

Technical Bulletin #27:

Macronutrients – The Body’s Building Blocks

What are macronutrients?

Macronutrients are nutrients that provide your body with the calories or energy for the normal growth and development of your body. They are essential for nutritional health and well-being.

The word “macro” means large. That is, macronutrients are nutrients that are needed in relatively large amounts on a daily basis. The key macronutrients are:

- **Carbohydrates**
- **Fats**
- **Proteins**
- **Water**

Carbohydrates – sources of energy



Carbohydrates are your body’s preferred sources of energy (or calories). When you eat foods that are high in carbohydrates, your body turns them into sugars that are used as fuel for energy.



Carbohydrates are also the macronutrient that we need in the largest amount – 45-65% of the daily calories you consume should come from carbohydrates. This is because:

- Carbohydrates are easily used by your body to produce energy.
- Carbohydrates are needed to ensure proper functioning of your nervous system, kidneys, heart and other muscles.
- Carbohydrates are the *only* source of energy for red blood cells and the brain.
- Carbohydrates can be stored in your muscles and liver and used later for energy.
- Complex carbohydrates such as whole grains, fruits and vegetables are high in dietary fiber that helps control cholesterol, blood sugar and bowel function.

A healthy diet means that an active adult consumes approximately 300g of carbohydrates each day. People who do not consume enough carbohydrates on a regular basis often feel tired and have difficulty to concentrate.

Most carbohydrates come from plant foods. Good sources of carbohydrates include:

Fruits and vegetables				
	Carbohydrates (g)	Calories		
Banana (medium)	27	105		
Orange (medium)	16	65		
Pineapple (medium)	60	230		
Watermelon (286g)	20	90		
Sweet potato (medium)	24	103		
Carrot (medium)	6	25		

Breads, cereals and other grains			
	Carbohydrates (g)	Calories	
White rice (128g)*	44	225	
Brown rice (128g)*	44	216	
Corn (small ear)	20	96	
Sorghum (21g)	15	60	
*Brown rice has 4g dietary fiber while white rice has no dietary fiber.			
Breast milk, animal milk and milk products			
	Carbohydrates (g)	Calories	
Breast milk* (246g)	15	170	
Cow milk (244g)	10	150	
Yogurt (227g)	10	140	
*For infants up to 6 months, exclusive breastfeeding is recommended. Breast milk will provide babies with all the carbohydrates, protein and nutrients they require at this stage of their lives.			



Proteins – cell growth and health

Protein is a vital part of every tissue, cell and organ in your body. It is essential that you eat protein-rich foods every day to ensure that you maintain your body in good health. Proteins are important for the following reasons:


- Proteins promote the growth of body cells – and are particularly important for children, teens and pregnant women.
- Proteins are necessary to repair body tissues and cells.
- Proteins strengthen your body’s immune functions.
- Proteins are responsible for making essential hormones and enzymes needed by your body.
- Proteins produce energy for your body when carbohydrates are not available.

Protein intake should account for 10-35% of the calories that you consume every day. The exact amount of protein that each person needs depends on his or her weight. As a general rule, each person should eat about 1g of protein for every kilogram of body weight.


Proteins are found in animal foods; plant foods such as legumes and nuts; and, in dairy products. Some good sources of protein are:

Animal foods				
	Protein (g)	Calories		
Chicken (100g, fried)	33	187		
Catfish (143g)	26	150		
Egg (1 fried egg)	6	90		

Legumes and nuts		
	Protein (g)	Calories
Fried tofu (28g)	5	80
Peanuts (28g, raw)	7	160
Almonds (28g, raw)	6	160



Dairy products		
	Protein (g)	Calories
Breast milk* (246g)	3	170
Cow milk (244g)	8	150
Yogurt (227g)	8	140



*For infants up to 6 months, exclusive breastfeeding is recommended. Breast milk will provide babies with all the carbohydrates, protein and nutrients they require at this stage of their lives.


Fats – concentrated energy sources

Dietary fats in the foods you eat provide the greatest amount of energy for the amount of food you consume. They are also important because:

- Fats help your body absorb and benefit from fat-soluble vitamins such as Vitamins A, D and E.
- Fats improve the taste, aroma and texture of food and also help in digestion.
- Fats help maintain healthy skin and hair.
- Fats protect your internal organs from shock and injury.
- Fats act as regulator of your body’s temperature.


Fats are an essential part of your diet and should comprise 20-35% of the daily calories that you consume. Some of the key sources of fats are:

Oils		
	Fats (g)	Calories
Vegetable oil (13g*)	14	119
Coconut oil (13g*)	14	116





*13g is equal to one large spoonful.

Nuts and legumes		
	Fats (g)	Calories
Almonds (28g, raw)	14	163
Cashew (28g, raw)	12	155
Peanuts (28g, raw)	14	159
Soybean (35g, raw)	2	43





Animal foods				
	Fats (g)	Calories		
Chicken (100g)	5	187		
Catfish (143g)	4	150		
Egg (1 fried egg)	7	90		
*For infants up to 6 months, exclusive breastfeeding is recommended. Breast milk will provide babies with all the carbohydrates, protein and nutrients they require at this stage of their lives.				

It is very important to consume fats in moderation. A diet that is too high or too low in fats can cause serious health problems. In Cambodia, the problem is often that many people eat diets that are very low in fats. The consequences can be serious for some people.

- Poor vitamin absorption: Low-fat diets reduce the body’s capacity to absorb key vitamins such as Vitamin A. Vitamin A deficiency is a major cause of night blindness in Cambodia.
- Low energy: You may suffer from low energy if your diet is very low in fats.
- Imbalanced diet: If you are not eating enough fat, you are probably getting too much of other macronutrients. Too many carbohydrates or too much protein can lead to health problems. The best approach is to balance all the macronutrients – fats, carbohydrates and protein.

Water – the most important nutrient

Water makes up about 60% of your body. You need to consume at least 2 litres of clean water every day to maintain the balance of water in your body – particularly because Cambodia is very hot and a lot of water is lost through perspiration throughout the course of the day.

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