
Halaan	75	1/3 cup, shelled	n/a	1 LF Meat, ½ Sugar	51
Hipon, puti	70	8 pcs	6.5 × 1.5 cm each	1 LF Meat, 1 ½ Sugar	71
Kuhol, itim	50	1/3 cup, shelled	n/a	1 LF Meat, ½ Sugar	51
Susong pilipit	75	½ cup	n/a	1 LF Meat, 2 ½ Sugar	91
Tahong	130	½ cup, shelled	n/a	½ LF Meat, 1 Sugar	41
Talaba, fresh	75	½ cup	n/a	½ LF Meat, 1 Sugar	41
Tulya	75	3 cups with shell or ½ cups shelled	n/a	1 LF Meat, 2 Sugar	81

Selected Food List [continued]

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Processed:					
Anchovy, spicy	25	1/3 cup	n/a	1 LF Meat, 2 Sugar	81
Century egg	50	1 pc	4 cm diameter × 4 cm	1 MF Meat, 1 Sugar	106
Cheese, filled	50	1 slice	6 × 3 × 2 cm	1 HF Meat, 1 Sugar	142
Cheese, mozzarella	45	1 slice	5 × 3.5 × 2.5 cm	1 MF Meat, 1 Sugar	106
Cheese, native (Kesong puti)	60	1 1/2 slice	4 × 5 × 2 cm	1 HF Meat, 1 Fat, 1 Sugar	187
Cheese spread	55	1/4 cup	n/a	1 MF Meat, 1 1/2 Sugar	116
Chicken spread	45	3 Tbsp	n/a	1/2 HF Meat, 1 Sugar	81
Dumpling (meat/seafood), fried	70	3 pcs	4.5 × 3.5 × 2.5 cm each	1 HF Meat, 1 Rice A	214
Dumpling (meat/seafood), steamed	90	4 pcs	4.5 × 3 × 2.5 cm each	1 MF Meat, 1 Rice A	178
Embotido	60	1 slice	3.5 cm diameter × 6 cm thick	1 MF Meat, 1 Sugar	106
Fish ball	95	17 pcs	n/a	1 LF Meat, 1 Rice A	133
Hamburger patty	75	3 pcs	9 cm diameter each	1 HF Meat, 1 Fat, 1/2 Rice A	213
Hotdog, chicken	70	1 pc	2.5 cm diameter × 15 cm long	1 HF Meat, 1/2 Sugar	132
Hotdog, cocktail	70	5 pcs	2 cm diameter × 6 cm long each	1 HF Meat, 2 Sugar	162
Hotdog, jumbo	70	1 pc	2.5 cm diameter × 15 cm	1 HF Meat, 2 Sugar	162
Hotdog, regular	70	2 pcs	2 cm diameter × 11 cm each	1 HF Meat, 2 Sugar	162
Hotdog, jumbo, with cheese	70	1 pc	2.5 cm diameter × 14.5 cm	1 HF Meat, 1 Sugar	142
Liver spread	65	1/4 cup	n/a	1 MF Meat, 1 1/2 Sugar	116
Longanisa, baboy	60	2 pcs	4 × 3 cm each	1 HF Meat, 1 Fat, 1/2 Rice A	213
Longanisa, baboy, Chinese	80	2 pcs	12 × 2 cm each	1 1/2 HF Meat, 4 1/2 Fat, 1/2 Rice B	436

Selected Food List [continued]

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Longanisa, manok	70	2 pcs	10 × 2 cm each	1 HF Meat, 1 Sugar	142
Luncheon meat, cnd	55	2 slices	9 × 5 × 1 cm each	1 HF Meat, 1 Fat	167
Luncheon meat, chicken, low fat, cnd	55	2 slices	9 × 5 × 1 cm each	1 LF Meat, 1 Sugar	61
Luncheon meat, chicken, regular fat, cnd	55	2 slices	9 × 5 × 1 cm each	1 MF Meat, ½ Fat, ½ Sugar	119
Meat loaf	70	2 slices	6.5 × 1.5 cm each	1 MF Meat, 1 Sugar	106
Peanut cracker	35	1/3 cup	n/a	1 HF Meat, ½ Rice A, 1 Sugar	188
Pork, barbecue	40	2 pcs or ¼ cup	5.5 × 6.5 × 1 cm	1 HF Meat, 2 Sugar, ½ Fat	165
Potted meat spread, cnd	75	1/3 cup	n/a	1 MF Meat, ½ Rice A	132
Sausage, bologna	80	3 slices	9.5 × 9.5 × 0.3 cm each	1 HF Meat, ½ Sugar	132
Sausage, chorizo, bilbao style	50	2 pcs	8 × 2 cm each	1 HF Meat, 2 Fat	212
Sausage, mortadella	80	3 slices	10.5 × 10 × 0.3 cm each	1 HF Meat, 1 ½ Fat, 1 Sugar	210
Sausage, Vienna	80	4 pcs	2 cm diameter × 5 cm long each	1 HF Meat, ½ Sugar	132
Squid, spicy	25	4 pcs	4.5 × 4 × 0.2 cm each	1 LF Meat, 2 Sugar	81
Squidball	90	8 pcs	2.5 cm diameter each	1 LF Meat, ½ Rice A, 1 Sugar	107
Tocino, baboy	40	1 slice	5.5 × 6.5 × 1 cm	1 MF Meat, 3 Sugar	146
Tocino, baboy, Pampanga	40	1 slice	5.5 × 6.5 × 1 cm	1 HF Meat, 2 Sugar	162
Sugary Products					
Candy, Milk Chocolate	10	3 pcs	2 × 2 × 0.8 cm each	1 Sugar, ½ Fat	43
Peanut brittle	10	1 pc	5 × 3 × 2 cm	1 Sugar, ½ Fat	43
Pili nut candy	10	1 ½ Tbsp	n/a	1 Sugar, ½ Fat	43
Mahareal	10	1 pc	8.5 × 2 × 0.5 cm	1 Sugar, ½ Fat	43

Selected Food List [continued]

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Nuts, Beans and Seeds					
Almond nuts, with or without skin, roasted, salted	40	34 pcs or $\frac{1}{4}$ cup	n/a	1 HF Meat, 2 Fat, 1 $\frac{1}{2}$ Sugar	242
Cashew nut, roasted	40	$\frac{1}{3}$ cup	n/a	1 HF Meat, 2 Fat, 1 Sugar	232
Cow pea seeds (paayap, buto)	75	$\frac{1}{2}$ cup	n/a	1 LF Meat, 1 Rice A	133
Garbanzos, tuyo	75	$\frac{1}{2}$ cup	n/a	$\frac{1}{2}$ LF Meat, 1 Rice A, $\frac{1}{2}$ Sugar	123
Hazelnut, with or without skin, raw, unsalted	55	$\frac{1}{3}$ cup	n/a	1 HF Meat, 5 Fat, $\frac{1}{2}$ Sugar	357
Kidney/Snap bean seed, white, dried	75	$\frac{1}{3}$ cup	n/a	$\frac{1}{2}$ LF Meat, $\frac{1}{2}$ Rice A, 1 Sugar	87
Lentils, mature seeds	160	1 cup	n/a	1 LF Meat, 1 Rice C	149
Lima beans, seeds, dried	75	$\frac{1}{2}$ cup	n/a	1 LF Meat, $\frac{1}{2}$ Rice A, 1 Sugar	107
Macadamia nuts, roasted, salted	45	$\frac{1}{3}$ cup	n/a	$\frac{1}{2}$ HF Meat, 6 Fat,	331
Mixed nuts, dried fruit and seeds (trail mix), with peanuts	70	$\frac{1}{2}$ cup	n/a	1 HF Meat, 1 Rice A, 2 Fat, 1 Sugar	324
Mixed nuts, peanut and 3 more other nuts, salted	45	$\frac{1}{3}$ cup	n/a	1 HF Meat, 3 $\frac{1}{2}$ Fat, $\frac{1}{2}$ Sugar	290
Munggo (berde, dilaw, pula)	75	$\frac{1}{2}$ cup	n/a	1 LF Meat, $\frac{1}{2}$ Rice A	87
Peanut with shell, boiled	60	6 Tbsp	n/a	1 HF Meat, 1 Fat, 1 Sugar	187
Pecan nut, raw, unsalted	40	$\frac{1}{3}$ cup	n/a	$\frac{1}{2}$ HF meat, 5 Fat	286

Selected Food List [continued]

Food Item	Weight (g)	Household Measure	Dimension	Exchange	Energy (kcal)
Pigeon pea seed, dried	75	½ cup	n/a	½ LF Meat, ½ Rice A, ½ Sugar	77
Pistachio nut, roasted, salted	40	¼ cup	n/a	1 HF Meat, 2 Fat, 1 Sugar	232
Pumpkin seed, hulled and dried, unsalted	25	¼ cup shelled or 1 cup with shell	n/a	1 ½ Fat, 1 Sugar	78
Soy bean seed, black, dried	75	½ cup	n/a	1 MF Meat, ½ Rice A, 1 Sugar	152
Soy bean seed, yellow, dried	75	½ cup	n/a	1 MF Meat, 1 Rice A	178
Sunflower seed, unsalted	30	¼ cup	n/a	1 HF Meat, 1 Fat	167
Taho, plain	130	½ cup	n/a	½ LF Meat, 1 Sugar	41
Walnut, raw, unsalted	55	½ cup	n/a	1 HF Meat, 5 ½ Fat, ½ Sugar	380
Watermelon seed kernel, dried	30	1/3 cup	n/a	1 HF Meat, 1 Fat, ½ Sugar	177

Appendix C FREE FOODS

A "free food" is any food or drink that contains few calories (<16 kcal) per serving. The following food items may be used freely unless specifically prohibited.

Food Item	
Bagoong	Hot pepper, sauce
Bouillon (fat-free soup)	Kalamansi
Candy, hard (sugar free)	Kamias
Carbonated drinks (sugar free)	Lemon
Chili powder	Miso
Cinnamon	Mustard
Clear broth	Oregano
Coffee, powder	Paprika
Curry	Pepper corn
Drink mixes (sugar free)	Pimiento
Fish sauce	Saffron
Flavoring extract	Soy sauce
Flavored/Tonic water (sugar free)	Spices
Garlic	Tea
Gelatin (unsweetened)	Turmeric
Ginger	Vinegar
Gum (sugar free)	Worcestershire sauce
Herbs	

This list may be considered as free food if taken in the amount specified below. However, taking two or more servings of these condiments will have corresponding calories that need to be considered. For example, 1 ½ Tbsp or 25 g of catsup, banana contains 32 calories.

Food Item	EP Weight (g)	Household Measure
Barbecue sauce	15	1 Tbsp
Catsup, banana	10	2 tsp
Catsup, tomato	15	1 Tbsp
Gravy, commercial	15	1 Tbsp
Lechon sauce	15	1 Tbsp
Pickle (dill or sour)	30	2 Tbsp
Sweet chili sauce	10	2 tsp
Tomato paste	30	2 Tbsp
Tomato sauce	60	2 Tbsp

Appendix D

ALCOHOLIC BEVERAGES

Alcoholic beverages contain ethanol or ethyl alcohol which is found in beer, wine, and spirits. Alcohol, like fat, protein and carbohydrate, provides energy of approximately seven (7) calories per gram when metabolized.

Drinking alcoholic beverages in moderation (i.e. no more than two exchanges for males and one exchange for females in a day) is associated with lower overall mortality and decreased risk of coronary heart disease.

However, alcohol intake may cause low blood glucose among persons with diabetes by potentiating the effect of insulin or oral anti-diabetic drugs and by blocking glucose production in the liver.

A standard drink or one serving is defined as twelve (12) ounces (oz) of regular beer, five (5) oz of wine (12% alcohol) or 1.5 oz (a jigger) of 80 proof liquor which contains 15 grams (1 Tbsp) of pure alcohol (Insel, et al., 2016).

This list gives the fat equivalent of some commonly used alcoholic beverages.

Name	Net Content (mL)	Measure	Fat Exchange	Energy (kcal)
Basi	170	1 glass	4	185
Beer, cerveza	320	1 bottle	3 ½	163
Beer, fruit flavored	330	1 bottle	3 ½	160
Beer, light	330	1 bottle	3	105
Beer, regular (pale pilsen)	330	1 bottle	3 ½	140
Beer, strong	330	1 bottle	4 ½	200
Brandy	30	1 brandy glass	1 ½	65
Brandy, cognac	30	1 brandy glass	1 ½	75
Brandy, light	30	1 brandy glass	1	40
Daiquiri	56	1 cocktail glass	3	124
Gin	45	1 jigger	2 ½	107
Manhattan	56	1 cocktail glass	4	167
Martini	56	1 cocktail glass	3	143
Rum	45	1 jigger	2 ½	107
Sake/Soju	45	1 jigger	1 ½	63
Tequila	45	1 jigger	2	90
Tuba	240	1 glass	2	89
Vodka	45	1 jigger	2	97
Whisky, scotch	45	1 jigger	2 ½	107
Wine, red	100	1 wine glass	2 ½	73
Wine, white	100	1 wine glass	2	85
Wine, fruit	240	1 glass	3 ½	140
Wine, sparkling	100	1 wine glass	2	85
Wine, port	100	1 wine glass	3 ½	160
Wine, rose	100	1 wine glass	2	85
Wine, vermouth	100	1 wine glass	4	170

Appendix E

Fatty Acid Content of Common Fats and Oils (per Tablespoon)

This gives the fat content of the most common fats and oils available in the market, starting from those with low saturated fat content to those with high saturated fat content. All fats and oils are high in calories (135 kcal per tbsp).

Product	Saturated fatty acids (g)	Cholesterol (mg)	Polyunsaturated fatty acids (g)	Monounsaturated fatty acids (g)
Beef tallow	6.4	14	0.5	5.4
Butter	7.3	31	0.4	3.0
Canola oil	1.0	0	3.9	8.9
Chicken fat	3.8	11	2.7	5.7
Coconut oil	11.2	0	0.2	0.9
Corn oil	1.8	0	7.4	3.8
Lard (pork fat)	5.0	12	1.4	5.8
Margarine (soft)	2.0	0	3.8	5.2
Margarine (stick)	2.1	0	3.4	5.4
Mayonnaise	1.6	6	6.2	2.3
Olive oil	1.9	0	1.4	9.9
Palm oil	6.7	0	1.3	5.0
Peanut butter (smooth)	1.7	0	2.0	4.2
Peanut oil	2.3	0	4.3	6.2
Safflower oil	0.8	0	10.1	2.0
Salad dressing, Caesar, regular	1.3	6	4.8	2.0
Salad dressing, thousand island, regular	0.8	4	2.9	1.3
Sesame oil	1.9	0	5.7	5.4
Soybean oil	2.1	0	7.9	3.1
Sunflower oil	1.4	0	0.5	11.7

Source: USDA National Nutrient Database for Standard Reference 1 Software v.3.9.5_2018-09-21

Appendix F Estimation of Total Energy Requirement for Healthy Pediatric Group

I. Determine DBW

1.1. Estimating DBW of Infants

Formula: $DBW \text{ (kg)} = (\text{age in months} \div 2) + 3$

Example: 8 month old infant

$$\begin{aligned} DBW \text{ (kg)} &= (8 \div 2) + 3 \\ &= 4 + 3 \\ &= 7 \text{ kg} \end{aligned}$$

Infant's weight:

- Doubles at 5 to 6 months
- Triples at 12 months
- Quadruples at 24 months

Infant's height or length

- Increase by 24, 12 and 8 cm during the first, second and third year, respectively, then by 6 cm every year thereafter up to eight years old

1.2 Estimating DBW of Children

Formula: $DBW \text{ (kg)} = (\text{Age in years} \times 2) + 8$

Example: 7 year old child

$$\begin{aligned} DBW \text{ (kg)} &= (7 \times 2) + 8 \\ &= 14 + 8 \\ &= 22 \text{ kg (Add 2 kg every year)} \end{aligned}$$

2. Determine Total Energy Requirement

2.1 Estimating TER of Infants

Formula: TER/day = 90 to 95 kcal/kg DBW

Example: 4 months old

$$\begin{aligned} \text{TER (kcal)} &= 5.4 \text{ kg (DBW)} \times 96 \text{ kcal} \\ &= 513 \sim 500 \text{ kcal} \end{aligned}$$

2.2 Estimating TER of Children

a. Using kcal/kg body weight based on 2015 PDRI

Example: 7 year old boy with 22 kg body weight

$$\begin{aligned} \text{TER (kcal)} &= 70 \text{ kcal/kg} \times 22 \text{ kg} \\ &= 1540 \sim 1550 \text{ kcal} \end{aligned}$$

Age Range(years)	Kcal/kg DBW	
	Boys	Girls
1-2	83	80
3-5	77	72
6-9	70	65
10-12	62	55
13-15	56	47
16-18	51	44

b. Using Narins and Weil

Formula: TER/day = 1000 + (100 × age in years)

Example: 7 years old

$$\begin{aligned} \text{TER (kcal)} &= 1000 + (100 \times 7) \\ &= 1000 + 700 \\ &= 1700 \text{ kcal} \end{aligned}$$

c. Using Cooper, Barber, etc

Age Range(years)	CMBRG (Cooper, Barber, etc.)
1-3	100
4-6	90
7-9	80
10-12	70
13-15	60
15 years and above	50

Example: 7 year old child with 22 kg DBW

$$\begin{aligned} \text{TER/day} &= 22 \text{ kg} \times 80 \text{ kcal/kg} \\ &= 1760 \sim 1750 \text{ kcal} \end{aligned}$$

Appendix G
DESIRABLE WEIGHT RANGE FOR NORMAL BMI RANGE

Height in cm	Height in m ²	Weight at BMI			Height in cm	Height in m ²	Weight at BMI		
		18.5	22	24.99			18.5	22	24.99
140	1.96	36.26	43.12	48.98	171	2.92	54.10	64.33	73.07
141	1.99	36.78	43.74	49.68	172	2.96	54.73	65.08	73.93
142	2.02	37.30	44.36	50.39	173	2.99	55.37	65.84	74.79
143	2.04	37.83	44.99	51.10	174	3.03	56.01	66.61	75.66
144	2.07	38.36	45.62	51.82	175	3.06	56.66	67.38	76.53
145	2.10	38.90	46.26	52.54	176	3.10	57.31	68.15	77.41
146	2.13	39.43	46.90	53.27	177	3.13	57.96	68.92	78.29
147	2.16	39.98	47.54	54.00	178	3.17	58.62	69.70	79.18
148	2.19	40.52	48.19	54.74	179	3.20	59.28	70.49	80.07
149	2.22	41.07	48.84	55.48	180	3.24	59.94	71.28	80.97
150	2.25	41.63	49.50	56.23	181	3.28	60.61	72.07	81.87
151	2.28	42.18	50.16	56.98	182	3.31	61.28	72.87	82.78
152	2.31	42.74	50.83	57.74	183	3.35	61.95	73.68	83.69
153	2.34	43.31	51.50	58.50	184	3.39	62.63	74.48	84.61
154	2.37	43.87	52.18	59.27	185	3.42	63.32	75.30	85.53
155	2.40	44.45	52.86	60.04	186	3.46	64.00	76.11	86.46
156	2.43	45.02	53.54	60.82	187	3.50	64.69	76.93	87.39
157	2.46	45.60	54.23	61.60	188	3.53	65.39	77.76	88.32
158	2.50	46.18	54.92	62.39	189	3.57	66.08	78.59	89.27
159	2.53	46.77	55.62	63.18	190	3.61	66.79	79.42	90.21
160	2.56	47.36	56.32	63.97	191	3.65	67.49	80.26	91.17
161	2.59	47.95	57.03	64.78	192	3.69	68.20	81.10	92.12
162	2.62	48.55	57.74	65.58	193	3.72	68.91	81.95	93.09
163	2.66	49.15	58.45	66.40	194	3.76	69.63	82.80	94.05
164	2.69	49.76	59.17	67.21	195	3.80	70.35	83.66	95.02
165	2.72	50.37	59.90	68.04	196	3.84	71.07	84.52	96.00
166	2.76	50.98	60.62	68.86	197	3.88	71.80	85.38	96.98
167	2.79	51.59	61.36	69.69	198	3.92	72.53	86.25	97.97
168	2.82	52.21	62.09	70.53	199	3.96	73.26	87.12	98.96
169	2.86	52.84	62.83	71.37	200	4.00	74.00	88.00	99.96
170	2.89	53.47	63.58	72.22					

Appendix H
CALCULATED DIETS FOR QUICK REFERENCE

Food Group	Exchanges per Calorie Prescription												
	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
Vegetable**	3	3	3	3	3	3	3	3	3	3	3	3	3
Fruit	3	4	4	5	6	5	5	6	6	6	6.5	7	6
Milk													
Whole Milk			1	1	1	1	1	1	1	1	1	1	2
Low Fat	1	1											
Non - Fat Milk													
Rice													
Low Protein	2	2	1	1	2	3	2	2	2	2	2.5	3	2
Medium Protein	3.5	4	4.5	5	3	4	5	5	6	6	6	6	8
High Protein			1	1	2	1	2	2	2	2	2	2	2
Meat													
Low Fat	3	2	2	2	4	3.5	4	3.5	4	4	5	5	5
Medium Fat	1	2	2	2	1	2	1	2	2	2	2	2	1
High fat													
Fat	3	2	2	2	3	3	4	4	4	5	5	5	4
Sugar	4	3	3	3	4	5	3	4	4	5	6	6	4

The diet prescription considered in the rating +/- 5 for macronutrients and +/- 50 for the calories

Refers to grams for carbohydrate, protein and fat respectively which follows the percent (%) distribution of 65-15-20, respectively

**Some vegetables can be included in meals as much as desired

GLOSSARY

Available carbohydrate: carbohydrates that are digested and absorbed by the human small intestine (i.e. soluble sugar and starch)

As purchased: food as sold in the market or picked from garden and includes both edible and inedible parts like peelings, bones or shells.

Basal Metabolic Rate: energy needed to sustain metabolic activities of the cells and tissues and to maintain circulatory, respiratory, gastrointestinal and renal processes.

Calories: is a unit of energy. The amount of heat needed to raise the temperature of one (1) gram of water by 1 degree Centigrade. In nutrition, calories refer to the energy derived from food, and the energy used for physical activity.

Carbohydrate: is a molecule containing carbon, oxygen and hydrogen present in food in the form of starch, sugar and fiber.

Cholesterol: a fat-like substance found in the blood, brain, liver, and bile and as deposits in the walls of blood vessels.

Desirable body weight: believed to be the weight that is annotated with good health for a person, based chiefly on height but modified by factors such as gender, age, build and degree of muscular development.

Diabetes mellitus: a disorder characterized by high glucose levels in the blood. Diabetes mellitus may be caused by a failure of the pancreas to produce sufficient insulin or by resistance of the body to the action of insulin.

Diet: is the customary amount and kind of food and drink taken by a person from day to day. The word diet often implies the use of specific intake of nutrition for health or weight-management reasons (with the two often being related).

Diet counseling: is a process in which a health professional, usually a registered dietitian, works with an individual to assess his or her usual dietary intake and identify areas where change is needed. The nutrition counselor provides information, educational materials, support, and follow-up to help the individual make and maintain the needed dietary changes.

Dietary fiber: a substance that resists digestion and passes through the system essentially unchanged. It adds bulk to the diet and aids in the passage of bowel movements. It also helps regulate the body's use of sugars, helping to keep hunger and blood sugar in check. A good source of dietary fiber contains three (3) grams per 100g edible portion.

Edible portion: quantity of food expressed either in weight, volume or count, after it has been cleaned, peeled or prepared and is ready for consumption.

Fat: a group of organic compounds that are composed of fatty acids. Fats are either saturated or unsaturated. Unsaturated fats are classified further as monounsaturated or polyunsaturated. As a concentrated source of energy – one (1) gram of fat contains nine (9) calories, much more than a gram of protein or carbohydrate.

Fat free: can only be used for “low fat” product with the percentage based on the weight of fat in 100 grams of food (2 g of fat in 100 g of food). In milk, contains less than 0.1 percent of milk fat.

Fatty acids: basic unit or building blocks of fat; different fatty acids have different effects on cholesterol and triglyceride levels.

Food composition tables: are compilation or database providing nutritionally important chemical composition of foods such as energy, moisture and nutrients like protein, carbohydrate, fat, vitamins and minerals.

Food exchange list: classification or grouping of foods with equivalent amounts of carbohydrate, protein, fat and energy; food item within a list may be used interchangeably.

Fruit-flavored drinks: are drinks flavored with natural or artificial essences or extracts of fruits.

Glucose: the main form of sugar produced by the body from food to provide energy. Carbohydrates and part of fat can be converted by the body into glucose.

Low fat Milk: contains one (1) percent milk fat per serving.

Macronutrient: nutrient needed by the body in large amount and are provided by carbohydrate, proteins and fats.

Malnutrition: a state of sustained deficiency or excess of nutrients.

Meal planning: process of planning meals that are nutritional adequate for an individual's age, sex, physiological state.

Metabolism: physical and chemical processes by which food is transformed into energy and tissues are broken down into waste products.

Mineral: a class of nutrients made from inorganic compounds.

Monounsaturated fatty acids: are fatty acids that have one double bond in the fatty acid chain with all of the remainder carbon atoms being single-bonded.

Nutrients: substances supplied by food that provide nourishment for the body.

Nutrition: process by which the body receives and uses the substances necessary for its function, for energy, and for growth and repair of the body.

Physical activity: is defined as any bodily movement produced by skeletal muscles that release energy.

Polyunsaturated fatty acids: are lipids in which two or more carbon-carbon double bonds occur. Polyunsaturated fat can be found mostly in nuts, seeds, fish, seed oils, and oysters.

Proteins: are nitrogen-containing organic compounds made up of amino acids used in repairs and building tissues. Proteins are the basic structure of tissue, enzymes, aid the immune system, and serve as hormones.

Reduced fat milk: is composed of two (2) percent milk. An eight (8) ounce glass (240 ml) of two (2) percent milk contains five (5) grams of fat.

Resting Metabolic Rate: used synonymously with basal metabolic rate; the energy expended for the maintenance of normal body functions and homeostasis; represents the largest portion of total energy expenditure; may be as much as 10% to 20% higher than the basal energy expenditure, allowing for the energy spent as the result of the thermic effect of food or excess post exercise oxygen consumption.

Saturated fatty acid: fat molecules that have no double

bonds between carbon molecules.

Serving size: is the amount of a food or drink that is generally served in one sitting.

Sugar-free: food that does not contain sugar; artificial sweetening substance is used instead of sugar.

Triglyceride: a form of fat made up of three (3) fatty acids and glycerol. The body can make triglycerides from sugar, alcohol, or excess calories.

Vitamins: organic substances that are essential for most metabolic functions of the body; they are fat-soluble (A, D, E, K) and water-soluble (B vitamins and C).